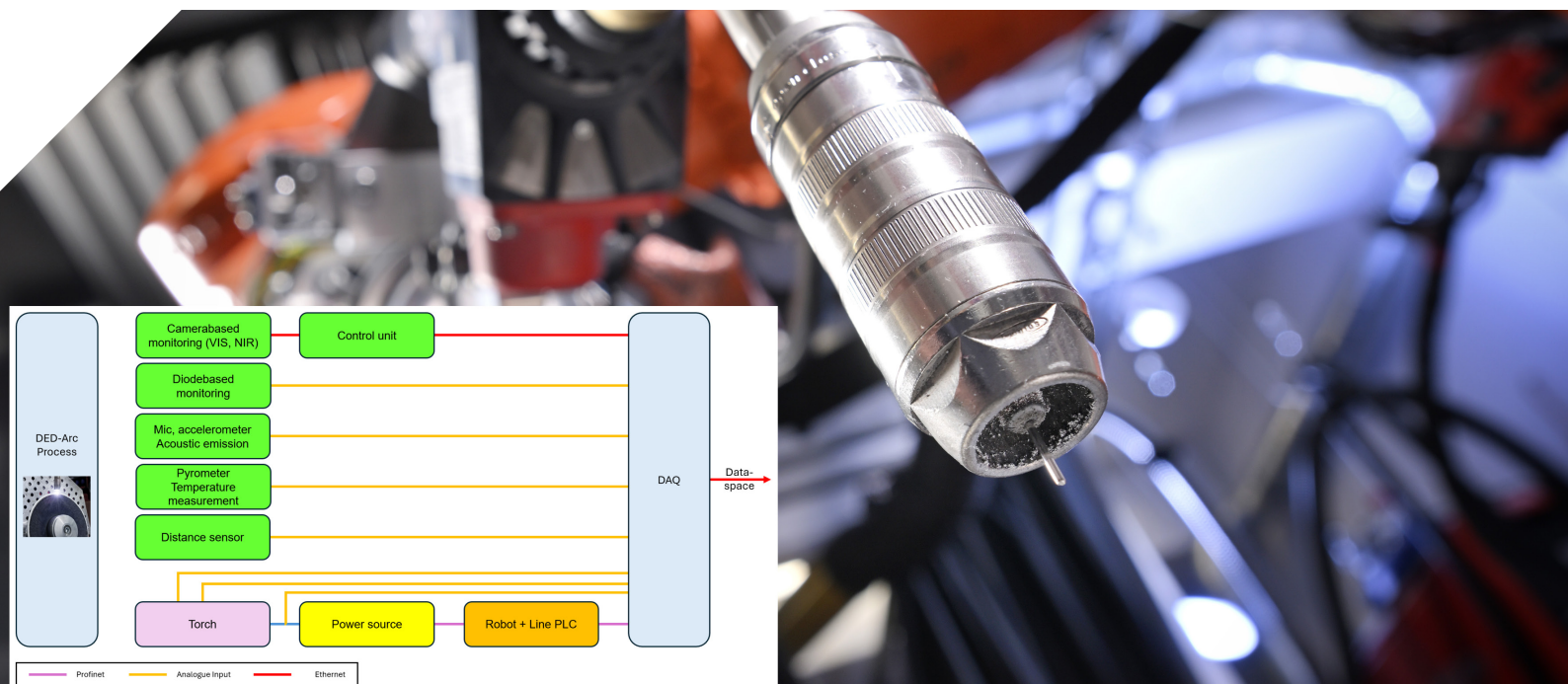




WIRE-BASED ADDITIVE MANUFACTURING (WAM) - SENSOR TECHNOLOGY AND DIGITALIZATION

OUR SERVICES

- Selection of suitable sensor technology for your application
- Faster process development and optimization
- Documentation of the construction process
- Quality control: detection of anomalies
- Immediate system shutdown in the event of process irregularities
- Predictive maintenance
- Process control/automation
- Creation of a digital footprint
- Basis for ML/AI and AR/VR-based advisory systems for operators and service personnel

