



Center for Innovation and Entrepreneurship

EIT Manufacturing



European Union

Dr. Konstantinos Georgoulas | Brussels | 2020-02-04

Vision and Mission

Our vision

Global manufacturing innovation is led by Europe.

Our mission

Bring the manufacturing actors of Europe together in innovation ecosystems that add unique value to European products, processes and services, while inspiring the creation of globally competitive and sustainable manufacturing.

*Strategic
Objective
SO6*

**Environmentally sustainable
manufacturing**
– Green and clean industry

#9: Industry, Innovation and Infrastructure & #12 Responsible Production and Consumption: Use of renewable energies is increased and environmental sustainability is established as a key component of the European manufacturing revolution.

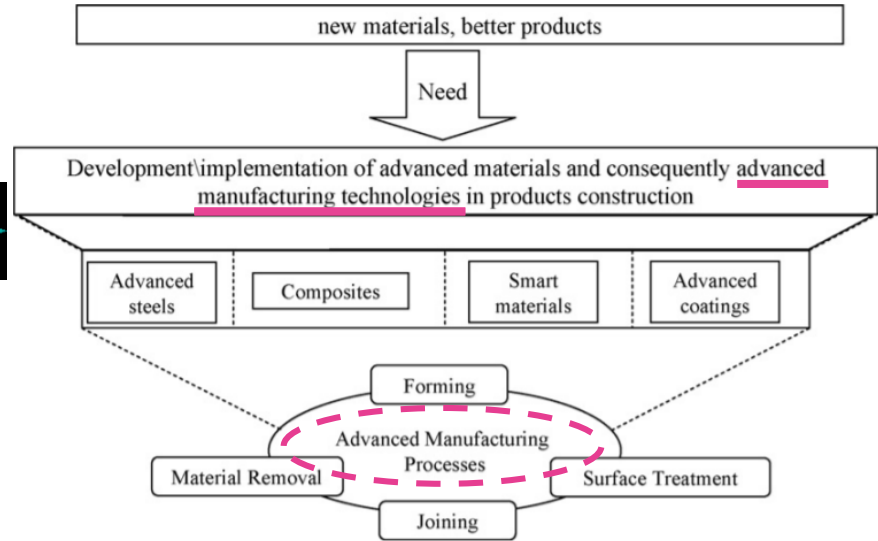
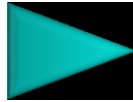
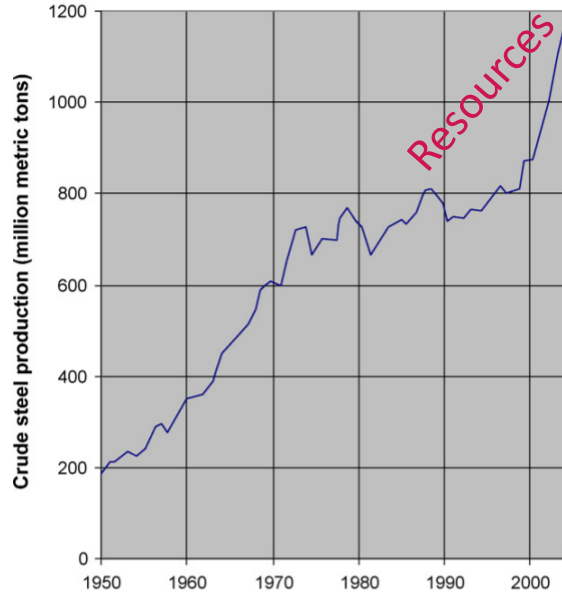
9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



