

Automating European production processes in just 24 hours

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While the automation of production facilities can lead to cost efficiencies and safer workplaces, the expense can be prohibitive. Plant managers, when weighing up the cost of halting production and putting in place expensive robotic technology, often opt for the safer option: carry on as normal.

While understandable, such decisions are holding back European industry at a critical time of economic difficulty and growing international competition. This is why a major EU project was recently launched, to demonstrate that [robotic automation](#) need not be time consuming or prohibitively expensive.

The FACTORY-IN-A-DAY project's ultimate goal is to reduce the installation time - and related cost of installation - from months to one single day. As part of the Commission's Economic Recovery Plan, this will help European manufacturing enterprises adapt to global competitive pressures by improving the technological base of manufacturing across a broad range of sectors.

In practice, the project will achieve the following. Before the [robot](#) is actually taken to the SME

premises, a system integrator will analyse which steps in the process can be taken over by the robot. In most cases, repetitive work can be done by a robot, while the human worker carries out more flexible, accurate tasks and deals with problem-solving.

New standardised arms, mobile platforms, and hands will be combined with 3D printed custom parts, capable of being designed in a matter of hours from novel design templates. This will greatly reduce the time it takes plants to automate and be up and running. New self-calibration routines and a novel software framework will furthermore allow the easy interconnection of robot components and existing machinery.

The robot will be connected to machinery software through a brand-independent software system, and be taught how to perform tasks, such as how to grasp an object. For very specific application domains - such as, say, mould finishing and assembly - a set of novel learnable skills - or Apps - will allow the rapid teaching of production tasks.

These robots will be capable of collaborating safely with humans in a shared workspace due to safe robot arms with dynamic obstacle avoidance, made possible by novel proximity-sensing skin and online path re-planning algorithms.

Augmented reality will let the robots project their intended motion plans to inform the workers. These hybrid human-robot teams will be assessed through the performance of short-batch production work. And, most importantly, the new flexible, leasable and cheap FACTORY-IN-A-DAY robotic system can be set up in just 24 hours.

The consortium believes there is huge potential for this technology. Many production line jobs are still done manually, from the packing and quality checking of fruit to the filling of spray-painting machines. This is mainly because automated

processes that can do the job as well and as efficiently as a human worker are currently not available. For these reasons, many SMEs in Europe do not use advanced robot technology, something that FACTORY-IN-A-DAY aims to change.

The four-year project has a budget of €11 million, €7.9 million of which will be funded by the EU as part of the FP7 programme 'Factory of the Future'. The international consortium comprises 16 partners and the coordinating university is Delft University of Technology (TU Delft). The [project](#) started on 8 October 2013.

More information: www.factory-in-a-day.eu/

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