

SWISSQUOTE

FINANCE AND TECHNOLOGY UNPACKED

N°4 SEPTEMBER 2023 | CHF 9.- | WWW.SWISSQUOTE.COM

DOSSIER

Biometrics: the revolution is upon us

Identification and security –
the applications of biometrics
are multiplying

SWATCH
The incredible
success of the
Moonswatch

ENERGY
Offshore
wind power
faces cross-
currents

PORTRAIT
Selina,
the global
hostel

→ NEC → THALES → AWARE → BIO-KEY → FINGERPRINT CARDS → SENSETIME → IDEX BIOMETRICS →

ISSN 2296-3278

82



9 772296 327000

THERE IS ETERNITY IN EVERY BLANCPAIN

The spirit to preserve.

70th
Fifty Fathoms
70th anniversary



"Creation"
Wildlife Photographer
of the Year 2021
Grand Title winner
© Laurent Ballesta

A Fifty Fathoms is for eternity.

Launched in 1953, the Fifty Fathoms is the first modern diver's watch. Created by a diver and chosen by pioneers, it played a vital role in the development of scuba diving. It is the catalyst of our commitment to ocean conservation.



RAISE AWARENESS,
TRANSMIT OUR PASSION,
HELP PROTECT THE OCEAN

www.blancpain-ocean-commitment.com

JB
1735
BLANCPAIN
MANUFACTURE DE HAUTE HORLOGERIE

BOUTIQUE ZÜRICH · BAHNHOFSTRASSE 28 · PARADEPLATZ · 8001 ZÜRICH · TEL. +41 (0)44 220 11 80
BOUTIQUE GENEVA · RUE DU RHÔNE 40 · 1204 GENEVA · TEL. +41 (0)22 312 59 39



Seamaster

PRECISION AT EVERY LEVEL

DIVER 300M
Co-Axial Master Chronometer

The Seamaster has served every kind of ocean adventurer from solo free divers to entire racing yacht crews. Continuing this fine tradition is the 42 mm Seamaster Diver 300M in steel, available on a matching bracelet or blue rubber strap. Crafted with a special seahorse logo on the caseback, it features a new wave-pattern dial in Summer Blue, varnished with a gradient finish to reflect its stated water resistance of 300M. We celebrate our oceangoing icon, with a promise to keep defying the depths and delivering new levels of precision.

Ω
OMEGA

HUBLLOT



HUBLLOT

hublot.com • f • t • i • g

BIG BANG UNICO

Titanium and blue ceramic case.
In-house UNICO chronograph movement.

A dream or a nightmare?

Discussing biometrics is always insightful. For some, the widespread use of biometric technologies is an opportunity for a better world. For others, it signals the start of a dystopian future. In reality, we know very well that technologies are inherently neither good nor bad. It all depends on how they are used. And this holds for biometrics as well. Despite reluctance from some, biometrics and particularly facial recognition and fingerprints are now part of our daily lives. All of us are now used to unlocking our smartphones with a finger or by looking into the camera, for example. And world travellers use the automatic gates at border control to speed up the identification process in airports. Switzerland even adopted biometric passports back in 2010.

But this is just the beginning. According to several studies, the global biometrics market is expected to triple by 2030, reaching \$150 billion per year. As you'll see in this issue, these technologies will start to be used in many other industries. In the future, purchases and financial transactions completed online will be authenticated by one or more biometrics systems. Access to sensitive websites, such as pornographic sites, will be protected by facial recognition systems that can verify the age of the viewer. And in medicine, biometric data will allow for early detection of some diseases thanks to arti-

L
A
I
R
O
T
I
D
E

ficial intelligence. A far cry from dooming us to dystopian Black Mirror-style scenarios, biometrics could – with robust safeguards – help make the world safer and more efficient.

But as Professor Sébastien Marcel, head of the Biometrics Security and Privacy research group at Idiap, reminds us in this issue, no technology is infallible. While biometrics systems are more secure than passwords overall, they can also be hacked. The rise of deep-fakes – audio or video recordings made with artificial intelligence – is a challenge for the biometrics industry.

It also raises the question of how we can protect our privacy. Permanent surveillance in public spaces or of employees is now possible with biometrics, but no one is thrilled at the prospect. Some countries have already embarked on that path. For its part, Switzerland has just updated its data protection legislation (nLPD), which will enter into force in September 2023, to include biometrics – the first step in protecting citizens.

Happy reading!

BY MARC BÜRKI,
CEO OF SWISSQUOTE



C

5

Editorial
by Marc Bürki

8

Scans
Economic survey



16

The crypto gazette

18

Interview
Can the stock market rally last?

O

20

Portrait
Selina, the global hostel



26

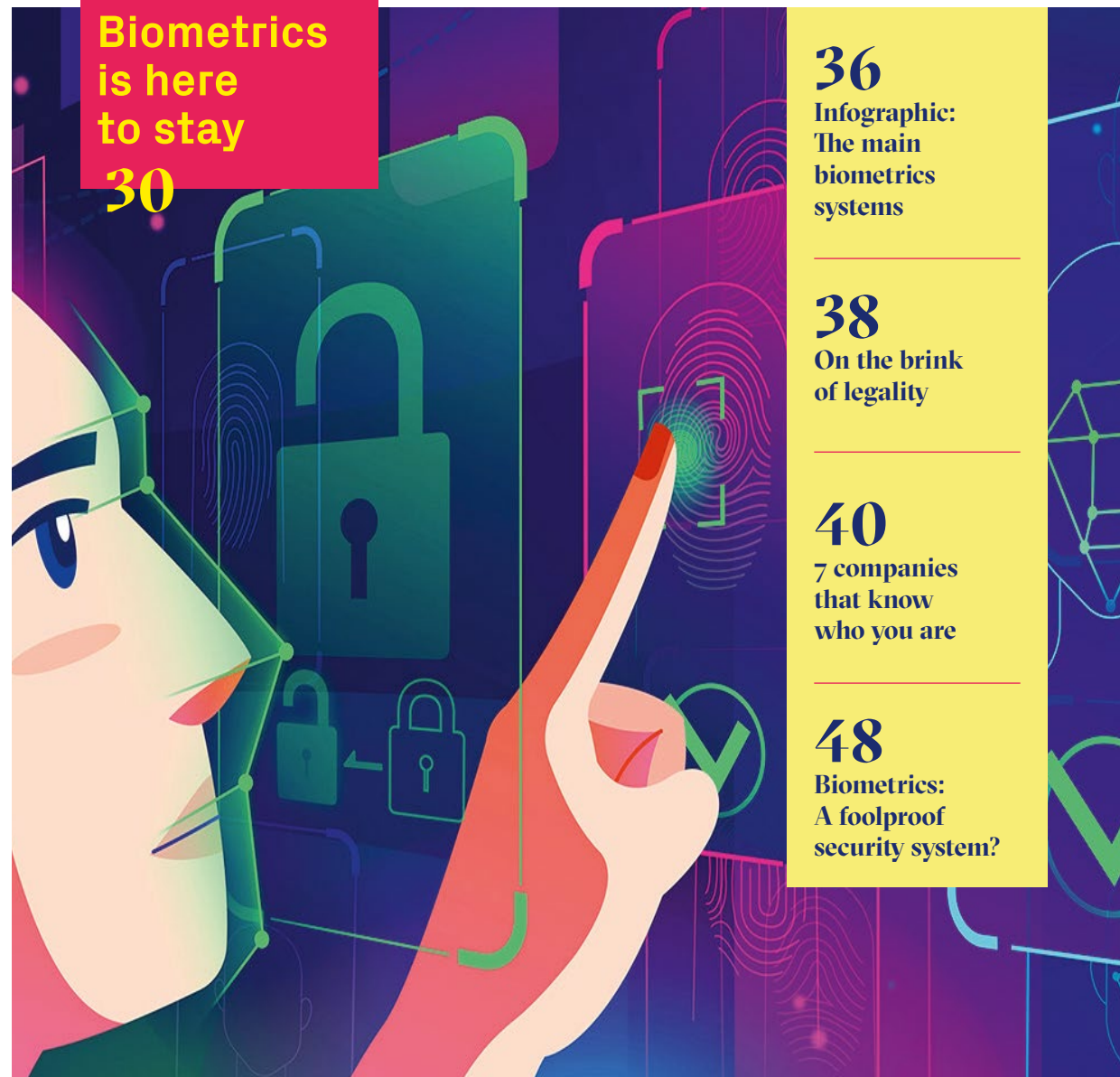
Banking
The stress test in question



n

DOSSIER

Biometrics is here to stay
30



36

Infographic:
The main biometrics systems

38

On the brink of legality

40

7 companies that know who you are

48

Biometrics: A foolproof security system?

t



52

Energy
Offshore wind power blows hot and cold

58

A brand, a story
Canadair, the flying boat



60

Portrait
Swatch keeps up appearances

66

Swiss startups in this edition

s

72

Auto
Testdrive: Volkswagen ID. Buzz



74

Travel
Corsica: The secret natural pools on the Isle of Beauty

78

Boutique

80

A look inside the lab
Fast charging lithium-ion batteries

impresum

Publisher
Swissquote
Chemin de la Crétaux 33
1196 Gland – Suisse
T. +41 44 825 88 88
www.swissquote.com
magazine@swissquote.ch

Manager
Brigitta Cooper

Editor-in-chief
Ludovic Chappex

Associate editor
Bertrand Beauté

Editorial staff
Bertrand Beauté
Stanislas Cavalier
Ludovic Chappex
Julie Estève
Blandine Guignier
Raphaël Leuba
Grégoire Nicolet

Gaëlle Sinnassamy
Julie Zaugg

Design director
Caroline Fischer

Layout
Caroline Fischer
Jérémie Mercier

Editing (English version)
Ose Ayewoh
Marco Simon

Photography
AFP, Keystone,
Getty images,
iStockphoto, Theisport,
Unsplash

Cover
Rose Sélavy

Printing, Binding and Distribution
Stämpfli Ltd.
Wölflistrasse 1
3001 Berne
www.staempfli.com

Translation
Acolad

Advertising
Infoplus AG
Traubenweg 51
CH-8700 Küsnacht
hans.otto@i-plus.ch

Wemf
REMP 2023: 86,795 Ex.
Print run: 110,000 Ex.



printed in
switzerland

SUBSCRIPTION
CHF 40 for 6 issues
www.swissquote.ch/magazine

S
N
C
S



“It is infinitely preferable to be attacked by strangers on Twitter, than indulge in the false happiness of hide-the-pain Instagram”

Elon Musk, CEO of Twitter (currently rebranding as X), upon learning of Meta’s Threads, the rival social media platform.



Miners search for cobalt and copper at the Shabara artisanal mine in the Democratic Republic of the Congo on 12 October, 2022. Due to the optics, Glencore and the big players in the sector have distanced themselves from artisanal mines.

MINING

A much-coveted red metal

A global copper shortage is in our future. Global production is expected to reach 30 million tonnes by 2031 – 7 million below demand, according to McKinsey. The red metal, which is used in electric vehicles, wind turbines and electrical wires, is increasingly in demand. But that demand hasn’t resulted in new mines, due to the drop in price for the raw material as well as

environmental considerations. Nevertheless, several mining groups hope to expand their production, such as Ivanhoe Mines in the Democratic Republic of the Congo and Freeport in Indonesia. Rio Tinto opened a mine in Mongolia and BHP acquired Australian copper mining company OZ Minerals this spring for \$6.4 billion.

→ RIO → IVN → BHP → FCX

\$300 BN

The expected value of the electric vehicle charging market in 2027, compared to \$66 billion in 2023, according to consulting firm Juniper Research.

RANKING

Top 5 cities with the highest growth (based on increased GDP from 2019 to 2022)

- 1. MIAMI **+10.6%**
- 2. SAN FRANCISCO **+9.4%**
- 3. SINGAPORE **+6.9%**
- 4. SYDNEY **+4.4%**
- 5. NEW YORK **+4.3%**

Sources: JLL, Knight Frank, Oxford Economics, national statistics, *The Economist*

Top 5 telecommunications companies by size (based on revenue in 2022)

- 1. VERIZON (United States) **\$136.8 BN**
- 2. CHINA MOBILE (China) **\$133.2 BN**
- 3. DEUTSCHE TELEKOM (Germany) **\$122.9 BN**
- 4. AT&T (United States) **\$120.7 BN**
- 5. NTT (Japan) **\$105.9 BN**

Source: All Top Everything

© JUNIOR KANNAH, AFP / JOHNN MISKANOSKI, ALAMY / ALAN LEVINE



THE IMAGE

The stats: 6 water slides, 7 pools, 20 bridges, 365-metres long, and weighing 250,800 tonnes. Built by Meyer Turku in Finland, the Icon of the Seas is the largest cruise ship ever built, five times the tonnage of the Titanic. After its sea trials this summer, this ocean giant is

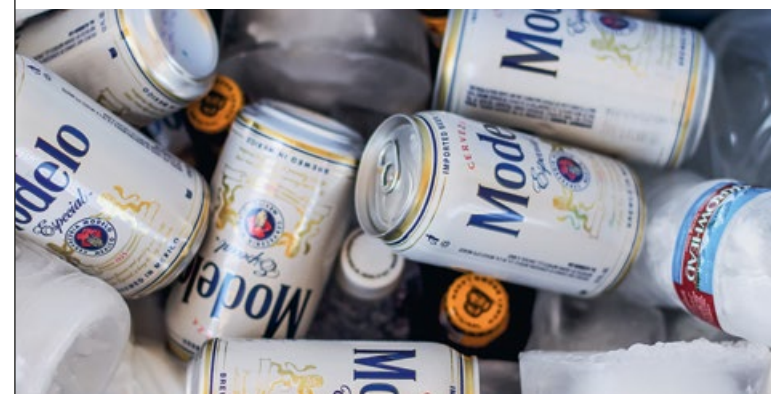
expected to embark on its first commercial cruise in early 2024 for Royal Caribbean Cruise Line. Two other Icon-class ships have been ordered, with delivery scheduled for 2024 and 2025. NGOs criticise the environmental damage caused by these monstrous ships.

ALCOHOL

Modelo Especial: the new boss of the beer world

Mexican beer brand Modelo Especial has dethroned Bud Light to become the most sold beer in the United States. Little known only a decade ago, it now holds an 8.7% market share. Acquired by Constellation Brands in 2013, Modelo received \$6.4 billion in investments for its factories in Mexico, which quadrupled produc-

tion, and also adopted a clever marketing strategy focused on cities with significant Latino populations, such as Chicago and Los Angeles. Constellation Brands will continue this approach, spending \$4.5 billion over the next three years to increase Modelo’s production capacity by more than 70%. → STZ



“I am not a promoter of a total decoupling from China. It’s not realistic nor is it in the interest of Western companies”

Carlos Tavares CEO of Stellantis.

CLOUD

Oracle makes moves in the cloud

Founded in 1977, Oracle is one of the tech dinosaurs. In recent years, the Texas-based group has been outpaced by Amazon, Google and Microsoft in cloud computing, which brings in the bulk of Oracle's revenue. Its market share dropped from 43% to 19% between 2012 and 2022. But the company is fighting back. Oracle has invested \$8.7 billion over the last 12 months to modernise its offering, and last year, it acquired US company Cerner, a health-focused cloud specialist, for \$28.3 billion. It also signed a much-coveted contract with Chinese social network TikTok to host its data in the United States. In Q2, Oracle's sales increased 55% compared to one year ago. Investors are intrigued: the share price has risen 73% in a year. → ORCL

\$210 BN

The expected value of the genetically modified (GM) seed market by 2050, compared to \$47 billion in 2021, according to a study from UBS.



“The reality is, the energy system of today continues to desperately need oil and gas”

Wael Sawan, CEO of Shell.

AUTOMOTIVE

Japan falters on electric vehicles

Japanese automotive groups have fallen behind in the electric vehicles race. Last year, EVs made up only 24,000 of the 10.5 million vehicles sold by Toyota. Japanese manufacturers were pioneers in electrification a decade ago. But they didn't continue this approach, deciding to focus on hybrid vehicles and then

hydrogen models, which never really took off. The lack of state subsidies and minimal charging station infrastructure didn't help. Now, Toyota, Nissan and Honda hope to make up for lost time by putting out dozens of new electric models. But they haven't been successful just yet.

→ 7203 → 7201 → 7267

Presentation of the Toyota bZ4X - an electric vehicle - at the 43rd International Motor Show in Bangkok (Thailand) in March 2022.



Calida products photographed in Lucerne in 2020.

FASHION

Business cools for Calida

Recent acquisitions made by the Calida group haven't been as hot as expected. The Lucerne-based company will divest itself of its German organic undergarments line Erlich Textil that it acquired in 2022, incurring an impairment of between 23 and 25 million Swiss francs. High inflation in Europe in recent months has caused sales to plummet for the group, and for that subsidiary in particular. For the time being, Calida will keep its American brand Cosabella, which it also acquired in 2022, despite disappointing results that have not reached growth targets. The turbulence continued when CEO Timo Schmidt-Eisenhart left the company in late June. → CALN

\$294.7 M

The cost of the latest Indiana Jones film, *The Dial of Destiny*. Two weeks after its release, it only earned \$250 million at the box office, which was deemed disappointing.

DELIVERY

Supply chains regroup

DHL Supply Chain, a subsidiary of DHL Group, will invest €500 million in Latin America by 2028. These funds will be used to expand its network of warehouses and its vehicle fleet in Mexico, Brazil, Colombia, Peru and Argentina. The objective is to get closer to clients, allowing them to diversify their supply chains, in particular by reducing their dependence on China. FedEx, a competitor, is following a similar



approach, opening new logistics centres in Poland, Romania, the Czech Republic and Indonesia.

→ DHL → FDX

THE QUESTION

The green economy consumes an ever-increasing amount of rare minerals. Are we heading for a global shortage?

Yes, we'll see the first signs of a shortage around 2030. The minerals most affected will be lithium, copper and nickel, which are all used to make batteries for electric vehicles. The paradox is that the world has enough of these minerals to meet demand. But most of the surface deposits have already been discovered and we now need to go below ground, where identifying the minerals is difficult. Opening a new mine also takes a significant amount of time: in northern Canada you can only work two months out of the year, and in the United States, it takes 10 years to obtain a mining permit. Furthermore, processing these minerals is difficult and expensive. Lithium can only be purified at a very high temperature and requires sulphuric acid. As for copper, we haven't found any new deposits in 20 years. The existing mines are reaching maturity and produce minerals that sometimes contain no more than 0.5% copper.

Jef Karel Caers, professor of earth sciences at Stanford University.



