

Academy – Industry Collaboration at University West, Sweden

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Outline

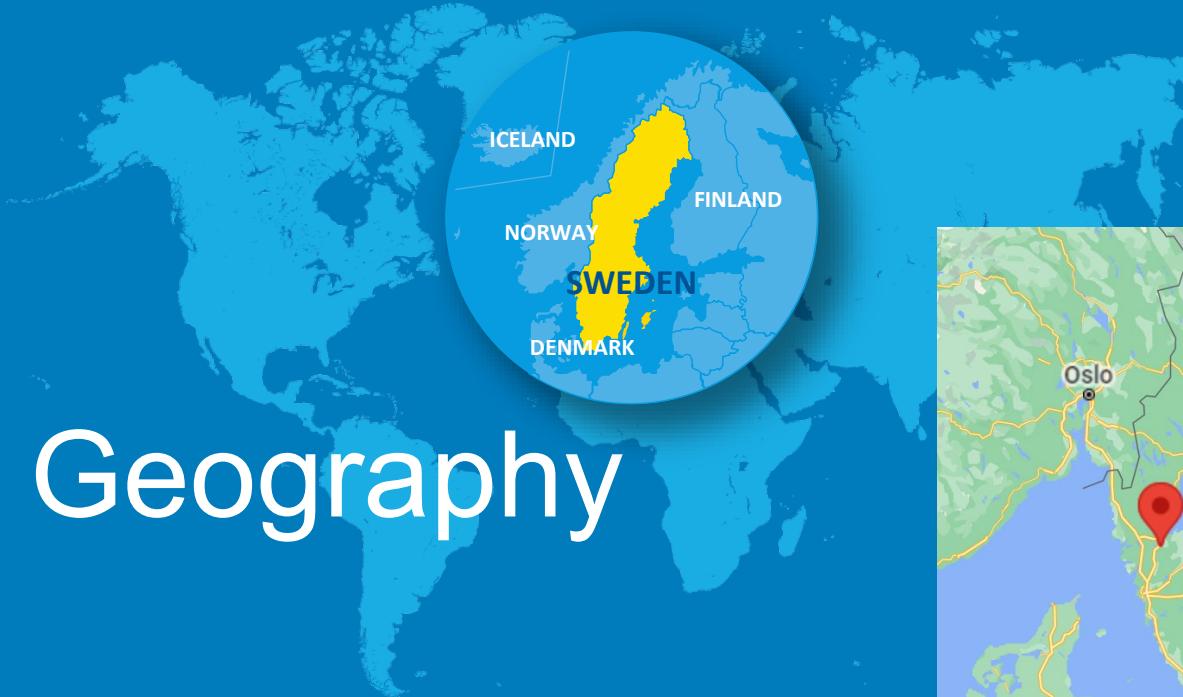
- Introduction to University West
- Research Centre PTC
- Student mobility – Dept. of Engineering Science



About University West

UNIVERSITY WEST

Geography



UNIVERSITY WEST



Ranked 3rd most innovative
country in the world!

