



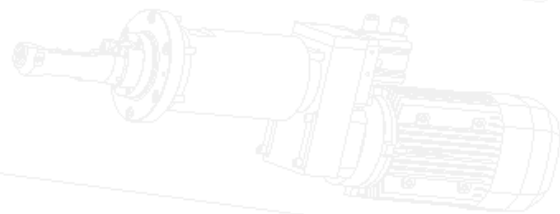
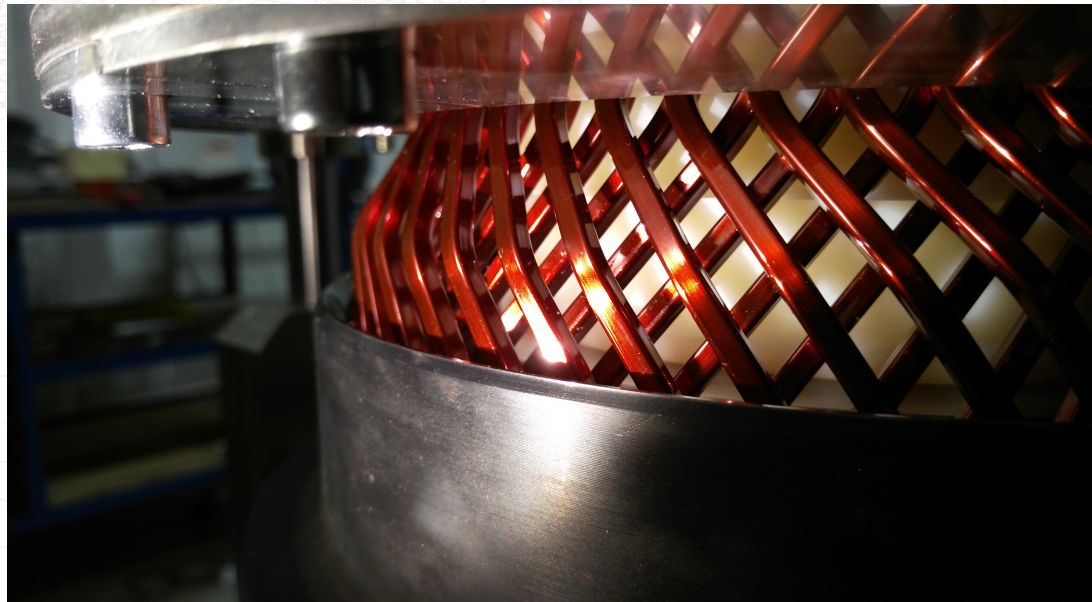
AMEKA

AUTOMATION & MECHANICS

AMEKA PRESENTATION

Scope of Activities

- Custom solutions for automating industry applications



АСМ113.04-3300-00			
Имя	Фамилия	Подпись	Дата
Колесов	Карачков		
Получено	Выдано		
№ документа	№ чертежа	Привод главный	
		Конт. дн	Конт. кв
		44.123	13
		№ проекта	
AMEKA - Office			

Scope of Activities

We are specialized in the design and construction of special purpose automation machinery, mainly for the automotive industry, and for the starter motor and alternator manufacturing in particular. We provide engineering design and machinery building for other industry applications as well.

Our technical & engineering expertise allows us to come up with the best solutions for any case of application.

Based on our knowledge and ability in the field of automation we are able to provide good quality at reasonable price.

History

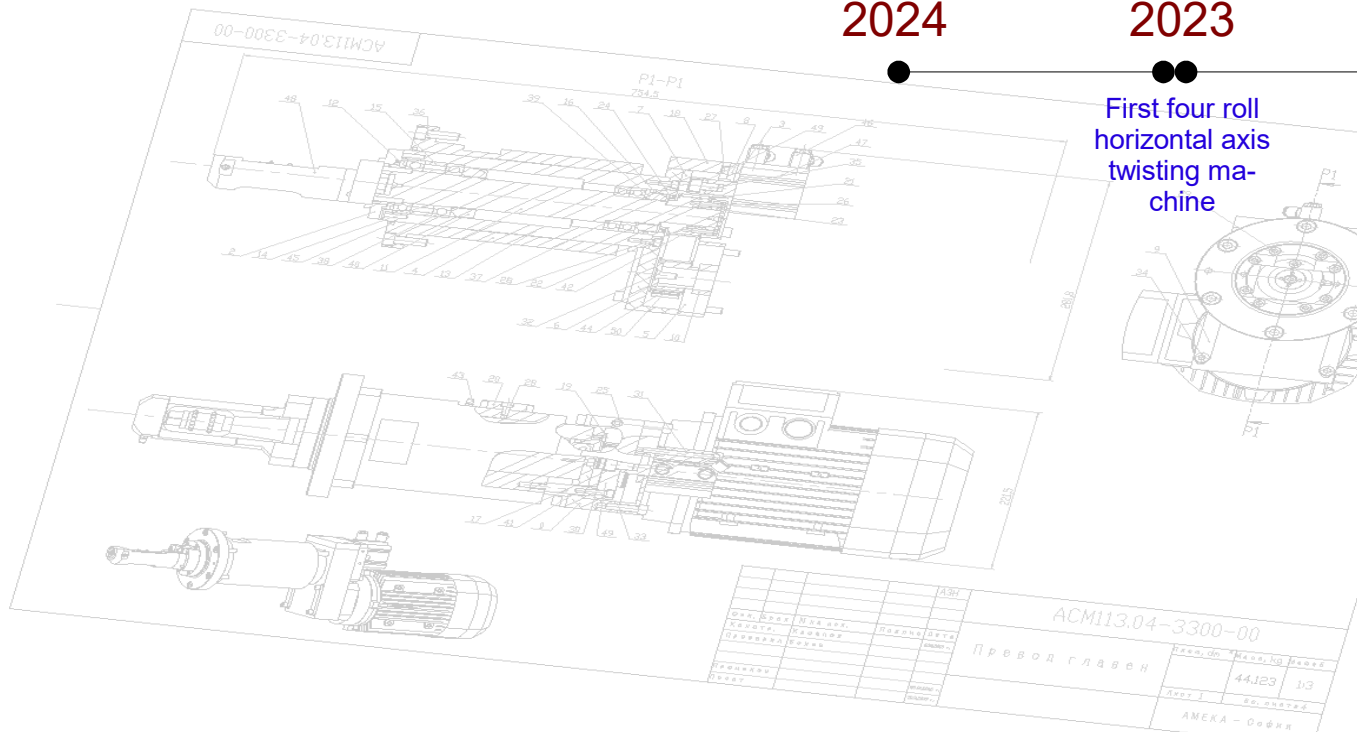
- The private company AMEKA LTD (previously known as AMECA LTD before 03.08.2018) was founded in the early 1993 by George Keskinov and Boyan Bonev, both Mech. Eng., M. Sc. and former employees of the state Central Machine Tool Research Institute in Sofia.
- The company currently employs 25 people altogether (machine designers and engineers, electronic specialists, software developers, mechanics, business administration). Modern working conditions were set out after the company moved into its own 900 sq. m. building in 1998, subsequently enlarged to 1300 sq. m. in 2013.
- Main activity of the company is developing and supplying of custom made special purpose machines for specific applications, using the most modern means of automation. AMEKA is specialized in particular in supplying automatic machines for the manufacturing of DC motors and generators, mostly for the automotive industry.



Milestones

1993 Foundation
1996 First hairpin armature line implementation
1998 Company moved into its own 900 sq. m. premises
2002 First hairpin stator line implementation
2003 ISO:9001 Certification
2013 Enlargement of AMEKA premises to 1300 sq.m. and purchasing of new machinery
2018 First flat type hairpin forming machine implementation
2020 First implementation of vertical axis slot insulation machine with automatic paper roll changeover

2024
2023 First four roll horizontal axis twisting machine
2022 Double "B" shape slot insulation forming and insertion machine
2022 First implementation of simultaneous necking twisting machine for up to 8-layer stator



Milestones

Hairpin Technology



AUTOMATION & MECHANICS

- AMEKA has started working on knuckle hairpin technology as early as of 1994. First hairpin armature production line was put into operation in 1996, comprising the following machines:
 - Slot Insulation Forming & Insertion Machine
 - Hairpin Coil Forming Machine
 - Hairpin Coil Assembling Machine
 - Coil End Twisting Machine
 - Coil End Cropping Machine
 - Commutator Installing Machine
 - Armature Brazing Machine
 - Armature Stack & Commutator Turning Machine
 - Armature Finish Turning Machine
- Since then AMEKA has manufactured various types of slot insulation forming machines, hairpin coil forming machines (including machines for heavy duty hairpins), assembling, twisting, welding/brazing machines.
- In 2002 was implemented the first production line for heavy-duty hairpin alternator stators, comprising:
 - Slot Insulation Forming & Insertion Machine
 - Hairpin Coil Forming Machine
 - Hairpin Coil Brazing Machine
- In 2018 was produced the first flat type hairpin forming machine, allowing production of several varieties of hairpins without necessity of changeover.



Knuckle Type Hairpin



Flat Type Hairpin

- AMEKA has developed also a well adopted balancing process. Available types of balancing machinery:
 - Automatic 4-Station Balancing Machine
 - Semi-automatic Balancing Machine with milling correction
 - Dynamic Unbalance Measuring Machine
- Along with electric and hybrid vehicle technology deployment, our experience in hairpin technology brought us the advantage to become valuable partner in the production of electric motor stator machines. Our technology has been very successfully advanced, and on certain issues AMEKA is already consulting the most developed companies in the field.

AMEKA features

- Main feature of the AMEKA products is quality. The use of equipment components (mechanics, pneumatics, hydraulics, electronics) from the most renowned suppliers, the good design and the special consideration concerning quality ensure high reliability, ease and safety in operation. These features combined with the advantageous prices make the machines compatible with the production of the traditionally most powerful machine builders.
- The good results are due to the long-term experience of the staff in the developing of the most varied types of production machines and lines.
- The strong designer staff of the company and the use of the most up-to-date electronic design technology allow delivering in short terms of high-grade solutions that meet all requirements of the customer.
- For the 30 years of the company's existence 181 different special machines have been developed mainly in supplying automatic machines and complete production lines for the manufacturing on large scale of car starters and alternators, as well as DC motors applied in the automotive industry, covering almost all operations of this technology. The most important machines have been subject to several consecutive renewals, bringing the quality of all our products to the level of the best European producers.

E-Mobility

- Our knowledge in the hairpin coil technology became highly appreciated in connection with the development of electric traction drives for vehicles, directing main part of our capacity in the realization of such projects.
- AMEKA develops and manufactures machinery for the production of electric motors for hybrid and electric traction vehicles.
- The experience gained in over 30 years of presence on the worldwide automotive markets and constant innovation have brought our products to the level of technological advantage. The implemented solutions guarantee optimal performance, process repeatability, flexibility and reliability. AMEKA strength is the ability to offer tailored solutions to meet customers' requirements for the processes of slot insulating, hairpin conductor forming, twisting, welding and electrical testing. This includes stand-alone machines for the production of prototypes.



