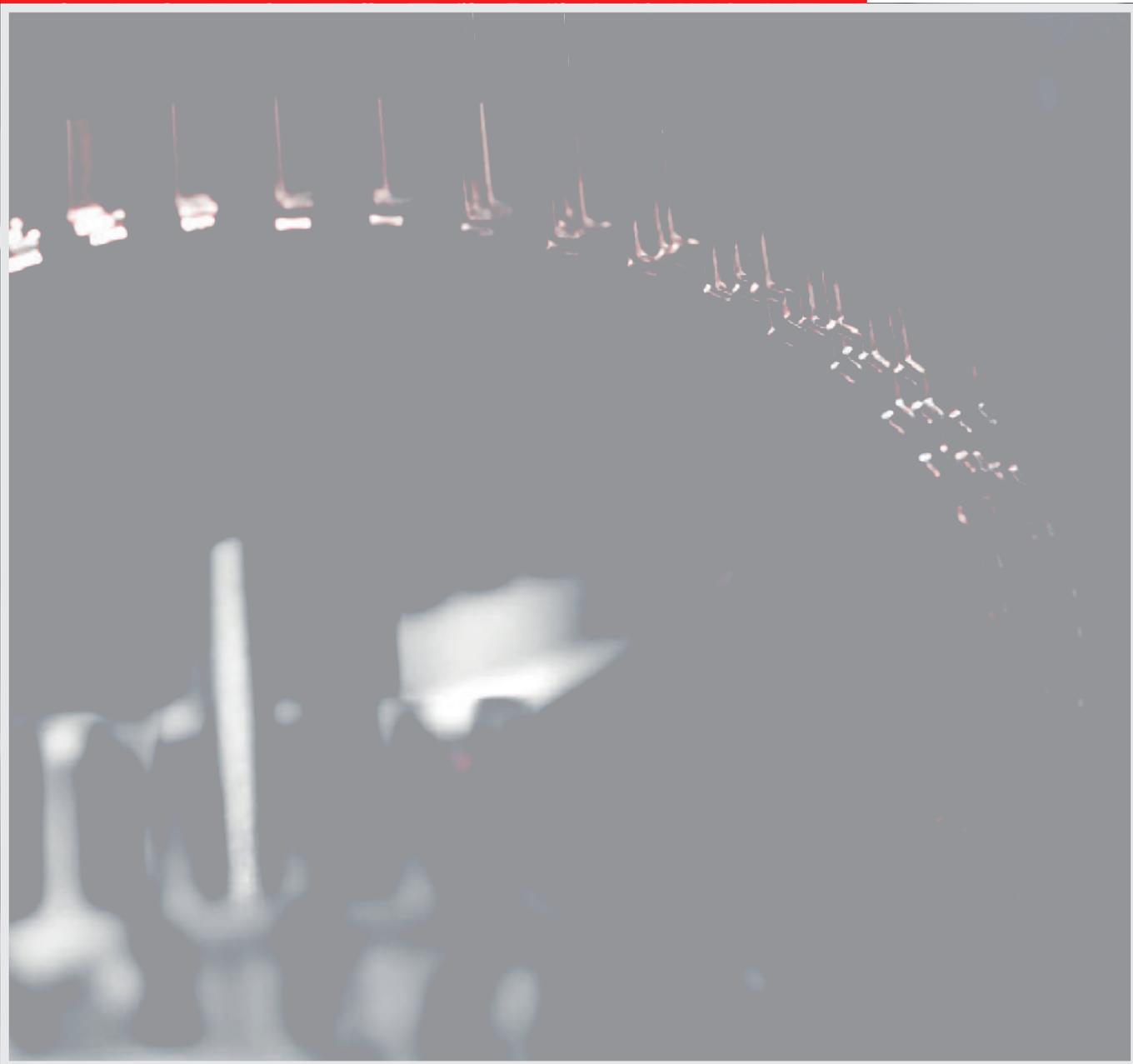


e-motive

Manufacturing solutions
for electric powertrains



Gehring

Excellence in motion.
Future in mind.