Source: Global Innovation Index 2022

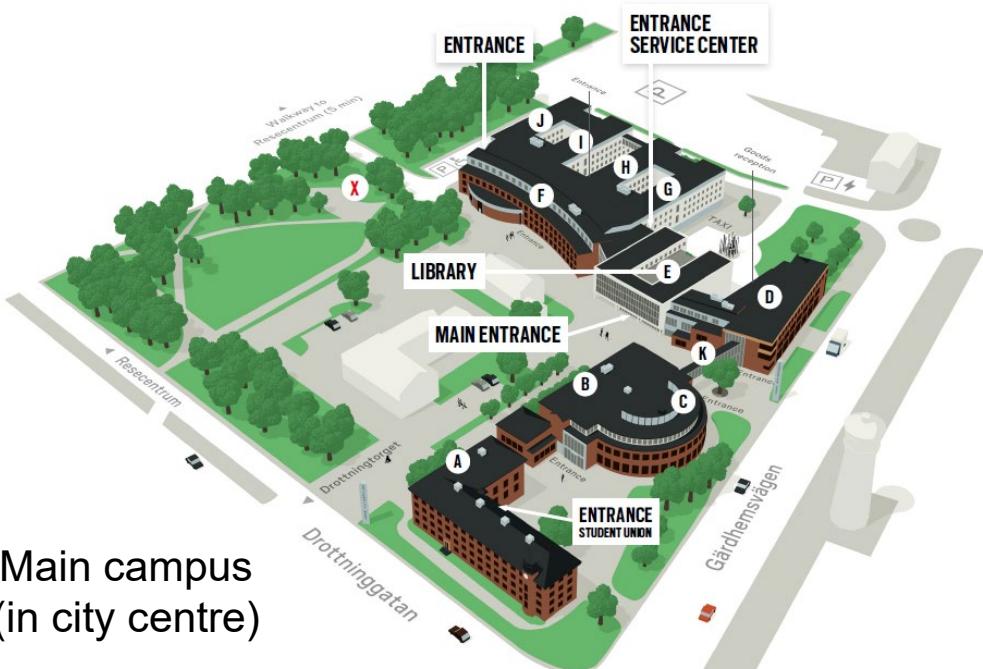




University West

- Located in Trollhättan, Sweden (close to Gothenburg, 2nd biggest city in Sweden)
- Founded in 1990
- Government funded

University West



Main campus
(in city centre)



Production Technology Centre
(PTC)



University West and Trollhättan

Our campus is located right in the center of the city Trollhättan close to a beautiful natural land-scape -The Göta river and its great waterfalls are within walking distance of the center.

The city, with its approximately 60,000 inhabitants, is a well-known destination in the south central Sweden, attracting thousands of visitors every year.

Trollhättan is located a 35-minute train ride from Gothenburg, the second largest city in Sweden.



Departments



Business, Economics & IT



Engineering Science



Health Sciences



Social & Behavioural Studies

Department of Engineering Science



- Around 150 employees consisting of nearly 20 professors, 15 associate professors, and 20 PhD students
- Bachelor programs in Mechanical Engineering, Industrial Engineering, Electrical Engineering and Computer Engineering
- Master programs in Manufacturing Engineering, Robotics & Automation, AI and Automation, Operations Management, Welding Technology, Cybersecurity and Electromechanical Vehicle Engineering
- PhD program in Production Technology
- Strong focus on digitalisation and internationalisation

Primus: KK-Environment 2018 – 2027

One of the few universities in Sweden that receives long-term multi-millionth support for ten years from the Knowledge Foundation to build a strategically complete academic environment

Vision:

Primus is an **internationally recognized** and **nationally leading** research environment in **production technology** and **work-integrated learning** that contributes to **industrial sustainable development** and growth.