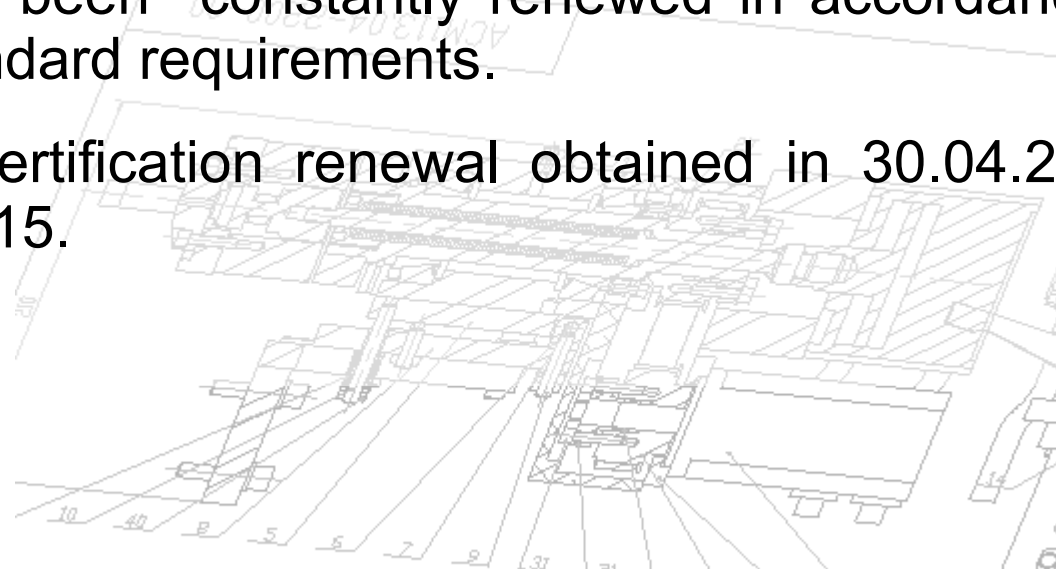
AMEKA know-how

- All machinery related development activities like machine design and software development and implementation are made by the Company and are AMEKA know-how.
- Our latest patent application encompasses a new method for simultaneous necking and twisting of multiple layer conductors and method and device for automated arrangement and assembly of "hairpin" type conductors.

Certifications

AMEKA LTD has obtained ISO 9001 certifications. All machines are manufactured in compliance with the requirements of EN ISO 12100:2011, EN 60204-1:2019, EN ISO 13849-1:2015, EN IEC 61000-6-2:2019, EN IEC 61000-6-4:2019.

- ISO 9001:2000 certification was acquired since April, 2003 and has been constantly renewed in accordance with the ISO standard requirements.
- Latest certification renewal obtained in 30.04.2024 – ISO 9001:2015.



Production facilities

- AMEKA's machinery and works are disposed in its own 1300 square meters covered surface of workshops and offices and a small machine shop, including a universal lathes and two milling machines, a surface grinding machine, CNC machining centers (Deckel Maho DMU50), CNC lathes (Gildemeister CTX 310V1), and wire EDM machine. However, the majority of the machine parts are supplied by subcontractors. Design (including software), assembling, testing and delivering is done by AMEKA.
- 10 to 20 machines is the annual company production capacity, depending on the project complexity.



- Pneumatic Components

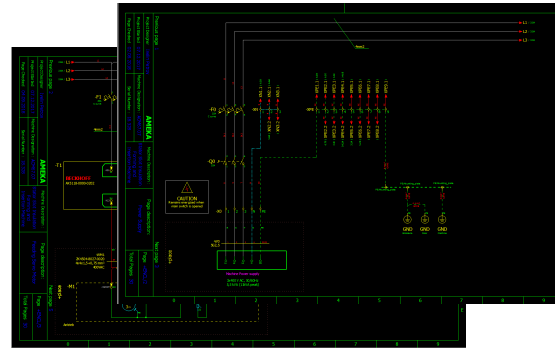
FESTO

- Electrical Hardware Components – PLC, HMI, ServoDrives

SIEMENS**BECKHOFF**

- **Electrical CAD Software**

ePLAN[®]
electric 8

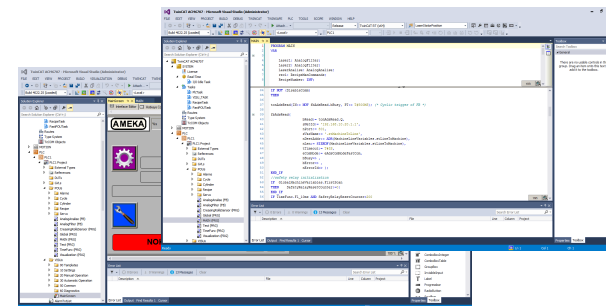
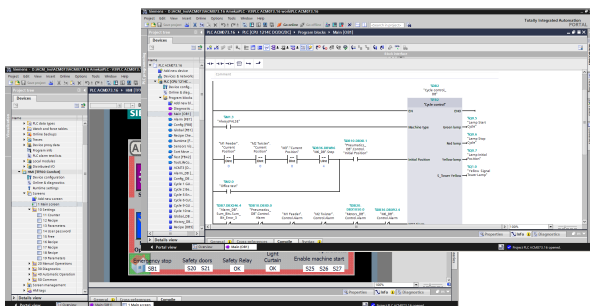


- **Automation Software**

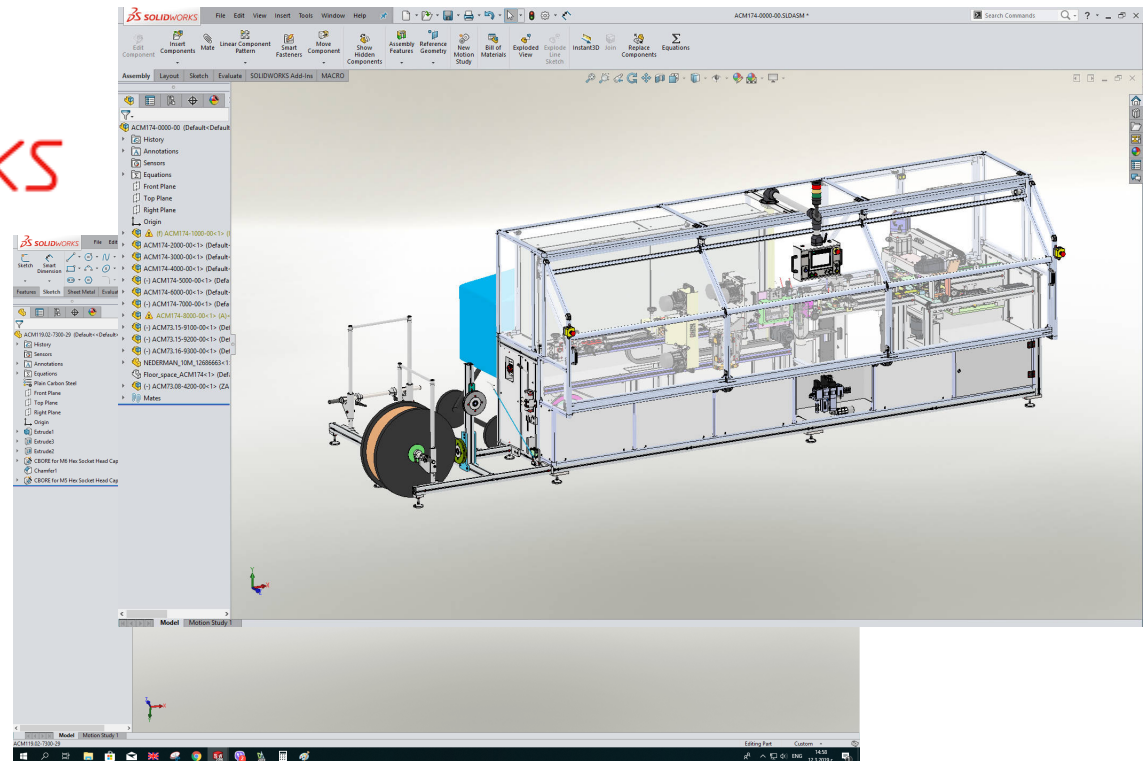


BECKHOFF

TwinCAT[®]



- **CAD Software**

The logo for SolidWorks, featuring a stylized red 'S' icon followed by the word 'SOLIDWORKS' in red, uppercase letters.The logo for NANOCAD, featuring a stylized blue and black 'N' icon above the word 'NANOCAD' in blue, uppercase letters.

Product range

Machinery and equipment for:

Armatures/rotors

- Shaft insertion
- Slot insulation
- Conductor forming
- Conductor insertion
- Conductor end necking
- Conductor end twisting
- Conductor end cropping
- Commutator installing
- Slot insulation cropping and wedging
- Fusing/brazing and clip forming
- Armature banding
- Impregnation
- Stack, commutator/slip ring turning
- Micanite undercutting
- Polishing
- Balancing
- Testing

Stators

- Coil and link conductor forming
- Paper insulation forming, insertion
- Conductor forming and winding
- Coil, conductor and pole assembling
- Conductor necking
- Conductor end twisting
- Brazing
- Lacing
- Testing

Assembling

- Lock plug assembling
- Electrical connector assembling
- Magnet pole assembling
- Grease nipple assembling
- X-ray dental plate holder assembling
- Flat brush assembling
- Cylindrical brush assembling
- Arc chute assembling
- Turbine wheel assembling
- Bearing assembling

Machine tools

- CNC equipped lathe
- Special automatic lathe
- Plastic rollers finish turning

Miscellaneous

- Bending of bourdon tubes
- Flexible tubes parting
- Friction welding of plastic parts
- Coil stripping and slot cleaning machine
- Balancing of laboratory centrifuges
- Balancing of turbines

MAIN CUSTOMERS



PORSCHE



DHOLLANDIA



THALES



MAHLE



OTHER CUSTOMERS

FESTO

BHTC
COMFORT IN MOTION

Prestolite[®]
electric



PARVALUX
GEARED FOR SUCCESS

 **BOSCH**
Invented for life


EMERSON.

 **FEMSAN**
Electric Motors

SENUR

MG

Delco Remy[®]


