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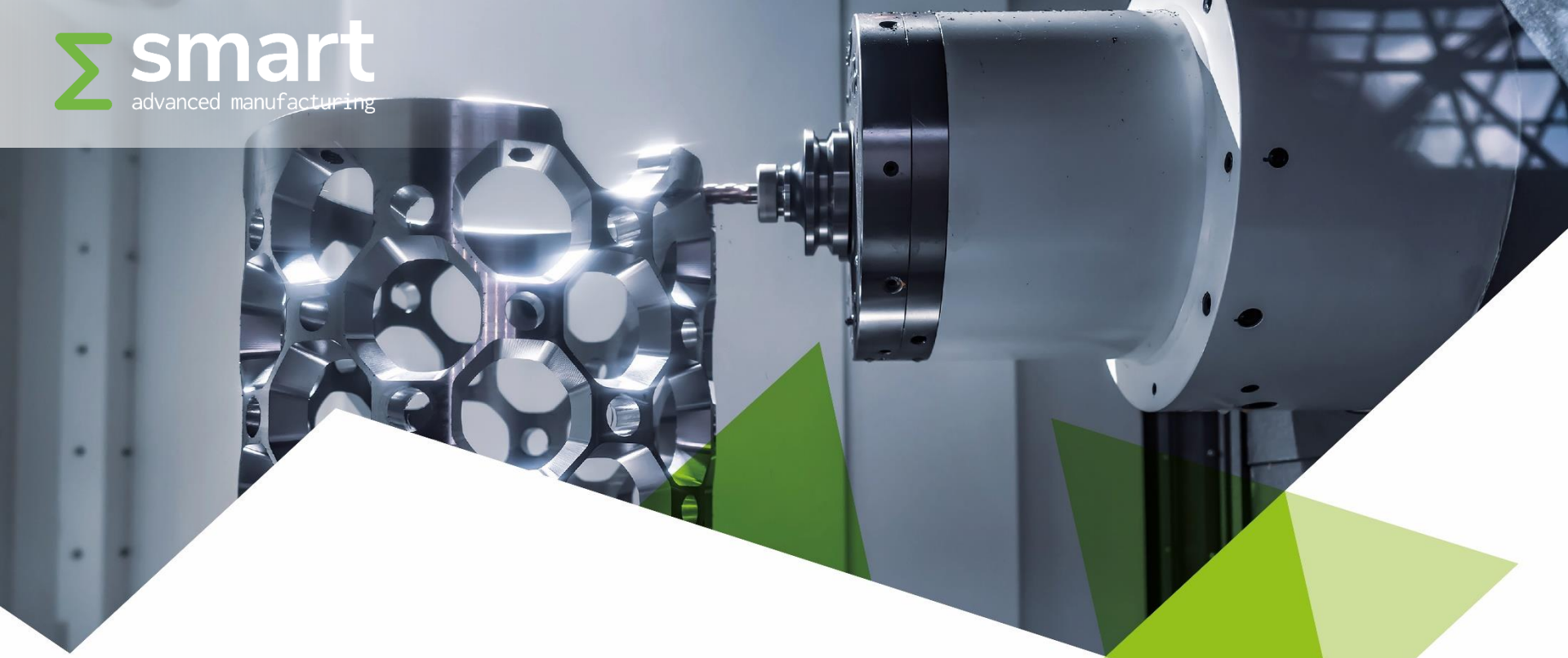

Electron Beam Additive Surface Texturing – EBAST


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ORGANISATION PROFILE

KTH Royal Institute of Technology, Department of Production Engineering, Manufacturing and Metrology Systems

KTH Royal Institute of Technology (KTH) is the largest and oldest technical university in Sweden. As a part of the Department of Production Engineering, the Division of Manufacturing and Metrology Systems (MMS) has focus on the following research areas: Precision Engineering, Metrology and Machine Tools (PEM), Circular Manufacturing Systems (CMS), and Additive Manufacturing (AM). Recent MMS work is focused on but not limited to: Functional surfaces manufacturing and metrology (e.g. abrasive or laser surface texturing), Novel multi-layered coatings for machining optimization, Modelling and simulation (e.g. FEM and CFD modelling), Integrated analytics (e.g. advanced signal processing and machine learning), Near-net shaped manufacturing of superalloy components by EBM AM Process, and Hybrid Additive Manufacturing of high-performance alloys. In developing and implementing CMS, team use a systemic approach that takes into consideration strong and mutual interactions, among business models, products design and supply chains, enabled through state-of-the-art infrastructure and innovations in information and communication technologies (ICT). The team members are carefully chosen to address the multidisciplinary characteristics of research in CMS. The CMS team besides leading one of the largest EU H2020 funded project ReCiPSS.

www.kth.se
www.iip.kth.se
www.iip.kth.se/mms

PROPOSAL INTRODUCTION (I)

Vision: main project goal
The EBAST project aims to develop and implement radically innovative and sustainable technology for improving the efficiency and the quality of texturing Electron Beam (EB) technology in mold manufacturing. The project also aims to demonstrate how the EB technology can support in reusing the molds which are traditionally melted at their end of use.