Produce more with less

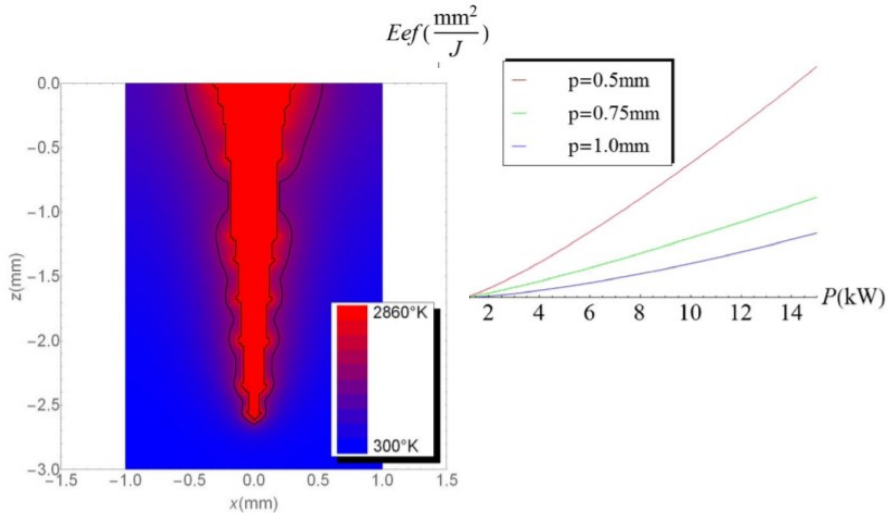


G. Chryssolouris, N. Papakostas, D. Mavrikios, "A perspective on manufacturing strategy: Produce more with less", CIRP Journal of Manufacturing Science and Technology, Volume 1, No.1, pp. 45-52. (2008)

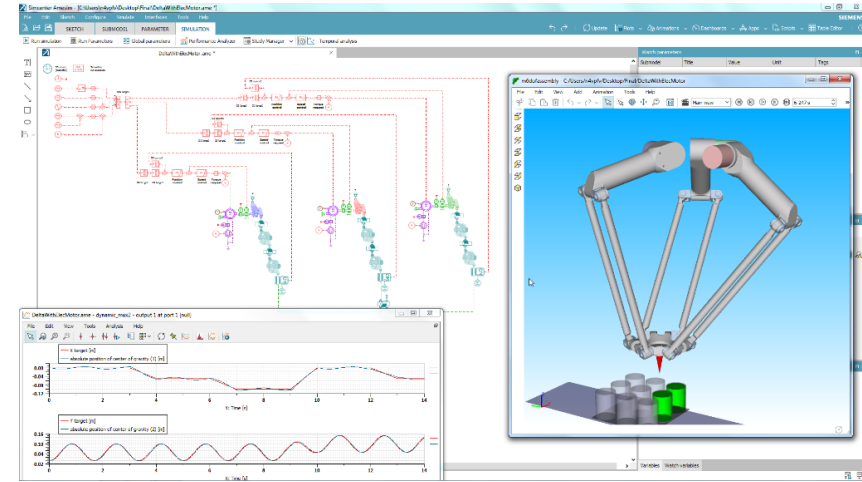


Modelling, Simulation, Dematerialisation

Welding energy efficiency as a function of laser power –
Energy Efficiency (Eef) as a manufacturing criterion



Improved machine productivity and energy efficiency using
system simulation



SIEMENS

<https://www.plm.automation.siemens.com/global/en/webinar/machine-energy-efficiency-systems-simulation/41262>