“Rolex is the most aspirational luxury watch brand and the highest demand, hence, it’s the most replicated”

Watchfinder CEO **Arjen van de Vall**, going on to state that half of all fake watches globally are Rolex imitations.



INSURANCE

Zurich Insurance seeks to stay up to date

Insurance giant Zurich Insurance is struggling to compete with startups that offer insurtech products that are easy to access or that cover certain new risks not taken into account by traditional products. But the Swiss group is trying to fix that. It has just begun a partnership with Belgian group Qover, which provides a platform for companies that brings together all their insurance products in the same place. In 2021, Zurich partnered with Canadian group BOXX, which specialises in providing coverage to SMEs and individuals for risks associated with cybercrime.

→ ZURN



The Barec group factory in Moudon (Switzerland) recycles Nespresso capsules. The aluminium and the coffee grounds are separated: the aluminium is resold and the coffee grounds turned into compost or burned to produce energy.

SUSTAINABILITY

Biodegradable Nespresso capsules?

The European Union wants to introduce a regulation banning non-biodegradable packaging in Europe. This would effectively ban sales of coffee capsules made from aluminium or plastic, such as those used in Nespresso machines. For Dätwyler, which produces a significant amount of these capsules for Nestlé in its Schattdorf (Uri) facility, the

new rule would be catastrophic. But the Uri-based company has already begun preparing for that possibility by investing in R&D for capsules made from new biodegradable materials. There are already several products on the market that are made from biodegradable plastics and even organic fibres that can be composted. → DAE

12.6 M

In tonnes, the quantity of textiles tossed each year in the European Union. But that could soon change with a new EU directive that plans to make fast fashion brands pay to process this waste, according to the “polluter pays” principle. Currently, only 22% of clothing and shoes that are thrown away in Europe are recycled.

© KEYSTONE

GRAFF.COM



BUTTERFLY

G R A F F

BUST



P. Diddy tanks his liquor brands

The future of vodka brand Ciroc and tequila brand DeLeón, launched by rapper Sean “Diddy” Combs, also known as Puff Daddy, could be in jeopardy. The artist has filed a lawsuit against the manufacturer Diageo, which he partnered with from 2007 to sell the two brands. Mr Combs claims that Diageo did not invest enough money in his brands, slashing the marketing budget and failing to produce enough bottles. In 2020, during a shortage of agave, a plant used to make tequila, the rapper claims that Diageo chose to focus on its other brands at the expense of DeLeón. He also criticises what he describes as the racist approach taken by the company, which chose to promote his two brands solely to African-American communities in large US cities, treating Ciroc and DeLeón as “inferior” products. → DGE



“While the company has had struggles [at] different points in time, we’re still huge in traffic, and we have our best days ahead of us productwise”

Yahoo CEO **Jim Lanzzone**, announcing his desire for a new IPO.

33,019

The number of points reached by the Nikkei in mid-June, its highest in 33 years. The Japanese exchange has risen by more than 25% since the start of the year.

THE IPO

A new champion for green hydrogen

Thyssenkrupp Nucera went public on the Frankfurt exchange in early July, reaching a valuation of €2.98 billion. The company, a joint venture between Germany’s Thyssenkrupp and Italy’s De Nora, specialises in producing green hydrogen, a form of renewable energy that is particularly useful for industries that are difficult to decarbonise. It uses a technique called alkaline electrolysis, which separates the oxygen and hydrogen in water using an electrical current in an alkaline solution. The IPO raised €526 million, allowing the joint venture to expand into India, Japan, Australia and the United States. By divesting itself of this segment, Thyssenkrupp continues to simplify after selling off its lift and stainless steel divisions. → NCH2

GRAFF.COM



BUTTERFLY

GRAFF

cryptos express

Bitcoin ETF: Europe ahead of the United States

This is a big step forward: a spot Bitcoin ETF, trading under the symbol BCOIN, was launched in mid-August on Euronext Amsterdam by Jacobi Asset Management, a multi-asset investment platform based in London. These types of ETFs, which are designed to encourage institutionalisation of the market, have not yet been approved by the US markets authority. For the time being, BCOIN's arrival on Euronext has been a mixed bag, closing at \$19.85 on the second day, down from its opening \$20 price. The current sluggish conditions in the crypto market did not help to attract buyers. Jacobi Asset Management initially planned to launch its ETF in July 2022 but delayed due to the collapse of the Terra/Luna ecosystem in May and FTX's bankruptcy in November, both in 2022.

Oman approves mining while Kuwait bans it

Authorities in Oman are all in on the crypto economy. The Oman Ministry of Transport, Communications and Information Technology

(MTCIT) opened a second large-scale cryptocurrency mining centre this August in the Salalah Free Zone, valued at \$350 million. The first centre opened in November 2022, for a combined investment of \$740 million. The sultanate, located on the Arabian peninsula, is forging a radically different path to that of Kuwait, where cryptocurrency transactions for both payments and investments are now banned. Mining is also explicitly prohibited.

The US Fed gets involved in regulation

The United States Federal Reserve (Fed) announced in early August that it would monitor cryptocurrency activities at US banks more closely. In its press release, the Fed stated the goal is to "foster the benefits of financial innovation while recognizing and appropriately addressing risks to ensure the safety and soundness of the banking system". In practice, this means that US banks must now provide more guarantees to the Fed before engaging in any crypto-related activity such as saving, trading, loaning, issuing or distributing cryptocurrencies.

Crypto spotlight**Algorand at its lowest**

It's one of the crypto bear market's most dramatic drops. The Algorand (ALGO) token, whose price hovered around \$2 for several weeks at the end of 2021, reached a historic low on 18 August, dropping to \$0.09 – below the symbolic threshold of \$0.10 seen during Bitcoin's flash crash (see p. 17). At the time this article was written, ALGO was trading at \$0.095, just slightly above its lowest amount.

The Algorand project, whose X (Twitter) account has 336,000 followers, nonetheless enjoys a solid reputation. The non-profit organisation that supervises the development of this blockchain is making progress in several areas: speed, decentralisation and security, three characteristics that are generally difficult to reconcile in the world of cryptocurrency. Prestigious partnerships have already been signed: last year, Algorand was chosen as the official blockchain of FIFA. But the token came under watch this spring by the SEC, as the US financial watchdog considers it a security and not a currency, similar to many other cryptos. Its current share price makes it one to watch.

Bitcoin: volatility returns

After weeks of stagnation, BTC fell nearly 10% in just a few minutes on 17 August 2023, piquing new interest from investors. BY LUDOVIC CHAPPEX

Another flash crash for Bitcoin. On 17 August at 23:40, BTC took a sudden and brutal hit, dropping from approximately \$28,000 to \$25,000 in just a few minutes, before levelling out to around \$26,000. As is always the case, other cryptocurrencies followed this downward movement en masse, resulting in a wave of liquidations on the futures market. In total, the crypto market capitalisation fell by nearly \$90 billion over this time.

Already, halving – the event that occurs approximately every four years in which the supply of new Bitcoins is reduced by half – is haunting investors

All this after Bitcoin holders had just got used to the calm. Their favourite crypto had thus far endured the summer with little fanfare (or volume), with only a few hiccups testing the intractable \$30,000 price.

To explain the dizzying fall, several analysts in the Bitcoin universe shared their theories but weren't able to reach a consensus. For some, the block sale of hundreds of millions of Bitcoin from Elon Musk's SpaceX could have contributed to the start of the crash. Others believed it was the simultaneous announcement that Chinese real estate giant Evergrande had gone bankrupt. Yet others blamed increased fears of a long-term interest rate hike from the US Federal Reserve, or even the rise in US government bond yields causing investors to desert the crypto market. The trader and influencer TheFlowHorse published a more unique opinion on the site Cointelegraph, stating that Bitcoin's sudden crash could have

been due to a massive sale from a single well-informed investor who sold off their Bitcoin position to revise their strategy after learning that the US regulator (SEC) was going to authorise Ethereum ETFs by October, a rumour that is still unconfirmed.

In any case, this Bitcoin panic has revived debates around what the cryptocurrency will look like in the medium term. This August was one of the worst months of the year thus far. But August-September is often a delicate time for BTC, unlike October-November... Already, halving – the event that occurs approximately every four years in which the supply of new Bitcoins is reduced by half – is haunting investors. Historically, halving results in very high prices in the weeks leading up to it.

The next halving is expected to occur in mid-March 2024, in less than 250 days. Will the cycle continue yet again? ▲

STOCK EXCHANGE

Too good to be true?

In the first eight months of 2023, the stock markets defied predictions and posted solid growth. Is this the start of a lasting trend? Ronald Temple, chief market strategist at Lazard Asset Management, provides us with his take on the months ahead, in an interview conducted on 7 August.

BY BERTRAND BEAUTÉ

Runaway inflation, signs of a recession, war in Ukraine, rising interest rates, tensions in the banking sector... At the start of 2023, storm clouds were gathering over the stock markets, so much so that many experts were anticipating a difficult year for shares. Eight months later, the crash hasn't happened. And more encouragingly, the majority of indices posted solid performances. Does this mean that the risk of a storm is gone? Ronald Temple, chief market strategist at Lazard Asset Management, provides us with his take on the months ahead.

Contrary to expectations, the majority of stock markets have posted solid growth since the start of the year. Can this continue?

The situation is not exactly the same everywhere in the world. In the US, the S&P 500 (ed. note: the stock market index for the 500 largest US companies) has already risen by 16% since the start of the year. And I don't believe that we'll see significant additional gains by the end of 2023. Elsewhere, the dynamic is different. For example, the MSCI Emerging Market index, which measures the perfor-

mance of stock markets in emerging market countries, has only grown 5% since the start of the year, while the MSCI Europe index has risen by 9% and the MSCI China index has fallen by 1%. And so it seems to me that the margin for growth in the next few months will be more significant outside of the US – unless the interest in the AI sector continues, in which case the US market will remain the best performing market.

Does this mean that the US market could fall?

I actually expect there to be a

rotation or change of direction in the US as optimism grows regarding economic outlooks. Although, as I mentioned, the S&P 500 has risen 16% overall since the start of the year, the median share growth is just 5%. In other words, a very small part of the market – namely tech stocks linked to AI – has driven the S&P 500 upwards.

I expect other sectors to take over in the months ahead.



“Japanese stocks still have potential for growth over the next 12 months”

Ronald Temple, chief market strategist at Lazard Asset Management

Outside of the US, which markets do you believe appear to be the most promising?

The Japanese market. Since the start of the year, it's seen considerable growth (ed. note: +25% for the Nikkei 225) but I believe that Japanese stocks still have potential for growth over the next 12 months. There are several reasons for this phenomenon. Firstly, Japan is the only large global economy where the central bank is continuing to ease its highly accommodating monetary policy and the country will experience above-potential growth this year. Secondly, we are seeing record amounts

being returned to shareholders, thanks to dividends and share buybacks which, in my opinion, will increase earnings forecasts for the Japanese market.

The UK large caps market is another market that I think is interesting. There is a lot of negativity surrounding the UK at the moment, due to inflation. As a result, the FTSE 100 (the market index for the 100 largest UK companies) is one of the least expensive large markets in the world. But 75% of the revenue of Footsie companies is generated outside of the UK. These companies are based in Britain but their business is global, and they offer an inexpensive investment opportunity.

Lastly, I would also like to mention the emerging markets, which seem to be increasingly interesting for three reasons. Firstly, the returns delivered by emerging markets have increased in the last few years and, historically, when companies have a better return on capital, their share prices hold up well. Secondly, the growth rate of emerging economies increases quicker than it does in developed markets. Thirdly, if we look at just the valuations, we can see that shares in companies in emerging markets are inexpensive.

Has the risk of a global recession been ruled out?

It's becoming less and less likely. If you had told me 12 months ago that the Fed would increase its rates by 525 basis points and reduce its balance sheet by \$936 billion, I would have expected there to be a recession, or even a global economic crisis. And yet, even the recession that occurred in Europe was shallow, only impacting certain countries – such as Germany

– which have experienced a technical recession.

I now believe that there's a good chance, perhaps 65% for the US and 50% for Europe, that we'll avoid a technical recession in the future. If the outlook seems more favourable in the US, this is because the Fed appears to have finished its rate hikes whereas the European Central Bank (ECB) might have to continue raising its rates due to inflation.

That being said, perhaps the question about a recession is the wrong one to ask. Even if developed countries avoid a recession, they will probably experience very weak growth of less than 1%. This stagnant growth is likely to continue due to tightening monetary policy progressively impacting these economies.

Is the stalemate in the war in Ukraine likely to affect these outlooks?

The war in Ukraine is a human tragedy and we all hope that the conflict ends as quickly as possible. However, it looks like the stalemate will continue over the coming months – which means more loss of life and economic damage. This is an additional risk for Europe, particularly for the coming winter. Last year it was a particularly mild winter and issues surrounding energy did not come into play. I fear that we now have a false sense of security and confidence, as reserves of gas and oil are at quite high levels and because winter 2022-2023 went smoothly. There is no guarantee that this year will be as easy as last year. Moreover, if Russia continues to block grain exports, food prices could continue to rise. Energy and food are two factors that could increase inflation if the war continues. ▽

PORTRAIT

Selina, the global hostel

Selina is no ordinary accommodation specialist. The group targets young people, especially through its CoLive subscription package for digital nomads. Since it was founded in Panama in 2014, more than 100 establishments have opened around the world. BY BLANDINE GUIGNIER FROM SAN JOSÉ, COSTA RICA

In San José, the capital of Costa Rica, the bar/restaurant welcomes tourists and residents alike. The dishes are typical of the country, the design trendy and bohemian with artwork by local artists on the wall. In the same courtyard, a shop sells Costa Rican clothing and objects. There are people setting up for a concert. At first glance, it is hard to tell that this is a hotel, let alone a major international chain listed on the Nasdaq. But in fact, Selina currently operates 118 locations worldwide, across five continents.

This impressive network was developed in less than 10 years by Daniel Rudasevski and Rafael Museri. Upon finishing their military service, the two Israeli-born entrepreneurs began their adventure in Central America after spending several years in the region themselves. “Over the course of their extended stay, they realised how easy it was to socialise in hostels, while the quality experience could vary significantly from place to place,” says Sam Khazary, senior vice president and head of global corporate development.

© SELINA

IN NUMBERS

24
Number of countries where Selina operates, including four in Europe (Greece, United Kingdom, Portugal and Germany).

29,600
Number of beds on offer (as of 31 March 2023).

\$330
Starting price of Selina’s monthly subscription, which allows you to switch destinations several times during the reserved period.

The duo opened their first Selina destination in 2014 with the idea of addressing the inconsistent quality in the youth hostel sector. They bought a run-down establishment in Venao, a fairly remote surf town in Panama. “In Venao, as with each of the other properties, Selina’s primary aim is to achieve denser accommodation. For example, we want to increase the number of beds from 50 to 150,” Sam Khazary says. The beds are divided into dormitories, private rooms, with or without bathrooms, and even suites. “This enables us to offer different types of rooms at very different prices. A good Wi-Fi connection, a communal kitchen, a library and a cinema space are also key features in the site renovation.”

Selina has always aimed to appeal to millennials and Generation Z. “Our customers mostly want clean rooms and functional facilities, but they don’t need marble floors or gold taps,” the executive says. “They prefer to keep their money for activities, excursions and eating out.”

Cindy Heo, a professor of revenue management at EHL Hospitality Business School in Lausanne, has conducted extensive research showing the importance that the younger generation gives to aesthetics. “This type of clientele is more interested in visually attractive places than in the number of stars,” she says.

Living like a local

As for design, Selina rethinks the design of each location it incorporates into its network, “but without carrying out any major renovation work”, Sam Khazary says. “We also engage with a team of local experts who help us to imagine the future Selina. For example, they advise us on the best partners to work with on the ground and local artists to collaborate with when decorating the site, they give us insight into the habits of locals, and so on.”

And Selina customers do not want “impersonal communal spaces where no one goes”, the VP adds. So to create a lively space that is open to the world around it, the founders be-

A bohemian ambiance at the reception of Hotel Selina in San José, Costa Rica.



\$183.9 M
2022 revenue (up 98% from 2021).

gan offering food and drink at attractive prices to draw in locals as well. Today, more than 41% of the group's revenue comes from services other than accommodation (27% from food services and 14% from ancillary activities).

Generating such high non-accommodation revenue is rather rare, EHL professor Cindy Heo says. This category of hotel generally offers limited common areas and few activities. "Selling a complete experience is what young people are looking for," she says. "Working closely with the local market also helps to reduce economic risks." To expand the range of services on offer, Selina created an independent division, SIMS, which organises music festivals. At the end of 2022, the group also joined forces with Mantra, a company offering activities including yoga, dance, meditation, exercise and massage.

Now based in London, Selina has also made a name for itself through CoLive, its unique subscription package for digital nomads launched during the pandemic. It includes a

30-night stay, and its Flex version allows subscribers to switch Selina destinations up to five times over a 90-day period. Subscribers can choose the type of room they want and enjoy access to the co-working spaces and wellness activities. An online network is also available to connect programme participants via app.

"No other operator has such an advanced and international programme for digital nomads"

Sean O'Neill, hotel industry expert reporting for the US travel news site Skift

The terrace of the Selina hotel in Nosara, Costa Rica.



Sam Khazary is pleased with the success of this project. "We have grown from a few hundred participants in the first year to 8,000 today. The product not only meets the needs of the target group but also brings add-

ed value for the company. Programme members stay at the destination longer, so they want to socialise more and can give advice to visiting travellers.

© SELINA

Sean O'Neill, a hotel industry expert reporting for the US travel news site Skift, says that he knows of no equivalent company in the sector. "No other operator has such an advanced and international programme for digital nomads." In his opinion, only one competitor accommodation chain targets the same customer base – Generator. A smaller group not listed on the stock exchange, Generator operates about 20 hostel destinations in Europe and North America and covers more major capitals than Selina. "As it's smaller, the company is already making a profit," the expert adds.

New partnership

Just last year, Selina was planning to open another 250 hotels by 2025. But, severely strapped for cash, the operator has had to review its strategy. Northland Capital Markets analyst Mike Grondahl explained in a report in June that, since it started operating, the company has reported net losses every

Rafael Museri and Daniel Rudasevski, Selina's two founders.



year. These losses are mainly attributed to the substantial investments required to grow the business through hotel acquisitions, financial costs and operational costs.

At first, Selina's IPO in October 2022 (see inset on p. 24) supported the company's growth policy, says Sean O'Neill from Skift. "However, by the end of the first quarter of 2023, the company had only \$23 million in cash. So they had to stop the haemorrhaging and find some money." Dutch firm Global University Systems (GUS), an online education platform with a base of around 100,000 full-time students, spotted the opportunity and invested an initial tranche of \$10 million. GUS could contribute up to another \$40 million.