Motivation: why the project is necessary

The EB technology can reduce manual work, i.e. drastically reducing mold manufacturing lead time and eliminate the use of hazardous chemicals. The quality of the imprints on the plastic parts depends on a long row of processes in the value chain: (1) the design, the physical properties and microstructure of the steel used in molds and the fabrication quality. (2) the process of mold fabrication, (3) the process of the finish of mold surface, (4) the performance of the texturing process, (5) the design and quality of the plastic parts. (6) reuse of mold to reduce resource consumptions and associated emissions.

Content: which are the developments to be made in the project

- Producing high quality textures by using the EBAST
- Development of the EBAST technology and customized machines for mold texturing

PROPOSAL INTRODUCTION (II)

Expected outcome:

- elimination of several process steps in the execution of textures, and reducing the cycle time and cost,
- complete process automation,
- elimination of chemicals,
- high process repeatability,
- significant improvement of texturing accuracy
- demonstrating potential of reusing the molds

Impacts:

- improvement of the working environment by removing hazardous chemicals
- sustainable product development by introducing new technology
- introduce the circular manufacturing system by re-using most of the molding system
- significant reduction of the scrapped molds
- significant reduction in emissions related to mold production

Schedule: start and end dates for the project. Duration.

June 2021 – June 2024. 3 years

PARTNERS

Current Consortium: list of partners already involved in the project

KTH, Sweden
SSAB, Sweden
Sonhult Service, Sweden

Partner search: type of partner searched and countries of origin (if necessary).

Steigerwald, Germany
Mould prod, Turkey
More is needed

CONTACT INFO

Contact info: of the person coordinating the project proposal

Robert Tomkowski, PhD
Senior researcher

KTH Royal Institute of Technology
ITM | Department of Production Engineering | Manufacturing and Metrology Systems
Brinellvägen 68, SE-100 44 Stockholm, Sweden
Phone: +46-8-790 90 74, Mobile: +46-72-148 62 38
rtom@kth.se,
www.kth.se
https://www.kth.se/profile/rtom
https://orcid.org/0000-0003-3056-781X

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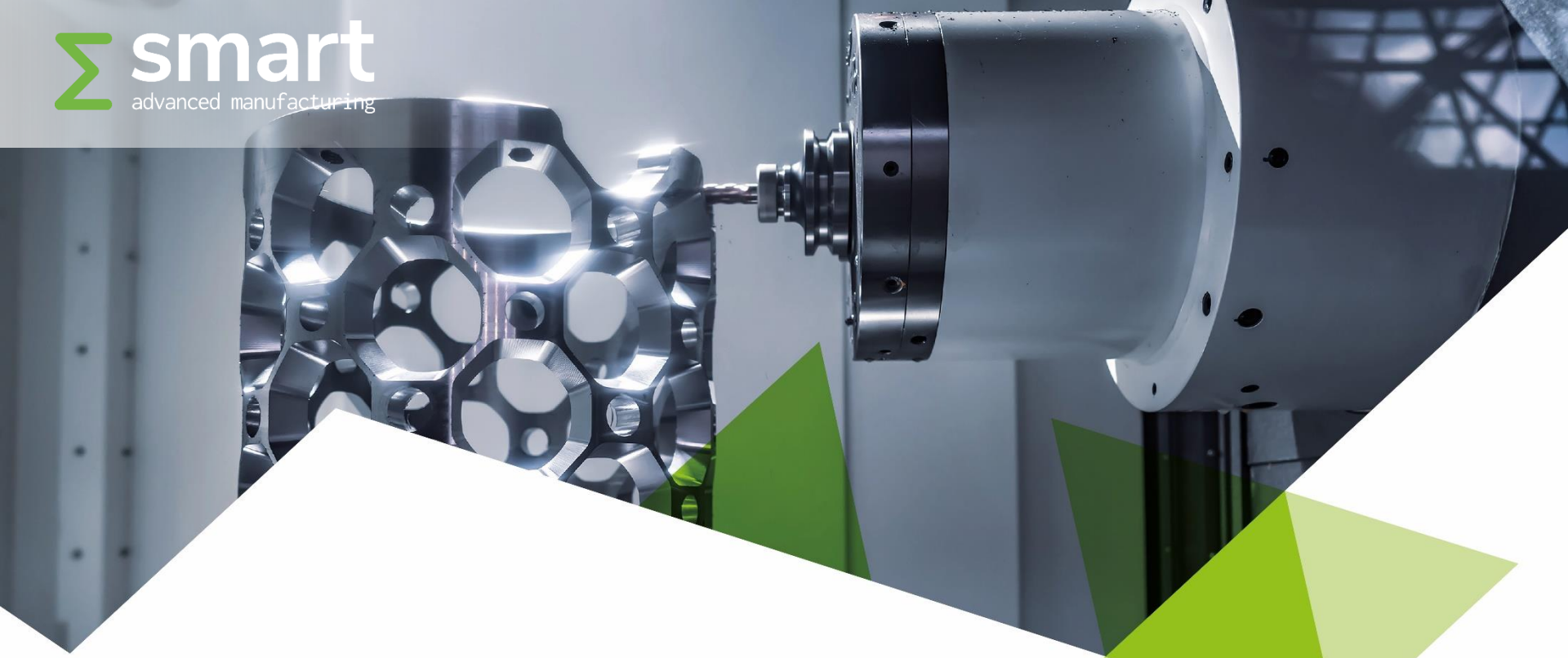

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