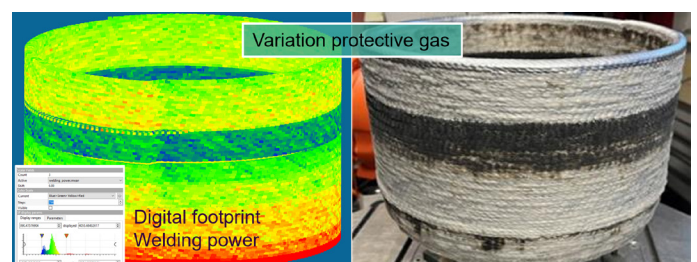
Data acquisition

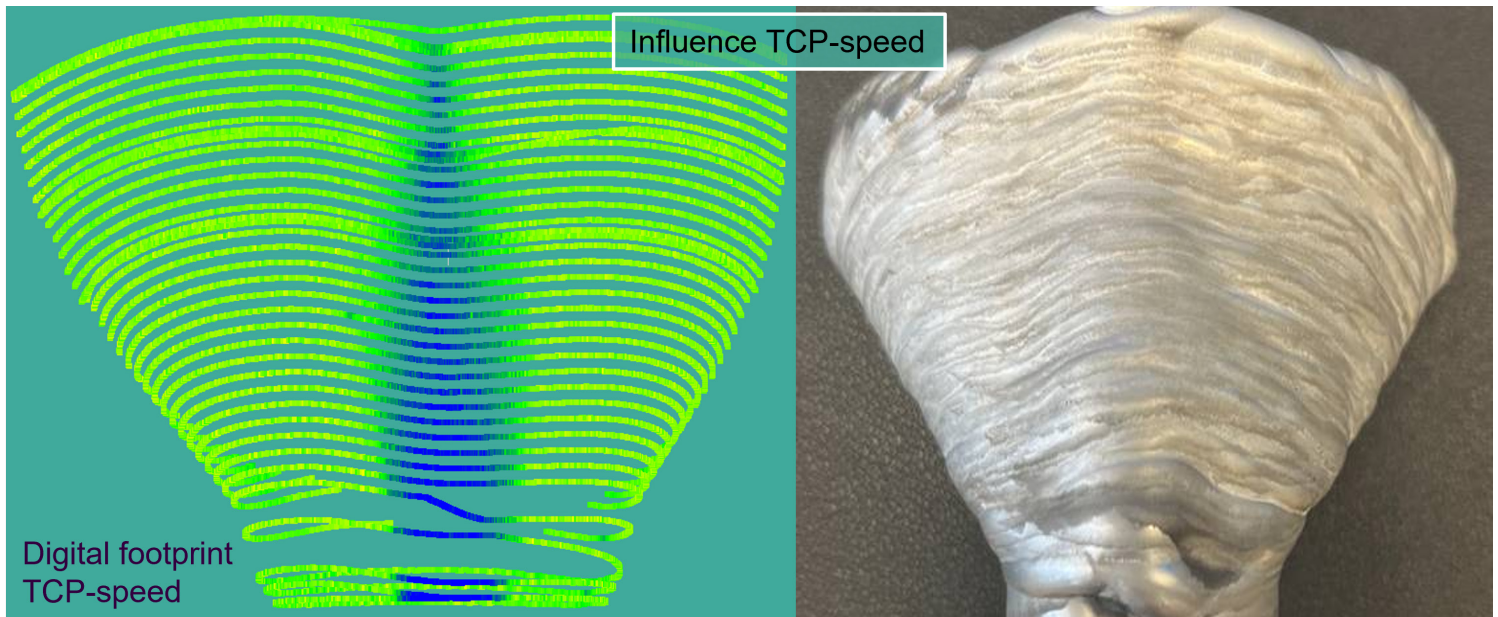
- Robot (kinematics)
- Power source (current, voltage, wire feed, etc.)
- Energy data of the system (LCA analysis)
- Process parameters
- Sensor data
 - » Camera-based: e.g. Fronius ArcView2
 - » Diode-based:
 - » plasmo fastprocessobserver (nLIGHT)
 - » Fast current, voltage, and wire feed measurement (LKR)
 - » Acoustic: structure-borne sound, microphones
 - » Thermal: pyrometer, PT100
 - » Distance sensors: 1D and 3D