Sensata
Technologies

AUTO-LEK
A TRUSTED NAME



 **KOSTOV**
MOTORS

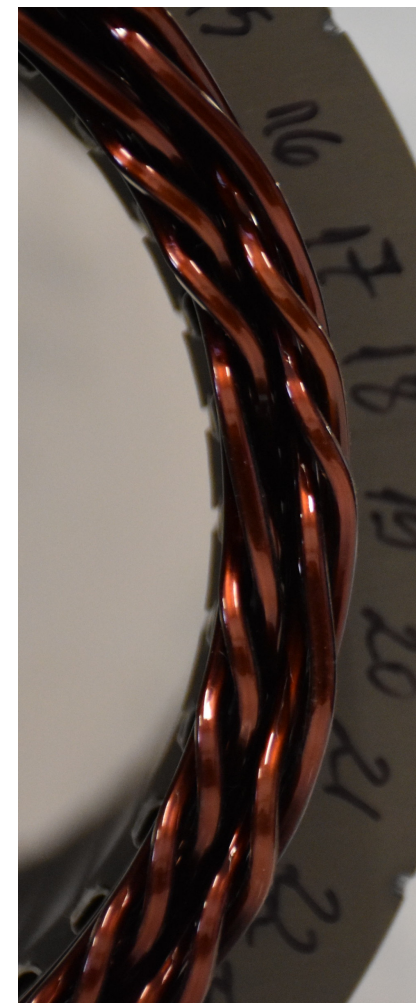
CYGNUS
technology as passion

 **SEVROLL**[®]

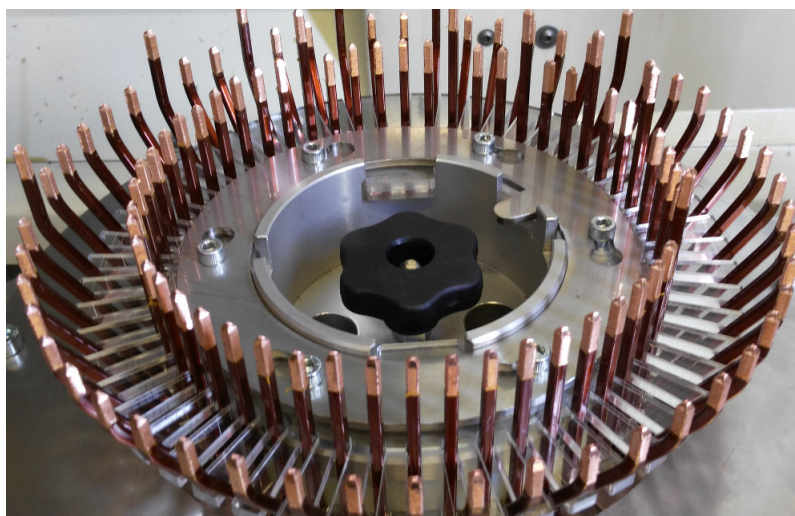
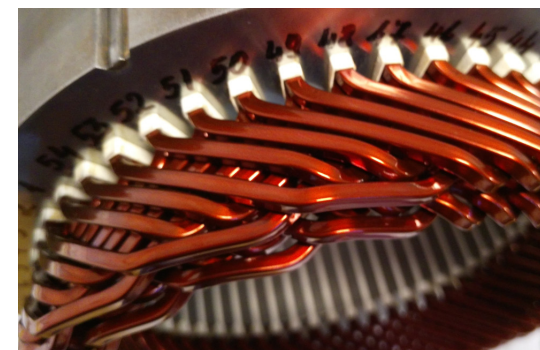
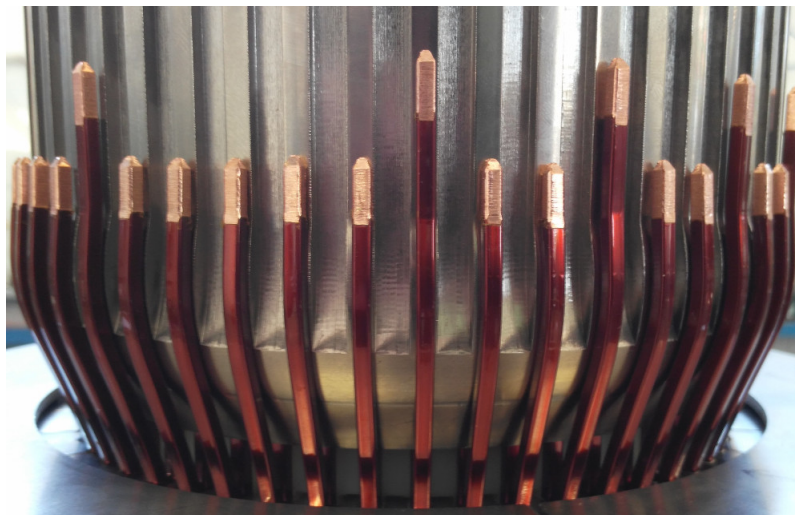