UNIVERSITY WEST Trollhättan



Primus's core areas

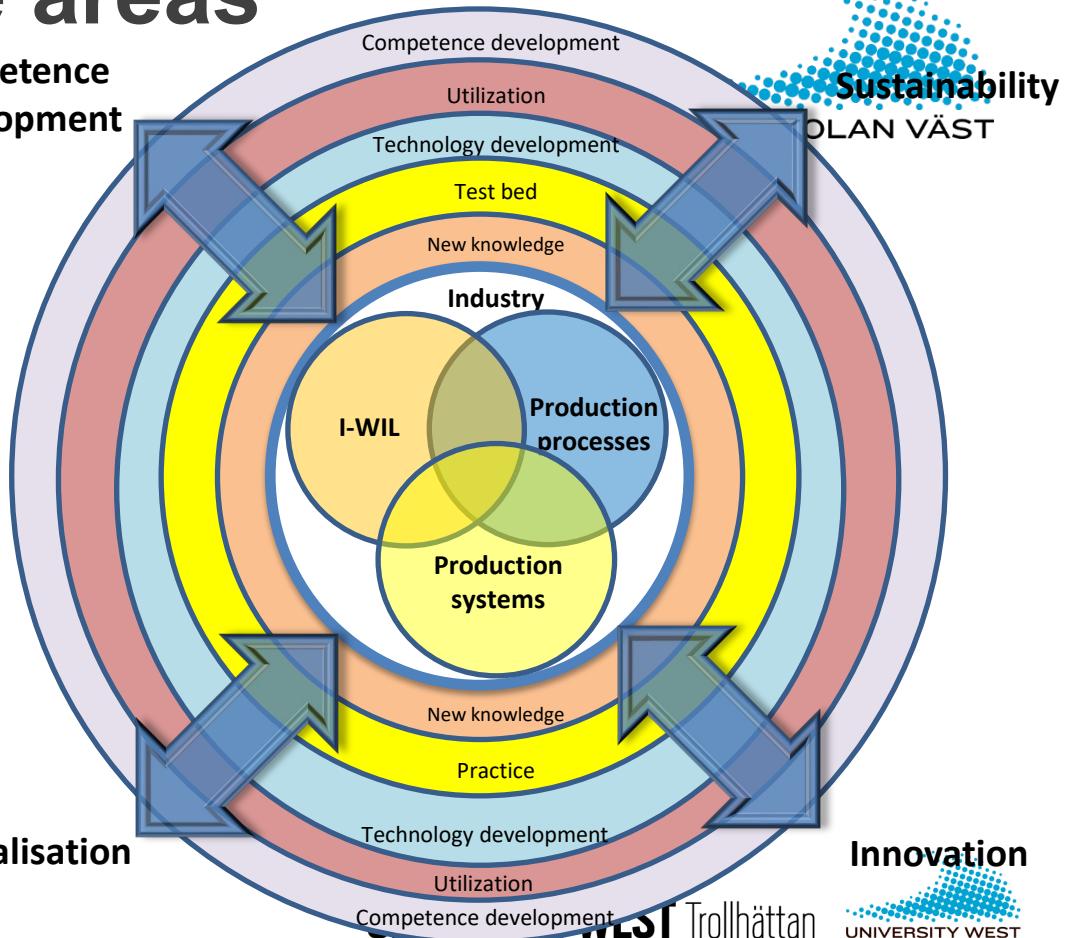
- Production processes
- Production systems
- Industrial Work Integrated Learning – I-WIL

Competence development

Digitalisation

WST Trollhättan
UNIVERSITY WEST

Innovation
Sustainability
OLAN VÄST





Production Technology Centre

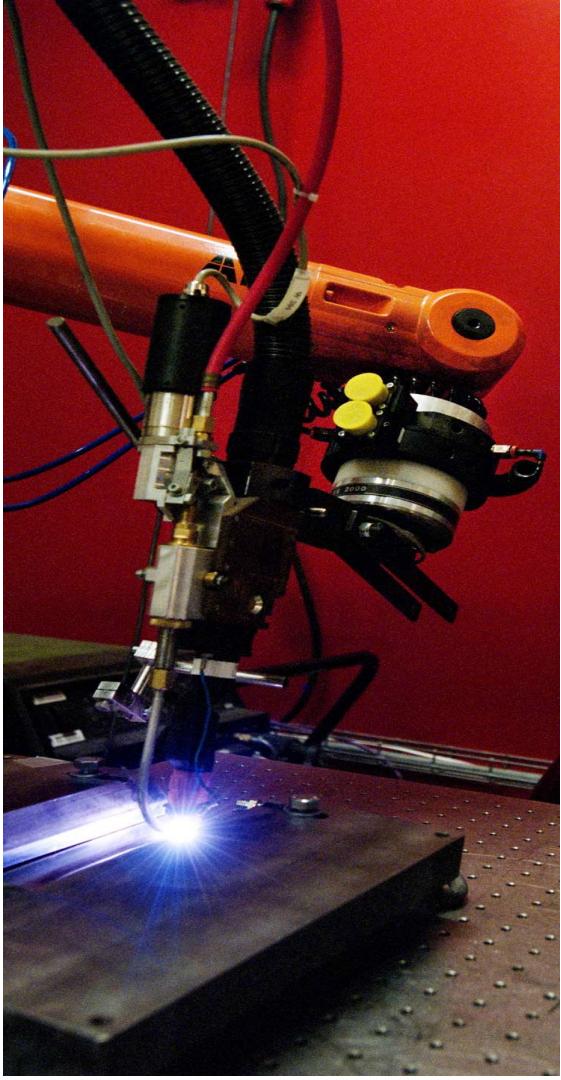
Sweden's best equipped production technology research and innovation centre
- Facilitate collaborative R&D between academia and business



