Cluster Conference 2023-05-10

“View on transition to next generation of powertrain production”

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Part of the Challenge Driven Innovation, step 3 - Implementation

Next Generation Powertrain Production Agenda

- Background.
- View of transition.
- Example collaboration industry and academy.
- Next step.

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Next Generation Powertrain Production

Part of the Challenge Driven Innovation, step 3 - Implementation

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Potentials – Global Targets Agenda 2030

Goal 4: Good education for all: The consortium connects relevant courses for industry and students, including for both women and men.

Goal 5: Gender equality: Gender equality perspective is a natural part of the consortium's work and of the project's solutions.

Goal 8: Decent conditions and economic growth: Internationally competitive solutions and skills are developed that attract investments, establishments and include the work environment and jobs for both women and men.

Goal 9: Sustainable industry, innovations and infrastructure: Efficient and sustainable innovation capacity in the production of electric powertrains is created.

Goal 12: Sustainable consumption and production: Products are produced sustainably and resource-efficiently and their use also has a good impact on sustainability.

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Koenigsegg Automotive
Volvo Lastvagnar
(Volvo PT Köping)
Volvo Penta
Powertrain Engineering Sweden
(Aurobay)
Xylem Water Solutions Manufacturing
Volvo Personvagnar

OEMs

Lab & innovation facilities

Volvo Personvagnar
Volvo Lastvagnar
IDC
Högskolan i Skövde
Science Park Skövde

Dahrén
AC Floby
Leax Group
Precomp Solutions
Surahammars Bruks

Suppliers

Network
Methods
Knowledge
Capabilities

Project agreement

Innovation System

RISE
Vinnova
VGR
Business Sweden

AFRY

Integrators

Universities

Högskolan i Skövde
Lunds tekniska högsko
Tekniska Högskolan i Jönköping

04/05/2023

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UDI steg 3 Vision

Contribute to a sustainable future by being a world leader in the production of future drivelines in Sweden through resource-efficient, changeable, sustainable, and circular production systems in collaboration.

Bidra till en hållbar framtid genom att vara världsledande för produktion av framtidens drivlinor genom resurseffektiva, omställningsbara, hållbara och cirkulärt anpassade produktionssystem i Sverige genom samarbete.

We need to take advantage of our strength

"The difficulty and value of manufacturing is underappreciated…."

"….the hardest thing is scaling up production, especially of new technology, it is insanely difficult…."

Elon Musk 2020

Work Packages

Collaboration
- Exchange of experience
- Chain of value
- Spinoff
- Communication

+

Working methods
- Effective change
- Spread

+

Lab development
- Testing and development

=

Series production
- Competence, exchange, construction
- Solutions

Methods to support transition

Support to efficient management
- Business models
- Supplier development
- Supply chain formation
- Transformation coaching

Support to fast transformation
- Re-configurable and changeable manufacturing concepts
- Agile methods – simplified and adapted to production development
- Virtual development

Support to efficient production
- Development of production methods
- Prototyping

Support to building knowledge
- Courses
- Knowledge sharing
- Development collaboration

Center of excellence

Electric Powertrain Production

INDUSTRIAL INNOVATION ARENA

Vision

National center of excellence for research and development of production processes for electric powertrains within ASSAR.

Mission

Provide an arena for production processes research and development collaboration between OEMs, academic partners, and component suppliers.

Current and future focus areas

- Stators
- Rotors
- Inverters
- Transmissions
- Complete electric machines
- Batteries and electric energy storage systems

idc industrial development center

1977 UNIVERSITY OF SKÖVDE

SCIENCE PARK SKÖVDE

ASSAR lab

A knowledge center

04/05/2023

Next Generation Powertrain Production - Vinnova UDI
Step 3

Next Generation Powertrain Production View on transition

- Challenging to include Swedish companies into the new value chains. Traditional procurement requirements are such as long-term financial strength, already a supplier, different customers, investments, hight volume capability and competitive price.
- Collaboration in the value chains is an opportunity.
- The required value chain is not only Swedish, but an opportunity also to initiate for instance green fields.
- In addition, there is a lack of electrical sheet and light weight casting capabilities, in volume, identified in Sweden.
- Lab facility is central for production process development. There is an opportunity to share capabilities.
- Size of investments needed in production infra structure is in general exceedingly high for new production processes.

Next Generation Powertrain Production View on transition

- Collaboration in network is an opportunity. When collaborating, there is a need of being in phase between the industrial parties and to work agile. Sharing is caring.
- For collaboration, to focus upon production processes, technologies, and methods is feasible, not on products, which often have IP restricted information.
- Continued competence built up is vital. Competence mapping and development takes time, start well in time.
- Power electronics, competence built up and scope for the value chain needs focus.
- Production process development of diverse types of e-machines, powertrains, needs focus.
- Speed in the transition is important, prioritization of resources required.