OHMAYD  **DYNAMO**

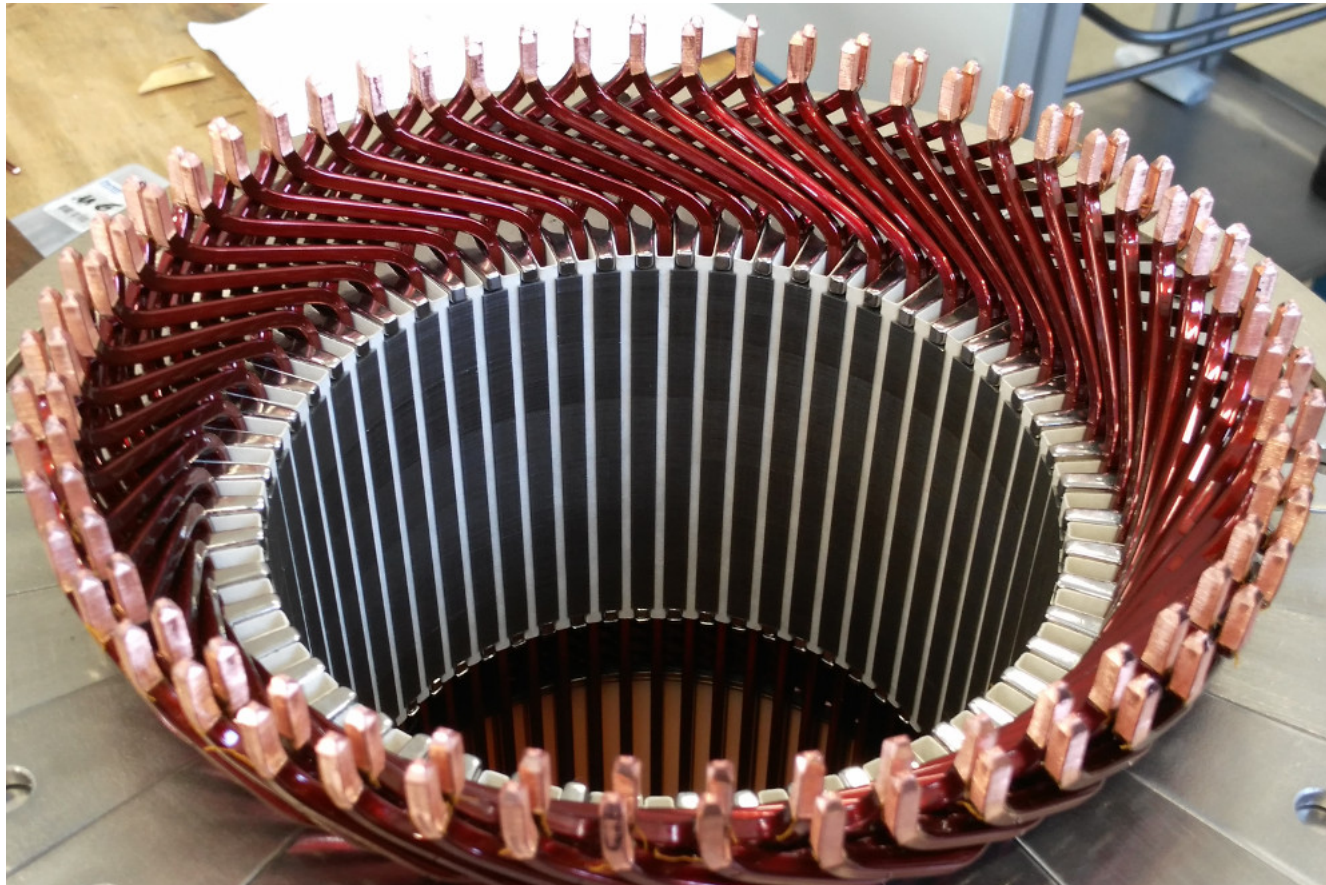
Finished products



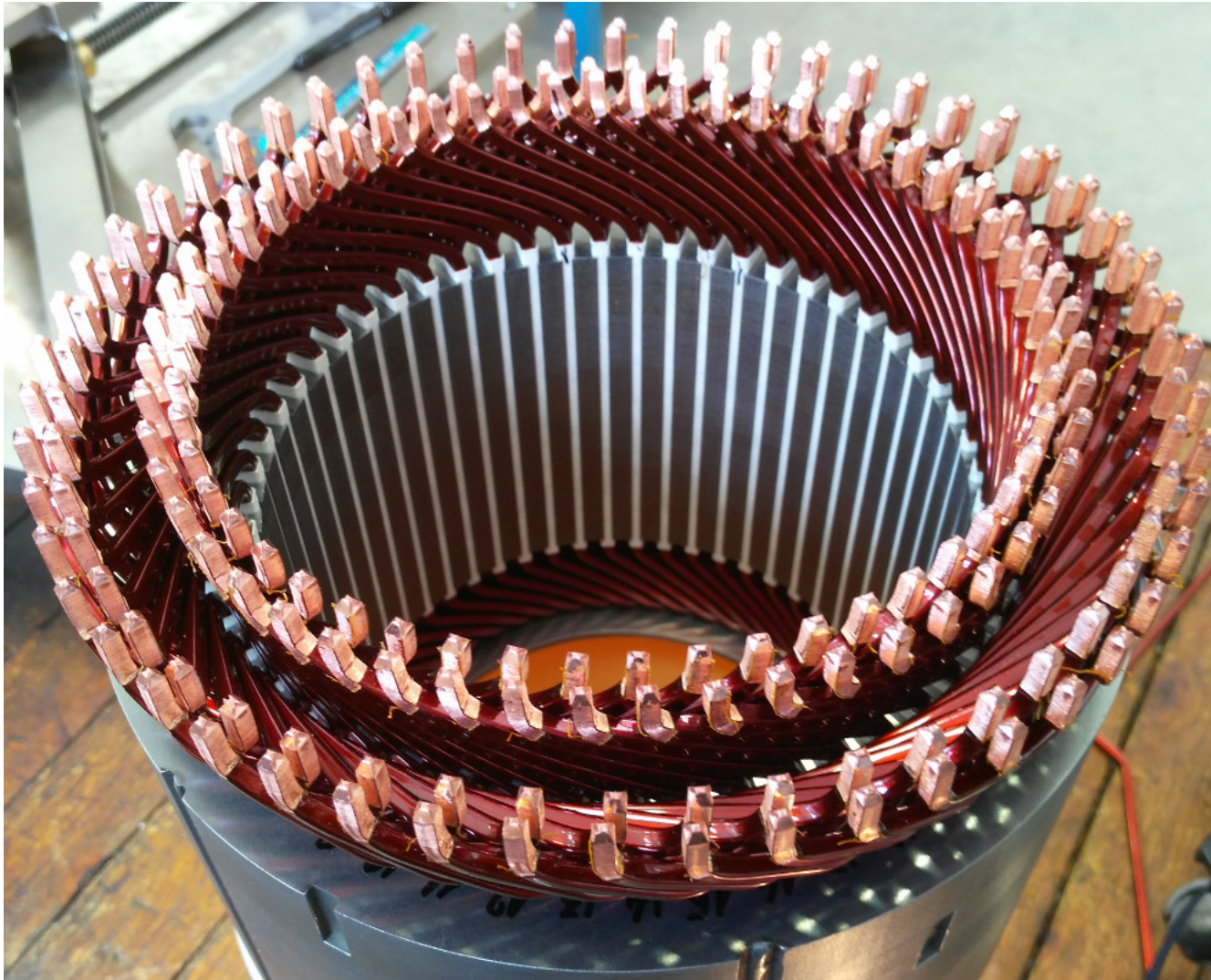
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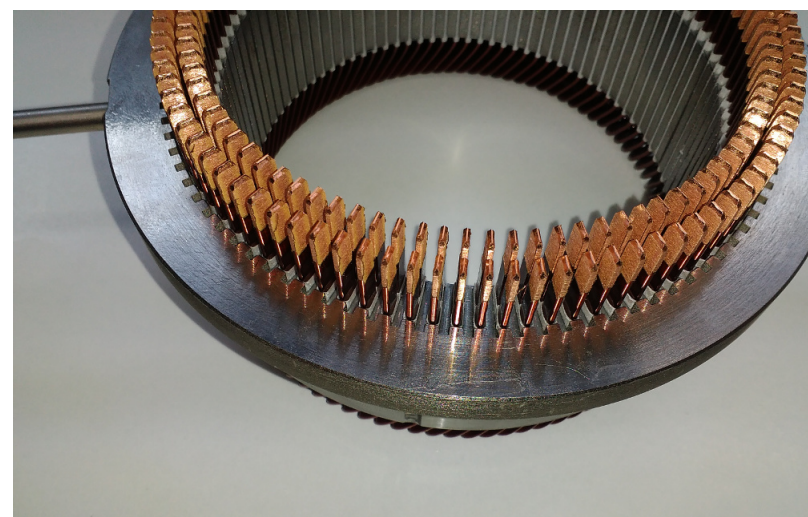
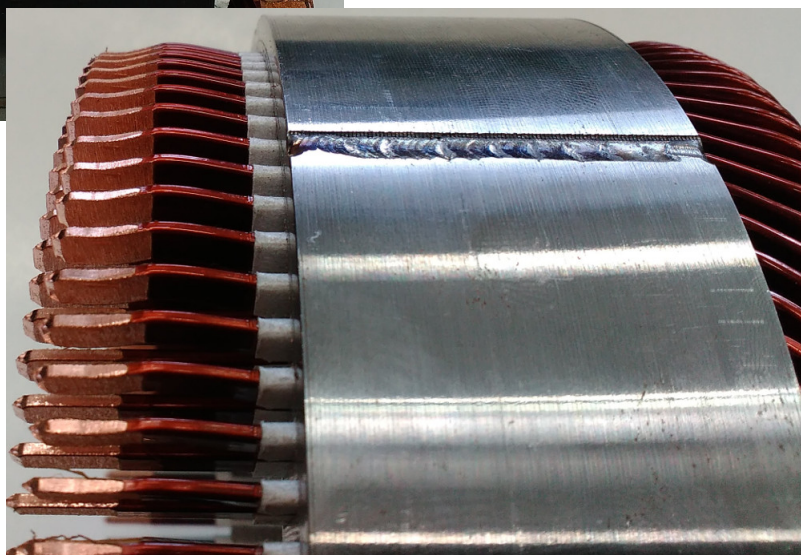
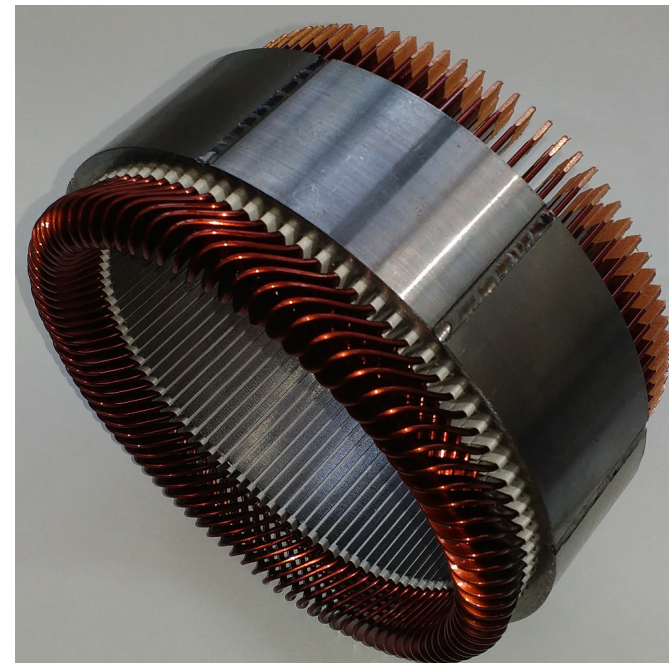
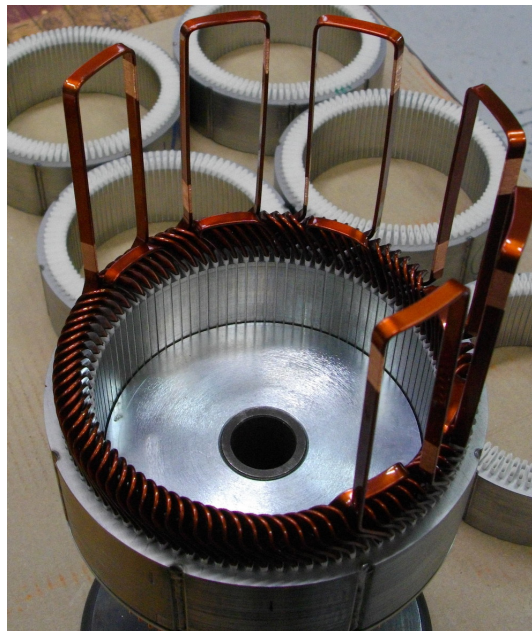
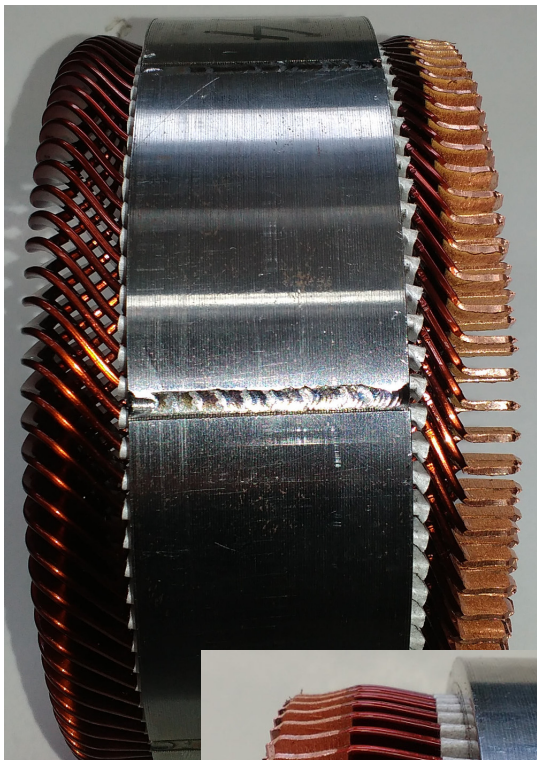
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Finished products



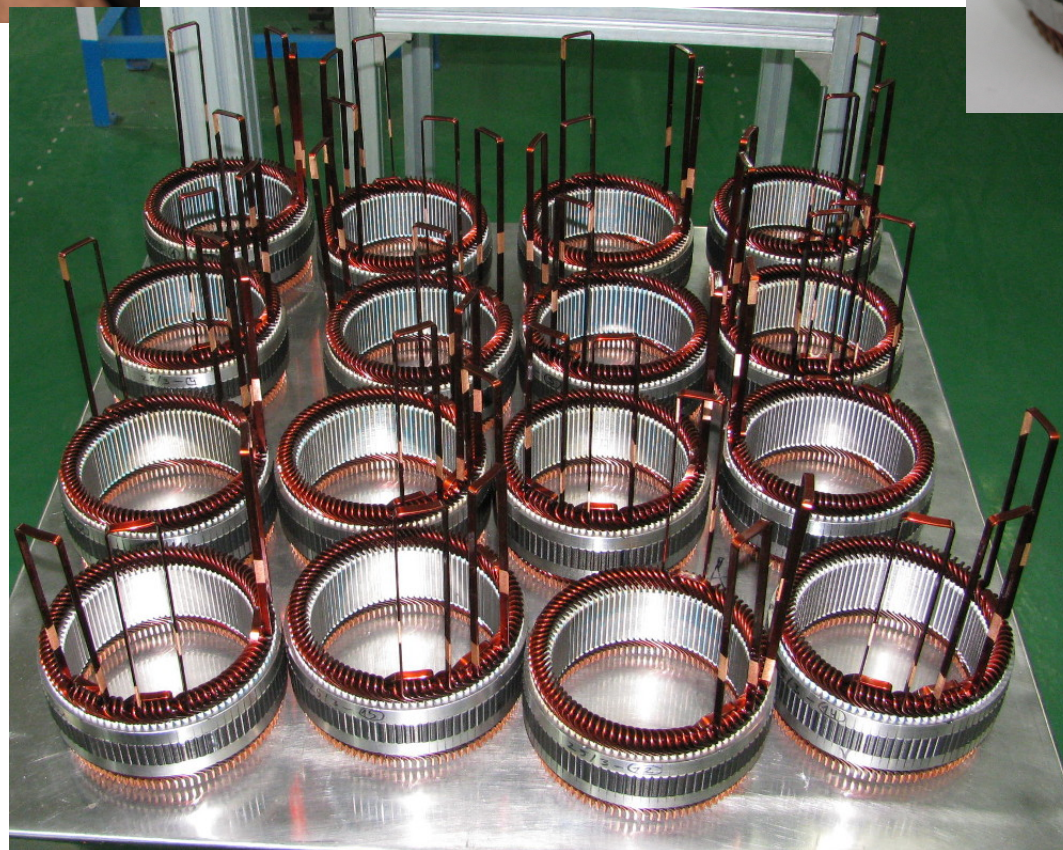
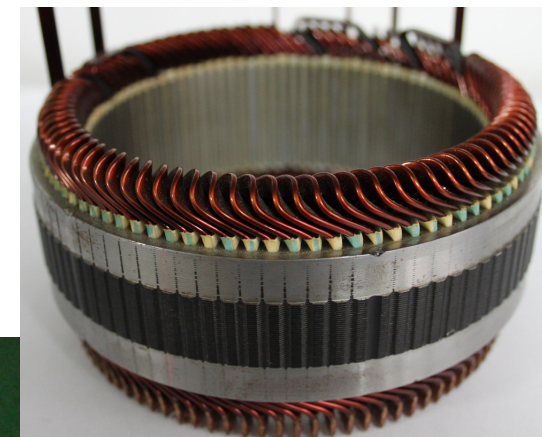
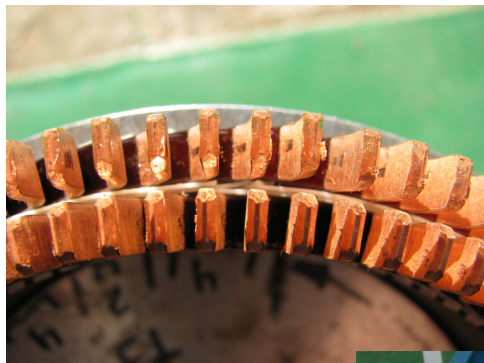
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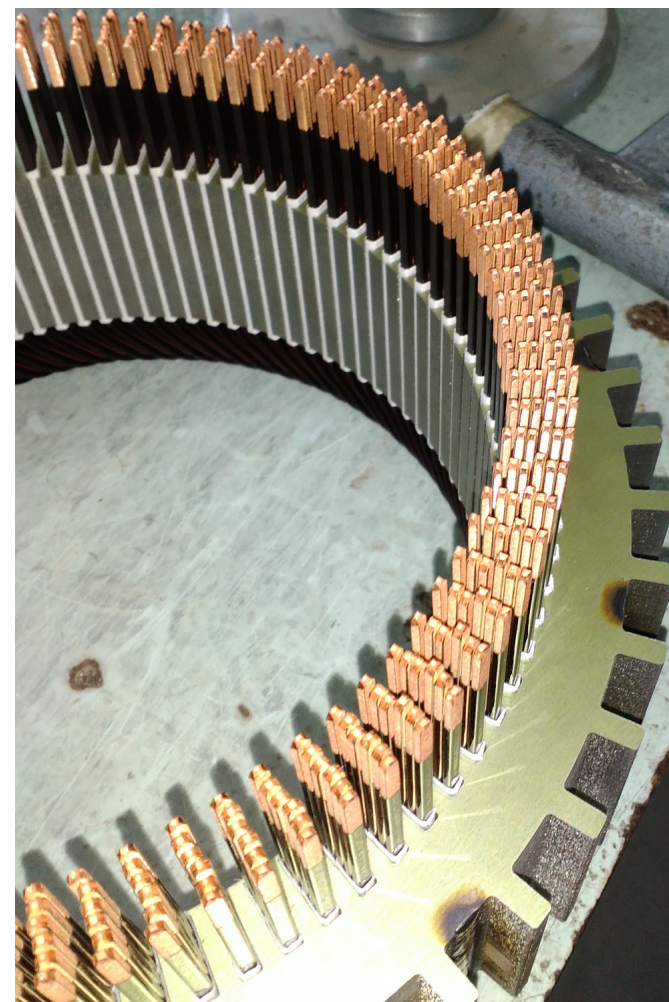
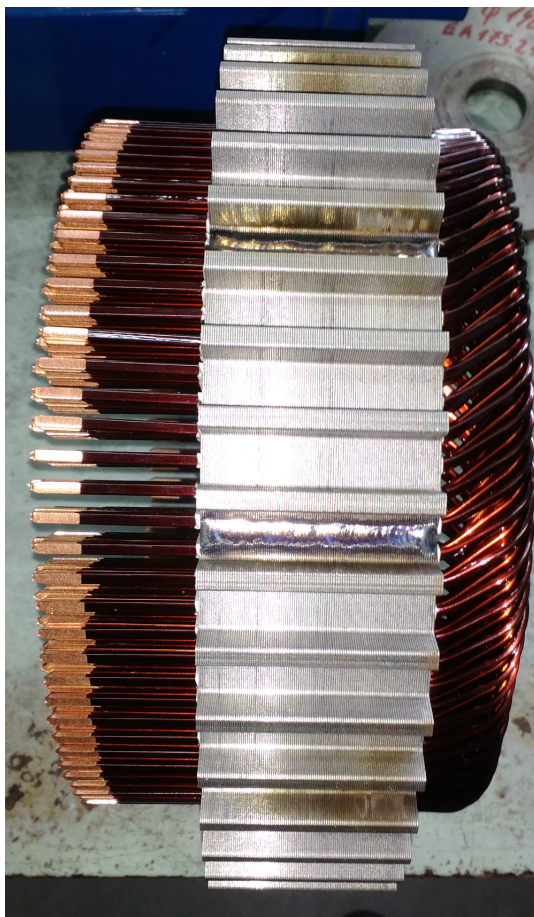
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Finished products