The new partnership between GUS and Selina should help to increase hotel occupancy rates by targeting a new type of customer: students. The two brands will join forces to offer students the opportunity to learn at Selina sites and stay at discounted accommodation rates. →

The café terrace of the Selina hotel in Quito, capital of Ecuador.



Cutting costs

Selina's main goal now is to reduce costs in order to achieve profitability, and there's still a long way to go, Mike Grondahl says. Five establishments that make up almost half of the operating losses are being shut down, and the group will soon shed about 350 of its 2,350 or so jobs. The Northland Capital Markets analyst points out that these adjustments are essentially dictated by GUS, the new strategic investor.

Sean O'Neill is confident about Selina's future. "They have real potential to achieve profitability," he explains. "The company enjoys a high direct booking rate of 55%, compared with around 45% for major groups such as Marriott, InterContinental and Accor. In its price category, Selina is also the leader in Latin and Central America." With around 80 establishments, tourists can stay exclusively within the group while travelling in the region. "Another encouraging factor is that group destinations become more profitable over time." Twelve of the company's most

successful destinations are currently being expanded. "It's a small segment, but one with great potential, because it caters to young people," the Skift expert says. In his opinion, the possibility of a takeover by a global hotel group looking to invest in this category cannot be ruled out. ▲

Swimming pool at the Selina hotel in Playa de Carmen, Mexico.



© SELINA

ANALYST OPINION

Stock market torment

After a strong growth phase during which it opened more than 60 destinations in the space of two years, Selina turned to the Nasdaq on 27 October 2022 in search of liquidity.

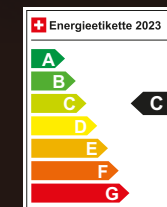
Set at \$9.75 at the time of the IPO, the share price soared to \$40.90 on the wild day of 27 October, before plunging below \$4 on 3 November.

However, the major investments made by Selina deepened its losses in the first quarter of 2023 to \$30.3 million. Forced to curb its expansion policy, the group announced in June that it was cutting 350 jobs and five hotels, as well as bringing in Global University Systems (GUS) as a strategic investor.

The share is currently trading at just over \$0.5. A nightmare or an opportunity? Mike Grondahl, analyst at Northland Capital Markets, has revised his price target to \$2, down from \$4.5 at the end of May. "The macro, management's restructuring and continued need for financing lead us to be more conservative," he wrote in the latest update on the company. For 2023, he projects total revenue of \$221.6 million and EBITDA of zero. The analyst adds that Selina's occupancy rate rose from 45.2% in the first quarter of 2022 to 56.9% in the first quarter of 2023. The hotel chain's management has set a target occupancy at 65% to 70%.

EF Hutton analyst Edward Reilly is more optimistic. He forecasts a share price of \$6 and has issued a Buy recommendation.

— SLNA



Audi Q8 50 e-tron advanced quattro, 340 hp, 21.6 kWh/100 km, 0 g CO₂/km, category B. Leasing offer: special payment CHF 18 830.-, 48 months, 10 000 km per year. Price calculations according to table above. Displayed model: Audi Q8 50 e-tron Black Edition quattro, 340 hp, 23.2 kWh/100 km, 0 g CO₂/km, category C. Chronos Grey Metallic, Audi Sport wheels, 5-spoke structure design, titanium grey, high-gloss turned finish, 9.5 J x 22, tyres 265/40 R 22, second charging socket, black roof rails, regular price CHF 100 260.-, compensation CHF 4210.-, EnterprisePlus discount CHF 10 560.-, cash purchase price CHF 85 490.-, down payment CHF 21 370.-. Leasing rate: CHF 529.-/month, 48 months, 10 000 km per year. All offers exclusive of compulsory comprehensive insurance. The granting of credit is prohibited if it leads to over-indebtedness on the part of the consumer. Financing provided by AMAG Leasing Ltd. Offer valid for contracts concluded by 30 september 2023 or until further notice. Subject to change. Applies to all vehicles imported by AMAG Import Ltd. Suggested list price of importer AMAG Import Ltd. * EnterprisePlus: commercial offer, only available for vehicles registered to companies with an entry in the commercial register.

Upgrade to Audi's business class

As an SME, you can benefit from special conditions on a range of models.

Audi Q8 e-tron from CHF 499.- / month

including 15% SME discount



Audi Q8 50 e-tron advanced quattro

Gross price	86 600.-
4.2% compensation	- 3630.-
11% EnterprisePlus (after compensation)*	- 9120.-
Your special price	73 850.-
Your discount	12 750.-
Annual interest for leasing	2,49%
Leasing rate per month	499.-

Further attractive offers for SMEs



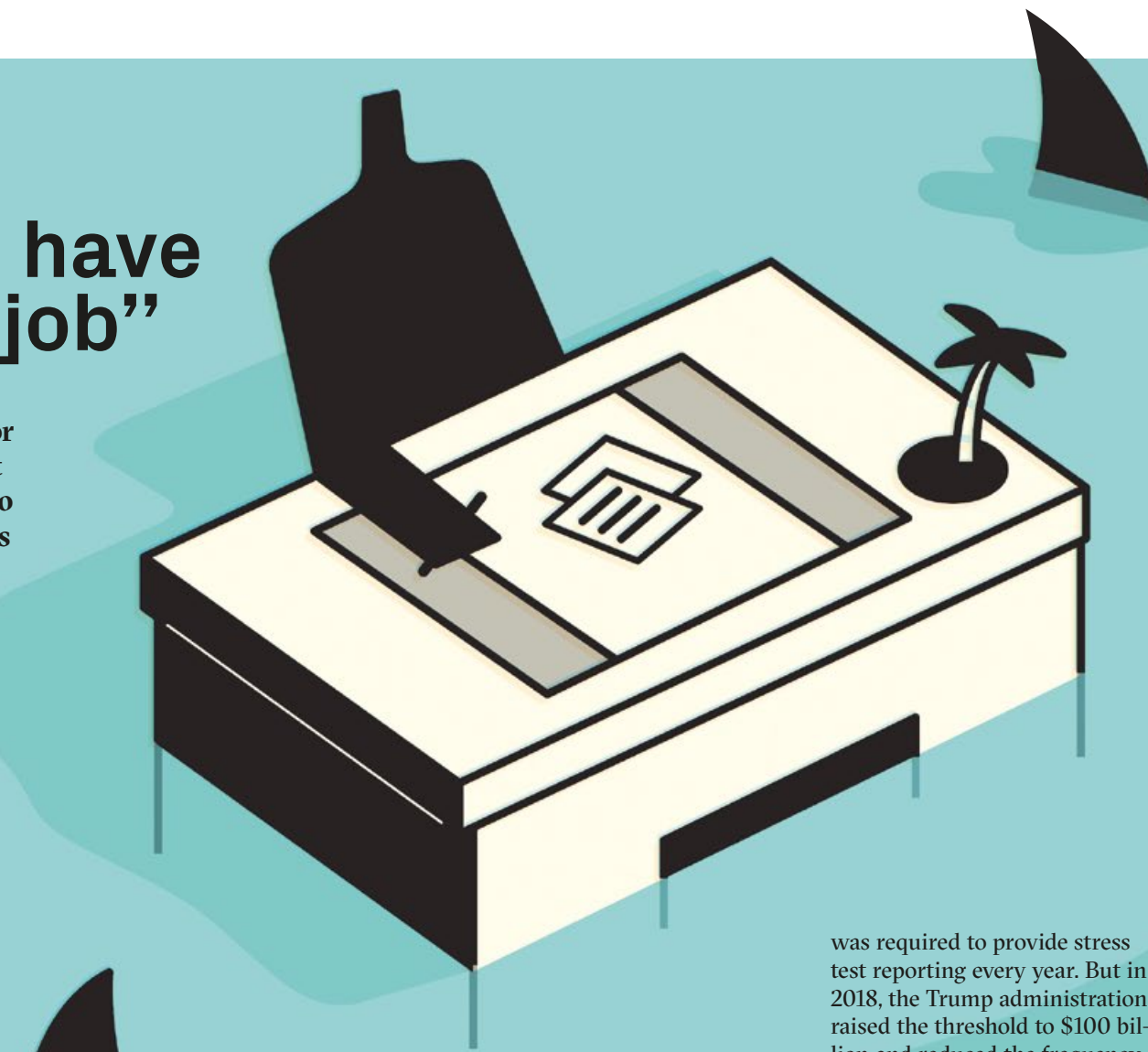
“Regulators have a thankless job”

Since the 2008 economic crisis, major banks have been required to conduct an annual stress test of their ability to withstand a crisis. Yet, these analyses have not prevented a recent spate of bankruptcies.

BY JULIE ZAUGG

The United States is going through a “severe global recession”: unemployment has climbed to 10%, commercial property prices have plunged 40% and housing prices are down 38%. This hypothetical doomsday scenario was included in the 2023 stress test used to assess 23 US banks as part of their annual resilience exercise. They all aced the test, demonstrating that they could remain above their minimum capital requirements to survive such conditions and continue lending.

These results do not add up with the demise earlier this year of Silicon Valley Bank, Signature Bank and First Republic Bank, three US banks that failed due to rising interest rates. Some financial experts are now questioning the effectiveness of these stress tests at predicting outcomes in the event of a real-world crisis. We discussed the issue with João Granja, an expert in the field, and associate professor at the University of Chicago Booth School of Business.



How did the stress tests imposed on banks get started?

They were introduced by the US Federal Reserve (Fed) following the 2008 financial crisis. Prior to that, some major banks were stress testing individually to estimate their balance sheet solidity. After 2008, stress testing became mandatory (ed. note: with the adoption of two regulatory frameworks: the Comprehensive Capital and Analysis Review and the Dodd-Frank Act Stress Test) and was applied systematically. Initially, any bank with more than \$50 billion in assets

was required to provide stress test reporting every year. But in 2018, the Trump administration raised the threshold to \$100 billion and reduced the frequency to once every two years, except for banks with more than \$250 billion in assets.

What's the situation outside the US?

Over the past 10 years, stress tests have become common in the European Union, the United Kingdom and Switzerland, as well as in other countries such as China and Brazil. Worldwide, over 50% of global GDP is now generated by countries where banks are required to undergo stress tests. However, implementation of the tests varies substantially. Stress testing requires significant resources.

First, each country carries out a cost-benefit analysis to decide which banks to test and how often. For example, in the United States, a bank with \$1 billion in assets does not have to undergo the test, as its potential failure would not jeopardise the whole financial system. In other countries, the calculation is different. In the European Union, a bank may not pose a systemic risk on a continental scale but would within the member state where it is based. Until recently, the European Central Bank (ECB) stress tests covered 50% of the banking market in each EU country. This year, only banks with more than €30 billion in assets are required to carry out stress testing.

What is the purpose of these tests?

Banks are inherently opaque. When the financial system is hit with a major shock, investors are lost. They don't know where the real risks are, which banks are safe and which pose a threat, so they tend to withdraw their assets. And that can bring down the entire banking system. Stress testing aims to prevent such a situation by giving the sector credibility. The regulator can demonstrate to investors that it has studied the banks from the inside and confirmed that they can weather a financial shock. This quiets investor fears and reduces market volatility. When things are calm, stress tests are designed to prevent the next crisis from occurring. They identify weaknesses within the banking system and introduce measures to remedy them. In practice, this means making sure that banks have adequate capital reserves to withstand an economic downturn.

How are the scenarios used for these tests developed?

In the United States, they're drawn up by the Federal Reserve. In the European Union, it's the European Central Bank. Specific factors change every year but follow a relatively similar template. All scenarios are inspired by the 2008 crisis, with an increase in unemployment to around 10% and a drop in housing prices. This is not the best approach. It would be worthwhile for regulators to break out of this standard scenario and be a little more imaginative, especially by projecting into the future. Some countries are starting to do this. In the United Kingdom, the Bank of England conducted a stress test in 2021 focusing on risks from climate change. Meanwhile, in 2024, the EU plans to launch a test of banks' cyber resilience.

“Each country carries out a cost-benefit analysis to decide which banks to test and how often”

João Granja, associate professor at the University of Chicago Booth School of Business

How is a stress test conducted?

The regulator collects masses of data from banks then constructs a model that translates macro-economic variables into loss projections for the financial system. This is not such an easy task. Each bank has its own range of financial products and will be affected differently by the regulator's stress test scenario. For →

example, a fall in housing prices would have a huge impact on the retail mortgage market, but less so on the market for small business loans. Once the model is developed, we also need to confirm its validity by comparing it with the historical data we have on previous crises.

How do we determine whether or not a bank has passed its test?

We combine two sources of information: potential losses if the crisis scenario used that year were to materialise, and its planned dividend payouts and share buyback programmes. Then we look to see if the bank has enough capital left over.

“In 2024, the EU plans to launch a test of banks’ cyber resilience”

João Granja, associate professor at the University of Chicago Booth School of Business

And if not?

The bank will have to turn to the markets to try and raise additional capital. In the United States, the Fed has also set up a safety net that allows the government to step in to sustain a bank if it fails to do so. In 2009, 10 of the 19 banks subjected to stress tests failed. Nine of them managed to raise adequate capital, but one of them, Ally Financial, the financial arm of General Motors, needed to be bailed out. The situation abroad is not as clear-cut. In the European Union, the initial stress tests carried out in 2009 and 2010 did little to allay

investors’ fears and stabilise the markets. It was known that the authorities would not have adequate resources to resolve a failing bank, especially in Europe’s periphery countries hard hit by the crisis.

Are undercapitalised banks also being asked to revise their dividend and buyback plans?

Yes, they’re being asked to scale them back. In fact, regulators like to point out that share buybacks are a more appropriate instrument than dividend payouts, as they can be revised or even cancelled without causing market turmoil. Conversely, a dividend cut sends investors a negative signal, and the bank’s share price could tumble.

Stress tests are sometimes criticised for preventing banks from granting loans, by forcing them to maintain high capital reserves. Is that justified?

The tests do have a negative impact on lending, particularly on commercial loans. But this effect is not as simple when we consider the system as a whole and over the long term. If a bank no longer provides a given loan, another bank will undoubtedly do so. Similarly, a healthy banking system will be in a better position to hold up in the next crisis and continue lending.

In 2023, three banks failed in the United States, and Credit Suisse was taken over by UBS. This has raised doubts about the effectiveness of stress tests...

Regulators lacked the perspective needed to anticipate this storm. The current crisis is classic. As in the United States in the 1980s, interest rates have soared and fixed-rate mortgages

have lost much of their value, while banks are forced to pay high interest rates on deposited assets. The combination of those factors has tightened their margins. But the scenarios used in the stress tests carried out in recent years failed to anticipate such a configuration because they are all based on the 2008 crisis, i.e., they set interest rates close to zero during a recession.

With such a flawed system, can the tests prevent the next crisis?

Regulators have a thankless job. Nobody notices when a crisis has been averted due to their intervention. Then they’re blamed for the problems they fail to avert. But the financial system is in much better shape than it was just before the 2008 crisis, and this is largely due to stress testing. When the pandemic hit in 2020, US banks had at least twice as much capital reserves as they had 12 years earlier. The COVID-19 crisis therefore could have had a much more dire impact. Is that enough? Probably not. The financial system would be even more resilient with higher capital reserves. But it’s a start. ▲



IW3881 THE REFERENCE.

IWC PILOT'S WATCH CHRONOGRAPH 41

Maximum performance and versatility: when it comes to chronographs, we have been setting ourselves the highest standards for more than four decades. Like with the 69000 caliber family, which we developed with an uncompromising focus on robustness and durability. Because only those who keep surpassing themselves can become the reference for others.

IWC BOUTIQUE · BAHNHOFSTRASSE 61 · 8001 ZÜRICH

IWC
SCHAFFHAUSEN

36

Infographic:
The main
biometrics
systems

38

On the brink
of legality

40

7 companies
that know
who you are

48

Biometrics:
A foolproof
security
system?



D O S S I E R

Biometrics is here to stay

The global biometrics market is expected to triple in the coming years to reach nearly \$150 billion in 2030. Could this boom cause as much concern as excitement?

BY BERTRAND BEAUTÉ

© CHRIS CASH

T

he year is 1989. In dark theatres around the world, astonished filmgoers watch a vision of the 21st century as pictured by Robert Zemeckis and Bob Gale, the directors of the *Back to the Future* trilogy. Alongside the flying cars, hoverboards, self-drying clothes, robot maids and other innovations that haven't yet become reality, the second instalment in the series did predict the omnipresence of biometrics. Sent forward into 2015 by the legendary DeLorean, the film's heroes open the door to their house, provide identification to the police and pay for a taxi all by placing their fingers on a digital fingerprint scanner.

A future dreamed up in the 1980s is now becoming a reality, as biometrics become increasingly significant in our lives. Many companies now use digital fingerprints and facial recognition to allow employees access to their buildings, and many airports have also adopted this technology. Most smartphones now unlock by pressing a finger

“We are irrefutably moving towards more and more biometrics in order to simplify identification and improve security”

Christophe Remillet, CEO of OneVisage

to a sensor or by looking at the camera. And let's not forget that biometric passports are now the norm in more than 150 countries.

“The use of biometric systems is booming. They are increas-

ingly present in our day-to-day lives,” says Christophe Remillet, CEO of OneVisage, a Swiss startup that specialises in facial recognition. Worth an estimated \$41.08 billion in 2023, the global biometrics market is expected to reach \$150.58 billion by

2030, or an annual growth of 20% during that time, according to predictions from consulting firm Global View Research. Biometrics Research Group agrees, believing that the market will be worth \$77.9 billion in 2026.

Why are we seeing such a boom? “The rise of biometrics systems is inherently linked to the failure of other identification systems (passwords, PINs, OTPs),” says Remillet. “If you look at passwords, for example, each person has to manage dozens. They all need to be complex and different for maximum security, but in reality, people use the same password across many accounts and generally the combinations are extremely simple and can be easily hacked. We are irrefutably moving towards more and more biometrics in order to simplify identification and improve security.”

© UNIVERSAL

Of course, all the digital giants (Google, Amazon, Facebook, Apple, Microsoft) have developed biometric systems for their products. But there are also a myriad of companies that specialise in biometrics, an industry that can be split into three parts: sensors, recognition software and cloud services (see the selection of companies on p. 40 to 47).

In concrete terms, biometrics – which literally means “measure of life” – refers to all processes that can identify a person using a biological or behavioural component. While facial and fingerprint recognition are the

best known and most widespread biometrics, and also the most likely to be used in the future, there are many others such as recognition via voice, iris, veins, body odour, and even keyboard typing rhythm.

