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Robotic Systems for
Handling and Assembly

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May 29-30, 2002

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“Robotic Systems for Handling and Assembly”

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Abstract / Zusammenfassung:

The usage of industrial robots in competitive production is an important factor for economical prosperity. A survey of the International Federation of Robotics predicts an annual growth rate of 15%. In addition to a fortification in existing markets such as in automotive industry, the penetration of new application fields is of particular importance. In the future a great potential for robot systems in material handling and assembly applications can be expected. The fast growing number of installed industrial robots comes along with a permanently increasing demand for improved dynamics of the systems. For economical as well as technological reasons robot systems with high performance are of great interest. Many applications in production automation like material handling and assembly require high operating speeds and accelerations. During the past years parallel robots proved to be an efficient and suitable supplement to serial robots. But for a better exploitation of the possibilities of these new types of robots the weak points of robots based on parallel structures have to be reduced as much as possible or – in the optimum case – completely have to be eliminated. This has been the starting point for a new research initiative with multidisciplinary character, namely the Collaborative Research Centre 562 (SFB 562) “Robotic Systems for Handling and Assembly” established by the German science foundation DFG in July 2000. The main goal of the Collaborative Research Centre 562 is to develop new types of robots based on closed kinematic chains to improve the structural and dynamic potential of such robots. The main focus is on modelling and control of new parallel structures and the consequent usage of new machine elements. The integration of active elements into lightweight links of parallel structures and suitable control concepts form an adaptronic compound system minimizing oscillations. In addition, by means of adaptronics it is possible to improve the dynamic behaviour and stiffness properties of parallel structures.

The SFB team presents its different projects as well as to give first results of research activities in the workshop proceedings. In addition ten well-known international experts from Canada, France, Italy, Switzerland, Sweden and Germany will present invited lectures within the scope of parallel robot development. The workshop certainly will demonstrate the current state of art and will stimulate further directions of parallel robot research. We hope that all participants from mechanical and electrical engineering as well as from computer science interested in research, development and application of new parallel robot systems will get helpful suggestions and useful cognitions!

Interested audiences:

Mechanical and Electrical Engineering, Robotics, Computational Science, Production Technology

Leserkreis:

Maschinenbau, Elektrotechnik, Robotik, Informatik, Produktionstechnik