INNOVATUM
TEKNIKPARK

UNIVERSITY WEST Trollhättan





Thematic Research Areas

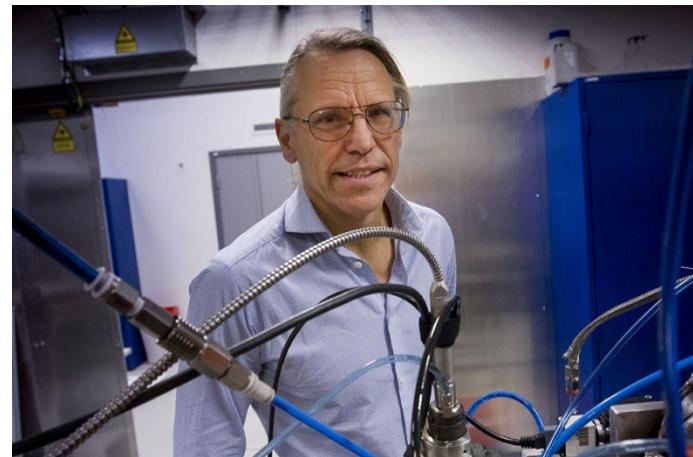
- Metal Additive Manufacturing (powder bed fusion)
- Thermal Spray
- Welding and Welding-based AM
- AI & Flexible Automation
- Simulation, Control and NDE

Research Team at PTC

A continuously growing group

- more than 80 people from all over the world
- more than 50 collaboration projects with several industrial partners

Most of the projects are externally funded by Swedish and EU Research Foundations and performed in close collaboration with industry



Prof. Per Nylén
Head of Department and Research activities

Web page: www.hv.se/en/research/production-technology

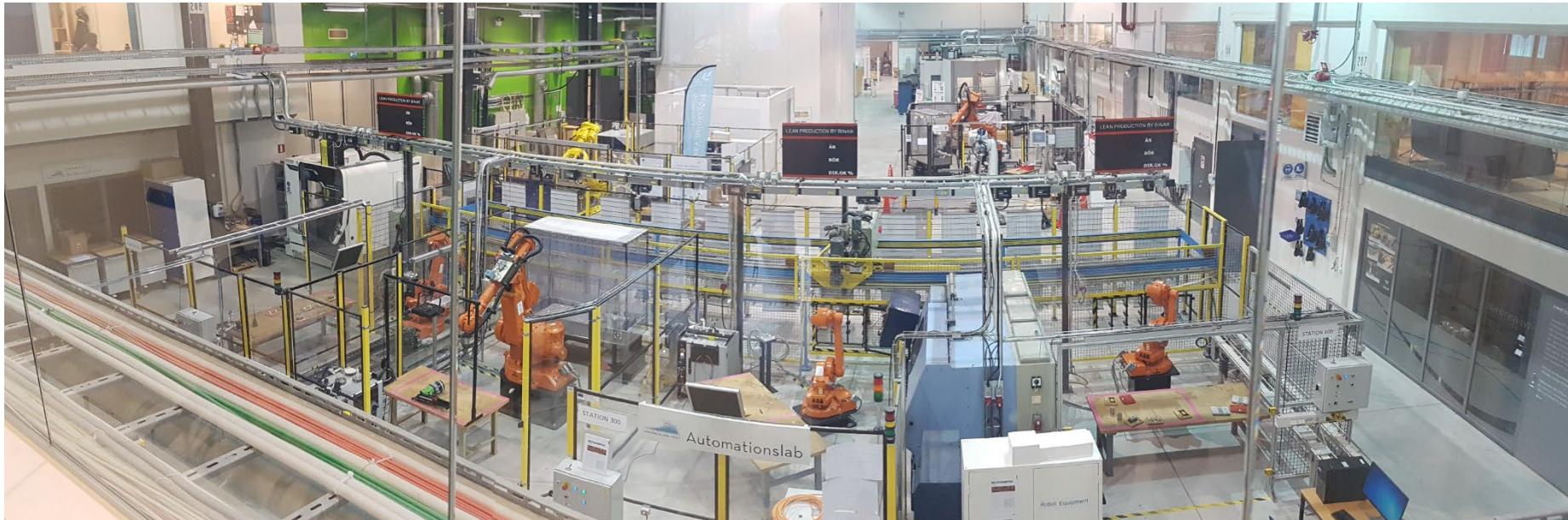
Video showing PTC: <https://youtu.be/5BjGsmeEdnc>