To simplify telephone communication with clients, Migros Bank has used an automatic voice recognition system since 2020. PostFinance has done the same since 2018 and Swisscom started in 2021. Customers who choose to use the service can →

↑ In the sci-fi film *Minority Report*, released in 2002 and set in 2054, all access is by retinal recognition. Wrongly accused of murder, the main character John Anderton (Tom Cruise) has his eyes replaced in order to fool the recognition systems.



supply a sample of their voice which will be used in future calls to formally identify them. This method makes it easier to identify customers by removing the traditional questions such as date of birth and account number. According to Swiss newspaper *Le Matin Dimanche*, PostFinance has gathered approximately 1.35 million voice-prints, or more than half of all its customers.

“There are many applications for biometrics, which opens up a myriad of opportunities,” says Laetitia Ramelet, project manager at TA-SWISS, a foundation that conducted a large

study on the risks and opportunities of biometrics in 2022. “In addition to replacing passwords to unlock our smartphones, biometrics could eventually be used in all services that require personal identification.”

For example, on 20 July, Amazon announced the rollout of its new palm recognition payment system, known as Amazon One, in all shops of US chain Whole Foods Market, which it acquired in 2017. Chinese internet giant Tencent and French electronic payment company Worldline are testing palm payments as well.

Biometrics are also being used more often in the humanitarian sector. In Ukraine, for example, facial recognition can be used

to search for missing persons or to identify people who have died. And new applications of this technology will arise in the future, particularly in health-care. “Machines are capable of determining much more than someone’s identity from their face, voice or words. They are able to make conclusions about emotions and physical and mental states,” adds Ramelet. “In medicine, recognition of biometric signatures can help with the early detection of diseases such as Parkinson’s, Alzheimer’s and depression.”

According to its advocates, biometrics technology has two major advantages: simplicity of use and security. “With biometrics, you don’t need a code

or software hidden somewhere on a chip. You’re paying with your identity,” said Gilles Grapinet, CEO of Worldline, in an interview with BFM TV. So that’s simplicity. And as for security: “All hackers that try to steal passwords will be blocked,” says Christophe Remillet. “Phishing attacks will no longer happen.”

“I’m eagerly awaiting the adoption of more restrictive legislation because many companies are using biometrics in ways that are ill-advised”

Christophe Remillet, CEO of OneVisage

That said, biometric technology is not infallible itself (see also p. 48). In early 2023, for example, a British journalist at the magazine *Vice* was able to trick his bank’s voice recognition system by using free voice AI technology. Facial and fingerprint recognition software have also been found wanting. “There is no such thing as infallible technology,” said researcher Sébastien Marcel, head of the Biometrics Security and Privacy research group, in an interview with *Swissquote* (read on p. 48).

Furthermore, the development of biometrics also raises concerns – many fear that widespread biometrics will be less like *Back to the Future 2* and more like the dystopia of *1984*, the famous novel by George Orwell in which the entire population is under permanent surveillance. To avoid that pitfall, in its report, TA-SWISS recom-

Authentication or identification?

Biometrics systems perform two main roles: authentication and identification. Authentication is simpler: think unlocking a smartphone or accessing buildings. To configure an authentication system, the first step is for users to save their biometric data (a fingerprint or face scan for consumer electronics). This data will be stored and used as a reference. Any time the system is accessed after the initial set-up – unlocking a smartphone, for example – it compares the data collected by the sensor (fingerprint scanner or camera) against the data stored in the database. If it’s a match, the device unlocks. If not, it stays locked. For authentication, the biometrics system needs to answer ‘yes’ or ‘no’ by comparing collected data to stored data. All authentication systems are made up of three essential components: the sensor that collects biometric data, a storage location for the original data, and software to compare the two.

Identification is much more complex: the system has to provide the name of an unknown person based on biometric data. For example, in a police investigation, detectives can capture the face of a person in a surveillance video. That face would then be compared to a database, such as a database of faces of wanted people. In this case, the system doesn’t answer ‘yes’ or ‘no’ but rather gives a match probability. This process is not without considerable risk: in 2020, Robert Williams, an African-American, spent 30 hours in custody because the facial recognition software used by Detroit police determined that the photo from his driver’s licence was the same as the image of a watch thief caught on surveillance cameras.

mends that Switzerland implements a precise legal framework (see also p. 38). Christophe Remillet agrees: “I’m not interested in a future like *1984*. I’m eagerly awaiting the adoption of more restrictive legislation because many companies are using biometrics in ways that are ill-advised. As a result, people are scared of being under per-

manent surveillance.” However, the CEO of OneVisage does not believe that these fears should halt the progress made in biometrics. “Technology is advancing. Today, no one refuses to wear a seatbelt. It will be the same with biometrics. In three to five years, it’ll be widespread and no one will question these security systems.” ▲

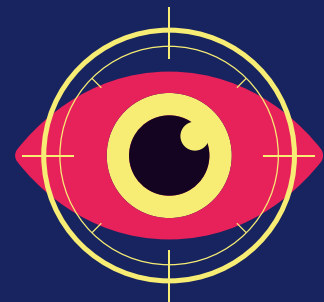
Travellers use the facial recognition system recently installed at El Dorado International Airport in Bogota, Colombia, 2 June, 2023. This system is intended to facilitate border control operations for foreigners visiting the Andean country.



© JUANCHO TORRES / AFP

The main biometrics systems

Biometrics covers a variety of very different technologies. Here are four of the most widely used.

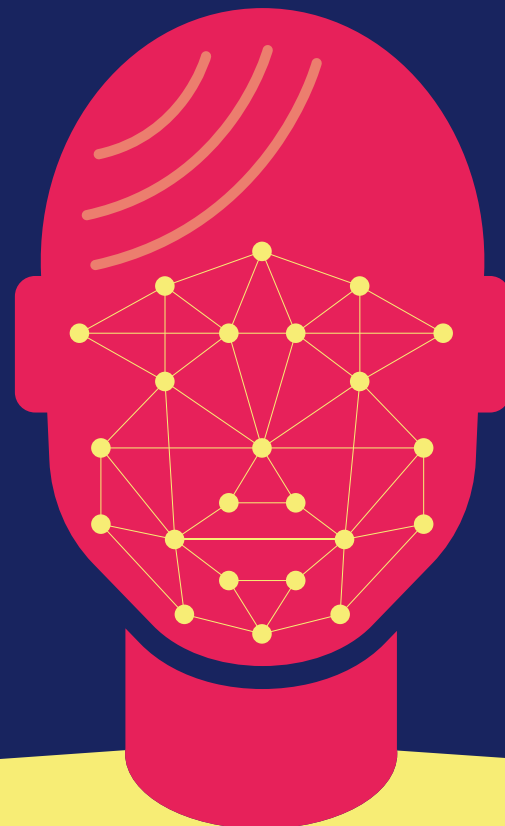


Iris recognition

Iris recognition captures and compares the unique irises of each individual. It is used to control access to high-security areas and to authenticate financial transactions. According to research firm Mordor Intelligence, the iris recognition market will grow only slightly in the coming years, going from \$9.45 billion in 2023 to \$9.54 billion in 2028. This is because while iris recognition is very secure, it is also very onerous, often requiring users to repeat the scan multiple times. The major players in this sector are Thales, NEC Corporation, Iris ID, Iritech and HID Global.

Facial recognition

Facial recognition using 2D or 3D cameras is gradually replacing fingerprints for unlocking smartphones, in airport security and for managing access to secure buildings. According to research and consulting firm Grand View Research, the global market for facial recognition was worth \$5.15 billion in 2022 and is expected to grow 14.9% per year until 2030. The major players in this sector are Thales, Aware, NEC Corporation and Fujitsu.

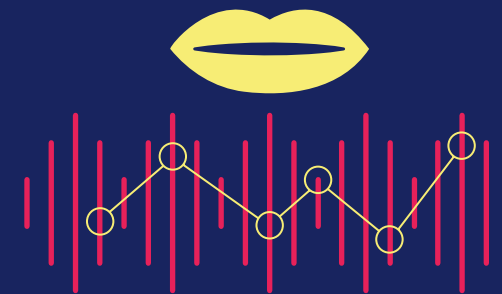


SOURCE: PRECEDENCE RESEARCH



Fingerprints

Fingerprint recognition is the most common biometric authentication technology. It is used in biometric passports, as a way to unlock everyday electronic devices (such as smartphones and computers) and access buildings, and as a payment method, as well as its more traditional use during criminal investigations. Some of the major players in this sector include French companies Thales and Idemia, as well as US companies 3M Cogent and Synaptics. According to research firm Straits Research, the global market for fingerprint scanners was worth \$3.8 billion in 2021 and is expected to reach \$13.3 billion in 2030.



Voice recognition

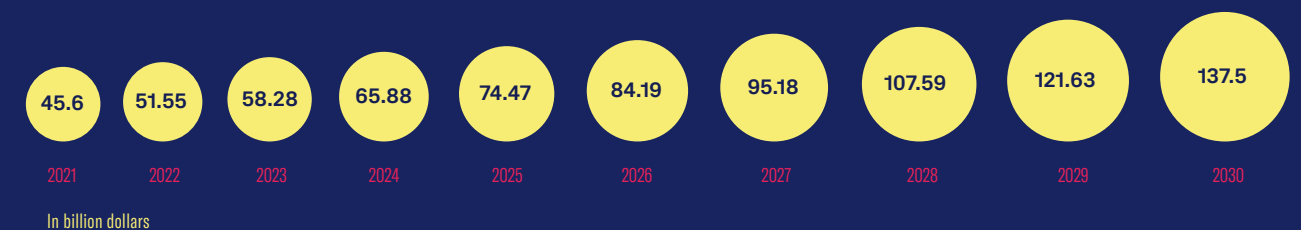
This biometric technology uses an individual's unique voice characteristics to authenticate access. It is used in call centres to authorise secure telephone transactions and in popular electronic devices such as voice assistants like Alexa (Amazon) and Cortana (Microsoft). Companies working in this sector include all the digital giants (Amazon, Alphabet, Apple, Microsoft, IBM and Baidu). According to Fortune Business Insight, the global voice recognition market was worth \$10.42 billion in 2022 and is expected to reach \$59.62 billion in 2030.

Other systems

There are other biometrics systems, such as palm identification, which Amazon uses as a payment method, DNA systems, and vein recognition. According to a study by MarketsandMarkets, the vein recognition market is expected to reach \$1.15 billion in 2025 compared to \$416 million in 2020. The palm recognition sector was valued at approximately \$1 billion in 2022 and is expected to reach \$2 billion in 2035, according to Research Nester.

A booming sector

The global biometrics market is expected to triple by 2030.



R
E
I
S
S
U
E
S

On the brink of legality

Well-known companies often gather biometric data from their users without their consent, or illegally use such data. We explain further.

BY BERTRAND BEAUTÉ



In October 2022, the state of Texas filed a lawsuit against Google. The Mountain View company was accused of collecting millions of biometric data points from its users without their consent, such as voiceprints and facial geometry via its photo storage app (Google Photos) and voice command devices (voice assistant Google Home and connected speaker Nest).

“Another breathless lawsuit,” according to José Castañeda, a Google spokesperson when contacted by AFP. It is simply one of many lawsuits as tech giants play with our biometric data, sometimes to the brink of legality. On 28 July, a lawsuit was filed in the United States

against Chinese company ByteDance for collecting biometric data from more than 200 million users without their consent via its video montage app CapCut. Facebook was ordered by a US federal court to pay \$650 million in 2021 for illegally collecting biometric data to recognise faces of its users between 2010 and 2018. There are so many of these types of lawsuits.

The widespread use of biometrics in recent years means that users are not always aware that by using certain services, they provide their biometric data to multinationals. Photo apps such as Google Photos recognise faces and voice assistants such as Amazon Alexa recognise voices. “Biometrics is often

extremely practical for the user, providing many new services, but it is not without risk,” said Laetitia Ramelet, project manager at TA-Swiss, a foundation that conducted a large-scale study on the opportunities and risks of biometrics in 2022. “In order to function, voice assistants listen to what happens in a room. And you may not necessarily want them to hear everything you’re saying, especially when you’re tired, drunk or having a confidential discussion. In order for facial and voice biometrics to be used appropriately, a precise legal framework must be established in Switzerland (see inset).”

In the lawsuit against Google, the state of Texas claims the company is using data for sales purposes and to improve its

artificial intelligence. But the problem is even more widespread, given that the companies offering these services aren’t the only ones that receive the biometric data. The US facial recognition company Clearview AI, for example, created a gigantic biometric database by collecting photos on the internet. “Clearview sweeps photos from many different websites, including social networks,” said the French National Commission on Informatics and Liberty (CNIL). This process allowed Clearview to save approximately 10 billion images unbeknownst to the subjects of the photos. For reference, the FBI has in its possession “only” 411 million images, or 24 times less, according to an article in the *New York Times* published in 2020. Clearview then sells its facial recognition software to police departments in the United States and several other countries.

“In order for facial and voice biometrics to be used appropriately, a precise legal framework must be established in Switzerland”

Laetitia Ramelet, project manager at TA-Swiss

More than 3,000 US police departments use it. The issue is that using photos from the internet to create such a database is illegal in many countries. CNIL, France’s data watchdog, fined Clearview €20 million, which the company refused to pay. Even in the United States, Clearview has caused concern. In 2022, the company was banned from selling its biometrics database to companies in the United States. “Clearview can no longer treat people’s unique biometric identifiers as an unrestricted source of profit,” said Nathan Freed Wessler, a deputy director of the American Civil Liberties

© RFB DDBI

Union (ACLU). But the company continues to sell to police departments.

And the future is hardly reassuring given the progress of AI: “Machines are becoming capable of determining much more than just the identity of a person based on their face and voice. They are starting to draw conclusions on their emotions or physical and mental state,” said Ramelet. In 2019, Amazon boasted about the performance of its facial recognition software Rekognition on its blog: “We have improved accuracy for emotion detection (for all 7 emotions: ‘Happy’, ‘Sad’, ‘Angry’, ‘Surprised’, ‘Disgusted’, ‘Calm’ and ‘Confused’) and added a new emotion: ‘Fear’”

“Detecting emotions based on facial expression or voice can be used to benefit sales,” said Ramelet. When cold calling, for example, a merchant could use this type of information to be more convincing. Analysing emotions could also be used to monitor employees or students to determine if they are focused and productive.” The startup Nemesysco, which specialises in detecting emotions from voice samples, is already selling its technology to call-centres which use it to monitor their employees.

The study from TA-Swiss recommends “banning the use of biometric recognition technologies in schools and workplaces to monitor attention.” ▲

Switzerland adjusts its legislation

When it comes to biometrics, laws vary from one country to another. In Switzerland, according to the revised data protection law (nLPD) in force as of September 2023, biometrics data is considered sensitive data in that it clearly identifies a physical person. Concretely, companies or federal authorities that collect biometric data can only do so if they receive explicit consent from the person in question and the data can only be used for a specific reason. With this law, Switzerland is now compliant with the European General Data Protection Regulation (GDPR). But it is still incomplete. The Swiss law only applies to the Swiss

Confederation and private organisations, not the cantons. So it doesn’t formally ban cantons from using biometric data in public spaces, and certain cantons already use facial recognition software in criminal prosecutions.

For private organisations, the law doesn’t provide enough guarantees, according to experts. Indeed, consent is often given quickly in an application – as no one reads that type of document before clicking ‘Agree’ – and for employers, employee consent as a justification remains highly debatable, given that there is a hierarchical relationship between employee and employer.

S
S
S
T
E
M
O
T
B
39



Bio-Key The biometric key

An end to passwords: that's the aim of US startup Bio-Key. To ensure information security, many companies require their employees to change their passwords regularly – a burden that can be counter-productive. Since employees can't remember constantly changing passwords, they often write them down on their desks, or forget them, and then they have to go

to the helpdesk to get a new one. To solve that problem, Bio-Key has developed fingerprint scanners that are directly connected to computers, eliminating the need for passwords.

Over the course of 2022, Bio-Key's revenue was up 37%

Some of the company's clients include local governments such as the city of Sacramento, univer-

↑ Developed by Bio-Key, the SideSwipe is a compact fingerprint scanner that works on any Windows device with a standard USB port.

sities (Unity College) and banks such as the First National Bank of Long Island. Over the course of 2022, Bio-Key's revenue was up 37% compared to 2021, reaching \$7 million. The only analyst that follows the company recommends purchasing shares.

**FOUNDED: 1993 HEADQUARTERS: DELAWARE (US)
EMPLOYEES: 50 2022 REVENUE: \$7 MILLION → BKYI**

I dex Biometrics The chip card

COVID has made it a common practice: when paying in a shop, we generally no longer enter a PIN code, but simply hold the card near the terminal and the transaction is completed automatically. But while contactless payment has become widespread in recent years, it does bring up security concerns. Anyone can pay using someone else's card. To solve this problem, Norwegian startup I dex Biometrics has developed a fingerprint sensor that is integrated into payment cards. In order to make a payment, users must place a finger on the sensor at the same time to be offi-

cially authenticated. Without the owner's fingerprint, the payment will not be processed. More than 20 payment card manufacturers around the world, representing 2.5 billion cards, are currently working on developing biometric payment cards.

I dex Biometrics has developed a fingerprint sensor that is integrated into payment cards

Twelve of these companies, representing one billion cards, have selected technology from I dex Biometrics, including Japanese giant Toshiba, French firm Idemia and Austria's Tag Systems.

Currently, nine banks around the world have launched biometrics payment cards with I dex technology, including Italian bank Sella, Sweden's Rocker, and First Abu Dhabi Bank from the United Arab Emirates. This market is new, but already booming. In the first half of the year, I dex's revenue has increased 29% compared to the same period last year.

**FOUNDED: 1996 HEADQUARTERS: OSLO (NO)
EMPLOYEES: 100 2022 REVENUE: \$4.1 MILLION
→ IDEX**

→ Demonstration of a biometric credit card, at a Royal Bank of Scotland conference, in Edinburgh in 2019. Visa uses the I dex Biometrics system.



© BIO-KEY / PA IMAGES: ALAMY



on average one surveillance camera for every three people, the Chinese government is SenseTime's primary client, generating nearly half of the company's revenue.

The Chinese government is SenseTime's primary client

The Zhengzhou police have also used SenseTime's smart glasses equipped with facial recognition software since 2018. The problem is that this mass surveillance concerns people, particularly as SenseTime filed a patent in July 2019 for a technology that could identify Uyghurs based on common facial features of the ethnic group from northwest China. Since then, SenseTime has been blacklisted in the United States, which means it cannot import components or technologies from the country. Washington believes that SenseTime's facial recognition cameras were used in police monitoring and repression of Uyghurs in Xinjiang.

