




How artificial intelligence is changing industry - and everyday life.

Artificial intelligence is taking over everyday life. Voice assistants aim to make our lives easier, cars are learning how to drive themselves, and in the not-too-distant future, the first drones could be taking passengers to their destinations – with no pilots whatsoever. What is less well known is how artificial intelligence is becoming more prevalent in industry and manufacturing.

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At the world's largest entertainment electronics trade fair, [CES in Las Vegas](#), many exhibitors' main focus was on artificial intelligence. From Alexa through to Google and Siri: the virtual assistants belonging to the IT industry's largest players can be controlled with your voice, all while monitoring smart homes, helping you to call, send messages or playing your favourite music on demand. Throughout the city in the Nevada desert, billboards were lit up with the "Hey Google" phrase. From many customers' perspective, artificial intelligence is a useful everyday helper, while others still perceive these assistants as a useless gimmick, at least for the time being.



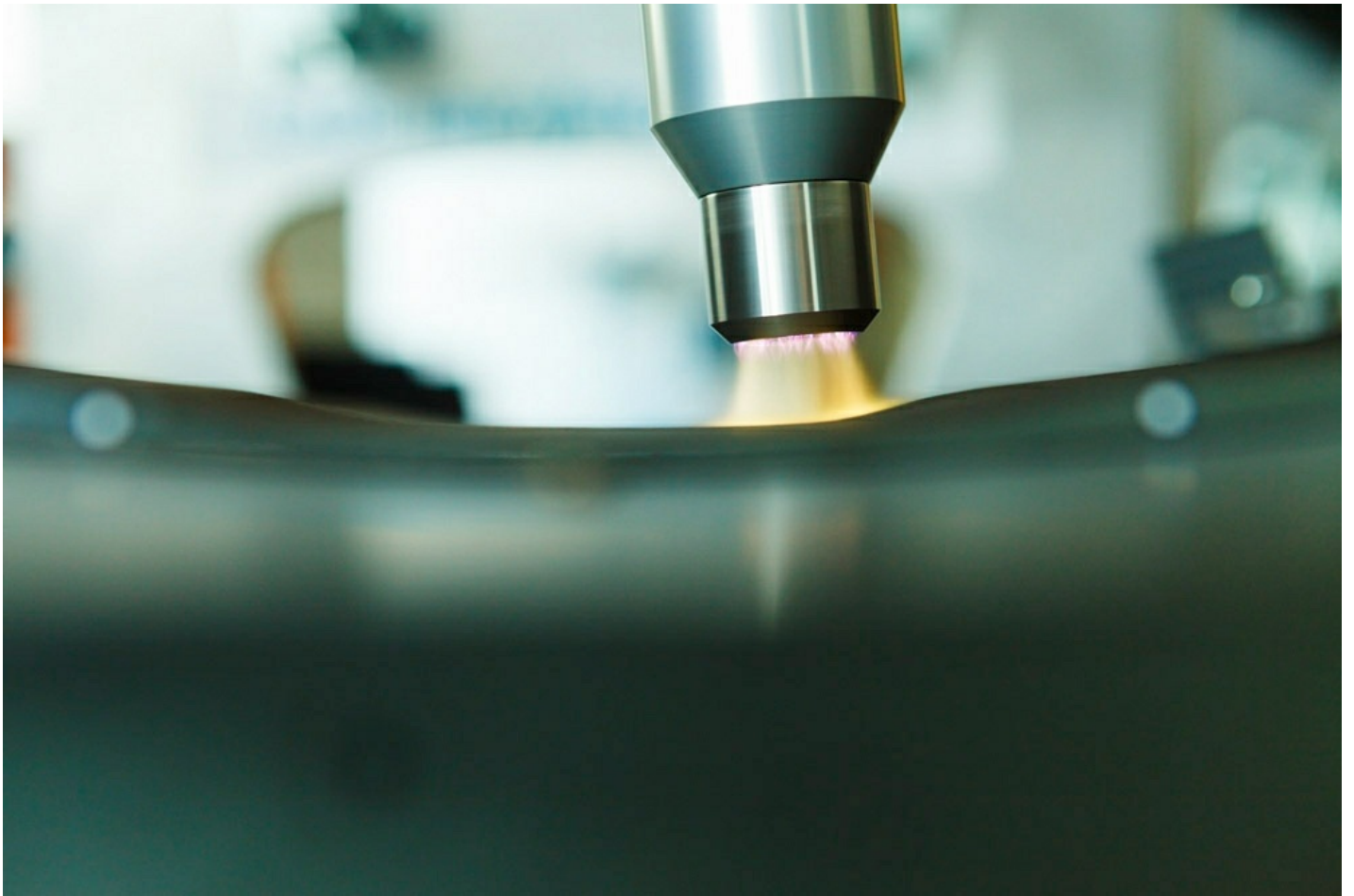
Amazon Echo "Alexa" - Artificial intelligence has even made roads into many private households

Dangers of artificial intelligence?

Critics even fear that artificial intelligence could become dangerous. If artificial intelligence breaks free from its human masters and continues to develop independently, specialists talk of a "technological singularity." A horrifying glimpse of the future? Not necessarily. The Facebook team ran an experiment, in which two bots named [Alice and Bob](#) were left to their own devices. Between them, they quickly developed their own language that was unintelligible to humans. To be on the safe side, the experiment was terminated early. Currently, however, there are no alarm signals that Siri and Alexa are planning to take over the world.

