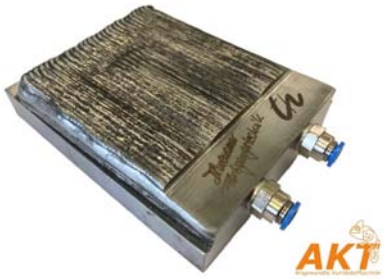
Project Profile

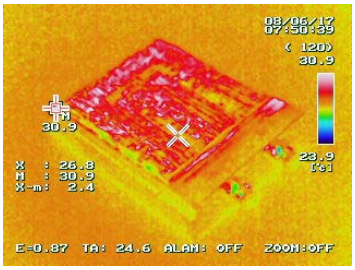
Research Group “Large Tempered Moulding Tools” (TemGro)

6-axis robot for arc welding at TU Ilmenau

bumper moulding tool
Source: TradeKorea



Arc welded insert with internal cooling channels



Thermography of the arc welded insert

Object of research:

- The generation of a near-contour temperature control
- The design of large-format moulds (bumper, container, etc.) with near-surface cooling channels by combining the additive manufacturing processes arc welding and diffusion welding with conventional processes
- These are moulds intended for injection moulding, pressure die casting, punching, reforming and press hardening

Key words

- Injection moulding
- near-surface cooling channel
- Additive manufacture
- Arc/diffusion welding
- Large moulding tool
- Thermography
- Cycle time
- Warpage

Third-party funds provider:

- Guideline on Subsidies for Personnel Working in Research and Development / Research Groups (FGR) of Thüringer Aufbaubank (TAB)

Results:

- Development of methods and strategies for the construction of large-dimension moulds with inside-recumbent cooling channels
- Provision of the proof of functionality
- Comparison of conventionally manufactured tools with the additively manufactured tools in respect of cycle time and warpage

Institutes involved and contact details:

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Period:

- 10/2016 – 09/2019 (36 months)

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- € 696,717.01