© BLOOMBERG GETTY IMAGES

↑ Demonstration of the SenseVideo pedestrian and vehicle recognition system, marketed by SenseTime, at the company's showroom in Beijing, China, in 2018.

FOUNDED: 2014 HEADQUARTERS: HONG KONG (CN)
EMPLOYEES: 5,000 2022 REVENUE: CNY 3.81 BILLION
→0020

Aware The forensics expert

In late July, the Miami Valley Regional Crime Laboratory announced that it had selected the biometrics software Aware ABIS (Automated Biometric Identification System) to help it solve crimes. Hosted in the cloud, this software can identify people based on their fingerprints, palm, face or iris.

Various Aware technologies are now used in 26 of 50 US states

With this contract, various Aware technologies are now used in 26 of 50 US states. In addition to helping the police, Aware software is also used to verify identities at border crossings and for payment processing and other financial services. According to the company's figures, Aware's software is used by approximately 100 companies around the world and 80 government agencies. In the first half of 2023, however, revenue was down, only reaching \$7.49 million compared to \$8.93 million a year earlier (-16%). This is due to a drop in sales of software licences, whereas recurring revenue from maintaining software that has already been sold has remained nearly constant. While Aware hasn't stated the reason for its sales slump, the company believes it is only temporary and is expecting a 15% increase in its revenue for the year 2023 compared to 2022.

FOUNDED: 1986 HEADQUARTERS: BEDFORD (US) EMPLOYEES: 85
2022 REVENUE: \$16 MILLION →AWRE

SenseTime China's Big Brother

"SenseTime is watching you!" If you had to pick one company that summed up every fear

about biometrics, it might well be Chinese group SenseTime. Founded in 2014, the company creates facial and image recognition apps and artificial intelligence algorithms that are used to monitor crowds and verify

identities. SenseTime's cameras and software are able to identify a person or detect "undesirable" behaviour such as smoking, fighting or crossing outside a pedestrian crossing, from 100 metres away. In a country that has

Thales The French giant

“The start of 2023 confirms that all of our businesses are doing very well, with organic growth in revenue ahead of our annual objective, driven in particular by activity in the aeronautics and biometrics sectors.” As Thales CEO Patrice Caine said in May, biometrics has become a vital industry in recent years for the French technology and defence group. While in 2022 the Identity and Digital Security division only made up 20% of the company’s revenue, it had the highest growth by far (+21% between 2021 and 2022), whereas the other two divisions, Aerospace and Defence, only grew 5.4% and 6% respectively.

The Identity and Digital Security division had the highest growth by far (+21% between 2021 and 2022)

In the biometrics industry, Thales is essentially everywhere. The company produces facial recognition systems, as well as fingerprint and iris recognition systems. Thales has sold its Border Automated Biometric System technology to several airports, including Bogota El Dorado (Colombia), London Heathrow (United Kingdom)

and Paris Charles de Gaulle (France). According to consulting firm MarketsandMarkets, the global biometrics market for border control is expected to reach \$2.1 billion in 2023 and \$3.9 billion in 2028. In this sector, Thales competes with French company Idemia, Dutch firm Sita, Portugal’s Vision-Box (all of which are private), German company Secunet Security Networks and Japan’s NEC Corporation. In addition to working in the travel industry, Thales also employs its biometrics systems in sectors

The French groups Thales and Inetum have equipped Valencia and Bilbao airports with 45 automatic border control gates (ABC Gates), combining facial recognition and automatic document verification.

such as government, health-care, finance, hotels, casinos and the gambling industry. Most analysts recommend buying Thales shares, which have risen 10% since the start of the year.

FOUNDED: 2000 **HEADQUARTERS:** COURBEVOIE (FR)
EMPLOYEES: 77,000 **2022 REVENUE:** €17.6 BILLION
→HO



← Some Google Pixel smartphones are fitted with fingerprint readers from Fingerprint Cards.

Fingerprint Cards The little-known scanner

Very few people know of Swedish company Fingerprint Cards. And yet each day, billions of people place their finger on a scanner sold by this company. Fingerprint Cards develops complete biometrics systems that include the fingerprint scanner, microcontroller units (MCUs), an algorithm and software. These products are then integrated into smartphones and tablets, particularly for brands such as Xiaomi, Huawei, Motorola and Google, as well as computers from Lenovo, Acer and Asus. In total, more than 700 smartphone

and tablet models sold around the world are equipped with sensors made by Fingerprint Cards.

Each day, billions of people place their finger on a scanner sold by this company

As a result, the drop in global smartphone sales, which fell 11.3% in 2022 to 1.2 billion units compared to 1.39 billion a year earlier, had a catastrophic effect on Fingerprint Cards’ revenue. In 2022, this stood at 861.8 million Swedish krona, compared to 1.356 billion in 2021 (-36%). To reduce its dependence on

the consumer electronics sector, Fingerprint Cards is trying to diversify, particularly in the fingerprint-based payment industry. Ten banks around the world have launched fingerprint-based payments using the Swedish company’s system and 24 others are currently testing the technology, including BNP Paribas, Royal Bank of Scotland and Bank Pocztowy.

FOUNDED: 1997 **HEADQUARTERS:** GÖTEBORG (SE)
EMPLOYEES: 200 **2022 REVENUE:** SEK 861.8 MILLION
→ FING-B

“There is no such thing as infallible technology”

While seen as extremely reliable, biometrics does have its weaknesses. At Idiap, a research institute in Martigny, researchers test and improve the security of biometrics systems. BY BERTRAND BEAUTÉ

In 2017, Apple proudly unveiled the new iPhone X, the brand's first smartphone equipped with Face ID, its facial recognition software. One week later, the Vietnamese company Bkav, which specialises in information security, put out a press release stating that it hacked Face ID by using a handmade mask created with a 3D printer. There are similar hacking success stories for every type of biometrics technology. In an article published in *Vice* in February 2023, journalist Joseph Cox described how he fooled the voice recognition system at his bank, Lloyds Bank, with an AI-generated voice sample. Fingerprints aren't immune, either:

in 2021, Kraken Security Labs demonstrated how easy it was to reproduce a fingerprint and make a copy that can fool the biometric sensors embedded in our devices (i.e., smartphones, tablets and computers).

“All the big smartphone manufacturers, but also governments and corporations, come to us to have us test their products”

Sébastien Marcel, head of the Biometrics Security and Privacy research group at Idiap

Is the infallible security promised by biometrics nothing more than a mirage? To answer this question, we went to Martigny to visit the Idiap

Research Institute. In April 2023, biometrics industry leaders (academics and companies alike) from around the world gathered here in the foothills of the Valais mountains. While lesser known to the general public than ETHZ or EPFL, Idiap is a world-class biometrics institute. “We have very unique expertise,” says Sébastien Marcel, head of the Biometrics Security and Privacy research group at Idiap. “All the

big smartphone manufacturers, but also governments and corporations, come to us to have us test their products.” The names of these manufacturers will remain a secret, as outlined in each confidentiality agreement.

What we do know is that Idiap has been accredited since 2019 by the FIDO (Fast IDentity Online) Alliance, which includes

many companies, including Big Tech (Google, Amazon, Facebook, Apple, Microsoft) and payment systems providers such as Visa, Mastercard and PayPal. The Valais-based institute is one of twelve laboratories in the world that are authorised to test and certify biometrics systems. In 2020, Idiap was also recognised by Android (Google) to certify the biometrics systems used in its

← Professor Sébastien Marcel, head of the Biometrics Security and Privacy research group at Idiap, poses in front of silicone masks. Idiap uses these to test and improve facial recognition systems.

ecosystem. App providers that use Android authentication technologies can have their work tested and approved at Martigny.

“Even with their significant financial resources, big tech giants can't do everything,” says Marcel. “And so multinationals come to us. We first try to hack their biometrics system and then provide solutions to make them more secure. Even though we work with lots of corporations, we remain completely independent. We are not affiliated with any company.”

So, are current systems reliable? “Generally speaking, yes, but there's no such thing as infallible technology,” says Marcel. “With smartphones, for example, ideally we would want the system to always recognise its owner and never recognise anyone else. But in reality, that's impossible: a biometrics system that recognises its owner 100% of the time would sometimes let other people in. Conversely, a system that rejects 100% of intruders would regularly reject the phone's owner as well. So we need to find the best compromise for each specific use case. With smartphones, we err on the side of ease of use, meaning that the devices almost always open for their owner. The current error rate – that is, the number of times the system allows an intruder to unlock a phone – is once per 1,000 attempts. On the other hand, for biometrics systems that control access to very secure locations, such as nuclear plants, we err on the side of security, which means →



that authorised people often need to attempt to gain entry multiple times.”

“We try to hack their biometrics system and then provide solutions to make them more secure”

Sébastien Marcel, head of the Biometrics Security and Privacy research group at Idiap

And what happens if the system is hacked? “Biometrics systems are IT systems just like any other, with one additional aspect: they capture biometric data. That means that they can be attacked by hackers, like any other IT system, but can also be subject to ‘presentation’ attacks of varying degrees of sophistication. For facial recognition, hackers could print a photo and hold it in front of the camera or wear a mask.”

In fact, that’s exactly the type of attack Idiap works on. In 2020, the Institute created highly realistic silicone masks, costing 4,000 Swiss francs, to test the limits of facial recognition. “We’re creating increasingly complex attacks to expose the vulnerabilities of each system, and then we build our defences,” says Marcel. “Faced with the same attack, two different smartphones wouldn’t react in the same way, for example.”

With the development of artificial intelligence, the rise of deepfakes – audio or video recordings created by AI – is a concern for the biometrics industry. Several voice recognition systems have been fooled by AI-generated voices. And as for facial recognition, “it’s possible to attack the system between the scanner and the software by injecting an AI deepfake video. This deepfake then replaces the video that should have been provided by the camera. We’re

working on improving security for that as well.”

Given this context, should the general public be concerned with the security of biometrics? “Many people publish photos, videos and personal data on social networks and at the same time are afraid of biometrics,” says Marcel, wryly. “It’s contradictory and illogical, because you no longer control any data you post online, which poses much more of a risk than the use of biometrics.”

But what happens if someone’s biometric data is stolen? “For smartphones that’s unlikely. The data is stored locally on the device inside a chip that destroys itself if you try to force it. On the other hand, when biometric data is stored in databases, that can be stolen. If that happens, we need to find ways to limit the breach, in particular in a way that ensures no raw data is preserved.”



← The so-called presentation attack consists of trying to fool a facial recognition system by presenting a photo (or a mask) instead of the user’s face. Here, Idiap uses a photograph of Sundar Pichai, Google’s CEO, to test Android’s facial recognition system.

© IDIAP



ÉLECTRIQUE. SÛRE. SUBARU 4x4.

SOLTERRA

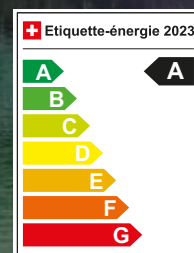
LE PREMIER SUV ENTièrement ÉLECTRIQUE DE SUBARU.

LEASING À **0,9%**

CHF 315.-/mois



[subaru.ch](https://www.subaru.ch)



Exemples de leasing : Solterra eV AWD Advantage, 218 ch, consommation d’électricité combinée : 18,1 kWh/100 km, catégorie de rendement énergétique : A, émissions de CO₂ : 0 g/km, CHF 55 900.-, mensualité : CHF 315.- (en couleur Black). Modèle présenté : Solterra eV AWD Classic, 218 ch, consommation d’électricité combinée : 18,1 kWh/100 km, catégorie de rendement énergétique : A, émissions de CO₂ : 0 g/km, CHF 59 700.-, mensualité : CHF 339.- (y.c. la peinture métallique).

Traites de leasing valables pour un leasing d’une durée de 48 mois et 10 000 km par an. Acompte : 30 % du prix de vente net. Aucune caution. Taux annuel effectif : 0,90 %. Casco complète non incluse. Il est interdit d’accorder un crédit s’il entraîne le surendettement du consommateur. Veuillez consulter les taux du jour sur [multilease.ch](https://www.multilease.ch). Prix de vente recommandés nets, TVA à 7,7 % incl. Sous réserve de modification des prix. Immatriculation au plus tard le 31.12.2023.

→
The gigantic wind turbines of the Rampion offshore farm measure 140 metres, of which 60 metres are submerged.

ENERGY

Offshore wind power blowing hot and cold

Offshore wind installations have exploded over the past decade, especially in the United Kingdom. But manufacturers are currently struggling to capitalise on the market. We take a closer look.

BY JULIE ZAUGG, IN LONDON



© RAMPION OFFSHORE WIND FARM

T

hey come into view as soon as you leave Brighton Marina. The sea is as flat as a mirror. From this distance, they look no bigger than dandelion seeds, swirling in the wind. But as you get closer, you get a more accurate idea of their true size. The sea is starting to get rough. Large waves crash against the boat's hull and the wind is blowing at 30 km/h. We pass the first turbine. Its gigantic mast is topped with three slender blades that silently slice through the blue sky. They turn at a speed of six to seven rotations per minute. The structure is 140-metres tall, 60 metres of which is underwater.

The magic happens in the nacelle, at the heart of the turbine. It contains the generator and gearbox that convert wind into electrical energy. The wind turbines are tethered to the seabed and are connected to a substation. With its bright yellow base, this platform is where the electricity sent from the wind turbines is transformed from 33 to 150 kilovolts and transported via 16 km of undersea cable to the intermediate station at East Worthing. From here, the electricity enters the UK's power grid.

Operated by the German companies E.ON and RWE, the Rampion offshore wind farm covers 70 square kilometres in the English Channel. Its 116 3.45-megawatt turbines, produced by the Danish firm Vestas, together have an installed capacity of 400 megawatts, enough to power 350,000 homes. But the site, commissioned in 2018, is far from being the country's largest wind farm.

That title goes to Hornsea 2, a project commissioned in September 2022 and located 90 km off the North Sea coast of Lincolnshire. Operated by Denmark's Ørsted, the site has 165 turbines and an installed capacity of 1.3 gigawatts, which help to power 1.4 million homes. Hornsea 2 is the world's largest offshore wind farm, but this privilege will soon be handed over to Dogger Bank, a joint venture between SSE from Scotland, Equinor from Norway and Eni Plenitude from Italy. Slightly further north, the 3.6 GW site will cover an area the size of London on completion in 2026.

"The UK was the world leader in terms of installed offshore wind capacity from 2009 to 2021, before China took over," says Ivan Savitsky, industry expert at the Carbon Trust, a private organisation that helps companies reduce their CO₂ emissions. Since 2008, UK wind farms have increased their output from just 1.2 gigawatts to 13.6 gigawatts. "The government has set targets to boost production to 50 gigawatts by 2030," he says. In 2022, this green energy covered a record 27% of the country's electricity needs. In the first three months of the year, this percentage rose to 32%.

"Offshore wind is expensive to develop. Without the UK government's generous subsidy scheme, this energy source would never have been able to spread on this scale"

Søren Lassen, head of offshore wind research at Wood Mackenzie

Britain owes this success to its geography. "As an island, the country benefits from a vast coastline, as well as shallow waters and abundant wind," says Dieter Helm, an energy transition specialist at Oxford University.

The government has also given its wholehearted support to this new technology. "Offshore wind is expensive to develop," says Søren Lassen, head of offshore wind research at Wood Mackenzie. "Without the UK government's generous subsi- →



← Workers attending to a wind turbine at the Rampion offshore wind farm.

petitive system, which halted all ongoing projects.”

But the real giant remains China, with 25.6 gigawatts of installed capacity, or 44% of the total worldwide, including 15.7 gigawatts commissioned in 2021 alone. “However, it’s a completely closed ecosystem, dominated by Chinese suppliers and operators that are active only in this market,” Søren Lassen explains. A handful of other nations have begun to install offshore wind farms, including the United States, Taiwan, Vietnam, South Korea and Japan, but the sector is still underdeveloped.

This growth spurt has mainly been driven by advances in offshore turbine manufacturing, an industry dominated – outside the Chinese market – by three companies: Siemens Gamesa (the result of a merger between Germany’s Siemens and Spain’s

“Turbine manufacturers have been competing fiercely over the past few years and it has squeezed their margins”

Søren Lassen, head of offshore wind research at Wood Mackenzie

Gamesa), GE Renewable Energy from the United States and Vestas from Denmark. Both the size and power of these machines have developed tremendously.

© RAMPION OFFSHORE WIND FARM

GE Renewable Energy’s brand-new Haliade-X turbines will be installed at Dogger Bank. At 260-metres high, with blades 107-metres long – that’s bigger than a soccer pitch – each turbine can generate 13 megawatts of electricity. A single rotation is enough to supply a household with electricity for two days.

The Global Wind Energy Council, an organisation representing the wind energy sector, believes that by 2023, we should be seeing 20-megawatt turbines

with 275-metre blades. “This technological progress increases the efficiency of wind farms. More power can be generated with fewer turbines,” Ivan Savitsky says. Installation and maintenance costs are also lower.

Another innovation is the development of floating turbines. The first of these machines was developed in Norway in 2009, under the aegis of Equinor. Since then, several pilot projects have been commissioned. Launched in 2021, Scotland’s Kincardine

is currently the largest floating wind farm with a capacity of 50 megawatts. Its Vestas-built turbines are mounted on triangular floating platforms deployed 15 km off the coast of Aberdeen, where the seabed varies between 60 metres and 80 metres in depth.

Siemens Gamesa has developed a wind turbine mounted on a vertical submerged buoy, also tested in Scotland. The technology is now ready for large-scale deployment. “Floating turbines will make it →

Platform used during the construction of the Rampion wind farm. ↓

dy scheme, this energy source would never have been able to spread on this scale, or compete with other forms of power.”

Through an initial auction system introduced in 2002, farm operators could win 15-year contracts to supply electricity. “The government paid the difference between the market price and the actual cost of electricity generation,” Ivan Savitsky explains. In 2015, when the authorities considered that the market was ready, this scheme was replaced with a more competitive system. As a result, prices were still guaranteed, but operators no longer received direct subsidies, which drove down the price of wind

power. Electricity generated by UK wind farms is now over 50% cheaper than gas-fired power.