POSSIBILITIES

Fully digitized WAM laboratory

- 6-axis robot and 2-axis rotary tilt table (KUKA/ABB) and glovebox
- 6-component inline gas mixer
- Component dimensions up to 1,500 mm





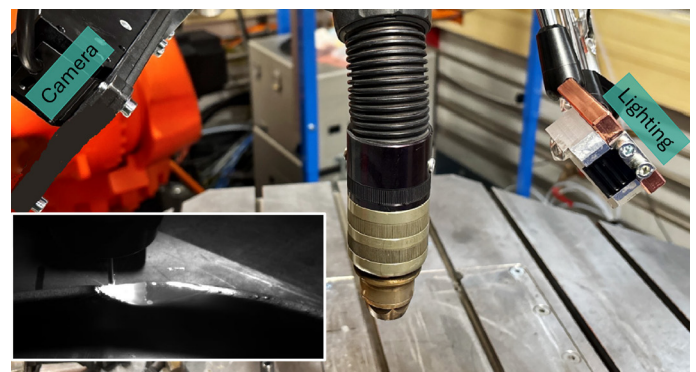
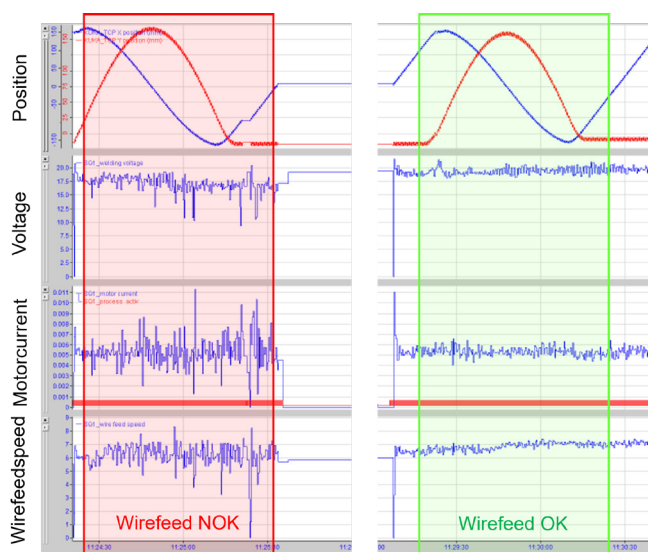
TECHNICAL SPECIFICATIONS

Data acquisition

• Number of digital I/O	24
• Number of analog I/O	32
• Encoder inputs	4
• Data rate analog/digital EA	40kHz
• Fieldbus monitor Profinet	Yes
• Data rate fieldbus	100Hz
• Video capture	Yes
• Latency times	2-8ms
• Time synchronization	10µs
• Process control option	Yes
• Data recording	Yes

Sensor specification

• Voltage/analog EA	0-20kHz
• Welding current	0-1,000A 0-10kHz
• Microphone	20Hz-20kHz
• Structure-borne sound	0.2Hz-15kHz
• Pyrometer	100/600°C approx. 1kHz
• Distance sensor	100-600 mm up to 8 kHz
• Encoder	up to 2 MHz
• ArcView2 camera	1024x768@40fps
• Temp. measurement PT100	On request
• Dust measurement	On request
• Energy measurement (LCA)	1 s



LKR LEICHTMETALL-
KOMPETENZZENTRUM
RANSHOFEN
Dr. Thomas Grünberger
thomas.gruenberger@ait.ac.at
Tel +43(0) 50550 6939
www.ait.ac.at/en/lkr