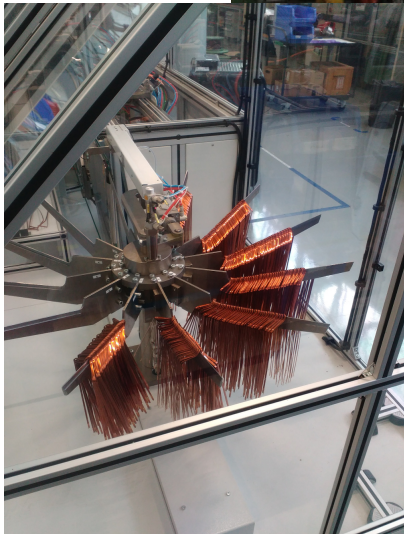
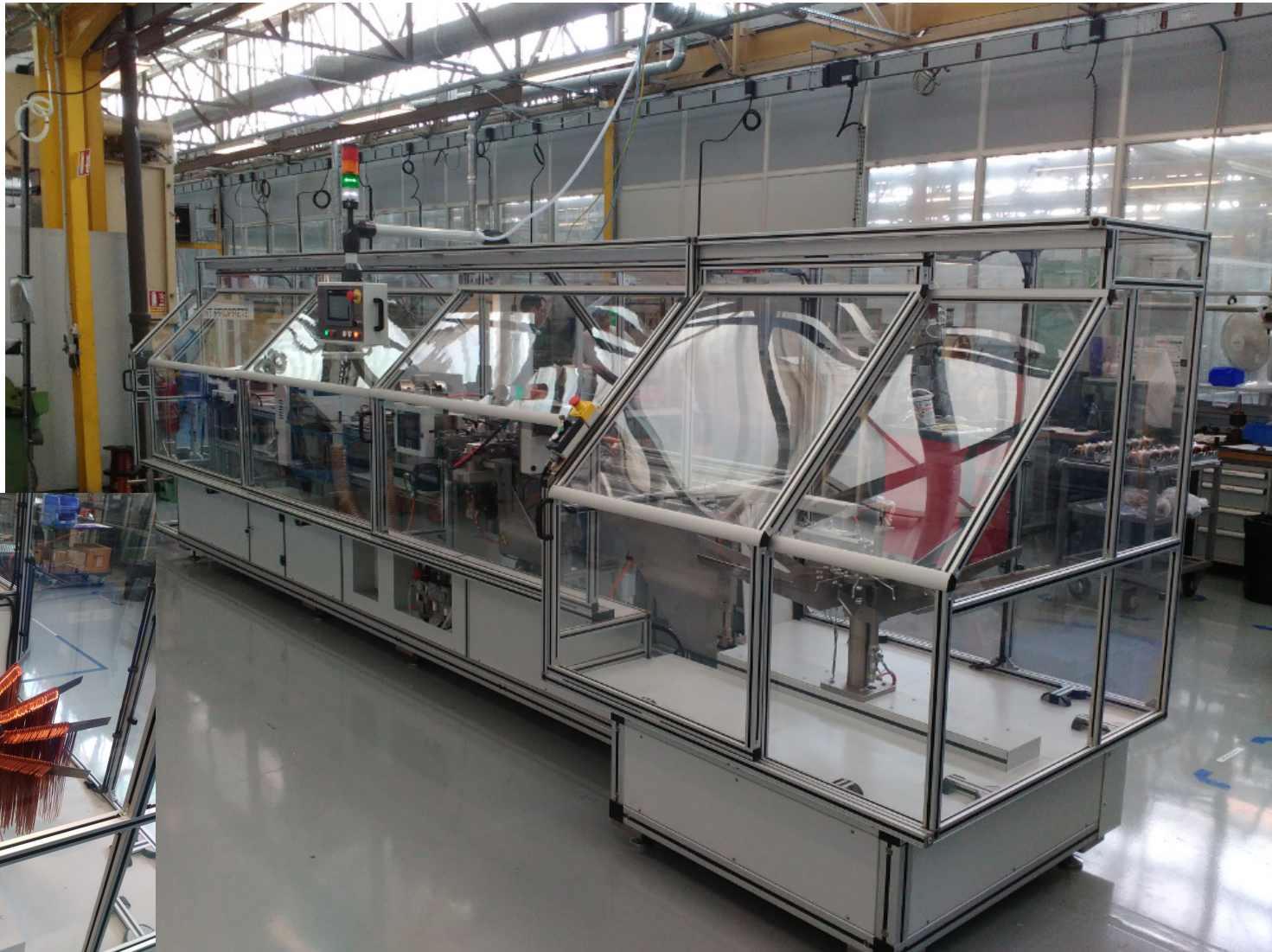