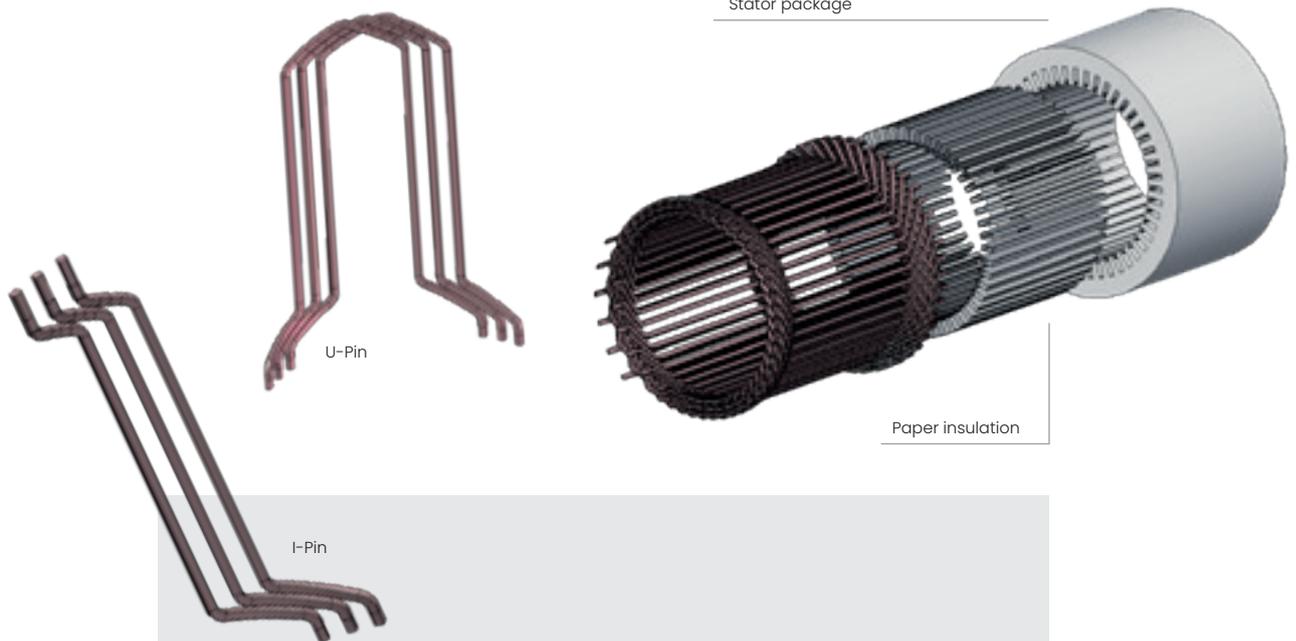
In cooperation with

WAFIOS

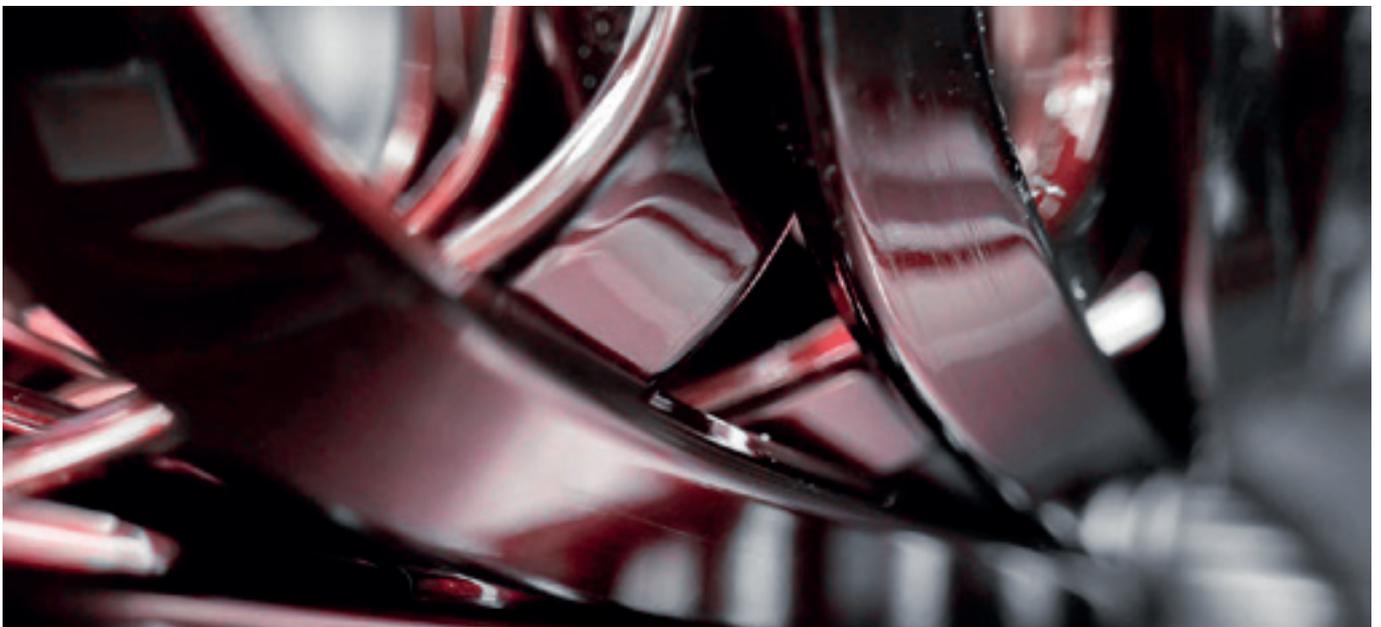
Your system partner for stator manufacturing

Gehring stands for technological-ly innovative approaches, extensive know-how in production technology for the electric powertrain and, last but not least, many decades as a system supplier for the automotive industry. The integrated portfolio includes production technology for manufacturing traction drives in electrified vehicles based on hairpin technologies. These designs combine efficient

electric motor characteristics with high automation capability and process reproducibility, essential prerequisites for large-scale automotive production. The range of products and services extends from independent, customized solutions for stator prototype development and small series production to fully automated, new system solutions for electric motor production lines.