Offshore wind power has also taken off in countries other than the UK. In April, the nine other nations with North Sea coastline pledged to produce 300 gigawatts of offshore wind power by 2050. Germany currently produces 8 gigawatts, the Netherlands 3 gigawatts, Denmark 2.8 gigawatts and Belgium 2.3 gigawatts. “These countries have a lot of potential, but wind power deployment policy has been irregular,” Søren Lassen says. “For example, the German government cancelled a subsidy scheme then delayed developing a new, more com-

SIEMENS ENERGY The industry giant

Siemens Gamesa, a subsidiary of Siemens Energy, dominates the offshore wind power market. Its turbines account for 70% to 75%

of installed capacity worldwide, excluding the Chinese market. Like its peers, it is grappling with falling prices and supply

issues. But the group’s other entities, operating in natural gas, power grid and decarbonisation technologies, will enable it to absorb the

losses generated by Siemens Gamesa. Most analysts recommend buying shares.

FOUNDED: 2020
HEADQUARTERS: MUNICH (DE)
EMPLOYEES: 92,000
2022 REVENUE: € 29 BN
→ ENR

GE RENEWABLE ENERGY The newcomer

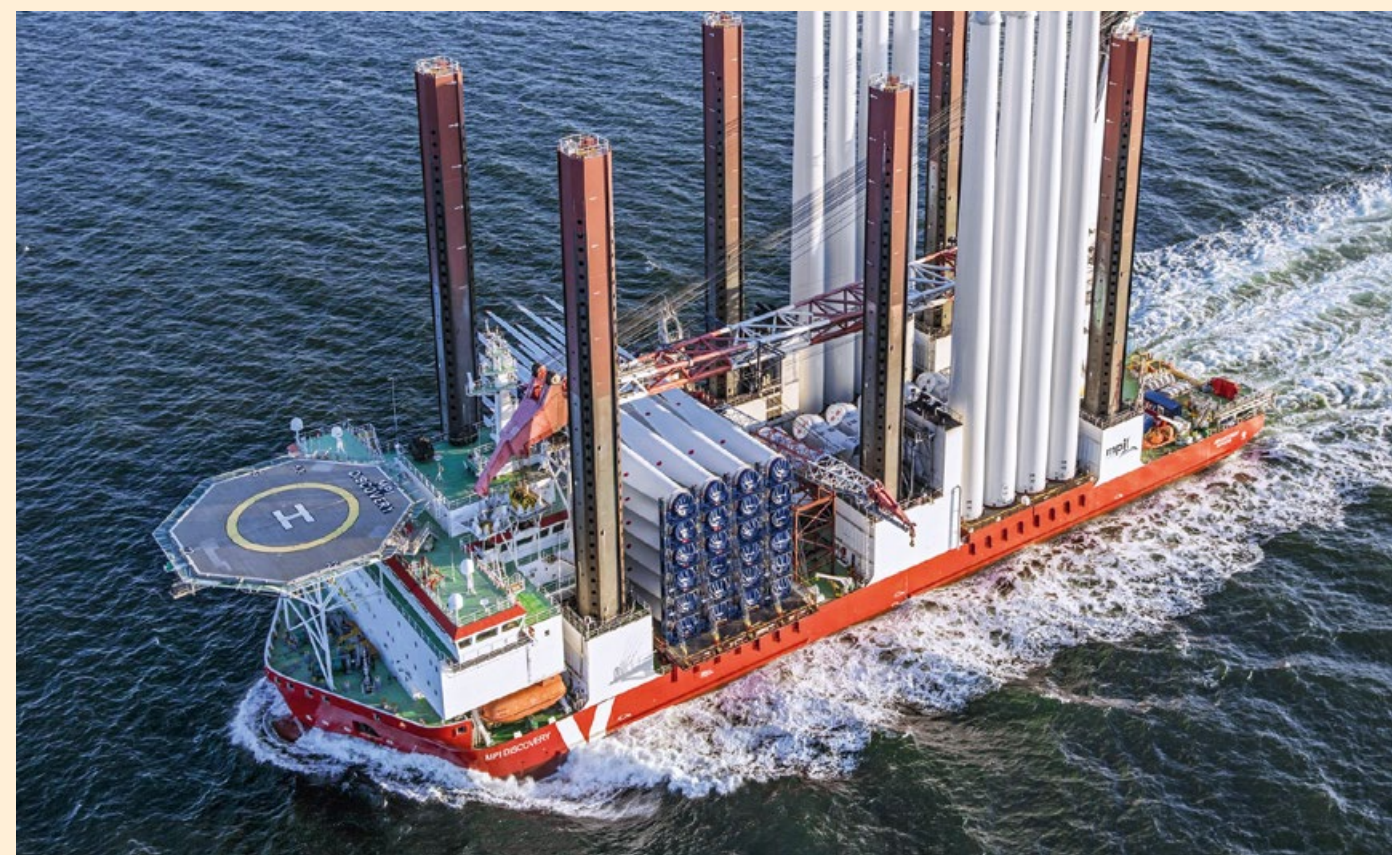
This division of the US firm General Electric has long focused on onshore wind power, which is more developed in the United

States. But it is now making giant steps to catch up. Its Haliade-X turbines are the most advanced on the market. In 2022, GE Renew-

able Energy incurred a loss of \$2.24 billion, mainly due to inflation and the sluggish US market for onshore wind power. Its parent

company plans to list the entity separately on the stock exchange as early as next year.

FOUNDED: 2015
HEADQUARTERS: BOULOGNE-BILLANCOURT (FR)
EMPLOYEES: 40,000
2022 REVENUE: \$13 BN
→ GE



possible to develop offshore wind power in deeper waters,” Ivan Savitsky says. The Global Wind Energy Council notes that 80% of the world’s potential lies in waters more than 60 metres deep, notably off the coasts of South Korea, Japan, California, Spain and Ireland.

Billions in losses

Despite the relentless development of the offshore wind market, turbine manufacturers are struggling to enjoy gains from this growth. In 2022, the industry’s three giants posted a cumulative loss of almost €4.5 billion. Siemens Gamesa will again be in deficit this year, as announced by its parent company Siemens Energy at the end of June. The news caused the group’s shares to plummet by one-third, wiping out €74 billion of its market capitalisation.

“Turbine manufacturers have been competing fiercely over the past few years,” says Søren Lassen of Wood Mackenzie. “And it has squeezed their margins.” The average price per megawatt fell from almost €1 billion in the mid-2010s to around €700,000 in 2020.

Paradoxically, technological progress has also contributed to the decline in these groups’ performance. “As each turbine has become more efficient, manufacturers are selling fewer of them, and, what is even more crucial, they are forced to charge less for

the high value-added services of installation and maintenance,” the expert says.

Making matters worse are supply chain problems caused by lengthy lockdowns during the pandemic, especially in China, where a large proportion of components come from, and rising raw material prices. “Turbines are mostly made of steel, and the cost of steel has sky-rocketed,” says Dieter Helm. They also contain copper, neodymium and dysprosium, two rare earth elements whose prices have soared.

“Demand should outstrip supply, giving turbine manufacturers more leeway with pricing”

Søren Lassen, head of offshore wind research at Wood Mackenzie

However, this combination of unfavourable variables should be reversed by around 2025. “At that point, demand should outstrip supply, giving turbine manufacturers more leeway with pricing,” Lassen says. Eventually, turbine buyers, i.e., wind farm operators, will be the ones watching their margins melt away.

These operators form a disparate crew. In the United Kingdom, they include major energy groups such as Ørsted, Vattenfall, E.ON, RWE, SSE, Iberdrola, KEPCO and J-Power,

oil and gas companies such as Equinor, BP, Total and Enbridge, as well as pension funds.

“Their government subsidies are tending to shrink,” says Rebecca McManus of Aurora Energy Research. “In the UK, the price per megawatt/hour under the 15-year contracts auctioned by the government has fallen dramatically.” In more specific terms, the

© DR

price fell from £114.39 in 2013 to £37.35 in 2022.

Wind farm operators are also beleaguered by the inadequacy of the electricity grid. “Wind resources are most abundant off the coast of Scotland and in the North Sea, but demand essentially comes from the south-east of the country, where the population is densest,” says Ivan Savitsky.

“There aren’t enough cables in the country to carry power from north to south.” On windy days, the grid is overloaded, and the government has to ask operators to switch off their turbines.

Rebecca McManus feels that, to avoid these bottlenecks, future wind farms will have to be designed like energy islands. “Turbines will have to be placed

next to electrolysis equipment to transform excess current into green hydrogen and fitted with batteries to store some of the energy. They can then feed it back into the grid on windless days,” she says. In Rampion, the wind is blowing too hard, and some turbines have been turned off. Their long, motionless blades form a Y shape, like the wings of a large seagull resting on the water. ▲



→ Aerial view of the Rampion wind farm which has a total of 116 turbines that power the equivalent of 350,000 homes.

VESTAS

The wind turbine expert

The Danish group is the only manufacturer that exclusively produces offshore turbines. This means that the company is highly exposed

to any instability in this sector. In 2022, it recorded €1.6 billion in losses. Meanwhile, it has also raised its average selling prices

by 29%, and its services division has grown by 27%. It also has a solid order book. Most analysts have issued a Hold recommendation.

FOUNDED : 1945
HEADQUARTERS : AARHUS (DK)
EMPLOYEES : 29,000
2022 REVENUE : € 14.5 BN
→ VWS

ØRSTED

The king of wind turbines

This Danish energy company has become the world’s largest wind farm operator outside China. In the UK, it owns 12 offshore wind farms

with an overall installed capacity of 5.6 gigawatts, or 46% of the country’s total capacity. This has enabled it to industrialise turbine construction

and therefore achieve economies of scale. In 2022, the company made an operating profit of 32.1 billion Danish kroner (4.1 billion Swiss

francs), breaking all previous records. Most analysts have issued a Buy recommendation.

FOUNDED : 2006
HEADQUARTERS : FREDERICIA (DK)
EMPLOYEES : 8,000
2022 REVENUE : CHF 16.9 BN
→ ØRSTED

Canadair

T H E B R A N D
T H E S T O R Y

The flying boat

The iconic red and yellow water bomber has been fighting fires since 1969. As the planet warms, the amphibious aircraft could take on an increasingly important role.

BY STANISLAS CAVALIER

ts firefighting planes are world famous. This summer, they were seen tackling giant fires in Canada and many countries around the Mediterranean basin. Sadly, however, one also suffered a tragic accident in Greece on 25 July. We are talking, of course, about Canadair aircraft, also

known as the CL-215 and CL-415 water bombers. Although the word “Canadair” is sometimes used as a common genericised name for amphibious firefighting aircraft, it is in fact the name of a Canadian aircraft manufacturer that produced numerous other civil and military flying machines, including the Sabre, Challenger 600 and North Star. But the company’s most famous product will forever be the Canadair.

The story of this legendary aircraft begins back in the 1930s. At the time, the US Navy issued a call for tenders for a military

seaplane. The US company Consolidated Aircraft Corporation won the contract with its Catalina model. The plane was used extensively during World War II. Its achievements include the destruction of the U-156, U-164 and U-197 German submarines as well as the battleship Bismarck, the pride of the Kriegsmarine. But by the end of the war, the planes had lost their appeal. A handful were taken over by California firefighters, who converted them into water bombers.

The Catalinas soon proved to be an invaluable weapon

for fighting fires. The key advantage of seaplanes like the Catalina was their refilling tactic called “scooping”. They would skim over the surface of a lake or the sea, without stopping, and scoop up water to replenish their tanks, meaning faster rotations. The experience in California was copied elsewhere in the world, namely Canada, where Canadair started manufacturing Catalinas under licence.

The Canadair CL-215 is the first aircraft specifically manufactured to fight fires

Later, in the early 1960s, Ottawa launched a bid for the construction of a new amphibious water bomber to replace the

KEY DATES

1967

The Canadair CL-215 makes its first flight

2015

Bombardier stops manufacturing Canadair

2030

A new version of the Canadair should enter service

old Catalinas. With its thorough knowledge of the Catalina, Canadair naturally took up the challenge. The company developed the CL-215, the first aircraft specially manufactured to fight fires. Its aerodynamic and structural design is guided by this purpose from start to finish. The two openings on its boat-like hull are used to fill two 2,675-litre water tanks in 10 seconds, while gliding across a water source at a speed of around 150 km/h.

Nicknamed the “pelican” for its shape, the Canadair CL-215 had 125 planes built between 1967

and 1989. During this period, however, Canadair went through serious financial trouble. To save it from bankruptcy, the Canadian government nationalised the company in 1976, before selling it to Bombardier in 1986. Under Bombardier’s leadership, the Canadair CL-415, successor to the CL-215, went into operation in 1994. Some 100 planes were produced in all before the programme was shut down in 2015. Bombardier then sold its amphibious seaplane division to Viking Air, which now provides after-sales service for all Canadairs.

Was it over? Not at all. As the number of wildfires increases, so does the demand for water bombers, even in Switzerland. In a motion submitted to the Swiss Parliament in June 2023, National Council member Pierre-Alain Fridez (JU/PS) stated, “As severe global warming becomes seemingly unavoidable, these

situations are likely to worsen and will unfortunately also affect our country. As this risk is ‘uncontrollable’, we believe that having this means of intervention at our disposal [ed. note: a firefighting plane such as the Canadair or equivalent] available in the future [...] would represent a necessary precautionary measure and an appropriate tool to remain prepared.” The Swiss Federal Council does not share this view. In January 2022, the purchase of water bomber aircraft was voted down. However, after the Bitsch forest fire in the Valais region in July, the debate is likely to heat back up. Meanwhile, the European Commission announced in July that it would be purchasing 12 water bombers.

The problem is that today’s Canadairs are old birds and in short supply. Despite a few competitors, such as the Russian Beriev Be-200 recently purchased by Algeria, none quite comes close to matching the Canadair’s performance. To rejuvenate the fleet, in 2018 Viking Air announced that it would launch an enhanced version, the CL-515, if orders met a threshold of 25 units. But the programme was not actually rebooted until March 2022 by De Havilland Aircraft of Canada*. And the new aircraft will not be available until 2030. “You can’t do it overnight,” Neil Sweeney, vice president at De Havilland Canada, said in June on Radio Canada. He explains that putting a plane back into production is a challenge. “We’re producing the parts here at De Havilland for the first time. So it’s going to take us some time to get up to speed. But once we’re up and running, we’ll be able to deliver fairly quickly. We see a market of around 300 aircraft over the next 20 years.” The Canadair story is just beginning.*

*In 2022, Viking Air’s parent company, Longview Aviation Capital, combined several of its businesses under the De Havilland Canada name.

PORTRAIT

Swatch keeps up appearances

The stunning success of the MoonSwatch has boosted the Swiss watchmaker's earnings. But not enough to revitalise a company profoundly destabilised by the success of smartwatches and a handful of luxury goods giants that have moved into the sector.

BY JULIE ZAUGG

IN NUMBERS

110

Number of stores offering MoonSwatch for sale in March 2022. One million pieces were sold over the year.

0%

Increase in sales recorded by Swatch between 2018 and 2022, compared with 12% for Rolex, 16% for Audemars Piguet and 18% for Breitling.

90 M

Number of smartwatches sold worldwide in 2022, compared with 15.8 million Swiss watches from all ranges.

T

he 11 MoonSwatch models, each named after a celestial body, are displayed in a glass case in the centre of the Swatch store on Oxford Street in central London, under the watchful eye of two security guards. "Today, we have the Mars, Venus, Earth, Uranus and Saturn models in stock," announces a salesperson to the small crowd gathered in front of the window.

"When's the next shipment coming?" a customer asks. "I don't know. They never tell us in advance. It's completely unpredictable," the salesperson replies. "Will you be getting the Neptune model soon?" asks another. "We only get it once or twice a month," the salesperson says. "I'll take the brown one, the Saturn!" shouts a third. "Well done, that's the last piece,"

the store employee chuckles. It's a frenzy, bordering on hysteria. No one is interested in the other watches from the Biel-based brand on display in the shop.

A collaboration between Swatch and Omega, the MoonSwatch is a bioceramic watch inspired by Omega's famous Speedmaster Moonwatch. "An undeniable success," says Oliver Müller, founder of the watch consultancy LuxeConsult. "One million pieces were sold last year, and sales will probably exceed two million this year," he says.

This performance boosted the Swatch Group's results, with sales up 18% in the first six months of the year to 4 billion Swiss francs, setting a new growth record. "In the space of a few months, the MoonSwatch has →

→ Nick Hayek, CEO of Swatch, during the presentation of the group's annual results on 16 March, 2023. In the background, images of the MoonSwatch campaign.



↑ Customers lining up to buy a MoonSwatch. Here at the launch of a new model in Tokyo on 7 March, 2023.

“The excitement is diverting attention away from an underlying trend”

Jean-Philippe Bertschy, analyst at Vontobel who covers the Swatch Group

captured 36% of the lowest price segment of the Swiss watch market,” says Jean-Philippe Bertschy, an analyst at Vontobel who covers the Swatch Group.

Immediately following the release of the new timepiece in March 2022, long queues began forming outside Swatch shops from Singapore to Dubai to Pennsylvania. These scenes were a throwback to the watchmaker’s heyday, after its founding in 1983, when fans of its cheap plastic watches would sleep outside stores in order not to miss the release of new models. London’s Carnaby Street store even had to be closed briefly after a riot broke out.

A year and a half later, the MoonSwatch is still going strong. Swatch stores keep running out of stock. On online resale platforms such as StockX, the Neptune, the line’s most popular model, sells for almost 800 Swiss francs, more than three times its official retail price of 250 Swiss francs.

“The key advantage of this collaboration is that it has managed to attract both Omega fans and younger customers who don’t necessarily know the brand or the Speedmaster,” Oliver Müller says. He sees this as the effect of a clever marketing strategy, combining traditional media advertising with “guerrilla” operations, including drops at a limited number of points of sale to create the illusion of rarity.

Swatch also launches a new adaptation of the MoonSwatch with each new full moon. June’s iteration was called Strawberry Moon, with a seconds hand in Moonshine Gold. This alloy was invented by Swatch to evoke the moonlight and, on this version, features a strawberry motif.

However, Jean-Philippe Bertschy believes that all the excitement is diverting attention away from an underlying trend. The low-end watch segment has been losing steam for over two decades, and the MoonSwatch will not be enough to resuscitate it. Between 2000 and 2022, the total number of Swiss timepieces with an export value of less than 200 Swiss



↑ A MoonSwatch out of its case at Zurich’s Bahnhofstrasse (6 March, 2023). This model is Swatch’s version of the famous Omega Speedmaster.

francs – sold for 400 to 500 Swiss francs – fell from 22.8 million to 8.4 million. Their value dropped by 45%, from 1.2 billion Swiss francs to 683 million.

“This curve correlates to the introduction of smartwatches – especially the Apple Watch – in the mid-2010s,” says Oliver Müller of LuxeConsult. And the appeal of smartwatches shows no sign of abating. “Since COVID, people have become more concerned with their health and well-being, causing smartwatch sales to explode,” notes Jean-Philippe Bertschy. The launch of a new Google Pixel watch and Meta’s first smartwatch are expected to maintain the popularity of connected timepieces.