Finished products



Machinery

KNUCKLE TYPE HAIRPIN COIL FORMING – ACM73 Series

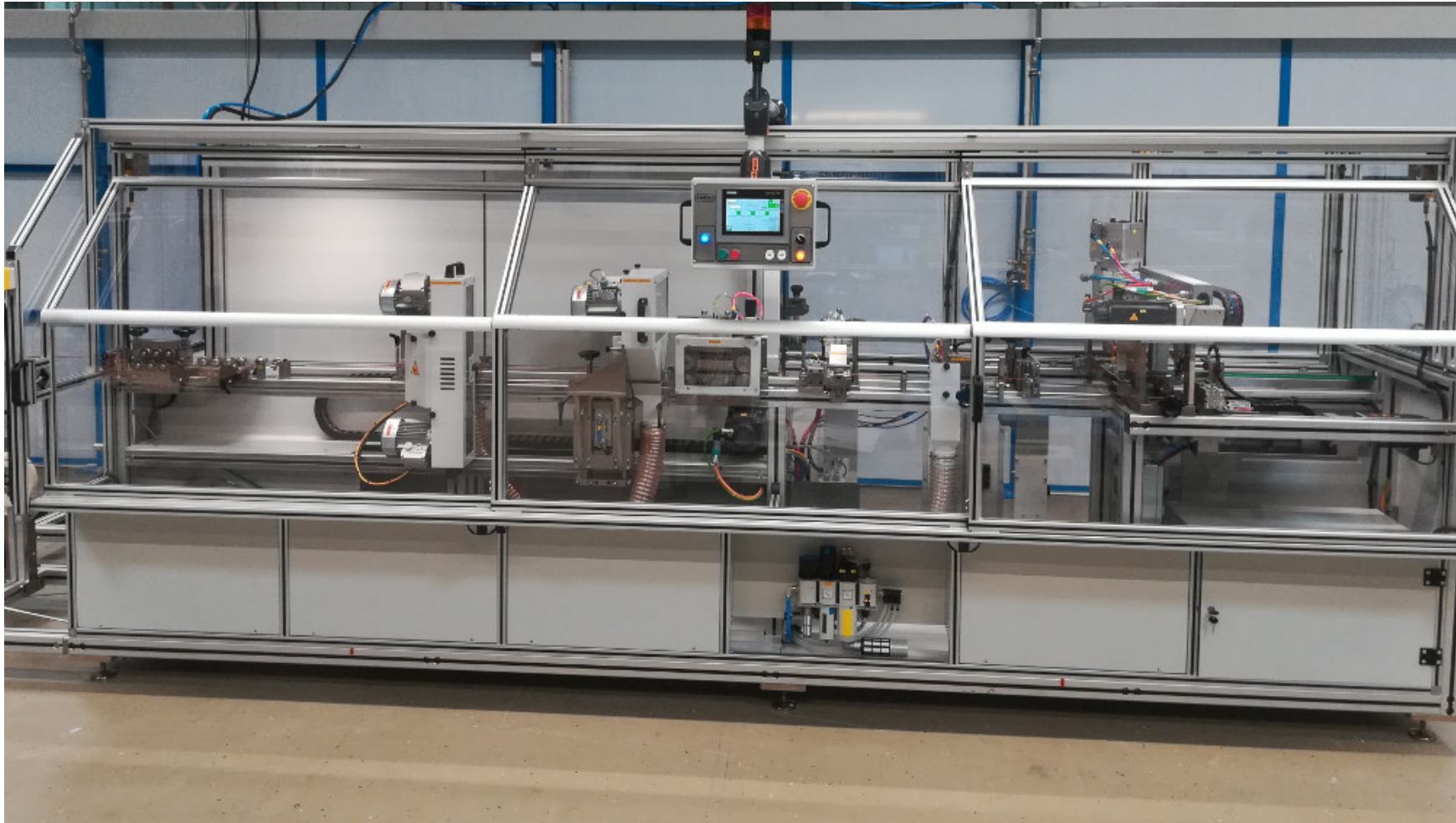




AUTOMATION & MECHANICS

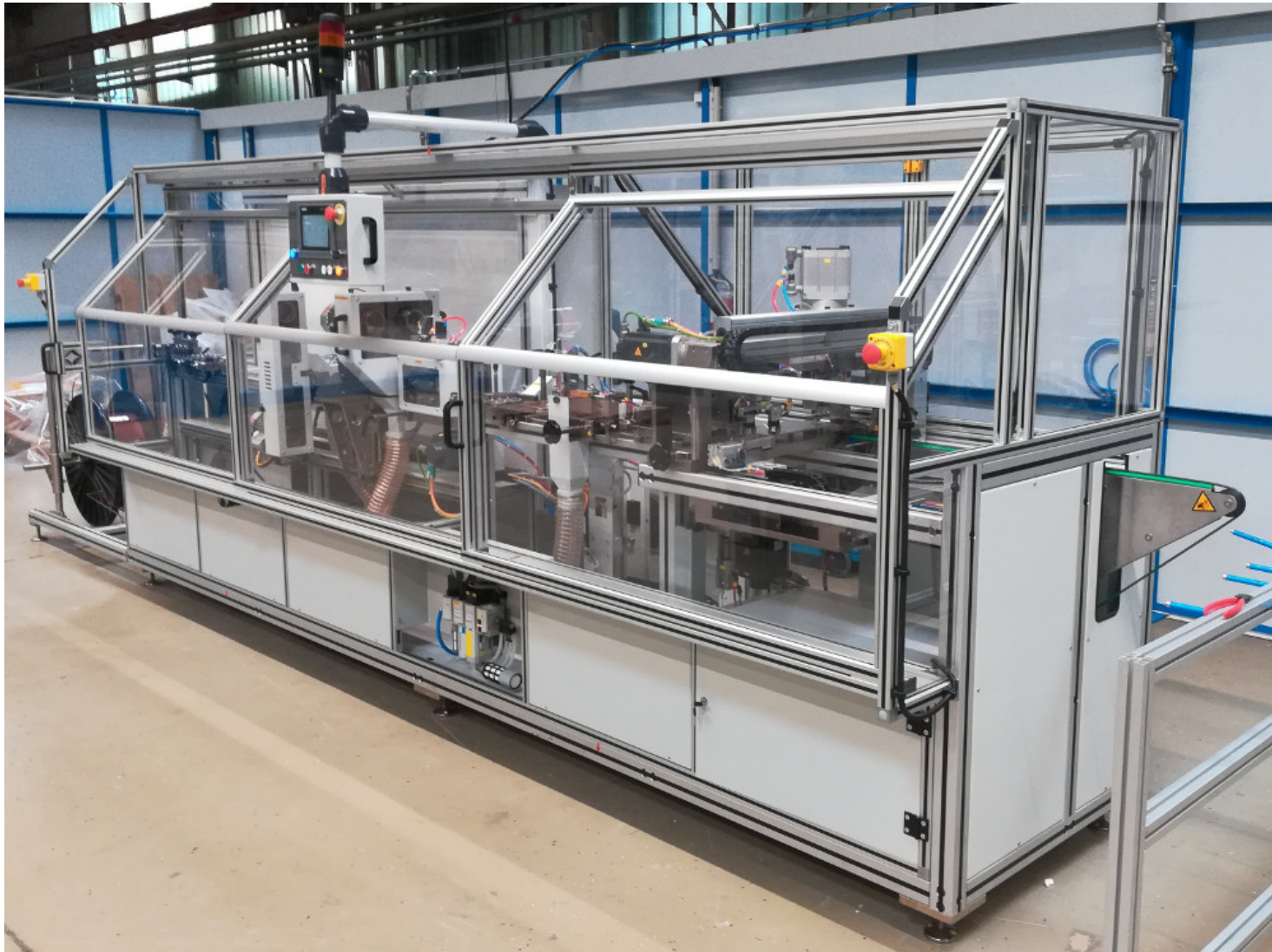
Machinery

FLAT TYPE HAIRPIN COIL FORMING - ACM174 Series



Machinery

FLAT TYPE HAIRPIN COIL FORMING - ACM174 Series



Machinery



AUTOMATION & MECHANICS

MAGNETIC FIELD COIL WINDING - ACM133 Series



Machinery



AUTOMATION & MECHANICS

SLOT INSULATION FORMING & INSERTION – ACM67 Series (horizontal axis)

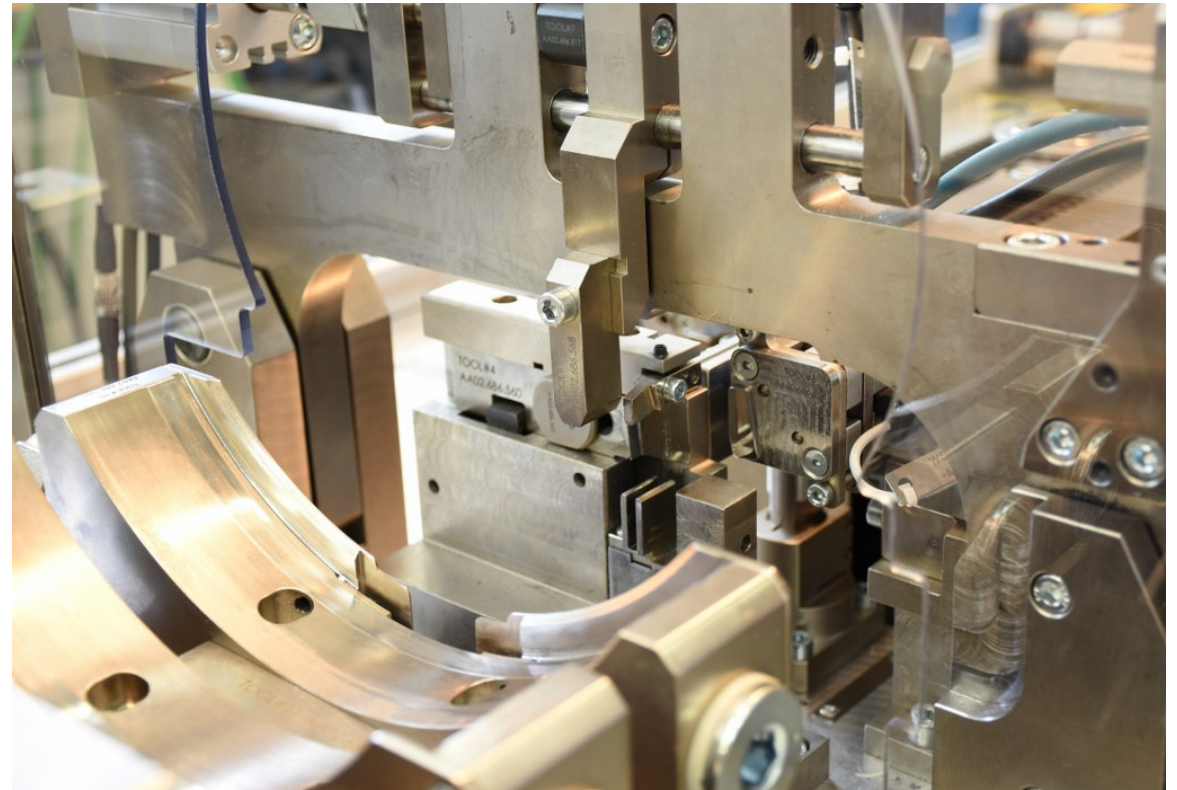
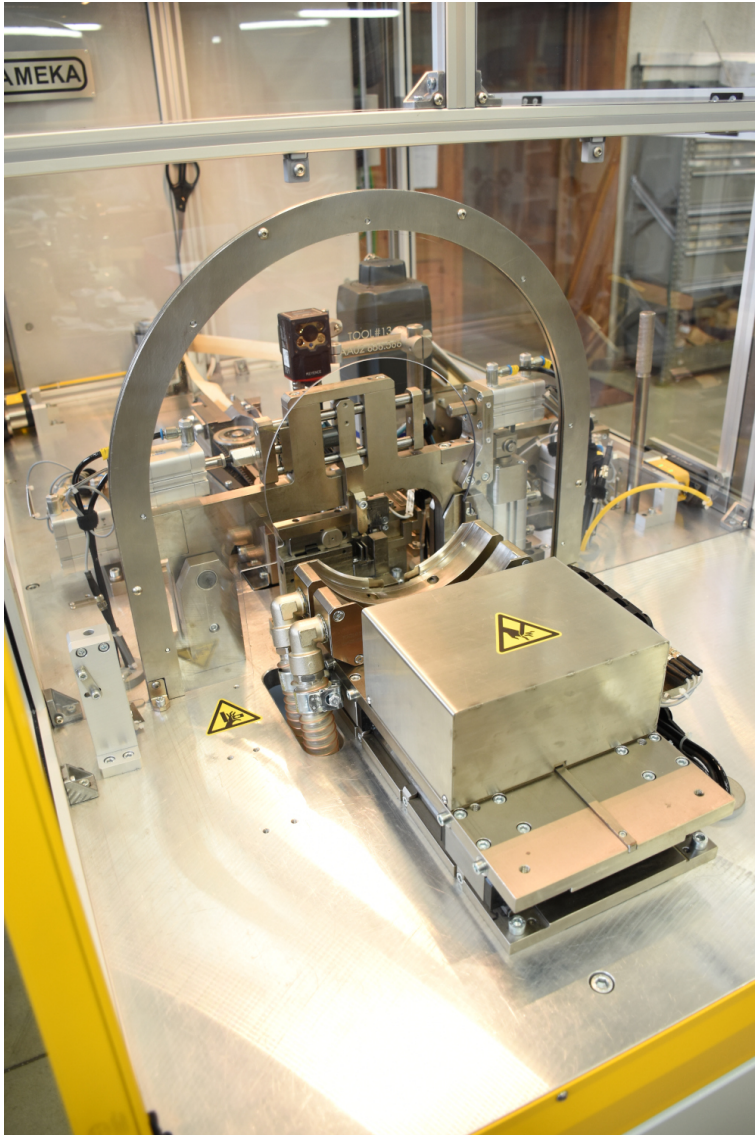


Machinery



AUTOMATION & MECHANICS

SLOT INSULATION FORMING & INSERTION – ACM67 Series (horizontal axis)

