

Man's BEST FRIEND?

Swiss company ANYbotics is leading the way in industrial robot applications. Milestone spoke with its CEO to discuss the future of the industry.

DR. PÉTER FANKHAUSER
CCEO @ ANYbotics



With uses in everything from education to warfare, robotics is an industry with few apparent limits. Once the stuff of science fiction, the sector is now populated with several innovative companies, while robotics such as drones have already become commonplace in everyday life. As a result, the global robotics market is flying, up from a value of \$63.9 billion in 2018, to \$104 billion in 2020. In the near future it is forecast to grow even further – to \$210 billion by 2026.

Among the companies surfing this wave is Swiss developer ANYbotics. Its flagship product, the waterproof, hazardproof, and dog-like ANYmal is

already being used in various industrial locations. Standing 80 cm tall and weighing in at 50 kg, the quadrupedal robot has a 360° field of vision and uses artificial intelligence (AI) to carry out whatever job it's programmed to do. It can walk, run, navigate stairs, cross uneven terrain, and pick itself up when it falls over. Because of this, the unique robot is the star of several YouTube videos.

ANYbotics was founded in 2016 as a spin-off from public technology university ETH Zurich. While still a university project, the team started experimenting with designs for walking robots in a bid to break the mould of tracked or wheeled robots, which struggle with stairs and other obstacles.



Instead of telling a robot how to walk, we let the machine learn itself



The team's research and development initially had no specific application in mind, however, the young engineers were being repeatedly approached by industrial entities eager to learn about their work. As a result, ANYbotics took its design to market. Headed by CEO Péter Fankhauser, who studied for his PhD at ETH Zurich, ANYbotics quickly expanded and recorded its first sales in 2017.

"There was clearly a huge market demand," Péter says. "So, it seemed the logical thing to do."

Rather than being pioneers at the forefront of robotics R&D, ANYbotics has positioned itself to focus on practical application. This perhaps makes it more market and end-user oriented than many other robotics companies.

"Many other companies come from the point of view of building a cool robot and then letting people figure out what to do with it. That is not our way," Péter explains. "Our customers come to us looking for a solution to a problem, and we work with them to solve that problem through our product, which is a highly mobile and adaptable robot platform, along with associated software."

ANYmal

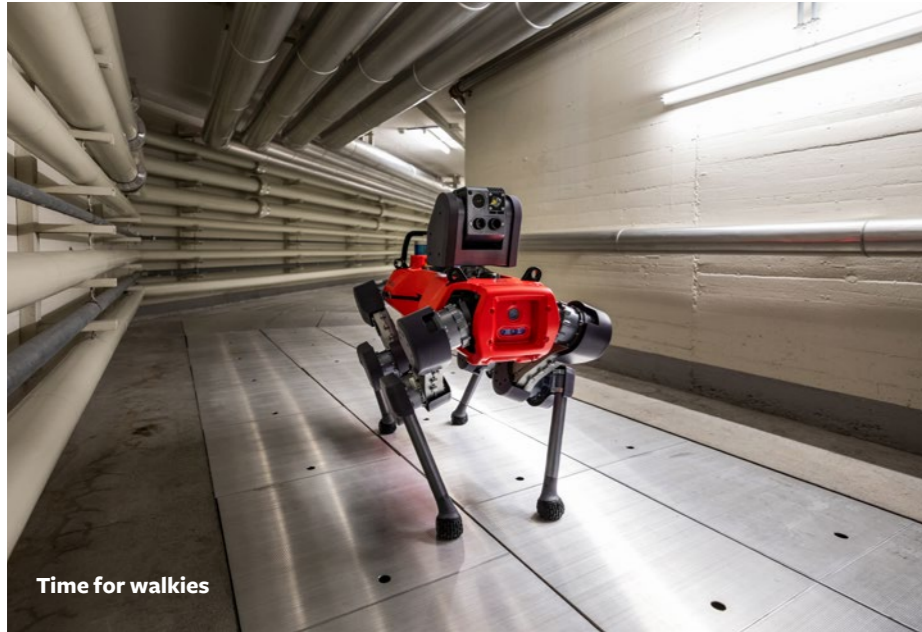
ANYbotics does not therefore exist to focus solely on breakthroughs in robotics technology. That work is still largely achieved in universities. Instead, its aim is to adapt the technology to the needs of its customers.