Strong industrial linkages

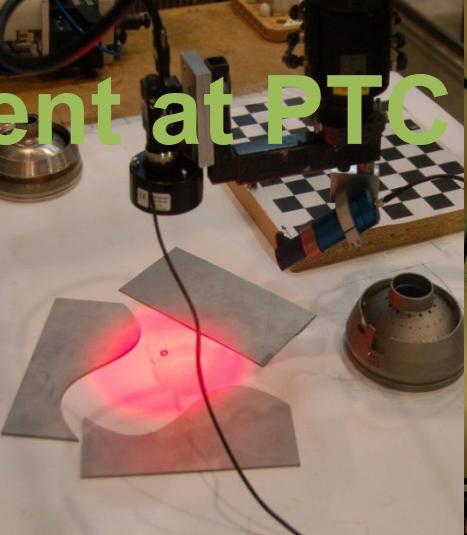
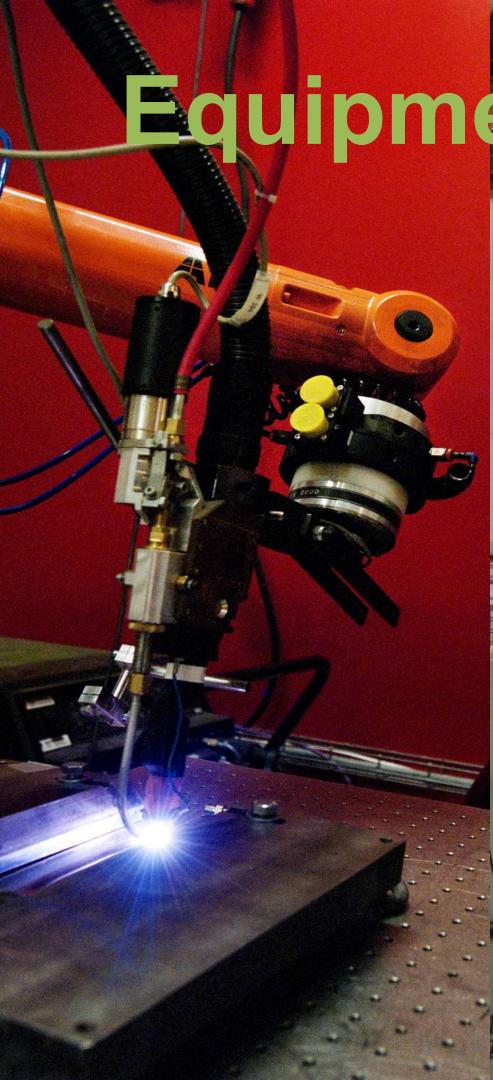
Wide range of sophisticated facilities and diverse expertise provides an ideal foundation to implement varied industry-relevant projects

Partial list of industrial collaborators	
GKN Aerospace	AB Volvo
Siemens Energy	Swerea Group
Sandvik	Hoganas AB
Arcam	Oerlikon Metco
Scania	Seco Tools
Treibacher Industries AG	ABB Västerås
Metalock	MH Engineering
Alfa Laval	TWI
Volvo Cars	Midroc