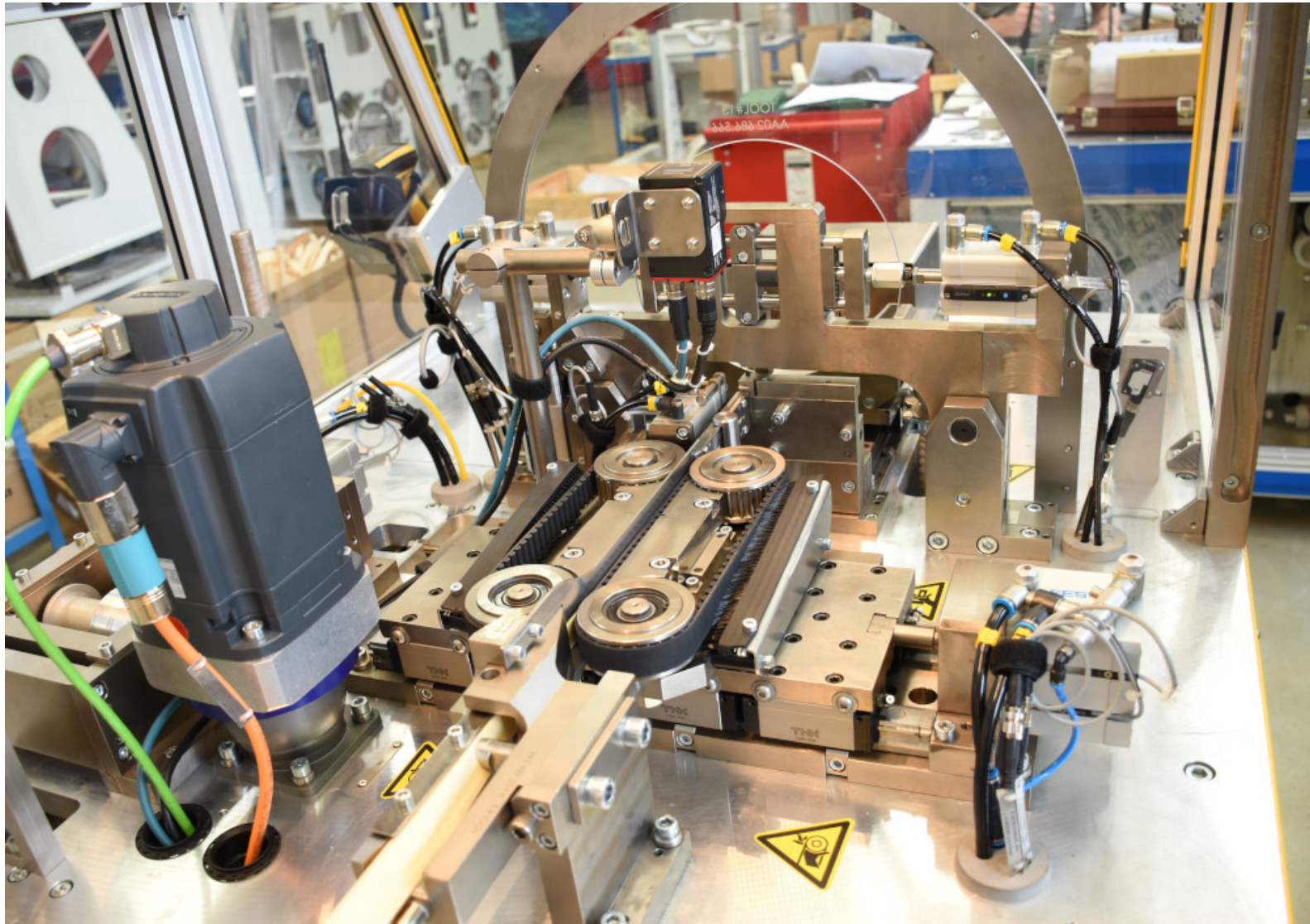


Machinery



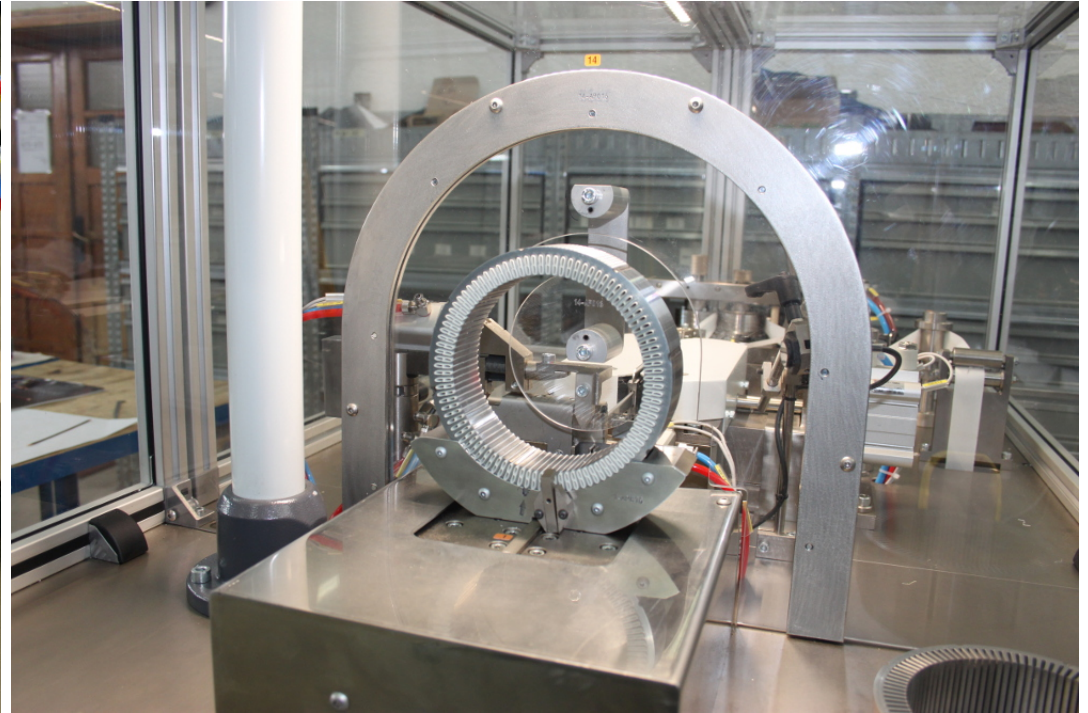
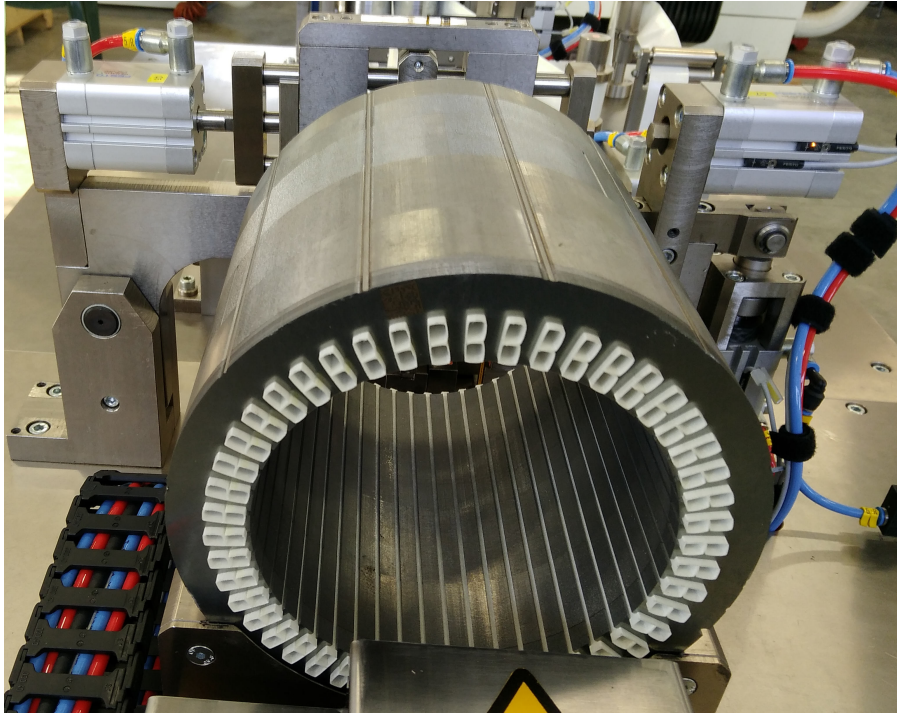
AUTOMATION & MECHANICS

SLOT INSULATION FORMING & INSERTION – ACM67 Series (horizontal axis)



Machinery

SLOT INSULATION FORMING & INSERTION – ACM67 Series (horizontal axis)



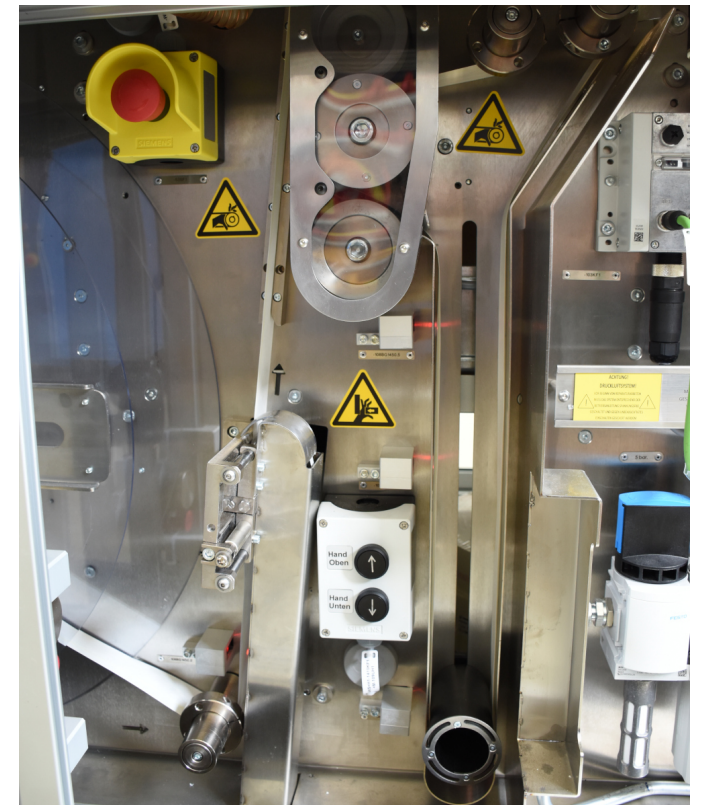
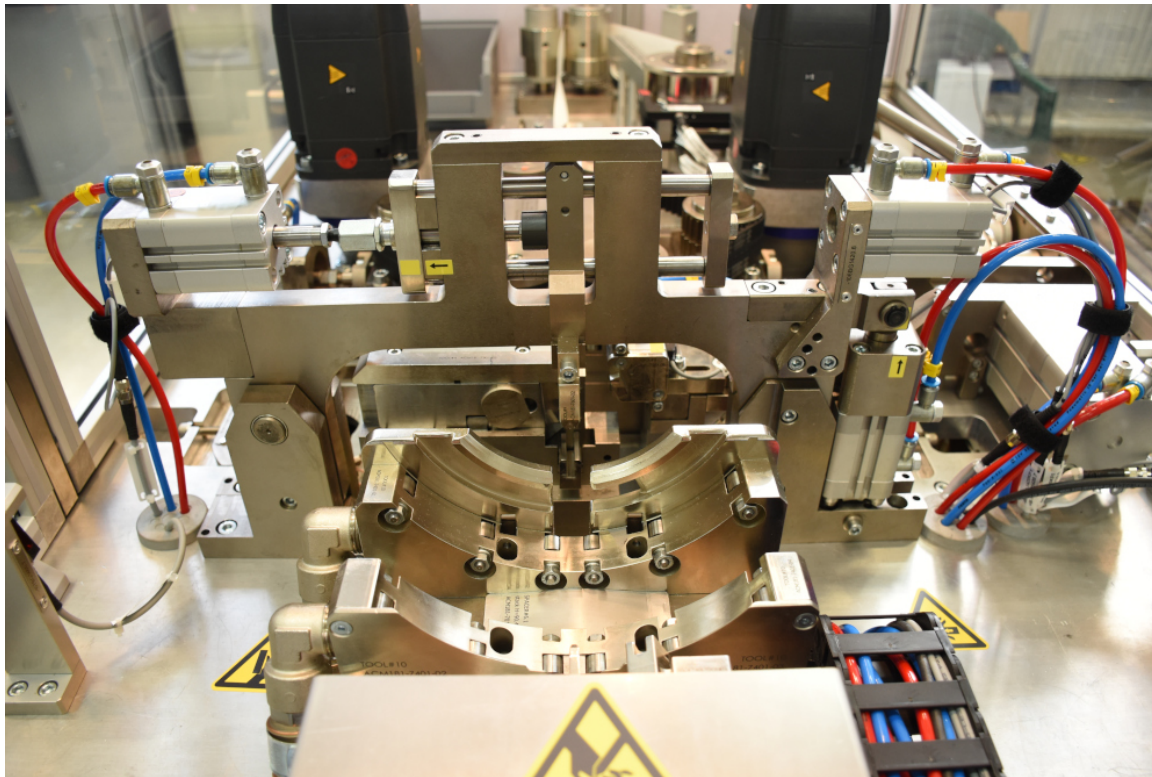
Machinery