Consequently, for Swatch, this has resulted in a drastic decline in sales for the eponymous brand, which has been losing money for 10 years. It currently only sells 3 million pieces a year, down from 20 million at its pinnacle, and accounts for just 4% of its parent company’s sales. Mid-range brands – Longines, Tissot, Rado, Mido and Hamilton – have also suffered.

Swatch did launch a counter-offensive against smartwatch competition in 2020, through a smartwatch collaboration with



↑ Bright colours and a pop aesthetic remain the signature of Swatch. Here at a brand store in Milan, Italy.

Tissot, but the venture flopped. “Features are limited, and its developers made the mistake of wanting to create their own operating system. That was overly ambitious,” notes Jelena Sokolova, a Morningstar analyst who covers Swatch Group.

The SwatchPay, a watch built with a chip used to count steps or make contactless payments, was launched in China in 2017, then in Europe in 2019. But again, the experience hardly matched the success of a smartwatch.

It currently only sells 3 million pieces a year, down from 20 million at its pinnacle, and accounts for just 4% of its parent company’s sales

“We don’t want to produce a mini mobile phone on your wrist,” but rather, give the watch additional, cool and useful functions while retaining the object’s beauty, Swatch boss Nick Hayek said in 2022.

Swatch’s concerns extend beyond the low- and mid-range segment, however. “Watchmaking as a whole has shifted considerably upmarket, forming a closed circle of undisputed leaders in the luxury segment,” Jean-Philippe Bertschy says, →



ANALYST OPINION

“It’s time to recreate value”

Over the first six months of the year, Swatch sales rose 18%, surpassing a previous half-year growth record of 8.5% set in 2018. Operating profit rose 36% to 686 million Swiss francs. Vontobel analyst Jean-Philippe Bertschy does not believe, however, that these results, heightened by the success of the MoonSwatch, will be enough to hoist Swatch out of its rut. He points to the group’s numerous challenges: loss of market share by luxury brands Breguet and Blancpain, increased competition for Omega from competitors like Rolex, Tudor and Breitling, and pressure from smartwatches in the low- and mid-range segment. “Barring a significant long-term rebound in the Chinese market, only a change in strategic direction will improve the Group’s valuation,” he says. “After years of value destruction, it’s time to recreate value for shareholders.” He has issued a Hold recommendation. — UHR

↑ James Bond and the Omega Seamaster, an association that has lasted since 1995.

citing the brands Rolex, Patek Philippe, Audemars Piguet, Richard Mille and Breitling. Moreover, big-name fashion houses, including Hermès, Louis Vuitton and Chanel, have moved into the market. And their sales immediately soared. For example, Hermès’ watch division grew by 17% a year between 2016 and 2021.

The success of luxury watches has been driven by social media, where flaunting an expensive timepiece has become a marker of social status, and by growth in the online resale market where some watches, such as the Rolex Daytona and the Audemars Piguet Royal Oak, go for up to four times their original sales price. “In financial circles, luxury watches have even become a popular investment to diversify your portfolio,” Jelena Sokolova says.

However, Swatch has not really capitalised on these market trends. “The group has acquired several high-end brands, including Blancpain, Breguet, Jaquet Droz and Léon Hatot, but they have never really gained a foothold in exclusive luxury,” says Pierre-Yves Donzé, an Osaka University history professor

specialised in Swiss watchmaking. Some houses, like Vacheron Constantin and Patek Philippe, have emphasised watchmaking tradition, while others, such as Richard Mille and Audemars Piguet, focus on modern design and innovative materials. “The Swatch Group has done neither,” he says. “It lacks a luxury strategy.”

What is more, Swatch missed the big opportunity with flagship stores. While Audemars Piguet and Rolex opened concept stores designed to feel like a luxury destination in itself, complete with cafés and museums, Swatch continued to focus on wholesale, which accounts for 60% of its sales. “Some retailers don’t hesitate to offer rebates when inventories get too high, or even put watches up for sale on the grey market at discounted prices,” says Jelena Sokolova of Morningstar. “The impact on their brand image is disastrous.”

As a result, Swatch Group luxury brands have stalled. “Breguet and Blancpain generate sales totalling around 300 million to

© DR. / KEYSTONE



400 million Swiss francs a year, while Patek Philippe and Audemars Piguet bring in more than 2 billion Swiss francs,” Jean-Philippe Bertschy says. He reminds us that these four companies used to compete at a similar level about 20 years ago.

The only exception is Omega. It has successfully moved upmarket over the years to assert itself as a leading luxury brand. Morgan Stanley estimates that Omega now accounts for 30% of Swatch Group’s sales and around 60% of its operating profit.

“Omega has held its own against Rolex with a strong message on watchmaking tradition, while also playing on glamour through its collaborations with George Clooney and Nicole Kidman, and developing its own universe steeped in moon travel and the Olympic Games,” Pierre-Yves Donzé says. However, competition has ramped up from brands like Rolex, Breitling and Tudor, potentially jeopardising these gains.

The Swatch Group’s other major challenge is its heavy dependence on the Asian market. “The company was one of the first to enter the Chinese market in the 1990s, when the coun-

try began to open up,” Oliver Müller says. “It has benefited enormously from the wealth that has been created there over the last 20 years.” By 2022, China generated a third of the group’s sales, and the rest of Asia – Japan, South Korea and Chinese tourist destinations such as Thailand and Indonesia – 24%.

That has created a risky situation. “China is an autocratic regime that can decide at any time to rein in sales of luxury goods, as it did in 2015 with its anti-corruption campaign,” explains Müller, founder of LuxeConsult. In 2022, Swatch’s sales in China collapsed due to the series of government-imposed lockdowns to control the pandemic.

This Asian strategy has a downside: “The Swatch Group is underexposed to the US market,” says Jean-Philippe Bertschy. The United States, meanwhile, holds the greatest growth potential for Swiss timepieces. Between 2018 and 2022, Swiss watch exports to the country grew 16% on average, compared with 11% for China. The MoonSwatch’s success in the United States reflects this potential. Swatch stores in Houston, Dallas and Honolulu are frequently out of stock, and the Orlando store has a line outside its door every morning. ▲

↑ Aerial view of the Swatch headquarters in Biel (16 July, 2021).



Impossible Materials

Healthy and eco-friendly cellulose

NUMBER OF EMPLOYEES
9

HEAD OFFICE
MARLY

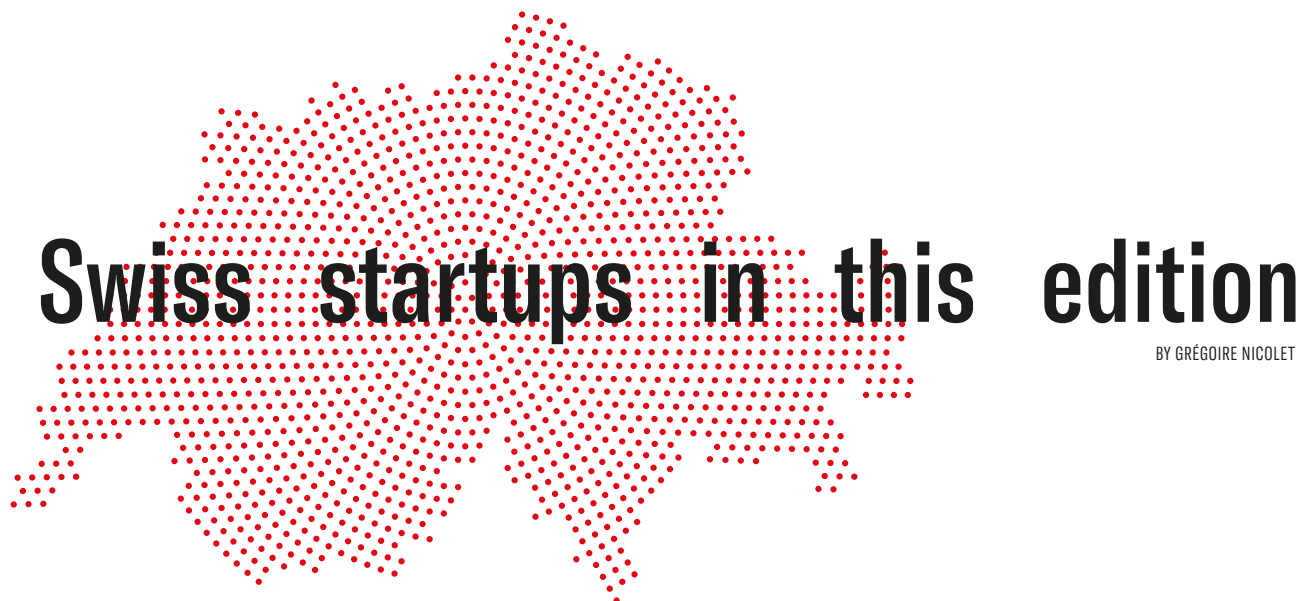
FOUNDED
2022

This spin-off from the University of Cambridge and the University of Fribourg has developed a cellulose-based natural ingredient to replace titanium dioxide (TiO₂), a white colourant that was once used as an additive in sweets

but is now banned from food products in Switzerland and the European Union. This invention from Impossible Materials has attracted attention from many players in the agri-food industry, as well as companies in the paint and protective coatings sectors that are looking to reduce negative effects on the environment.

The Swiss startup says their ingredient isn't limited to a specific type of cellulose material, but wood pulp is currently the most profitable and reliable. Several projects are in the works: "We

plan to launch other products made from cellulose to replace materials made from heavy metals and plastics," said CEO Lukas Schertel. For the company, located in the Marly Innovation Center in Fribourg, the next step is to set up a pilot production chain by the end of the year, with large-scale manufacturing scheduled for 2025.



Swiss startups in this edition

BY GRÉGOIRE NICOLET



Destinus

Hydrogen aeroplanes

NUMBER OF EMPLOYEES
120

HEAD OFFICE
PAYERNE

FOUNDED
2021

At the Paris Air Show in Le Bourget earlier this summer, the startup Destinus made headlines with Jungfrau, a hypersonic drone prototype with a hydrogen afterburner. A few weeks earlier in Munich, on 24 May, the first flight was a success, with the drone reaching a speed of 250 km/h. This is just the first step for the Swiss company, which hopes to eventually transport passengers at hyper-

sonic speeds with hydrogen fuel. This dream could see Paris just a 90-minute flight from New York – twice as fast as the Concorde with no carbon emissions.

Destinus has already raised 50 million Swiss francs, thanks in particular to the solid reputation of its founder Mikhail Kokorich, a Russian serial entrepreneur who has founded businesses including Momentus, an aerospace company that went public in 2021.

Based at Payerne Airport, Destinus will have filed 17 patents by the

end of the year, most of which pertain to propulsion and thermal protection. The primary challenge is how to cool hydrogen to -253°C, liquefying it for use as fuel. But Destinus will need billions of francs before operating its first eight-passenger flight, planned for the early 2030s, according to the CEO.

Until then, Kokorich is also exploring other applications: "We have now expanded our scope to the energy sector, developing turbines for clean mobility using the unique properties of hydrogen."

Votre entreprise veut économiser de l'énergie. Nous proposons des subventions. Parlons-en!



0848 444 444

Ensemble vers l'optimisation énergétique de votre entreprise.



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Département fédéral de l'environnement, des transports, de l'énergie et de la communication DETEC

Département fédéral de l'économie, de la formation et de la recherche DEFR





AMANDA GOODALL

R E A D

Credible

The Power of
Expert Leaders

BY AMANDA GOODALL,
PUBLICAFFAIRS, 2023

This book by Amanda Goodall deconstructs the myth of “managerialism”. With a decade of research experience in a wide range of industries such as business, education, healthcare and sport, Goodall, a professor of leadership at Bayes Business School in London, demonstrates how the expertise that an individual has gained in an industry throughout their professional career gives them an undeniable advantage when leading a company in the same industry. By presenting concrete examples, she illustrates that deep knowledge and experience within an industry are essential for effective leadership.

CHF 20.– PAPERBACK
CHF 12.– DIGITAL COPY

MONEY
For the Rest of Us

L I S T E N

Money For the Rest of Us

BY DAVID STEIN

In his podcasts, David Stein offers simple lessons for individuals and institutions on how to invest and manage their finances. With nearly 450 episodes, most often without guests, Stein has covered a wide range of topics since 2014, all while taking a beginner-friendly approach. Previously, he was head of investment strategy and portfolios at Fund Evaluation Group, an institutional investment consulting firm.

[MONEYFORTHERESTOFUS.COM/EPISODES/](https://moneyfortherestofus.com/episodes/)



F O L L O W

Charlie Bilello

@CHARLIEBILELLO

Chief Market Strategist @ Creative Planning
Investor | Writer | Reader | Thinker
Trying to become a little wiser every day.

X (TWITTER) 134 FOLLOWING 555K FOLLOWERS

Charlie Bilello's research leads to fascinating statistics rich with graphics and historical data that he publishes on his X (formerly Twitter) feed. One of the best accounts to follow for economic stats.



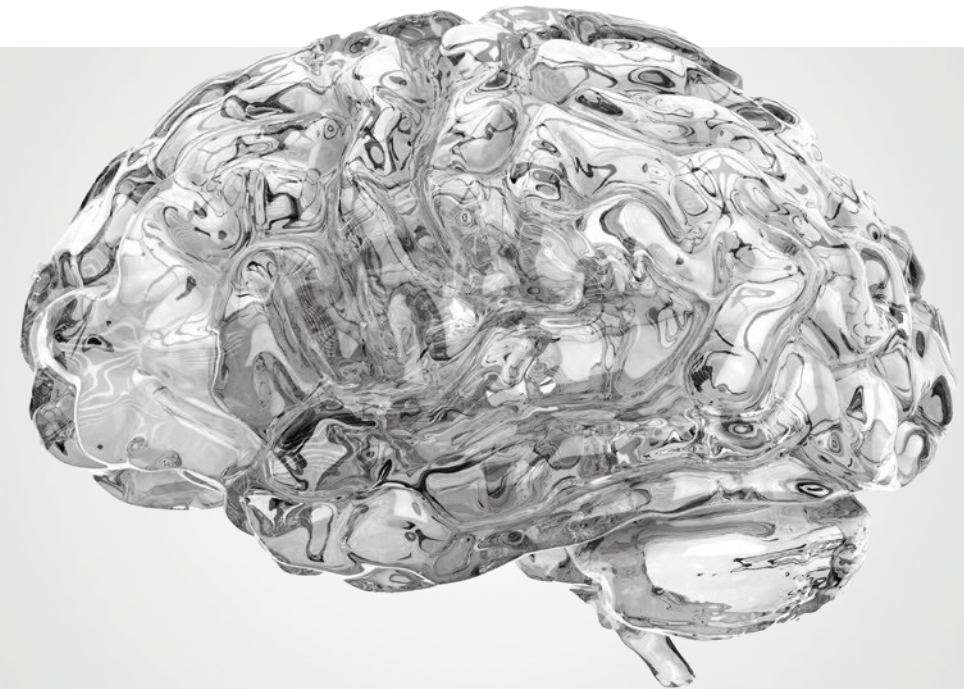
D O W N L O A D

Pocket

Save articles
to read later

Created by Mozilla, Pocket lets you save articles and videos you discover throughout the day and collect them all in one place to view later. Previously known as “Read it Later”, this app can save content from any app or browser. Once the article or video is saved to the app, the content can be read or viewed even when offline. Pocket also has a “read” feature that allows users to listen to written content.

[APP STORE](#), [GOOGLE PLAY](#),
FREE, IN-APP PURCHASES



4 MASTERMINDS TO DRIVE YOUR PORTFOLIO

Be inspired by the Big Four's investment strategies.

Warren Buffet, Michael Burry, Joel Greenblatt and Stanley Druckenmiller: inspired by the positions and transactions of funds linked to these big names in value investing, our new “Value Rockstars” certificate (available on the SIX Swiss exchange) is an effective way to make Smart Money work for you.

CERTIFICATE
Value Rockstars

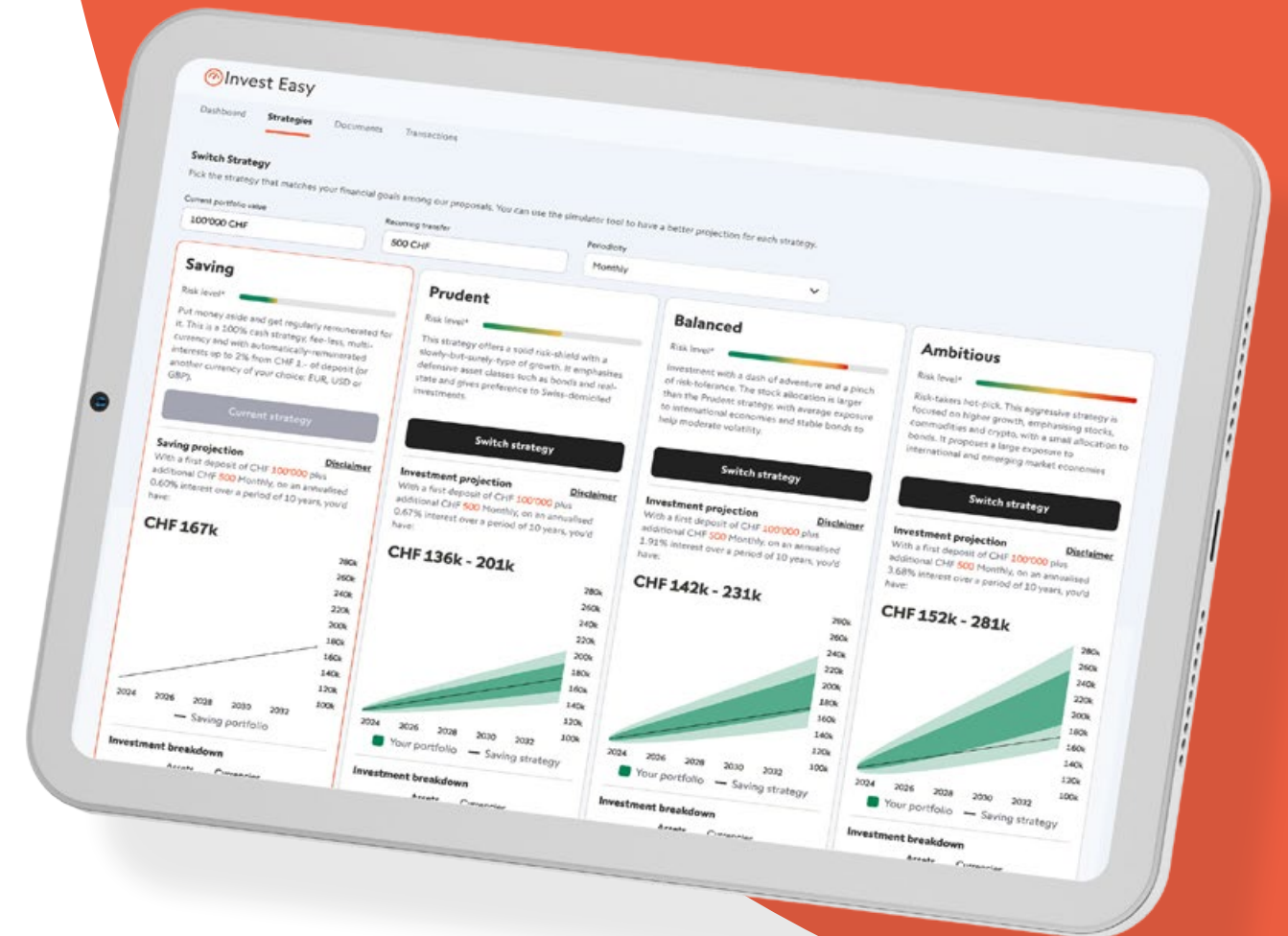
ISIN
CH1236313198

SYMBOL
STARSQ

swissquote.com/value-rockstars

IN 5 MINUTES, YOU CAN ~~READ~~ ~~AN ARTICLE~~ INVEST

New: invest and save in one click with Invest Easy.
Choose one of the 3 predefined investment strategies, or
the saving strategy with interest rates of up to 2% a year.