Example collaboration industry and academy

UNIVERSITY OF SKÖVDE

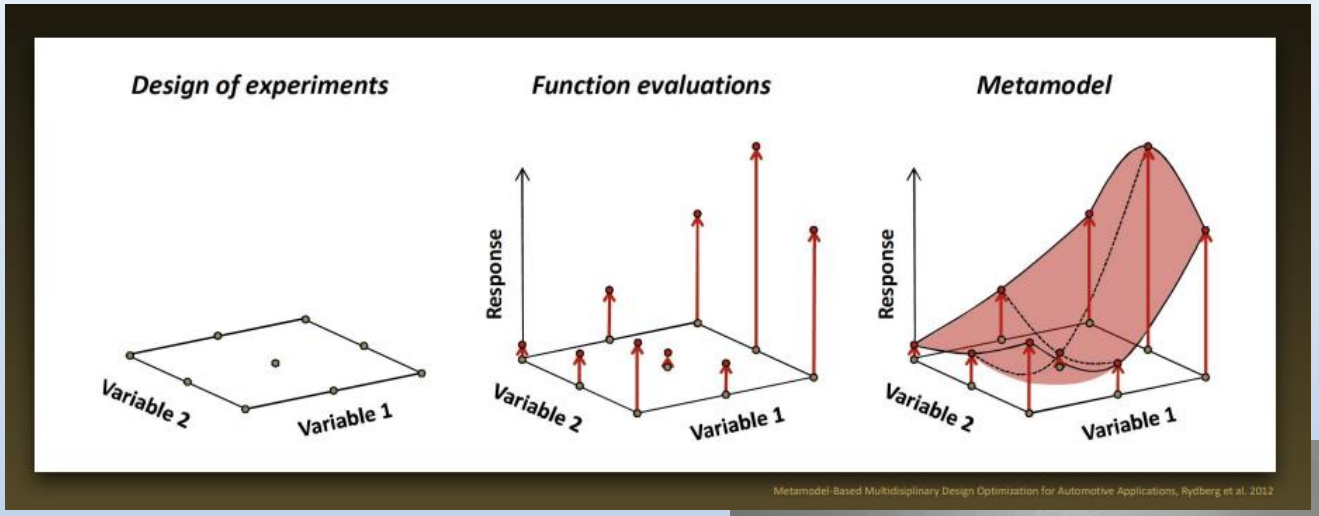
ASSAR Skövde

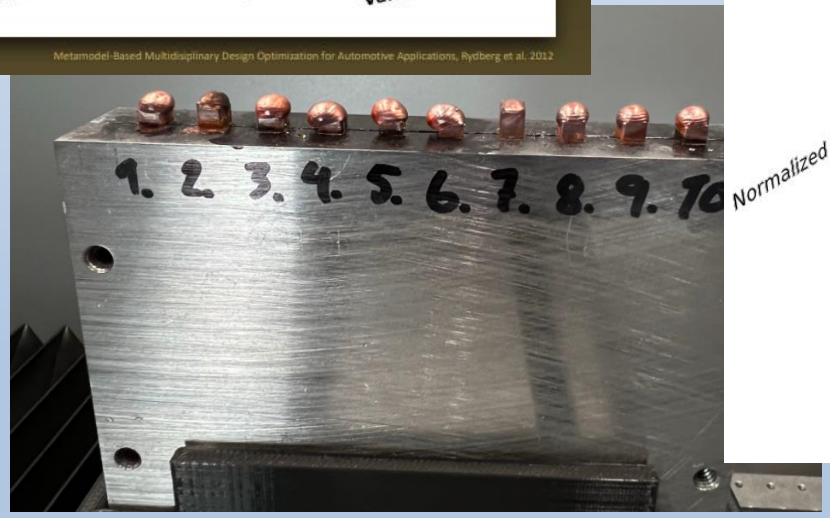

VOLVO
How to transform - All of us will be wrong

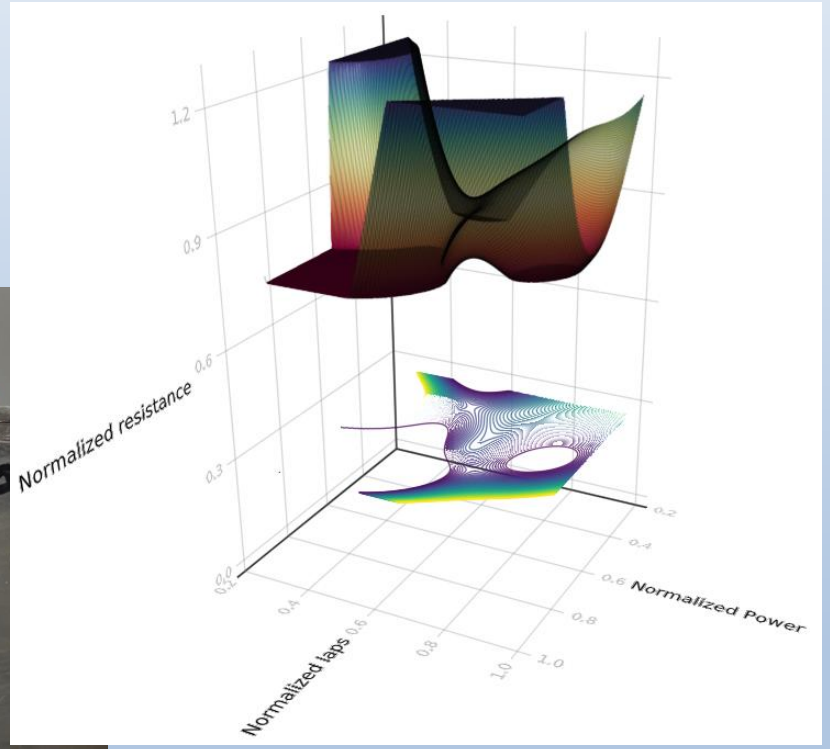
How to transform – All of us will be wrong