"As roboticists, we are at the consumer end of many technologies," says the CEO. "We are not developing new algorithms for the sake of novelty – we are applying them to real-world applications."

This is not to say, of course, that innovation is not important. In fact, the advances made during the development of ANYmal across six models since 2009 have been revolutionary. How ANYmal learns to move is a standout example of this. Standard practice is for an engineer to programme a robot with information, which tells it how to move in a variety of situations. Yet ANYbotics is seeing beyond this convention.

"Instead of telling robots how to walk," Péter says, "we let the robot learn itself. We're using deep reinforcement learning to let the robots practice movements many hundreds of thousands of times, like a child, to understand the best motion to accomplish a task."

This perspective enables ANYbotics to blow traditional approaches out of the water and to make massive leaps in performance. As a result, ANYmal is a market leader among what are →



The construction of robots requires very specific components including motors and gears. For its first few years of operation, ANYbotics made most of these in-house. However, to streamline and focus on robot solutions, recently the team has been able to externalise much of this manufacturing. In particular, Péter identifies Maxon, the Swiss actuator manufacturer associated with high-precision drives in NASA's Mars rovers, as a key partner in this regard.

These kinds of partnerships allow ANYbotics to remain at the forefront of what looks likely to be a seismic shift in how much work is left to robots.

"We are seeing an alteration in mindset regarding work," he says. "People are beginning to realise how effective a tool robotics can be in so many settings. I think in a few years, we will look back and wonder how we worked for so long without robots. They will become an integral part of our working lives."

Sci-fi fears

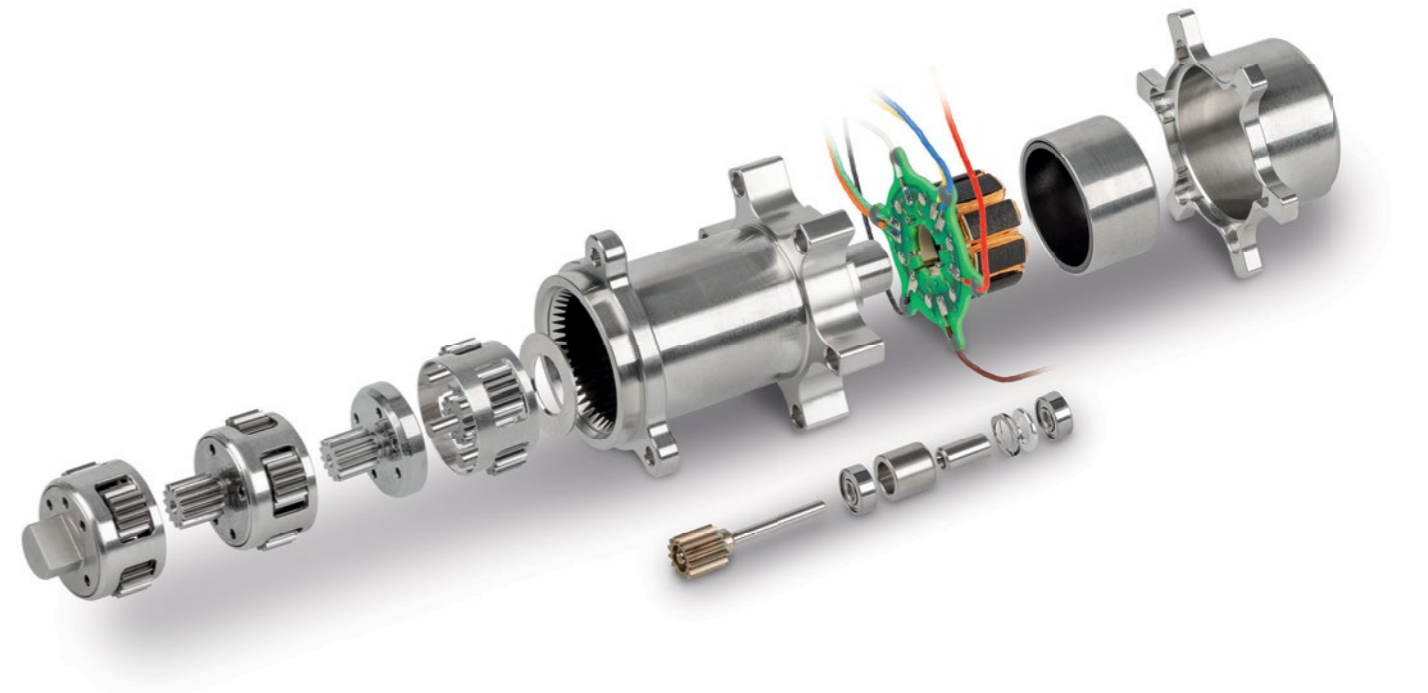
Despite this optimism, ANYbotics' CEO is very aware of a certain fear among the public, largely thanks to movies such as "I Robot" or "Terminator 2: Judgement Day," which have pushed the idea that the development of robot technology, and especially AI, carries huge risk. Péter puts this into perspective: "Much of this is based on the film industry's story-telling to evoke emotions. The idea that a robot may one day decide to do something it is not programmed to do. We do not see this as a realistic risk at all."

