Güdel AG and ABB Robotics parts of European consortium building high performance, low lifecycle cost industrial robots for demanding applications.

Güdel AG and ABB Robotics have made a large contribution to a new EU "SMErobot" concept that brings affordable robot automation to demanding industrial applications. The concept is modular and easy to scale, combining the benefits of high performance, speed and accuracy for high speed applications such as laser, plasma and water jet cutting, gluing, assembly and machining. This is a new class of robots that makes automation technology affordable and increases profit potential for SMEs.

First ever parallel kinematics robot of this type
The robot brings all the benefits of automated production plus affordability, making it perfect for SMEs. Reliability, performance and accuracy is guaranteed through low inertia in the moving parts and high stiffness of the joints and arms.

The innovation behind the new robot is a completely new parallel kinematic structure. The wrist of the robot is moved by means of 3 high performance linear actuators via 6 links. The links are connected in such a way that they only need to transmit axial forces and no bending or twisting torques. This made it possible to build the first ever parallel kinematics robot that has a large accessible work space in relation to its footprint. It brings all the performance and cost advantages of parallel kinematics with only axial forces in the arm links. The robot is also non-redundant, which means that it can easily be assembled and disassembled with high precision without needing any complicated time consuming mechanical adjustment procedures.

Born out of multi-national collaboration.
The complete system including hardware and software is a collaboration between ABB Robotics (arm system, wrist, robot control), Güdel AG (linear actuators, installation frame work), HDD Servo Motors AB (wrist servo actuators), ABB Corporate Research Germany (robot programming), University of Lund (kinematics, robot control, robot calibration), Institute of Industrial Technologies and Automation in Milan (simulations, design optimisation), Casting Technology International in Sheffield (tooling and processes) and University of Coimbra (speech communication). It is a testimonial to successful European high technology collaboration.

Uses throughout the industrial world
There is no limit to how companies can capitalise on the robot's unique features. Foundries benefit from its stiffness and mechanical bandwidth. High precision drilling and trimming of large structures are perfect usage examples, as are applications like material handling, pick & place, packaging and machine tending.
Its low inertia, high speed and high precision make the robot ideal for high speed applications such as laser cutting, water jet cutting, gluing, plasma cutting, measurements, assembly and machining of for example wood and plastics.

Cost the competitive edge
Its competitive edge is through the ability to build low inertia, modular, scalable, easy to assemble and disassemble robots that optimise low life cycle cost. Low inertia means low actuator power and brings cost savings to drive system components and energy consumption.

See it at Automatica 2008
See different implementations of the robot in the booths of SMErobot and Güdel AG, at Automatica 2008. In the SMErobot booth, one robot has a work space of 4 x 1.5 x 1.5 m and a second has a work space scaled down to 1 x 0.5 x 0.5 m. The large robot is designed for cutting, grinding and deflashing

of steel castings for SME foundries. The robots in the Güdel booth are configured to have vertical work areas, demonstrating drilling and trimming.

For more information please contact:
Torgny Brogårdh, ABB Robotics
torgny.brogardh@se.abb.com
+46 21 344391

or

Dipl. Masch. Ing. FH Walter Zulauf / Güdel
Phone: +41 62/916-9214
Fax: +41 62/916-9150
E-Mail: walter.zulauf@ch.guedel.com

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