Equipment at PTC

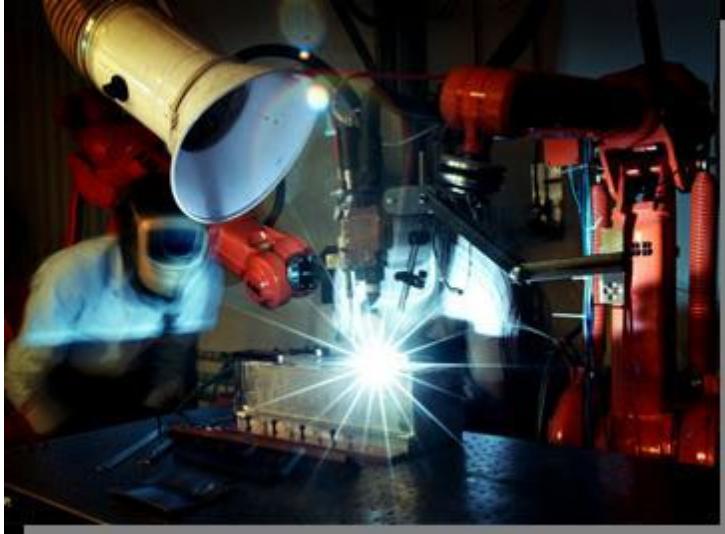


Equipment at PTC

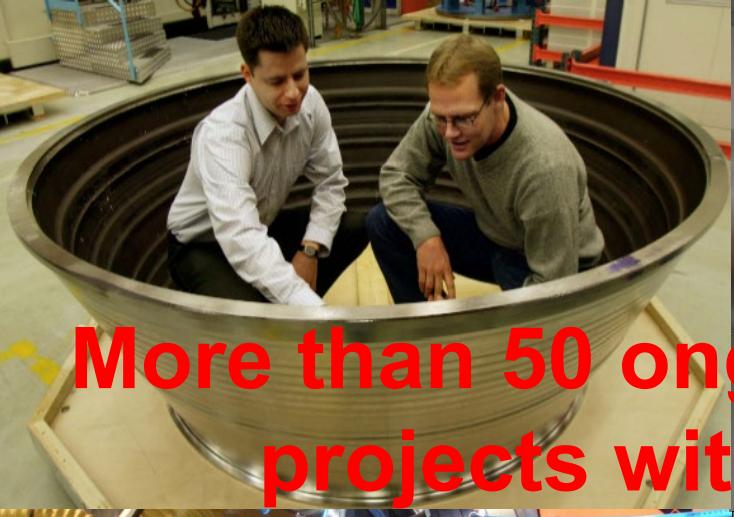


Laboratory Resources

- EBM Additive manufacturing – (Arcam AX2)
- Gleeble (Gleeble 3800) - physical simulation of processes
- Robotised laser metal deposition
- X-Ray Computed Tomography (XCT)
- Automation cell
- Robotised TIG, MAG, MIG, plasma welding
- Thermal spray plasma, HVAF, wire-arc and flame spraying
- Parallel Computer cluster with advanced computational software
- CCD-cameras for temperature and strain field measurements
- Material and characterisation lab