We need diversity

Development of laser welding parameters
(Power and feeding)

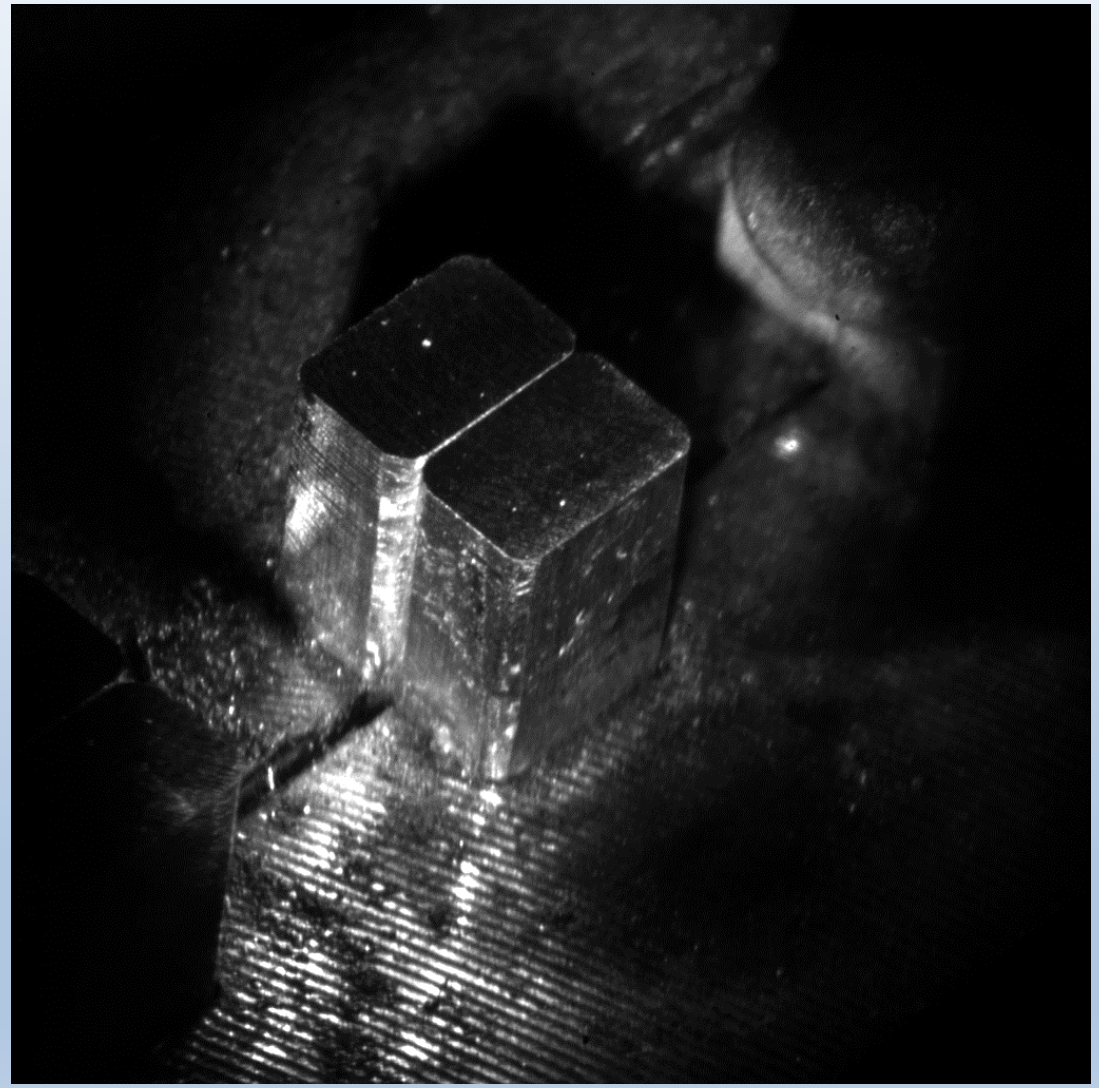






Hairpin welding – high speed video

Test 2:
P = 6000W
v = 1000mm/s
n = 16 rep
3x3mm ellipse



CT-scanning - weld porosity analysis

Next Generation Powertrain Production Next step

- End conference for the Vinnova project at ASSAR in Skövde tomorrow – learn more.
- The network will continue.
- The ASSAR lab environment used in continuation and needs to be amended.
- The final project report to be issued in December 2023.

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Thank you for being a part of today´s seminar!

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