SYSTEM FOR STATOR FACTORYING



Turnkey solutions

We offer complete turnkey solutions and production lines for electric motor manufacturing. From pin production, pin assembly and insertion, twisting and welding of pin ends to impregnation of stators and powder coating, we offer all steps from a single source. Our cooperation partner Wafios offers the right solutions for your pin production requirements. Our automation ensures a continuous flow of stators through

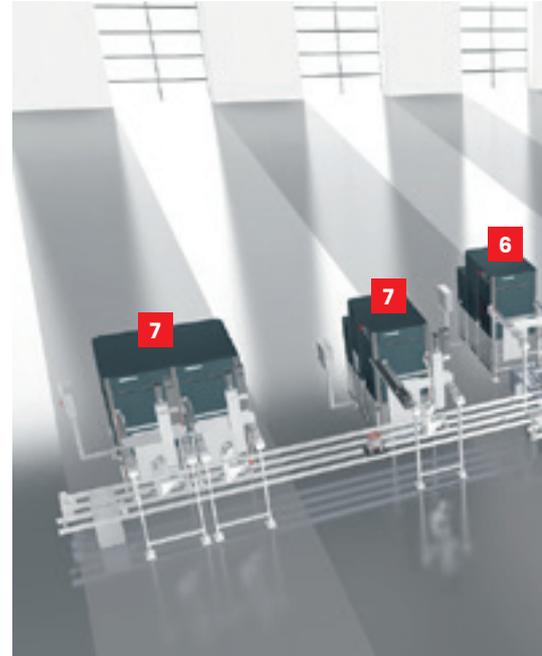
the line. With modern simulation methods and many years of expertise in project management, we are a competent partner for the design of new production lines with high productivity. The bundling of all competences, the extensive know-how of the individual production steps and the direct contact person simplify and optimize project execution for the customer.

