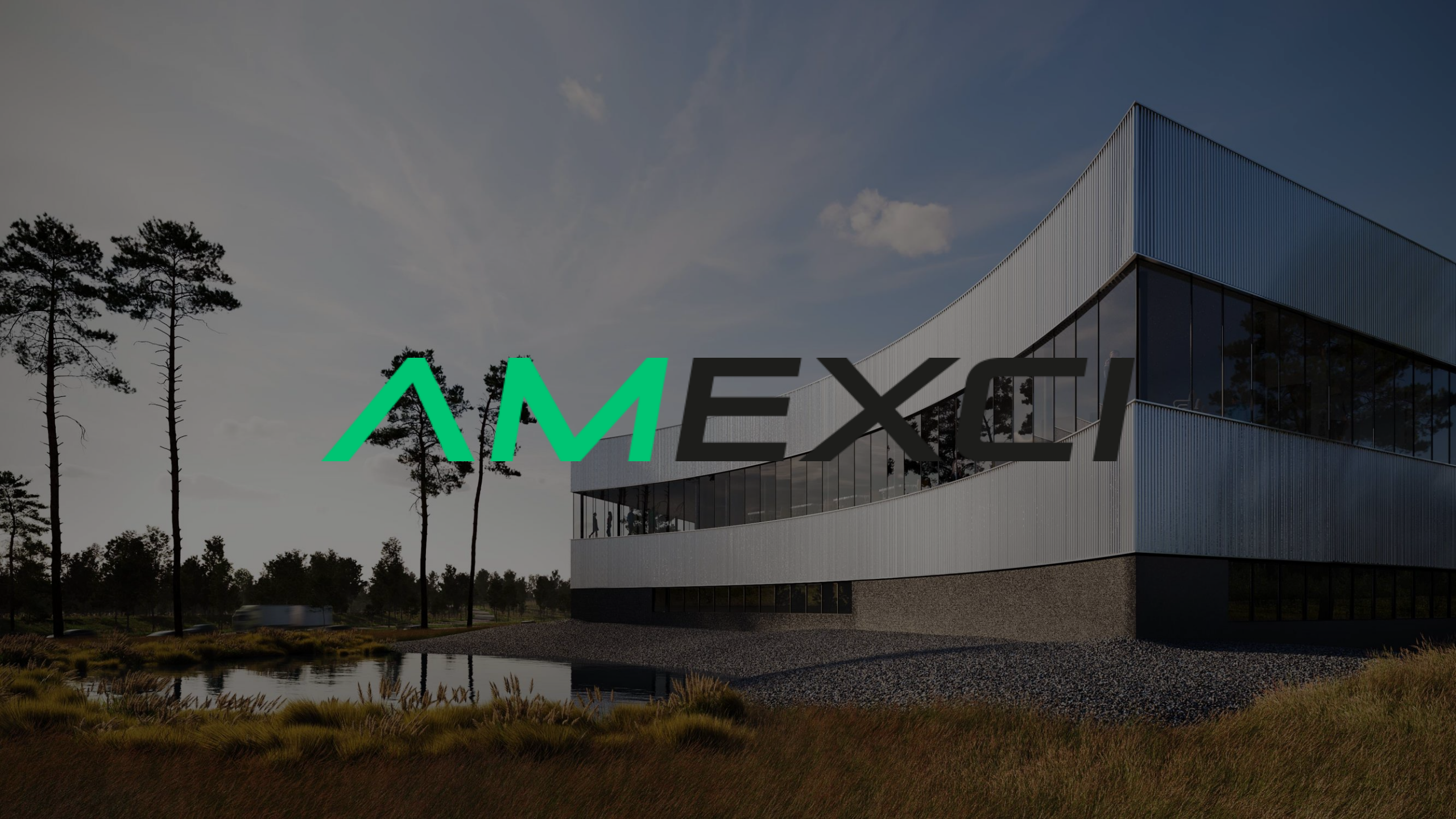


AMEXCI



A modern building with a curved facade and large glass windows, situated in a landscape with trees and a body of water. The building has a dark, possibly metallic or stone, base and upper sections, with a large glass section in the middle. The landscape includes tall pine trees on the left, a body of water in the foreground, and a grassy area. The sky is dark with some clouds.

