



Smart Robotics
Credit: Bart van Overbeeke



Mark Menting: 'Ons werk maakt duidelijk dat een leven lang leren geen vage modekreet is'

Robots are our future colleagues:
*THE DUTCH TRANSITION
TOWARDS SMART INDUSTRY*

Robots are our future colleagues and are an integral part of the transition from a traditional industry towards industry 4.0 or as the Dutch call it: Smart Industry. Robots are no longer a standalone machine, designed to execute one task. Over the years robots have become more intelligent, aware of their surroundings, safer and cheaper.

The rise of robots and new technologies, such as additive manufacturing, combined with an excellent digital infrastructure make the Netherlands suitable for smart industry. This is essential in a world where global competition is growing and consumers demands are changing. High-mix low-volume is key in this development and calls for a more flexible industry. The Dutch manufacturing industry is particularly strong in providing tailor-made work based on an intensive customer relationship. A lot of manufacturing and automation knowledge originates from Philips. Development is built on this knowledge, examples linked to Philips that are still around: VDL-ETG, the old Philips machine factory and Marel, food processing. In the area of digitisation, the Netherlands has numerous companies at the forefront.

FIELD LABS: A PLAYGROUND FOR SMART INDUSTRY CONCEPTS

A Dutch public-private partnership run by the industrial employers' organization (FME), the Ministry of Economic Affairs, the Chamber of Commerce, Nederland-ICT and applied research institute TNO, designed the Smart Industry Action Program. The goal of this action program is to stay a frontrunner in Europe. The main pillars of this action program are expansion of knowledge, skills and ICT and the set-up and acceleration of field labs.



Smart Robotics

One of these field labs is the Rotterdam Additive Manufacturing Lab (RAMLAB). This lab opened in 2016 and is the first additive manufacturing lab for the maritime industry. RAMLAB is located in Rotterdam, an epicentre for innovation, with the port as its beating heart. At RDM's Innovation Dock, companies are invited to set up shop. RDM's Innovation Dock offers prototype and testing facilities.

RAMLAB is an initiative of three founding partners: Port of Rotterdam, InnovationQuarter and RDM Makerspace. Together with industry partners, RAMLAB works on making additive manufacturing possible for maritime spare parts. The lab collaborates with the industry and has partners in the entire supply chain.

The most suitable technology for printing large metal parts is Wire Arc Additive Manufacturing, or WAAM in short. This technology uses a combination of an electric arc as heat source and wire as feedstock. The lab currently has two WAAM systems at its disposal. To create 3D designs, the lab builds software with its partners. An important element of success is monitoring and certification. Big Data plays a big part in monitoring the WAAM process. RAMLAB involved certification agencies to realize the ultimate end goal: certified large AM parts.

INNOVATIVE CONCEPTS: THE EMPLOYMENT AGENCY FOR ROBOTS

An example of the innovative approach in the transition of a traditional industry towards a smart industry is the start-up Smart Robotics. The company is an employment agency for robots. Heico Sandee and Mark Menting founded the company Smart Robotics in May 2015. Both have background in robotics and mechatronics and strong ties with the Eindhoven University of Technology. Heico and Mark noticed a growing need for flexible ways of automation for high-mix, low-volume production activities. They also noticed that this need was not addressed enough in the traditional industry. This need and a sense of adventure inspired them to set up Smart Robotics. They started their business at the High Tech Campus in the heart of the Brainport Region in the city of Eindhoven, the Netherlands.

Companies are able to rent their robots on a monthly basis, comparable with hiring a temporary employee. The concept of hiring a robot instead of an employee seems only suitable for tech-savvy companies. But according to Mark Menting the industry is ready for this next level of automation: "Our robotic solutions are easy to use for production workers, have a high level of re-usability of the system, a small footprint and a minimal impact on the existing infrastructure."

The company developed their own software platform and hardware creating standardized products out of it instead of one-offs and customer specific projects as they see this as a more classical approach.

The software developed by Smart Robotics is state of the art. The company has a good relationship with the Eindhoven University of Technology to stay ahead. Although the software is robot independent, Smart Robotics decided to use the hardware platform of Universal Robots. The robots are so called cobots, and are safe in an environment together with humans, perfectly fitting in the philosophy of "the employment agency for robots"

While still being a young company business is going well at Smart Robotics, and within a year and a half they decided to relocate to support growth. The team and the customer base are growing. With customers in several countries and the combination of dedicated partnerships to support further growth export is one of their main topics for 2017.

CHALLENGE THE DUTCH: STRONG RESEARCH CAPABILITIES

The collaboration between research and industry plays an important role in the development towards smart industry. With four technical universities and applied research institute TNO, the Netherlands has a strong base for the development of innovative and smart technologies.

In 2016 Amazon organised the second edition of the Amazon Picking Challenge. The challenge is designed for the academic robotics community. The challenge consisted of two tasks, stowing and picking. The stow task: to move twelve items from a tote into bins on a shelf, the shelf already contains several items. The picking task: to move twelve selected items from the shelf into a tote. The solutions need to be completely autonomous no human intervention is allowed.

Team Delft won the 2016 edition of the Amazon Picking Challenge. Team Delft is a collaboration between the Delft Robotics Institute of the Delft University of Technology and the company Delft Robotics. Team Delft designed the gripper in-house and used the Robot Operating System for industry (ROS-Industrial). The software is released as open software.

Another initiative that combines academia and industry is RoboValley. RoboValley is platform for robotics in the Netherlands. The initiative is founded by the Robotics Institute from the Delft University of Technology. RoboValley stimulates robotic start-ups and companies to come to Delft to set up their office

or a research lab on the campus of Delft University of Technology. From 19-21 April 2017, RoboValley organises the International Robotics week, together with RoboBusiness Europe and TUS Expo. The event will take place in Delft and the metropolitan region of Rotterdam-The Hague. There will be visits to various labs, including those of TU Delft (Delft University of Technology) and ESA (the European Space Agency), as well as demonstrations at different field labs in the Rotterdam-The Hague metropolitan area.

THE NETHERLANDS EMBASSY

The Netherlands enjoys a strong position as a European manufacturing location for foreign-owned companies. In fact, major multinationals in a wide range of industries have already established advanced manufacturing operations in the Netherlands—from agrifood and life sciences to chemicals, maritime industry and IT.

The Holland Innovation Network at the Netherlands Embassy in Singapore focusses on innovation, technology and science collaborations between Southeast Asia and the Netherlands. By organizing seminars and workshops the team informs and inspires about topics such as policy innovation, autonomous driving and robotics. The Holland Innovation Network writes articles to inform Dutch government agencies, knowledge institutes and companies about developments in Southeast Asia. For more info on smart industry and robotics R&D in the Netherlands, contact Ms Astrid Seegers, Advisor for Innovation, Technology and Science via sin-ia@minbuza.nl.

For more information on investment opportunities in the Netherlands, contact the Netherlands Foreign Investment Agency (NFIA), via bouma@nfia-singapore.com or visit www.hollandtradeandinvest.com.

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