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**VTT**

**Anssi Laukkanen**  
**Project Coordinator**



### What is VTT doing in ENGINE?

In addition to coordinating the effort VTT is contributing with a digitalization agenda spanning more or less most project activities from modeling defect generation in manufacturing processes to assessing product lifetime influencing properties to simulating non-destructive evaluation methods and to linking technical design to LCA. This we do both with physics-based multiscale models and AI tools like deep learning based surrogates. So we are at the very heart of developing new means and toolsets to applied industry use based on fundamental knowledge and excellence we've matured along the way, so the very common mission VTT has oftentimes laid out for itself.

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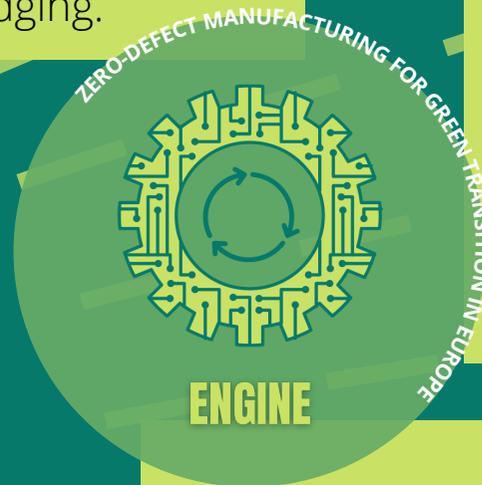
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## What the ENGINE project will add to the current scientific state-of-the-art?

The scope of ENGINE is vast in terms of manufacturing from materials to components and final operation of complex products integrating aspects of design, sustainability and LCA, AI and modeling and simulation, to name a few topics. In terms of scientific state-of-the-art, personally one dear topic is how we link the operational performance of a product to all preceding manufacturing steps from the very beginning of steelmaking. There is a lot of room and necessity for scientific innovation in between there, especially when using both physics-based modeling and AI to do this bridging.

## What will be the main impact of the project?

Ultimately, we are delivering a new way of doing technical and design for sustainability across the whole supply and value chain that we have from primary steelmaking to products that have reached end-of-life. We expect this will also add greatly to improving product performance, accelerating R&D&I cycles, eliminating costly iterations due to insufficient design methods and ramping down lead times. What we do should be rather easy to extend and multiply across related manufacturing industries.



## Why is the ENGINE project important?

The work done in ENGINE addresses our push to make European industries more competitive all the while meeting our sustainability and decarbonisation goals. As an innovation action we're taking our cue from industry and doing our very best to push the boundaries of how we do manufacturing and design by making Industry 4.0 and 5.0 a reality.

## How will the ENGINE project increase the competitiveness of the manufacturing industry?

ENGINE is a driver for new markets, growth and market shares in terms of opportunities presented by sustainability. Our consortium sees huge business potential with high-end and complex products manufactured in Europe meeting already near future regulatory needs and decarbonisation goals.

## How will the ENGINE project make Europe more sustainable?

The greatest impact in the mid to long term will arise from the ENGINE system which enables the extension and multiplication of the use cases we work with across heavy manufacturing industries by exploiting the methods and methodologies we develop. Regarding our consortium, e.g., the drive for green fuels and zero-emission propulsion alone is a huge area in terms of decarbonisation, further, we contribute in terms of material efficiency across our supply chain, introduce and investigate repair and refurbishment strategies, integration of LCA with AI driven technical design, to name again only a few topics.