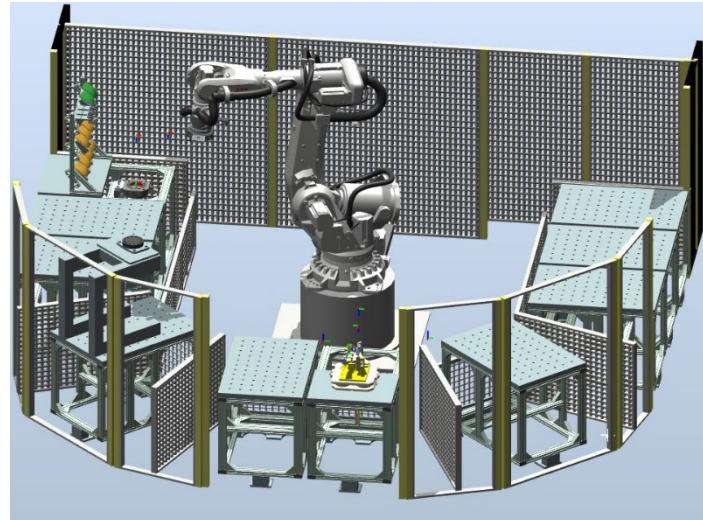


Examples of projects within Robotics and Automation

Humans in automated systems



Human-robot collaboration



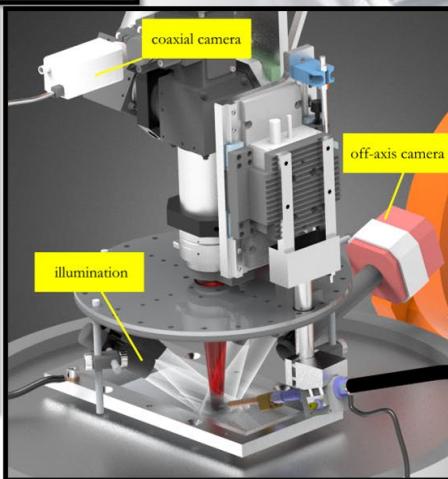
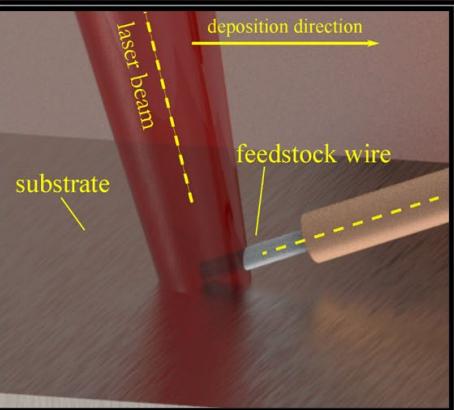
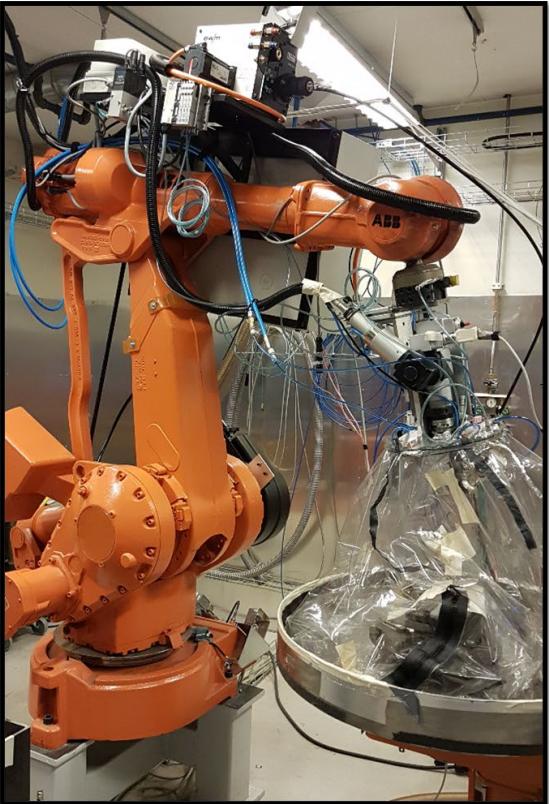
Plug and Produce

