



INSTITUT FÜR
ENERGIETECHNIK UND
THERMODYNAMIK
Institute for Energy Systems and Thermodynamics

IEA IETS Task XVIII

Digitalization, Artificial Intelligence and Related Technologies for
Energy Efficiency and GHG Emissions Reduction in Industry

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International Energy Agency (IEA)

Technology Collaboration Programmes (TCP)

Industrial Energy-Related Technologies and Systems

- Focus on energy use in a broad range of industry sectors
- Reduce emissions, resource consumption and costs

Tasks (formerly Annexes)

Industrial
Energy-Related
Technologies
and Systems

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Digitalization, Artificial Intelligence and Related Technologies for Energy Efficiency and GHG Emissions Reduction in Industry

Phase 1: 2018 – 2020

Subtask 1 Assessment Studies

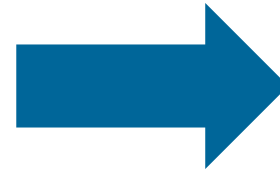
Phase 2: 2020 – 2023

Subtask 2 Methods and Applications of Digital Twins

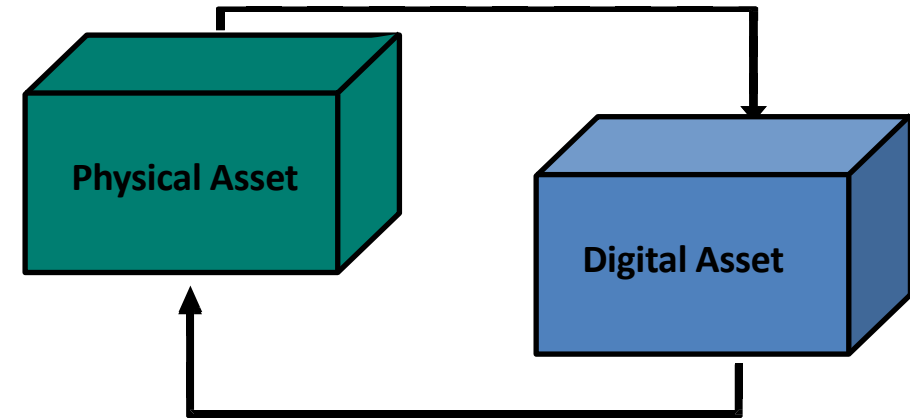
Subtask 3 Lessons learned and created values by digitalization

Subtask 4 Roadmapping the implementation of digitalization in the energy-intensive process industries

Subtask 1: Assessment Studies



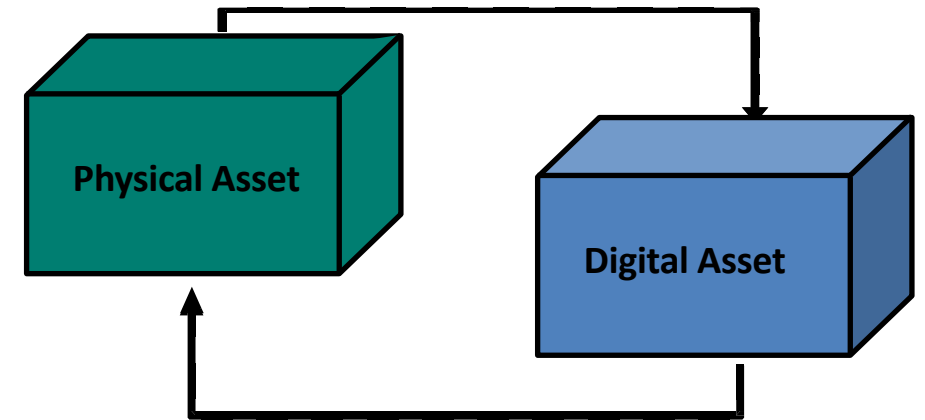
Digital twins



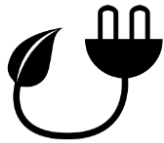
Hofmann, R. et al. (2020). Digitalization in Industry – An Austrian Perspective. Whitepaper; Bericht für den Klima- und Energiefonds. <https://www.energieforschung.at/assets/project/downloads/White-Paper-Digitalization-in-Industry.pdf>.

Digital Twins in industrial energy systems

A **digital twin** is a virtual representation of a "real world" asset that matches its physical attributes through measured values and domain knowledge.



Benefits



Process & Energy

Productivity, Efficiency, Reliability



Product

Quality, Insights



Business

Mass customization, mixed manufacturing, small-batch manufacturing



Customer

Customers service, Customized products

The benefits of digital twins are often criticized as being exaggerated – Is it all just a hype?

IEA IETS Task XVIII Subtask 2 Methods and Applications of Digital Twin

Overview of methods and applications

Analysis of the potential benefits

Creation of an international, interdisciplinary network

Co-lead



Target audience

- Innovative companies
- Technology providers
- Research institutions

22 participants from 8 countries (as of 2022)

- TU Wien, Institute for Energy Systems and Thermodynamics
- Austrian Institute of Technology
- Montanuniversität Leoben, Lehrstuhl für Energieverbundtechnik
- AEE – Institute for Sustainable Technologies



- Funded by FFG.





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