LMS

Laboratory for
Manufacturing Systems
& Automation

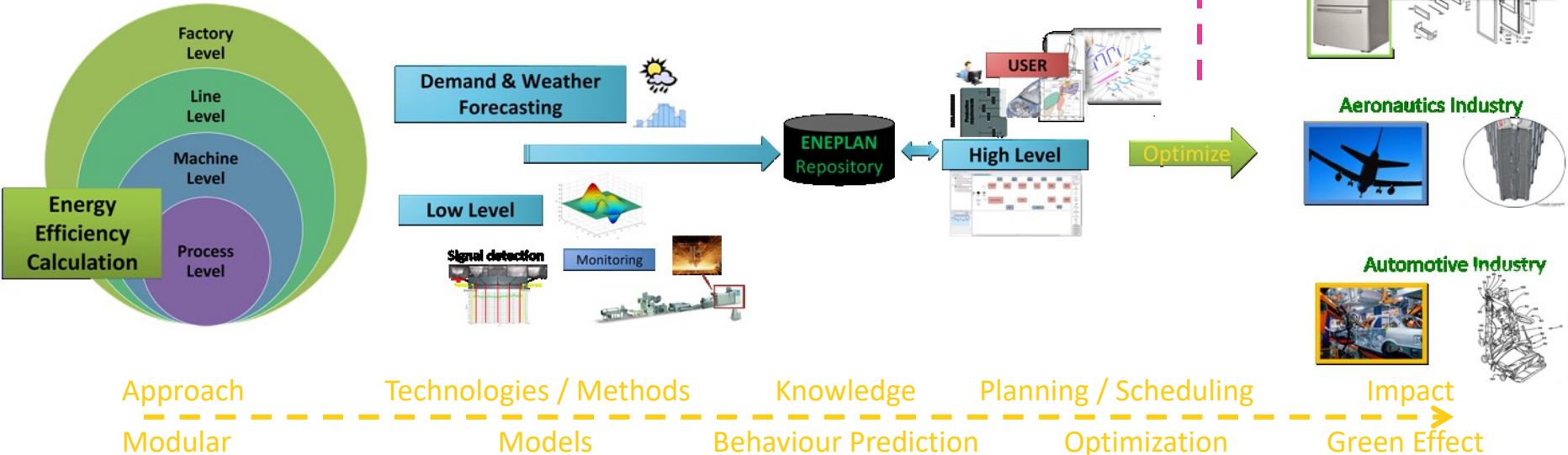
G. Pastras, A. Fysikopoulos, G. Chrissoulouris, "A numerical approach to the energy efficiency of laser welding", The International Journal of Advanced Manufacturing Technology, Volume 92, Issue 1-4, pp. 1243-1253, (2017)

Paralikas, J., Salonitis, K., & Chrissoulouris, G. (2013). Energy efficiency of cold roll forming process. The International Journal of Advanced Manufacturing Technology, 66(9-12), 1271-1284.

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Overall Process Planning

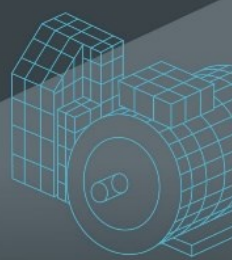
Energy Efficiency, Decarbonisation



Holistic Solutions

1 Product design

Simulate machines – build more efficiently



- Shorter development time
- Minimized costs
- Increased quality

2 Production planning

Plan virtually – reap real benefits



- Increased productivity
- Reduced energy consumption
- Substantial cost savings

3 Production engineering

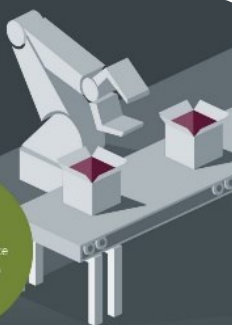
Manage energy – save money



- Transparent energy flows
- ISO 50001-compliant
- Newly tapped potential for optimization

4 Production

Optimized drive technology – produce efficiently



- Seamless integration
- High performance
- Improved energy savings

5 Service

Take advantage of services – optimize your energy requirements



- Tailored consulting
- Customized financing
- Effective energy management

Manufacturing Companies - Examples

Experience in non-conventional solutions to reduce the **energy consumption**, design and application of laser generators and laser machines for special purposes, advanced robot control systems



<https://www.primapower.com/us/combi-machine-combi-genius/>

FESTO

<https://www.festo.com/group/en/cms/10752.htm>

Holistic solutions for an economically efficient and sustainable future.

Energy efficiency is a competitive factor and must be consistently anchored in the development, production and customer processes as a cross-sectional requirement.



Towards the future...



From conventional industrial robotics
and manual intensive labor...

... to cognitive Human Robot Collaboration
with Smart Mechatronics and Digital Twin
Technologies.



Center for Global Health and Development

Thank you



European Union