PROCESS DEVELOPMENT TOGETHER WITH FMT

Johannes Karjalainen 28.05.2024

FOUNDING STORY



MARCUS
WALLENBERG



Electrolux



SCANIA

FAM Höganäs



Husqvarna Group



SAAB

SKF®

WÄRTSILÄ



storaenso

ERICSSON



AMEXCI IN THE NORDICS

KARLSKOGA



EMPLOYEES: 26

TAMPERE



EMPLOYEES: 4



AMEXCI'S OFFERING

RESEARCH

- Single company projects
- Multi company projects
- Public funded projects
- Internal R&D

“THE WHAT’S NEXT”

ACADEMY

- Training and Education
- Tech & ECO evaluation
- Business Models
- Development Projects

“THE WHY”

PRODUCTION

- Part & Prod Design
- Process Optimization
- Prototyping
- Serial Manufacturing

“THE HOW”

AMEXCI'S OFFERING

RESEARCH

- Single company projects
- Multi company projects
- Public funded projects
- Internal R&D

“THE WHAT’S NEXT”

ACADEMY

- Training and Education
- Tech & ECO evaluation
- Business Models
- Development Projects

“THE WHY”

PRODUCTION

- Part & Prod Design
- Process Optimization
- Prototyping
- Serial Manufacturing

“THE HOW”



PRODUCTION

PRODUCTION

In-house “End to end” production, from design to final part.

