Green Factory -Towards Carbon Neutral Production (GREEF)

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Webinar

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Background

- Climate change and its management is the most significant challenge facing our society.
- Goal for a carbon-neutral Finland by 2035
- In technology industry, the means of emission reduction mostly relate to
  - electrification of processes and machines
  - improving energy and material efficiency
  - the circular economy
  - use of digital solutions
- Need for industrial R&D investments in the green and digital transition
- Environmentally friendly, low-carbon industrial production will be an increasingly important competitive factor in the international market.

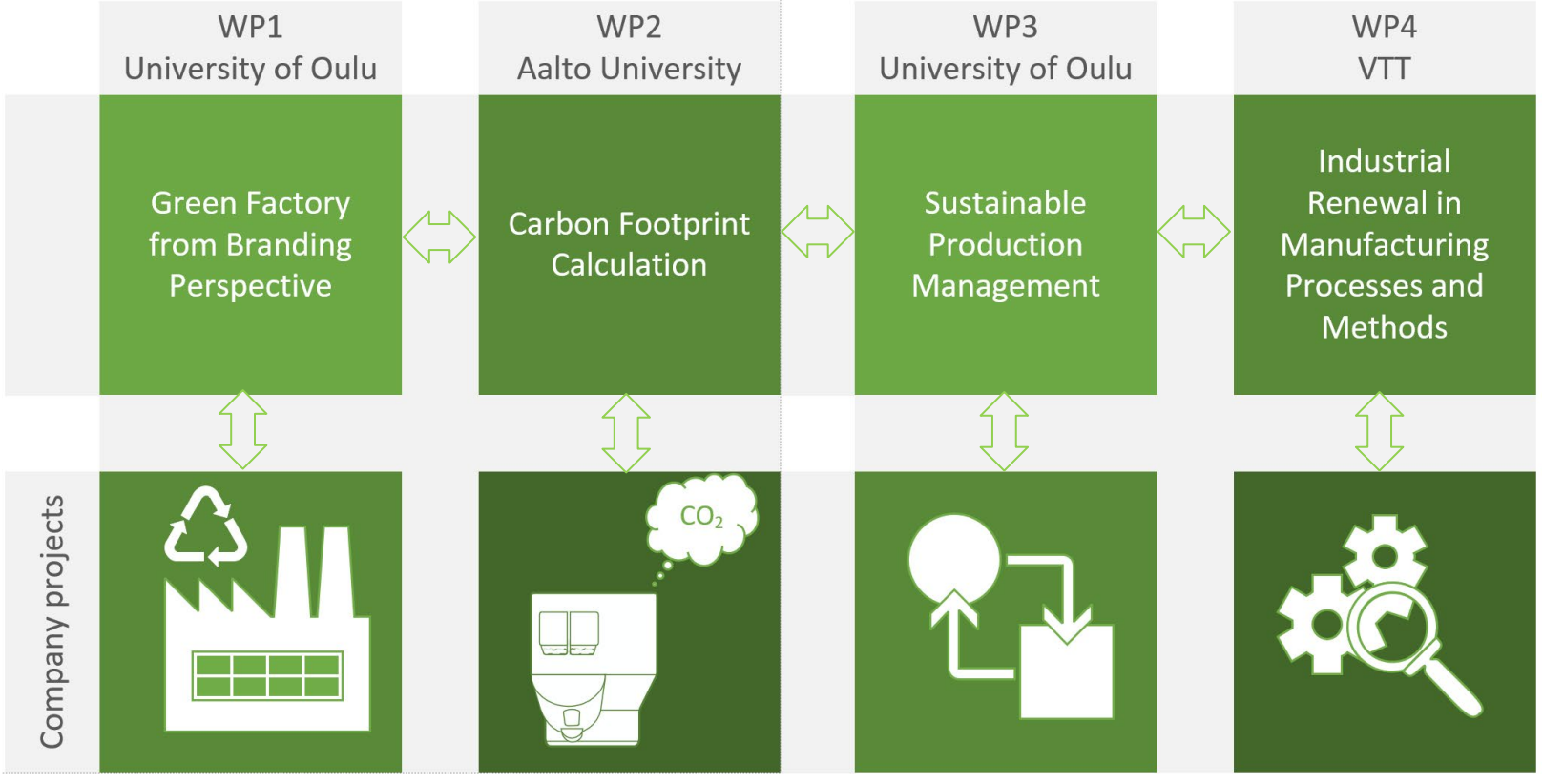
GREEF project

- Schedule: 1.9.2021 – 31.12.2023
- Total funding: 4.8 MEUR, of which Business Finland support is about half.
- GREEF overall goals:
  - To help companies in the manufacturing industry reduce the environmental impact of their operations and products.
  - To accelerate companies towards the goals of low carbon emissions and export growth.

