

## ASIGURAREA CALITĂȚII – QUALITY ASSURANCE

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# Management Aspects of Industrial Systems Quality

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## **Abstract**

Today, product quality is considered to be a crucial factor of competitiveness, survival and development for industrial system all over the world. Quality management is necessity for organizations on their way of achieving competitive advantage and is main subject research within this paper. The effort that Serbian companies are making to join the global trend of implementing Quality management systems in their business, in order to improve operational excellence and enter the EU market is shortly presented. In the conclusion of the paper the basic elements of management devotion to the tendency of producing good quality industrial products are emphasized.

**Keywords:** Industrial System, Industrial System Quality, Product Quality, Total Quality Management (TQM), ISO 9000, Serbia.

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# The Adjustment and Monitoring of Freeform Surfaces using Inertial Tolerancing

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## Abstract

At present, the manufacturing process allows one to make parts easily having one or several freeform surfaces thanks to the numerical link between Computer Aided Design (CAD) and Computer Numerical Control (CNC). Indeed, from a part defined by a CAD software the designer realizes the program of the CNC and can produce, if the CNC is supplied. However, during the step of production, the operator meets some difficulties to monitor and control. Indeed the ISO tolerancing of this kind of part is often complex and the setting of the manufacturer process is complex to adjust a part to its target values (numerical model). In this paper, we propose an original approach which simplifies the monitoring of freeform surface. We introduce this approach, we present the concept and we conclude by two industrial cases.

**Keywords:** Monitoring, freeform surface, tolerance, measure.

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# Cercetări privind reziliența sistemelor socio-tehnice

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## **Abstract**

This paper presents the interdisciplinary research developed at the EUROQUALROM laboratory and based on the SOREZ – „Socio-technical systems resilient to errors / fault“ project; these researches have as purpose to improve the dependability and especially of its main components – reliability and safety/security – of sociotechnical systems, mainly through the use of errors/fault tolerance. For high functional importance systems (especially the electronic/information, nuclear, aeronautic and military ones) the failures may have important social-economic consequences. That’s why, for these systems must adopted, beginning with the design stage, structures/strategies to avoid dangerous states. An important research direction having as goal the reliability growth for high functional importance systems is the use of fault tolerance, an architectural attribute of a system which makes possible its operation, even in the presence of one or several faults in its structure. Certainly, in the context of critical socio-technical systems it is necessary to extend the researches to the error tolerant systems. A peculiar attention is given in the international researches to the human factor in complex systems. DHE (Designing for Human Error) became during the last period a large used method for the designers of high functional importance systems critical from the point of view of security or missions. The researches regarding human factors intensified during the last two decades, based on the statistics that demonstrate the human failure are responsible for 25...40% of the failures of complex systems. A special attention is given to the methods for human reliability/safety analysis, having as objective the identification of the criticality of human actions, determination of the corresponding probabilities, minimization of the dependence among human actions etc. Some researches take into consideration development of interfaces between systems which limit the error risk. It is important for these interfaces to be adapted to the characteristics and limits of human operators. The researches done in the frame of this grant take in consideration a quantitative evaluation related to human error/reliability as well as a deep study of the interaction technical-human in the dependability evaluation of high functional importance socio-technical systems. To conclude, the interdisciplinary researches that been developed in the frame of this grant had as main objective the improvement of the dependability of socio-technical systems, which have a technical component, as well as a human one.

**Keywords:** Resilience, research, socio-technical system, dependability, human reliability, human error.

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# Typical Failure Mechanisms of Microsystem Technology

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## Abstract

The paper is furnishing details about the failure mechanisms (FMs) that are specific to microsystem technology (MST), including corrective methods for diminishing or even avoiding the failures. The FMs are grouped according to the possible failure risks, arisen at various process steps, such as: quality of materials, design and fabrication, operational and environmental stresses. Moreover, some FMs (stiction, fracture, mechanical and thermal fatigue), which are specific to MST and most frequently encountered, are detailed, including up-dated corrective methods.

**Keywords:** Microsystems, technology, reliability, failure mechanism.

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