Design

Optimization

3D Printing

Heat Treatment

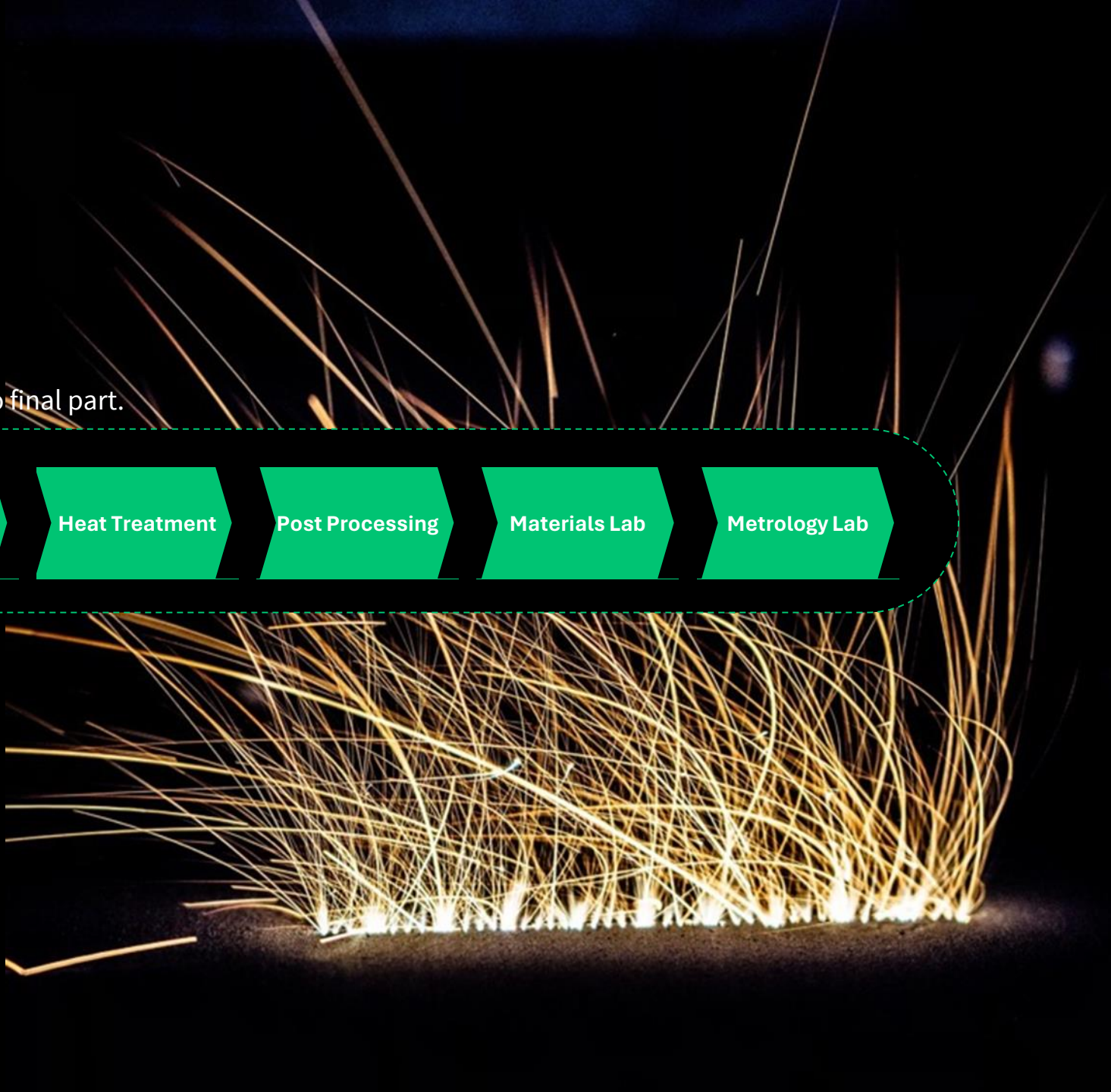
Post Processing

Materials Lab

Metrology Lab

Production certified for:

- AS9100D (Aero, Space & Defence)
- IATF16949 (Automotive)
- ISO14001 (Environmental)
- ISO17025 (Materials Laboratory)



PRODUCTION FACILITY



PRODUCTION HALL



MACHINE CELLS

HOW BIG CAN WE GO?



- 1-2 Lasers
- 250 x 250 x 300 mm
- IN718, 316L, Hast X, AlSi10Mg, Ti64 Gr5

- 4 Lasers
- 500 x 280 x 365 mm
- AlSi10Mg, Ti64 Gr5

- 12 Lasers
- 600 x 600 x 600 mm
- AlSi10Mg



QUALITY

MATERIAL PRODUCTION

- Traditional vs Additive Manufacturing
- Material certificate **EN 10204, type 3.1**
- **Full traceability** always by default
- Own database is mandatory

MATERIALS LABORATORY



MICROSCOPY



SAMPLE PREP



MECH TESTING

AM & FATIGUE



- AM materials have a unique microstructure
- Different material conditions within a component
 - Vertical
 - Horizontal
 - 45 deg
 - Machined vs as-printed
- AM FEA calculation doesn't differentiate from traditional FEA

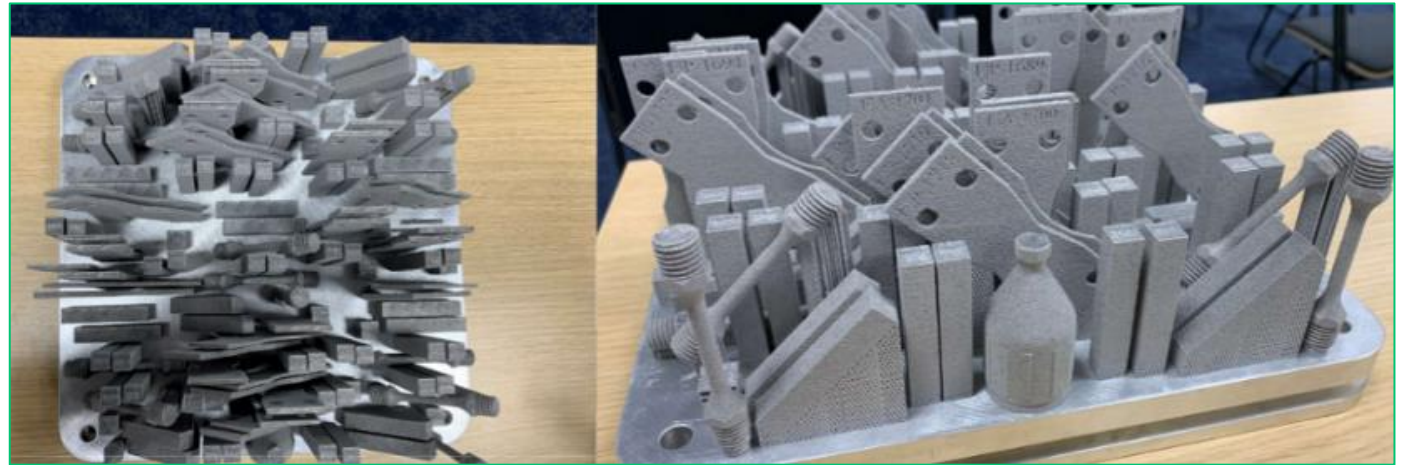
Know your material and it's straightforward!

