

Breakthrough with new generation robots

April 21 2016, by Jochem Vreeman



The robotics industry is on the precipice of a major breakthrough. Soon, industrial robots will be used at lower cost in small-scale production thanks to the operating system developed by the Dutch-German partnership SInBot. Doctoral research by Maarten Essers from the University of Twente shows that the results from preliminary tests are promising.

Major companies in the manufacturing industry, such as car manufacturers, are using smart robots for mass production more and more often. This is not economically viable for small production runs, because reprogramming [industrial robots](#) is an expensive and time consuming process. An additional problem is the hierarchical structure of the operating system, which means that significantly more machines are involved than strictly necessary. This increases the risk of production errors and it becomes difficult for robots to quickly switch between different tasks. This risk is much more acceptable in large production runs, which is why small and medium enterprises rarely use robots.

Robotic 'discussion'

Doctoral candidate Maarten Essers of the University of Twente conducted research into improving control of industrial robotic arms. His research shows that the new generation of intelligently controlled robots is in fact capable of a quick and flexible performance of production tasks. In the new system, robots are not controlled in a top-down manner; instead they discuss what they are going to do next. This allows them to eventually assign and execute tasks individually. This is called a heterarchical approach (instead of a hierarchical approach).

Smart factories are everywhere

The new design architecture results in more flexible robots that are easier to use in smaller production environments. Mr Essers predicts that 'factories will get a complete overhaul in the near future, especially with respect to small and medium enterprises. Smart factories will pop up everywhere and small-scale production will become completely automated with the help of self-learning [smart robots](#). They will be used in the food, feed and metal industries as well as in other manufacturing sectors. It will also be much easier to quickly switch between parts of

major production lines in the petrochemical industry, for example. It will have a major impact on Dutch [industry](#) and will pave the way for a Smart Industry.'

Provided by University of Twente

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