Like being in a bubble

Beneath its alluring exterior, the ID. Buzz offers a unique driving experience and convincing road performance. Indulgences aside, we admit it is not the most practical of vehicles. BY RAPHAËL LEUBA

With its funky design and tangy colours (the two-tone accoutrement comes at 2,892 Swiss francs), it is hard not to love the ID. Buzz. Looking like something of a space oddity, this electric bus is expected to bring the fun back to the road, not least because it is one of the most reasonable EVs on the market. Not many competitors stand against it, apart more or less from the more classic Mercedes EQV. As with Volkswagen's other ID (Intelligent Design) models, the permanent magnet synchronous motor is by default mounted at the rear of the vehicle. This fortuitous throwback to the old Beetle is reinforced by the gigantic drum brakes, also at the rear axle.

The single charging point is located on the rear right-hand side. An additional "Type 2" socket at the front would not be asking too much on a vehicle measuring 4.71 m long and 1.99 m wide. At least the Buzz is easy to manoeuvre, thanks to its

ENGINE
150 kW (204 HP), 310 NM

BATTERY
LI-ION BATTERY, 77 KWH NET
CAPACITY, MAX. CHARGE 170 KW

RANGE
423 KM (WLTP)

PERFORMANCE
0-100 KPH IN 10.2 SECONDS,
MAX. SPEED 145 KM/H

PRICE
STARTING AT CHF 69,910
(PRO LAUNCH EDITION WITH
OPTIONS: CHF 87,051)

Perched like a captain
at the helm of the ship,
you quickly figure out
how to operate the Buzz

tight turning circle. Another bonus is the two power-sliding side doors, fitted as standard – an act of generosity on a VW "utility" vehicle – coupled with a huge powered tailgate in synthetic material.

Perched like a captain at the helm of a ship, you quickly figure out how to operate the Buzz. But first, note a few quirks. Instead of spraying the windscreen washer fluid for the first time, you might flash your headlights! Twist the right-hand stalk on the steering column, which acts as the gear selector. Press once for basic Drive mode (D) and twice to engage the "B mode" for powerful regenerative braking on steep inclines. You disengage it by rotating forward again, despite instinct telling you the opposite, or you could end up in neutral (N). Now, time to talk about the excessively sophisticated touch-sensitive controls on the steering wheel and climate control panel. All that tech might have been put to better use on the cabin's rather conventional modularity. The three-seat rear bench does slide but is not removable, and the front seats do not swivel like in a California. Such features could have boosted the user-friendliness that one might expect of this shimmering cabin. However, the centre console and its three compartments can be removed. A definite plus. The dashboard contains other handy

storage compartments and is distinctive for its border that lights up, for example, to indicate the fork in the road ahead. This feature has the merit of occupying the immense empty space that separates the driver from the windscreen.

On the road, the ID. Buzz offers a rather unique driving experience, making passengers feel as though they are travelling in a tightly sealed glass bubble. Although it packs enough vigour, the electric minibus gives a deceptive impression of calm. So keep a close eye on your speed, which is displayed on the dashboard. Whether or not you like it, driving a VW bus is conducive to daydreaming. While the substantial unladen weight (2,471 kg), concentrated towards the ground, provides stability, it only leaves a maximum payload of 529 kg. Apart from a rocking motion over the waves on the road surface and a few thumps from the optional wide 20-inch tyres (265 mm at the rear!), the ID. Buzz is pleasant and soothing to drive. The only problem is that this pleasurable experience comes to an end after 423 km at most (WLTP data), and inevitably less if fully loaded (from 1,121 to 2,123 litres) and on a motorway. To travel fast and far, you must find the ultimate treasure, in this case a 170 kW DC charging point that can regenerate the battery to 80% in 30 minutes.

After all, those on the road a lot could turn to its cousin, the T7 Multivan, available with a diesel, petrol or plug-in hybrid engine. Just as spacious but with more headroom, the T7 also leaves a bit more space in your budget. VW makes the electric version of its icon an expensive choice, at more than 80,000 Swiss francs for this copious test version. However, the ID. Buzz could fit the bill as a service shuttle, especially in its new, six- or seven-seater long version (4.96 m) with increased battery capacity. ▲



B U Z Z Z



T R A V E L

CORSICA

SECRET NATURAL POOLS ON THE ISLE OF BEAUTY

Corsica may be renowned for its dreamy beaches and turquoise waters, but the Mediterranean island is also brimming with natural pools that are true gems of wild beauty. Here is our selection. BY JULIE ESTÈVE

Corsica is a masterpiece. Its beauty is everywhere. North. South. Mountains. Sea. It is said to be the closest of the remote islands. With such a variety of poetic landscapes, it feels like paradise. Therefore it comes as no surprise that hordes of tourists flock here every summer to roast on the beaches of this big rock wedged between Sardinia, Italy and France. But in September, the sun turns back into a perfect caress. And once the summer rush is over, the island regains its tranquillity. Autumn is coming, but the best fruit in the world still dangles from the fig trees to perfume the air with their sweet scent. The bougainvillea creeping up the walls explodes into red and purple flowers, always a spectacular sight to behold. This season is the best time of year to enjoy the island peacefully. Even if white sand, secluded coves and the Mediterranean Sea are always a sure bet, today we will be diving into ancestral Corsica. A journey to the origins, with hiking and swimming in the pure, cool waters of natural pools.

The Purcaraccia canyon in Bavella.

© SIBAG, ALAMY / JON INGALL, ALAMY

The natural pools of the Fango

To kick off our journey, we're heading to Haute Corse and Balagne, in the Fango Valley – a UNESCO World Heritage Site and Natura 2000 site. On the D351, I drive to Manso, a small village jutting out of the surrounding green scrubland, in the shadow of the island's highest peaks – Paglia Orba and Punta Minuta (more than 2,500 metres high). I park in the mini parking lot of the tiny Bar des Amis. I sip an Orezza sparkling water on the terrace, before taking the stairs down near the café and crossing a bridge over the Fango River.

The first natural pools I see are amazing, but I leave them for lazy people. The ones I want to see are a 30-minute walk away. I walk along a path that is in parts rocky, in parts in dirt. The scents around me are distinctive of Corsica, a blend of immortelle flower, rock, water and wild marjoram. After half an hour, I cross a stretch of shallow water that

comes halfway up my calf. I can feel the river electrifying my legs. It's not too cold, even at this time of year. The water is actually known for being warm.

I arrive at a spot where the landscape is like nowhere else: water holes and clear green pools set against the grey rock. But this is not my final destination. About another kilometre to go. Then paradise opens its gates before me. At least that is what it looks like. The scenery is breathtakingly beautiful. No photo can do justice to this perfection of nature. And the sunsets. Wow! Picture this: blocks of pink granite. Pale pink. The water is the same colour, then royal blue, then lime. The combination of shades is stunningly harmonious. A few trees provide some shade. And majestic mountains tower all around. Now is time to dive into the beauty. The pool is deep and incomparably pure.

The crystalline Fango river, overlooked by the stone arch of Ponte Vecchio.



The emerald-coloured pools are interconnected by natural slides and waterfalls.

The Purcaraccia waterfalls

It took millions of years for the little Purcaraccia stream to carve out a canyon in the granite. Well worth the wait. Alternating between turquoise pools, natural slides and gorgeous waterfalls, Purcaraccia is a mountain wonderland. The spot has rightfully gained its reputation, but the huge crowds in the summer somewhat spoil the experience. You're therefore better off taking the trail to the Purcaraccia waterfalls in the off-season (September or May). But let it be known from the start, you have to earn it.

After winding through the 20 or so kilometres of hairpin turns that separate Solenzara, a town on the island's eastern coast, from the hike's starting point, I park my car on the roadside – the D268 – where a few spaces are available. Otherwise, you can drive a bit further to a car park along the Col de Larone. The path leading to the waterfalls begins on a fairly easy trail gently sloping uphill, offering lovely views of the Aiguilles de Bavella. But after about a 30-minute

walk, things start getting complicated. The not-always-shaded path gets tough, with steep slopes and big rocks to climb over. I have to be careful where I place my feet. Two people died here in 2021, and another fatally fell from the waterfall in April 2022. These accidents prompted the Corsican prefecture to regulate access this summer. From 22 June to 19 September 2023, groups must be supervised by a licensed professional.

In reality, the itinerary is not out of reach for people in good physical condition with proper equipment (hiking boots, adequate water, etc.). After walking for an hour and a half, I finally spot the river and the big Purcaraccia waterfall just below. The water in the pool is emerald green, framed in pink and white granite. I cannot help but want to jump right in. But again, be careful. The rock is slippery, and non-slip shoes are recommended. I wet my neck and shoulders and slowly enter the pool. I shiver. The water does not exceed 15°C. But no problem. I'll warm up on the way back.

© RONNYBAS, ALAMY / HEMIS, ALAMY / DR

The Aitone forest

To wrap up my tour of Corsica's natural pools, I head for the island's west coast to the Gulf of Porto. Inland from there, the Aitone forest spans almost 4,000 hectares. I leave Porto and take the winding road towards the village of Évisa. On the way, it is not uncommon to come across huge, semi-wild black pigs slumped along trail edges. Sometimes a sow and her long litter run alongside the cars. Feeding them is not recommended. Last year in southern Corsica, a couple of tourists tossed some pigs a few biscuits before the insatiable animals went for the family dog, a poor chihuahua, and devoured it.

After passing through the village of Évisa, you need to continue a few more kilometres to reach the car park for the Aitone forest, a haven of peace and natural beauty. While the forest is home to many species of trees (chestnut, beech and oak), it is renowned for its Laricio pines (also called black pines) – the most spectacular in Corsica. The path to the waterfalls is easy, signposted and accessible for the whole family. Just a 15-minute walk takes you to the first pools. While most tourists tend to stop here for a dip, I prefer to continue my hike along the river. Further down, you are guaranteed calm and serenity. But diving into the water is a challenge: on my visit in September, the temperature was no higher than 11°C.

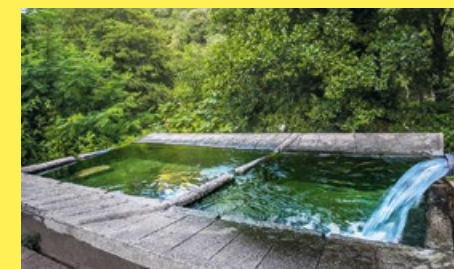


In the Aitone forest, some Laricio pines are taller than 50 metres.

A DETOUR FOR WARM WATERS

For anyone averse to the cold water of natural pools, the sulphurous thermal baths of Guitera, where 47°C water gushes out into the open air, are touted by Corsicans for their health benefits. They say that the baths help to heal fractures and sprains, and relieve rheumatism and certain skin conditions. If you do not have any aches or pains, the waters will completely relax you, and your skin will feel softer than ever. The thermal baths began to be commercialised in the 18th century, but today

all that remains is a dilapidated hot tub in the middle of the forest, under the stars, before a mighty river.



GETTING THERE

Direct flights from Geneva to Ajaccio, Calvi, Bastia and Figari.

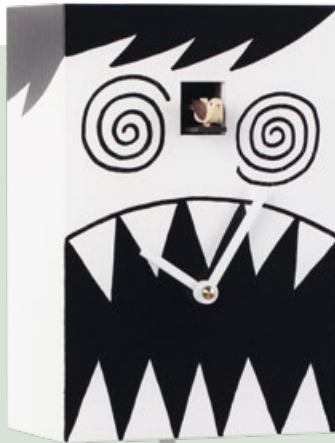
Direct flights from Zurich to Figari.

Ferry from Marseille (France) or Genoa (Italy).

The mouse of champions

California-based firm Pwnage launches the StormBreaker, a gaming mouse made with a magnesium alloy. Weighing in at a mere 51 g, the device is ideal for hardcore FPS gamers, delivering outstanding speed and control. The StormBreaker also has a battery life of 120 hours. As a bonus, the mouse shell is available in an array of seven colours.

pwnage.com
From CHF 160



Reinventing the cuckoo clock

As part of a project led by the artist collective Swiss Creatives Club (Club des créatifs Suisses), Julien Depreux, a.k.a. PanpanCucul, reinvents the famous Hansruedi cuckoo clock by Danish designer Søren Henrichsen. This clock, replete with a little cuckoo bird, shares the same minimalist, contemporary design and is fully assembled in a Geneva workshop using local materials. In this version, it is decorated with silly faces in the typical style of the French-speaking Swiss designer.

panpancucul.com
CHF 950

The stealth e-bike

Under their air of classic urban bicycles, devoid of screens, the elegant Ampler e-bikes carry an electric battery hidden in their frame. Sufficient to cover between 50 and 100 km, depending on the support and the terrain. The bikes are made in Estonia at the brand's factory and can be tested at the Zurich showroom.

amplerbikes.com
From CHF 2,990



Multi-use cables

The latest cable from the Ticino-based company Rolling Square, InCharge XL, is equipped with three different connectors (USB-C, Micro USB, Lightning) for ultra fast charging up to 100 watts. At 3 metres long, the InCharge XL makes it easy to charge a laptop, smartphone, external hard drive or headphones. Featuring a sophisticated design, the cable is built to last. It comes with a silicone storage pouch and is available in 2 metre or 30 cm versions to meet diverse needs.

rollingsquare.com
From CHF 46

Responsible honey

Nature-conscious forest and flower honey, made in Switzerland, is the concept from the Thurgau-based brand Bee-Family. Its wide range of honey assortments come in lovely birch wood boxes. The label highlights that it is helping to increase the country's bee population by creating new colonies and that it actively supports scientific projects to improve bee-keeping practices and living conditions for bees.

bee-family.com
From CHF 29.90



Off to work

Peugeot is branching out. By joining forces with major luggage manufacturer Delsey, the automaker has made a strong foray into luggage. We particularly appreciate the elegant, compact laptop backpack in water repellent canvas made from recycled bottles. The bag includes a padded sleeve for your computer, a USB port, space for an external battery and an RFID blocking pocket to hold your cards and phone.

peugeot-voyages.com
CHF 455



b o u t i q u e

A LOOK
INSIDE
THE
LAB

Fast-charging lithium-ion batteries

A Penn State startup has developed a lithium-ion battery that can be charged in just a few minutes. Could this be the breakthrough that will truly democratise electric cars?

BY JULIE ZAUGG

To fully charge a lithium-ion battery, like those used in electric cars, it currently takes an average of 60 minutes. "If it's cold, it can even take several hours," says Brian McCarthy, an electrochemistry expert who is conducting research with Pennsylvania State University and is also CTO of the startup EC Power.

For an optimal charging process, the battery needs to reach a temperature of 55°C to 60°C. "At that temperature, the lithium ions are more flexible and move more quickly, making it easier to transfer them from the battery's cathode to its anode," he explains.

Batteries are therefore built with an integrated heating and cooling system, a device consisting of tubes filled with liquid coolant that are in direct contact with the lithium ions to bring them up to the right temperature. But this system is heavy and expensive. "It can account for up to 20% of the battery pack's total mass," Brian McCarthy says.

What is more, these liquid heating systems are slow. "The most sophisticated electric cars give you 2°C per minute," he says. "But more basic models only achieve 0.5°C per minute." If the outside temperature is 15°C, it takes between 20 and 90 minutes for the battery to reach the 60°C required for a fully effective charge.

To address the problem, Chao-Yang Wang, a professor of mechanical engineering at Penn State, worked with EC Power to de-

velop a battery with an ultra-thin nickel foil added between the cathode and the anode to heat the anode faster. "Our system enables lithium ions to gain 30°C per minute, and in some cases even up to 60°C per minute," says Brian McCarthy. This reduces the entire charge time down to less than 10 minutes.

The scientist believes that this innovation will eventually reduce battery size. "People will have less powerful cars that they charge more often," he explains. The price of electric vehicles would fall, making them more affordable. This could also be the much-needed breakthrough in response to the shortage of certain minerals, such as lithium, cobalt and graphite, used to produce these batteries.

EC Power is now working on marketing its innovation, which was the subject of a 2022 article in the scientific journal *Nature*. It was tested for the first time last winter on electric buses in the particularly cold environment of the Beijing Olympics. Several major automotive groups have also begun testing prototypes from a production line developed by EC Power.

But the startup's first customer is likely to come from the logistics or construction sector. "You're never far from an electrical socket on a building site or in a warehouse," Brian McCarthy says. "This environment is well suited to vehicles that need frequent rapid charging." EC Power is currently trying to raise money to build its first plant somewhere on the east coast of the United States. ▽

YOUR FRIENDS ARE OUR FRIENDS

Share your trading experience today.
Refer a friend and you will both receive
CHF 100.- of Trading Credit.*

[swissquote.com/referral](https://www.swissquote.com/referral)

 Swissquote



AUDEMARS PIGUET

Le Brassus

SEEK BEYOND

ROYAL OAK
PERPETUAL CALENDAR
ULTRA-THIN

AUDEMARS PIGUET BOUTIQUES : GRANS-MONTANA | GENEVA | ZURICH