PRODUCTION SYSTEM FOR HAIRPIN STATOR

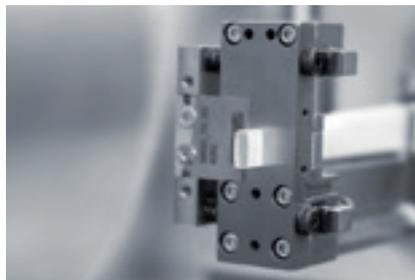
Production system for hairpin stators



Impregnation



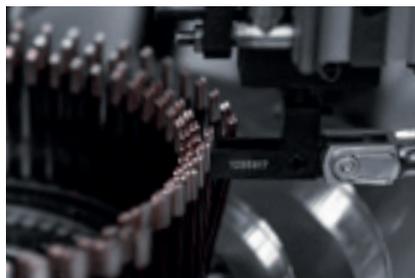
Production system for hairpin stators



Slot insulation



Pin production with SpeedFormer



Widening

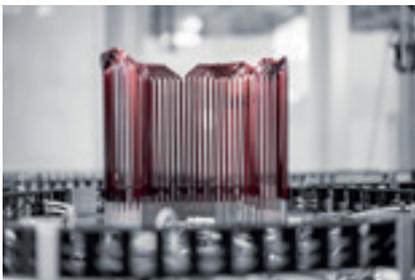


Twisting

ON SYSTEM N STATORS



1. Slot insulation
2. Pin production
3. Pin assembly
4. Widening
5. Twisting
6. Pin cutting
7. Laser welding
8. Impregnation
9. Powder coating



Segements as basket ring



Hairpins assembly



Segements driven together



Pin cutting



Laser welding



Powder coating

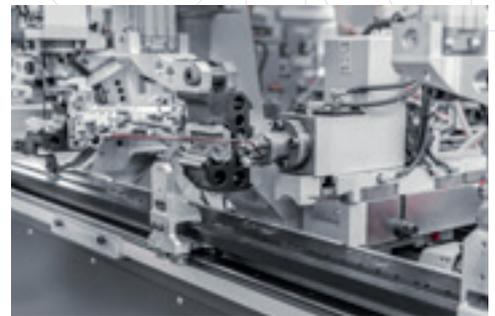
MACHINES

Core Technologies

in Stator Production

SpeedFormer

- High output with low space requirement
- Flexible change between different hairpin geometries without tool change
- Quality assurance thanks to integrated testing of the geometry characteristics



SNT - Pin Assembly and Insertion

- Robot-based setting process for numerous winding schemes
- Scalable assembly, split up into successive operations
- Safe insertion by paper protection and slob guidance

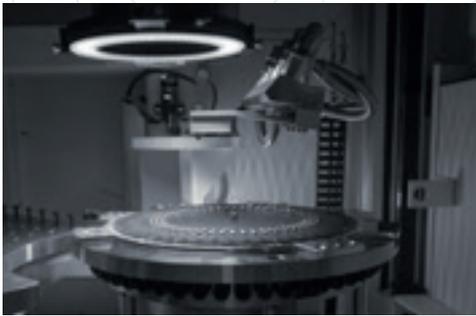


STW - Twisting

- Multi-layer twisting with freely adjustable springback compensation
- Axial compensation for all twist layers
- Force and torque monitoring for process evaluation



S FOR NOLOGIES RODUCTION



SWD - Welding

- Automated clamping and masking system
- Reliable processing due to clamping, cutting and welding in one setup
- Heat input optimized welding process control



Imflex TR - Impregnation

- Efficient heating processes due to induction principle
- Individual recipe setting, also for "batch size 1" operation
- Scalable modular design



Imflex P - Powder coating

- Individually programmable process sequences through Gehring Sequence Editor
- Robust powder bath fluidization for reproducible weld end coating
- Automation of masking and unmasking can be integrated



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