

# AIMACS

## Advanced intelligent machine adaptive control system

*The objective of AIMACS is to develop active, self-optimising control systems which continuously analyse a wide range of monitored parameters in the machining process and automatically adapt machine operations, thereby enhancing machine productivity.*

Currently, most machines in a manufacturing chain are not running at their peak load and hence deliver a sub-optimal performance. AIMACS will develop reliable techniques for monitoring and online-tuning of machining parameters, while ensuring overload and damages are avoided.

Inefficiencies in current machining practices are caused by operating at basic parameter configurations that are robust towards any possible process. Choosing different parameter sets without extended experience and knowledge can result in instability, machine overloads and consequential

intensive. The added value of AIMACS is that this project will concentrate on generating new methods for efficiency improvements during the use phase, rather than the design phase, increasing the efficiency of existing machines and reducing the need for machines to be replaced, in turn reducing waste.

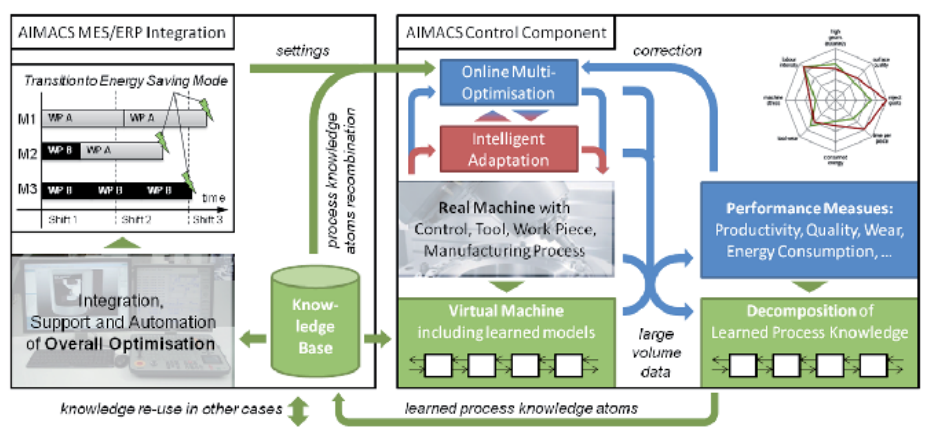
With the number of machines installed in Europe estimated at more than 1,000,000, the impact of AIMACS on the efficiency and productiveness of domestic European manufacturing will be very considerable. AIMACS aims at improving monitoring techniques for the most critical machining issues, such as load cutting, vibrations and the

<b>START</b>	August 2010
<b>DURATION</b>	36 months
<b>TOTAL BUDGET</b>	€4.5 million
<b>EU SUPPORT</b>	66%
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<b>COORDINATOR</b>	Peter Pruscsek (DMG Electronics)

scenarios. This is because the quality and stability of the machines depends on multiple parameters which change with process conditions such as cutting speeds, degradation of the machine components and the weight, size and material of tools and basic parts.

At present, modifying these parameters manually with a view to enhancing performance would cause considerable overload and put the efficient functioning of the system in serious jeopardy. This in turn would result in frequent disruptions in production, giving rise to productivity losses, energy waste and the need for reinvestment in machinery.

As a plug-and-produce system, AIMACS will be able to be applied to newly-built machines, as well as existing ones to the benefit of a substantial number of large and small players in the European domestic manufacturing industry.



damage to tool systems, meaning that disruption to production is frequent and excessive.

As it stands, many projects try to improve the efficiency of production facilities by producing machine components which operate at higher speeds and are less resource-

conservation of energy used in these processes.

Productivity in Europe is compromised at present as process planners, programmers and operators are currently forced to adopt a pre-emptive approach to programming, configuring machines for 'worst case'

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