Yet ANYbotics also works hard to mitigate these fears. Behind-the-scenes videos can be found on their website, while interested members of the public are invited to visit their labs.

Péter says: "We understand this fear, so we make it a priority to communicate about this, to be open, to help to take this fear away."

Most importantly, ANYbotics uses its connections, supply chain partners, and collective imagination to stay right on top of industry trends. This gives the company an extremely forward-looking attitude, an essential requirement in all engineering, but especially robotics.

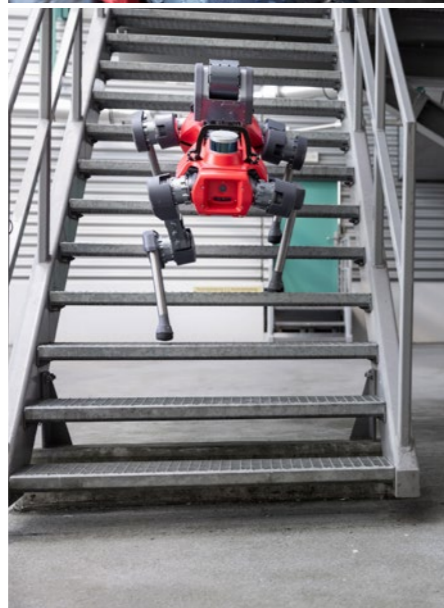
"It's a super exciting time because robotics is now a reality. But we don't want to just make what is available now," Péter concludes. "We want to make what will be available in three years. That is how we stay at the cutting edge." [↗](#)



known as "dogbots," a fast and robust product with projections for thousands of sales per year within the next few years.

Naturally, this expected growth in business will entail expansion. As this growth begins, Péter's company will require a larger deployment team. Rather than simply selling robots, each ANYmal is tailored to the needs of each customer. This is because the initial stage of an ANYmal's deployment involves an ANYbotics technician working with the customer to integrate the robot into their site or facility. The dogbot will only be left to operate unguided once it's fully established. Alongside this, Péter is keen to develop the commercial side of the business. Sales, marketing, and customer after-care are all being ramped up as well.

The company is therefore in the midst of a recruitment drive. Currently employing about 75 people, making it one of the largest European robotics companies, Peter expects an increase to over 100 employees in the coming months.



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