FAME DREAMS

- Creating a large material database; up to 10k LPBF test specimen
 - Finnish AM service providers manufacture test specimen
 - University of Oulu conducts mechanical testing
 - University of Turku analyzes powder from each run
- Mechanical tests include:
 - Axial fatigue
 - Bending fatigue
 - Impact toughness
 - Tensile test
 - Microstructure analysis

FAME

Finnish Additive Manufacturing Ecosystem



HEAT TREATMENTS



316L

650°C

900°C

1150°C

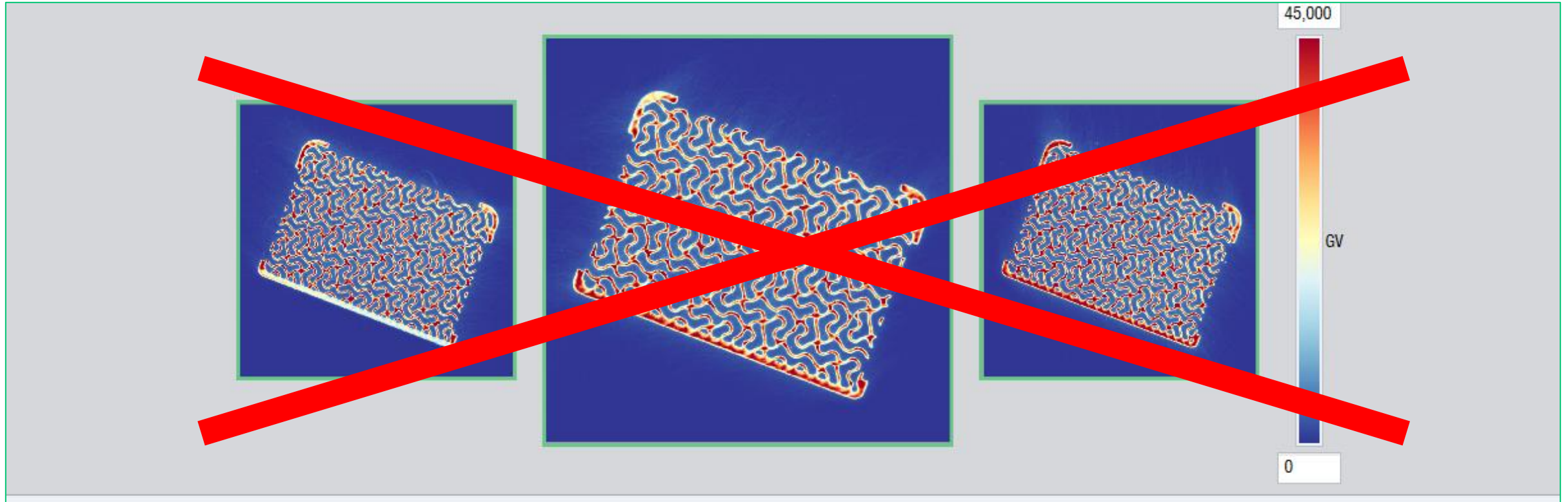
IN718

1150°C → 1060°C

91% → 35%

....?

GEOMETRY DEPENDANT PROPERTIES



NEW WAY OF WORKING TO BE VALIDATED

QUESTIONS?

Contact:

Johannes Karjalainen

Managing Director

Johannes.Karjalainen@amexci.com

+358405490943