Airliners: new challenges from new materials

Artificial intelligence is also making inroads into other industries, including aviation. The field of MRO —the abbreviation stands for Maintenance, Repair and Operations - is making increasing use of the latest technology. For our February calendar page, the photographer, Wolfram Schroll visited Airbus Innovations in Ottobrunn near Munich. The picture shows a robot-controlled plasma applicator being used to treat a composite surface. Using gas as a carrier, a coating is applied - in this case to increase material strength after a repair. Treatment processes such as this are used in an extremely wide range of applications, including the automotive and printing industries.



A robotised plasma applicator being used to coat a composite surface - © Wolfram Schroll

In the world of commercial aviation, requirements for composite repairs are increasing. Newer airliners, such as the Airbus A350 and the Boeing 787 Dreamliner, are literally built around carbon fibre construction. This material is lightweight, durable, and non-corrosive. However, during manufacture and repair, the requirements that it imposes are different from those for traditional metal construction. The goal is to perform [repairs directly on the aircraft](#), in a fast and accurate manner, while maintaining the highest standards of quality and safety. Airlines and specialist businesses are therefore investing in new maintenance and repair methods. During its CAIRE (Composite Adaptable Inspection and Repair) project, Lufthansa Technik worked in conjunction with several other businesses. During the project, a mobile robot demonstrated its ability to repair patches of carbon fibre, up to one square metre in size, on the aircraft itself. This should result in time savings of up to 60% compared to conventional repair methods. In the meantime, the CAIRE project has come to an end, but the progress in automating repairs continues. For instance, some of the highest-level research into working with CFRP is taking place in Stade, in northern Germany, which is home to the [CTC \(Composite Technology Center\)](#), one of the leading locations in the field of composite technology. The business is part of the Airbus Group.



Airbus is also developing robots to be capable of assessing situations, and finding solutions, in a fully autonomous manner - © Airbus SAS 2017 – All rights reserved.

Riveting robots at Boeing

Conventional manufacturing techniques have not been left behind. At the end of 2015, the American aircraft manufacturer, Boeing, introduced a new process as part of the manufacture of its 777 widebody, which features metal construction, known as “[Fuselage Automated Upright Build](#)”. Previously, workers had to fit 60,000 rivets by hand to each fuselage. This was arduous work which was not exactly conducive to employee health, but this unloved task is now performed by robots. Two pairs of robots share the task of fitting the rivets – one pair inside the fuselage, and one outside. The robots move through the production process under their own power and complete work where humans have already carried out preparations. This means that more aircraft can be made in less time at a lower cost.

At Boeing, robots are taking over unpopular, unhealthy work that was previously done by humans

Power grids gain intelligence

In early 2017, the IT specialist, [IBM](#) and the technology company, [ABB](#), combined their knowledge to make an impression in the field of artificial intelligence. IBM has experience in the fields of artificial intelligence and machine learning, while ABB benefits from sector-specific knowledge and a portfolio of digital solutions in a variety of industry sectors. One of the jointly-presented solutions involves Smart Grids: i.e., intelligent power networks.

In the air and on the streets: will people become surplus to requirements?

Artificial intelligence continues to play an increasingly important role in the automotive industry as well. At CES, the Stuttgart-based car manufacturer, Daimler, launched an assistant that will providing assistance to drivers when they say “Hey Mercedes.” However, that is just the first, small step on the way to the actual goal, which is fully autonomous driving. This also applies to tools that are already in common use, such as distance warning, cruise control, and brake and lane-keeping assistants.

In terms of fully autonomous driving, established car manufacturers are experiencing [competitive pressure](#) from IT companies including Google and Apple. These businesses are far ahead of the field in terms of data processing and artificial intelligence and ultimately, autonomous cars need to be able to navigate on their own, recognise obstacles, and follow traffic rules – as well as taking potentially life-or-death decisions that affect human safety. Nonetheless, old-school car manufacturers are not willing to go down without a fight: [General Motors](#), for example, is planning to launch automated taxis in 2019.



Tesla Model S – Tesla has assumed a cutting edge position in the quest for the “self-driving car.”

There is a similar trend towards autonomy in the aviation sector. Autopilots have been standard in both large and small aircraft for a long time, while unmanned aircraft demonstrate that complete flights can operate fully autonomously, from take-off to landing. However, even when a pilot is on board, it is often the case that flight would be impossible without intelligent electronics: some aircraft would be uncontrollable without digital support. One popular example of this, which is also “made in Germany” is the 18-rotor [Volocopter](#). Electronics are the only way to apply power in a way that results in a stable, easily controllable flight path. Some manufacturers’ visions go even further, with startups and established manufacturers working on [autonomous, flying drones](#) to convey passengers to their destinations without a pilot.

Sources: [ABB](#) | [compositesworld.com](#) | [CTC](#) | [GameStar](#) | [Manager Magazin](#) | [Reuters](#) | [Wikipedia](#)
[\[AI](#) | [Plasmaspritzen](#) | [MRO](#)] | [wired.com](#) | [wn.de](#)



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