“SelSus”

“Health Monitoring and Life-Long Capability Management for SELf-SUStaining Manufacturing Systems”

Publishable Summary

Today's production equipment must enable mass customization, has to enable to adapt various environmental impacts, and fluctuating production volume. Additionally, the cost pressure increased significantly, due to increasing suppliers. Along with this, to enable availability of production equipment and by that establish a high level of ability to deliver within supply-chain considering low level of inventory and buffer stock, just ensuring relative high level of reliability and availability at production level is not sufficient.

The European Union significantly supports industry, suppliers, research institutes and universities in facing this challenge to manage the switch to digitalization of the production, comprising component, equipment, and entire line and considering the entire life-cycle starting from planning phase, down to ramp-up, production, and re-use.

With new and advanced machines, fixtures and tools, comprising extended sensor capabilities, smart materials and ICT self-diagnosis and self-awareness will be enabled within SelSus project and will also prove self-healing capabilities

Additionally, distributed diagnostic and predictive and renovation models will be an integrated part of smart devices, enabling prognosis failure modes, component degradations, and by that predict future downtimes of devices.

These goals are reflected in the work packages and milestones, focusing on conversing vision into real working machines and production lines. As one of the key objectives within SelSus, data will be gathered, transformed into information and knowledge, and by that may offer an added value to supplier and end-to-end-user using self-diagnosing and self-healing devices.

Sensor networks, built up of a variety of sensor nodes, will add the capability for distributed analysis, interoperable and delay-tolerant communication.

Integrated models and methodologies for predictive maintenance will enable constant life-long assessment, by forecasting degradation and deterioration trends of single components and equipment. Additionally, machine learning and data mining techniques, combined with discrete material flow simulation models will enable decision models, on how to anticipate unforeseen future malfunctions and downtimes.

These methodologies will be proofed and demonstrated on three different levels, which are device level, equipment level, and factory, respective line level.

As scheduled, one integrated task will be, to disseminate publishable results. Additionally, to website, Linked-In account, flyers, etc., the consortium organized a Smart Factory Workshop to directly communicate goals and results to industry and universities.

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