Examples of projects within Manufacturing

Thermal barrier coating (TBC) systems for gas turbine applications

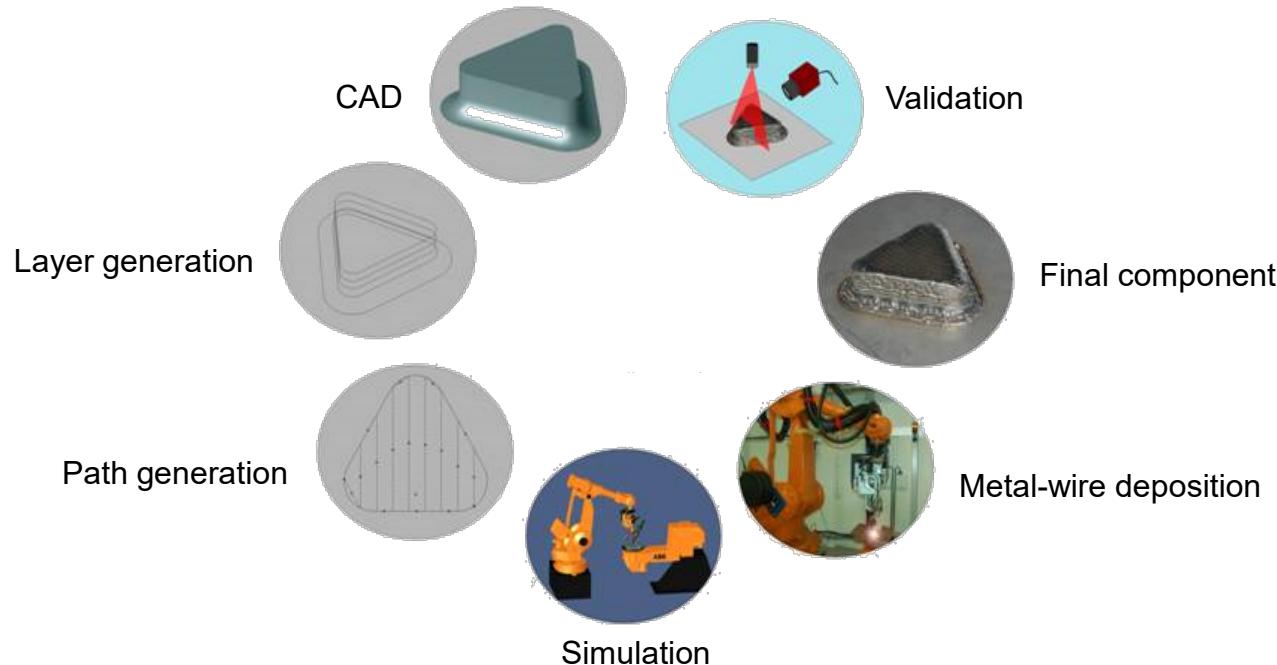


Laser Beam Additive Manufacturing with wire (LBAMw)

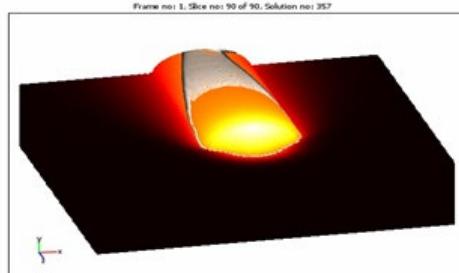


Examples of projects within Manufacturing

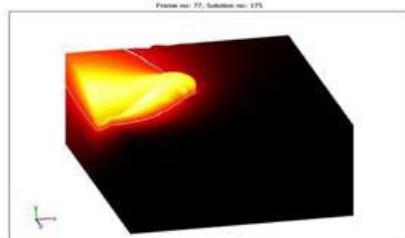
Sensor-based control in additive manufacturing



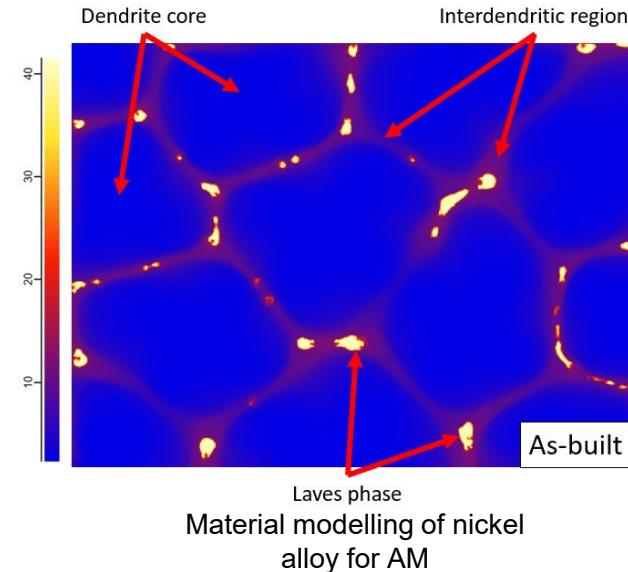
Examples of projects within Manufacturing Simulation based studies



Multipass bead-on-plate



Overflowing weld pool



Video about industry collaboration at PTC

Henrik Runnemalm,
Head of Research,
GKN Aerospace



https://www.youtube.com/watch?v=55_QHi7icb0

UNIVERSITY WEST Trollhättan





Welcome to Trollhättan, Sweden!