Towards Resource Efficient Manufacturing

Growing awareness of climate change and the increasing scarcity and rising prices of natural resources have subjected the use of energy and resources in manufacturing to increasing scrutiny. Manufacturing is responsible for a significant part of the world's consumption of resources and generation of waste. Their energy consumption accounts for nearly a third of today's global energy use, and 36% of global carbon dioxide emissions 1. Manufacturing industries nevertheless have the potential to become a driving force for the creation of a sustainable society.

By using fewer resources and accepting these new business conditions, companies can become more environmentally friendly, competitive and profitable. Materials and energy are by far the most critical cost factors in a medium-sized manufacturing company, where material consumption accounts for 35-40%, and energy costs for up to 15% of total expenditure, compared to an average of 20% for personnel costs.

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MEMAN - UNLOCKING THE RESOURCE SAVING POTENTIAL OF THE METAL MECHANICAL SECTOR

The MEMAN project will support European companies in the metal mechanical sector in their efforts to maximise their resource saving potential and increase competitiveness. The project is based on an innovative approach that addresses optimization of whole manufacturing value chains instead of isolated single company or process optimization, and includes energy, raw materials, suppliers and waste.

Fourteen partners, including industrial enterprises, R&DIs, and experts in eco-innovative business models, are working on developing resource efficiency across the complete metal mechanical value chain. This will be done through the full validation of new business models. The project aims to develop new ways of working, to enable the exchange of data, and to provide tools for practical decision-making support.

It is expected that the MEMAN project will not only modify the consumption patterns of the whole metalworking value chains, but also guide the reduction of energy consumption and CO2 emissions. This will benefit all companies in the value chain, and thus increase resource efficiency in the manufacturing of stainless steel hydraulic piston rods and their manufacturing processes. These optimizations will contribute to a significantly increased resource efficiency in the manufacturing of chromium plated products with reduced chromium use and losses, as well as increased chromium recycling and safer handling procedures.

CLUSTERS

The development of approaches for organizational and technological optimization will be led by three competence clusters: Casting, Machining, and Surface Finishing. These will be used to develop tools for practical decision-making support and new collaborative business models to benefit all companies in the value chain.

CASTING COMPETENCE CLUSTER

Led by MONDRAGON Corporation - Entrepreneurial Innovation Cluster, Basque Country, Spain Partners involved: Loramendi, Fagor Ederlan, Insertec, eiffo, Acciona

The cluster comprises a large number of sectors, including transport (automotive, rail, shipping, automotive), energy, agriculture and chemicals. The companies in all sectors directly employ around 16,000 people in the area. Within the framework of the MEMAN project, the cluster will develop new collaborative business models to benefit all companies in the value chain.

MACHINING COMPETENCE CLUSTER

Led by CETIM – Technical Centre with Mecanic Vallée - Business cluster, Limousin and Midi-Pyrénées Region, France Partners involved: MONDRAGON, eiffo, Technofi

The cluster comprises a large number of sectors, including transport (automotive, rail, shipping, automotive), energy, agriculture and chemicals. The companies in all sectors directly employ around 16,000 people in the area. Within the framework of the MEMAN project, the cluster will test and innovate new collaborative business models to benefit all companies in the value chain.

SURFACE FINISHING COMPETENCE CLUSTER

Led by EIFFO - Industrial Innovation Cluster, Germany - Austria Partners involved: Stahl Judenburg, CETIM, Mecanic Vallée, THOMA

The cluster is focused on surface technology and finishing, including over 300 companies and 8,000 employees. It directly employs around 16,000 people in the area. The sector is strongly affected by higher resource costs, as energy accounts for 12% and materials and chemical supplies for 10 – 15% of total operating costs. The MEMAN project is therefore expected to enable a better re-design and re-engineering of stainless steel hydraulic piston rods and their manufacturing processes. These optimizations will contribute to a significantly increased resource efficiency in the manufacturing of chromium plated products with reduced chromium use and losses, as well as increased chromium recycling and safer handling procedures.