GREEF project partners

International research organizations in collaboration

GREEF research ecosystem work packages



GREEF PUBLICATIONS

Student theses

- Matikainen, M. (2022). Lastuavan työstön energiankulutus. (Kandidaatintyö, Aalto-yliopisto). https://aaltodoc.aalto.fi/handle/123456789/116008
- Kondakov, M. (2023). Terästeollisuuden alkutuotannon ympäristövaikutukset. (Kandidaatintyö, Aalto-yliopisto). https://aaltodoc.aalto.fi/handle/123456789/123248
- Niemi, A. (2023). Uudelleenvalmistus. (Kandidaatintyö, Aalto-yliopisto). https://aaltodoc.aalto.fi/handle/123456789/123616
- Pulli, O. (2022). Ympäristöarvojen huomiointi hienokuormitus- ja tuotannonohjausjärjestelmän käyttöönotossa. (Diplomityö, Oulun yliopisto). https://jultika.oulu.fi/Record/nbnfioulu-202206152849
- Erkkonen, J. (2022). Becoming rightfully green: how industrial companies legitimate their green brands for their customers? (Master's thesis, University of Oulu). https://jultika.oulu.fi/Record/nbnfioulu-202206142769
- Kangas, M. (2023). Environmentally sustainable brand identity co-creation in an industrial context. (Master's thesis, University of Oulu). https://jultika.oulu.fi/Record/nbnfioulu-202302151156
- Ruokostenpohja, M. (2023). Sustainability in communications content: the frames of handprint in corporate communication and branding. (Master's thesis, University of Oulu). https://jultika.oulu.fi/Record/nbnfioulu-202306132428
- Silva, J. (2023). Comparative life cycle inventory of CNC machining and powder bed fusion additive manufacturing. (Master's thesis, Aalto University). https://aaltodoc.aalto.fi/handle/123456789/119451
- Alieva, E. (2023). Analysis of emissions in foundries with carbon footprint calculator. (Master's thesis, Aalto University). https://aaltodoc.aalto.fi/handle/123456789/119366
- Ahmed, T. (2023). EU carbon border adjustment mechanism and production location. (Master's thesis, Aalto University). https://aaltodoc.aalto.fi/handle/123456789/121694

Scientific publications

- Ojansivu, I., Saraniemi, S., & Erkkonen, J. (2022). Legitimating 'invisible' sustainable B2B brands in domesticated markets/networks. Presented at the 38th Industrial Marketing and Purchasing Group Conference (IMP), 30 August – 2 September 2022, Florence, Italy.
- Ojansivu, I., Saraniemi, S., Erkkonen, J., & Autio, J. (2023). Legitimating collective change in reluctant global networks. In 39th Industrial Marketing and Purchasing Group Conference (IMP), 22-25 August, Manchester UK.
- Ruokostenpohja, M., Saraniemi, S., Vatanen, S., & Väinämö, M. (2023). Carbon handprint as a tool for framing sustainability in B2B brand communications. In 39th Industrial Marketing and Purchasing Group Conference (IMP), 22 – 25 August, Manchester, UK.
- Peltokorpi, J., Vatanen, S., & Glock, C. H. (2023). Greenhouse Gas Accounting for Manufacturers. In International Conference on Flexible Automation and Intelligent Manufacturing (pp. 912-919). Cham: Springer Nature Switzerland. https://link.springer.com/chapter/10.1007/978-3-031-38165-2_105
- Ahmed, T., & Niemi, E. (2023). EU carbon border adjustment mechanism under economies of scale. In 27th International Conference on Production Research (IJPR), 23 – 28 July, Cluj Napoca, Romania.
- Reijonen, J., Silva, J., Pulli, O., Hahtonen, K., Ulkuniemi, J., Niskanen, J., Puukko, P., & Metsä-Kortelainen, S. (2023). Comparative Life Cycle Inventory of PBF Additive Manufacturing and CNC Machining. In EPMA Proceedings 2023 & EPMA Congress and exhibition, 1-4 October, Lisbon, Portugal.

In the media

- Maukonen, M. (2022). 3D-tulostuksella kestävän kehityksen mukaista kilpailuetua. Prometalli 4/2022. https://www.prometalli.fi/natiivi/3643/3d-tulostuksella-kestavan-kehityksen-mukaista-kilpailuetua
- Puukko, P., Hepo-Oja, L., & Lindqvist, M. (2023). Process Parameters Significantly Reduce Carbon Footprint. FonMag 3/2023. https://formnext.mesago.com/frankfurt/en/themes-events/fonmag/fonmag_articles/articles/delva.html
- Ruokostenpohja, M. (2023). Kädenjälki teollisuusyritysten viestinnässä ja brändissä. Oulun yliopiston blogi. https://www.oulu.fi/fi/blogit/oulu-business-school-fi/kadenjalki-teollisuusyritysten-viestinnassa-ja-brandissa
- Dang, J. (2023). Sustainable Supply Chain Management: A Shared Future. Interview conducted by Ilkka Ojansivu. Young Leaders for Sustainable Business. 23 August 2023. https://www.youngleadersforsustainablebusiness.com/post/sustainable-supply-chain-management-a-shared-future

…and more to come!

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