Affordable robots will boost SME manufacturing competitiveness

The SMErobot project is developing a family of robots that will be affordable and versatile enough to function alongside human operators in typical SME manufacturing workshops.

More information: www.smerobot.org

Existing automation technologies typically give rise to costly and complex systems designed for capital-intensive high-volume production. The large numbers of SMEs forming the mainstay of EU manufacturing thus face a dilemma: they must either opt for current and often inappropriate automation solutions, or compete on the basis of lowest wages.

The SMErobot project, coordinated by the Fraunhofer Institute for Manufacturing Engineering and Automation, Germany, is therefore developing a new family of affordable, dependable and versatile robots having significantly reduced setup, changeover and instruction times. The aim is to make them safe, human-aware and capable of understanding instructions by voice or gesture.

Demonstrations of fully functional prototypes will be set up in real SME environments (e.g. small foundry, metal parts fabrication and wood-working) with the cooperation of actual end-users and SME system integrators. Training and education will be conducted at all levels, from researchers to operators.

This could have a major impact in fostering the transition to more knowledge-based manufacturing in Europe. The unique composition of the consortium, which for the first time brings together the EU's five top robot-makers, also provides the strategic weight to have maximum impact on worldwide standards.

Combinatorial catalysts promise cleaner chemicals manufacture

By developing alternative catalytic synthesis routes, the Integrated Project TOPCOMBI aims to speed bulk chemicals production, using processes that are environment-friendly and generate far less waste.

More information: www.topcombi.org

In TOPCOMBI, a consortium led by France's Centre National de la Recherche Scientifique is seeking to reduce scale-up times for sustainable chemicals manufacture by developing eco-efficient catalysts based on combinatorial chemistry. These will form the basis of cleaner, safer and cheaper process routes, avoiding hazardous conditions and extensive solvent use.

Targeted industrial applications include NOx abatement in nitric acid plants: replacement of toxic phosgene in the synthesis of polycarbonates, isocyanates and polyurethanes; and the conversion of new bio-feedstocks into high-added-value products.

An approach employing high-throughput and miniaturisation methodologies is expected to reduce production costs by up to 30%, and development time by at least a factor of two. The number of process steps is planned to be reduced by 25%, while waste volumes are likely to decrease by 50%. This should lead to a decrease in waste-related costs of 30-50%.

A life-cycle and economic evaluation of process development for future industrial use is also underway. As well as enhancing competitiveness, this could help to improve the global image of Europe's chemicals industry.