DOUBLE 'B' SLOT INSULATION FORMING & INSERTION – ACM181 (horizontal axis)



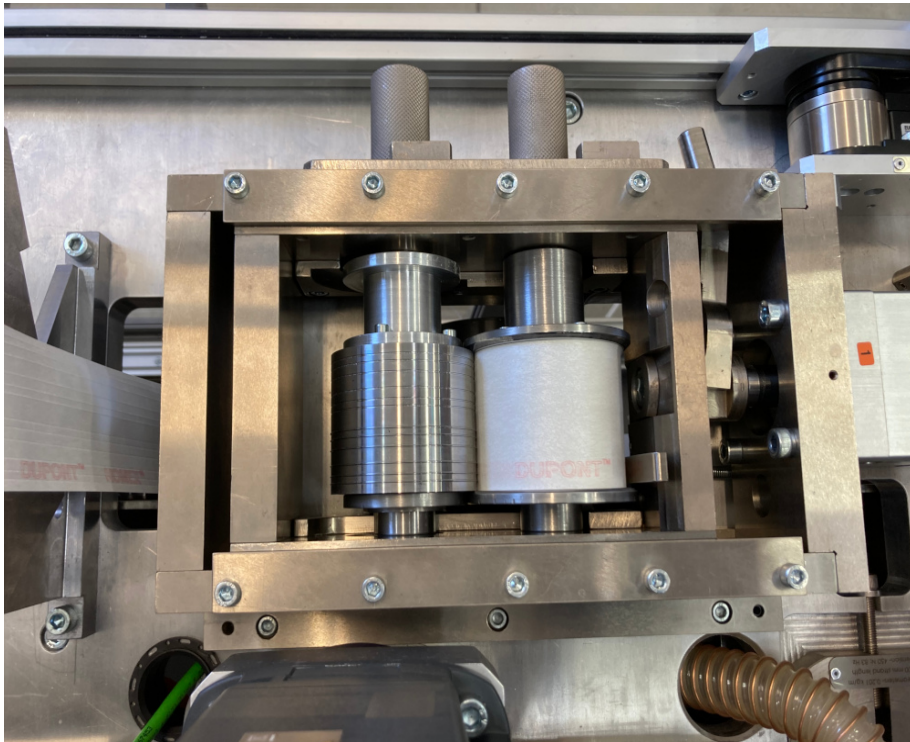
Machinery

DOUBLE 'B' SLOT INSULATION FORMING & INSERTION – ACM181 (horizontal axis)



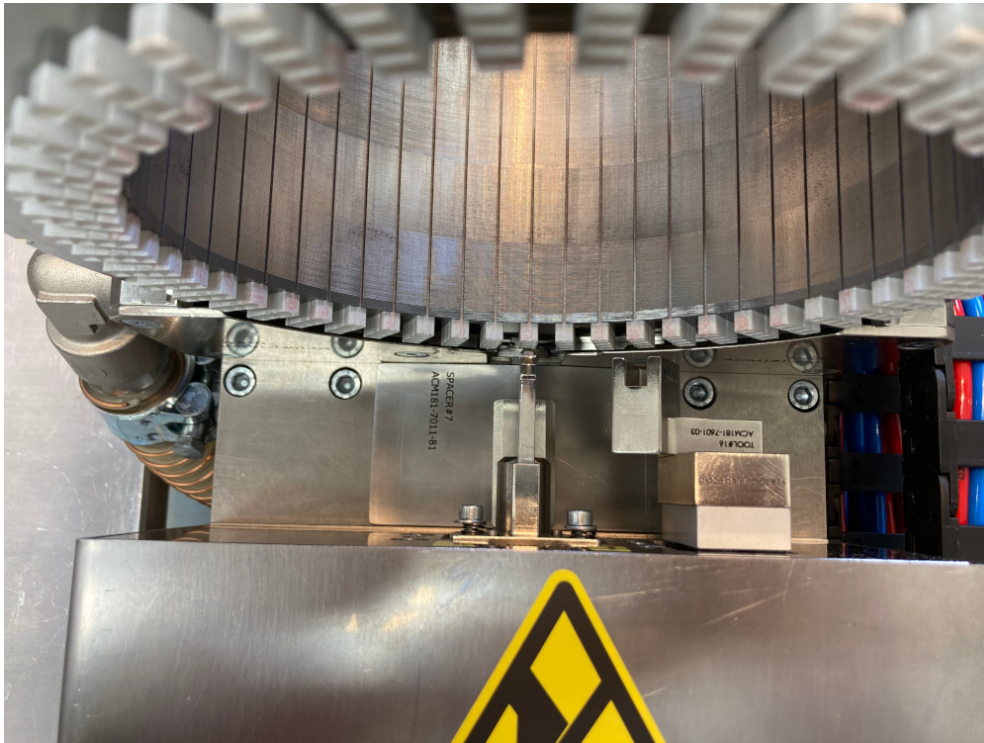
Machinery

DOUBLE 'B' SLOT INSULATION FORMING & INSERTION – ACM181 (horizontal axis)



Machinery

DOUBLE 'B' SLOT INSULATION FORMING & INSERTION – ACM181 (horizontal axis)

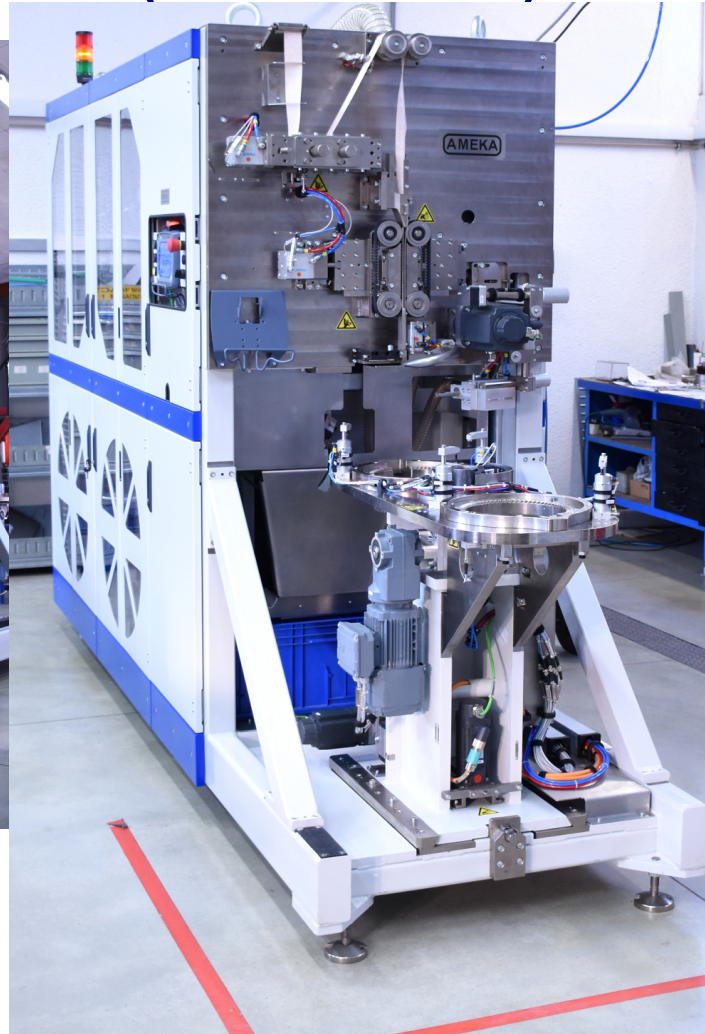


Machinery

AMEKA

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SLOT INSULATION FORMING & INSERTION – ACM176 Series with integrated automatic paper roll change system (vertical axis)



Machinery



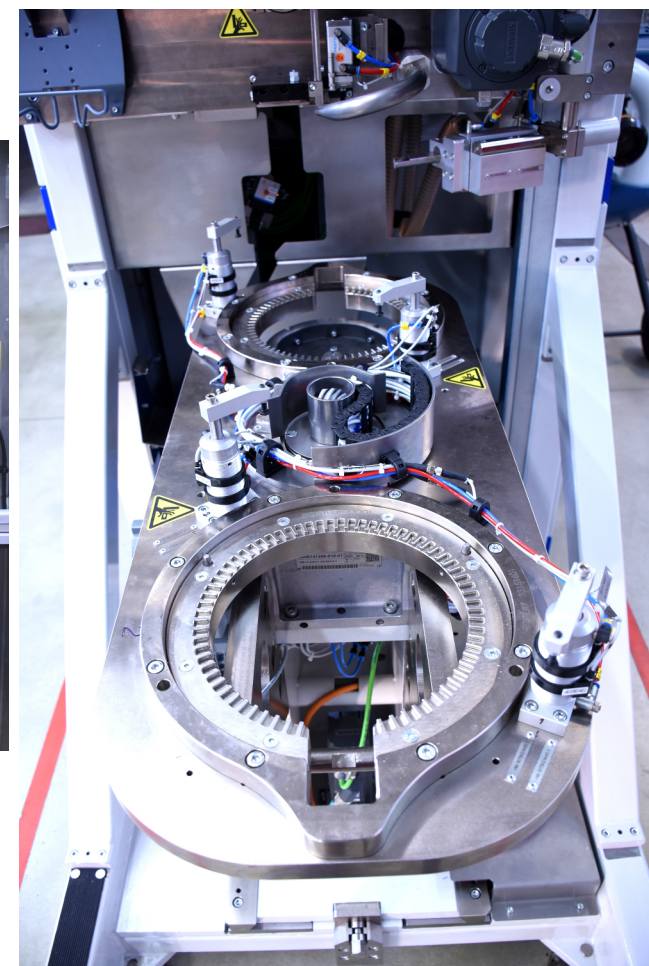
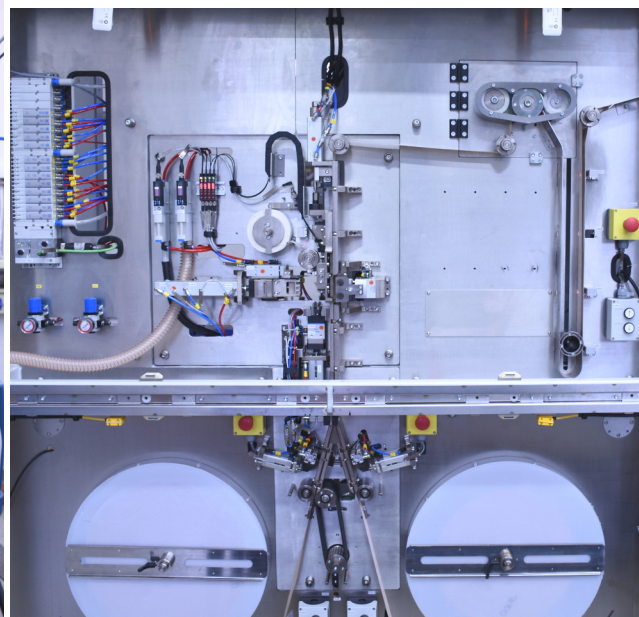
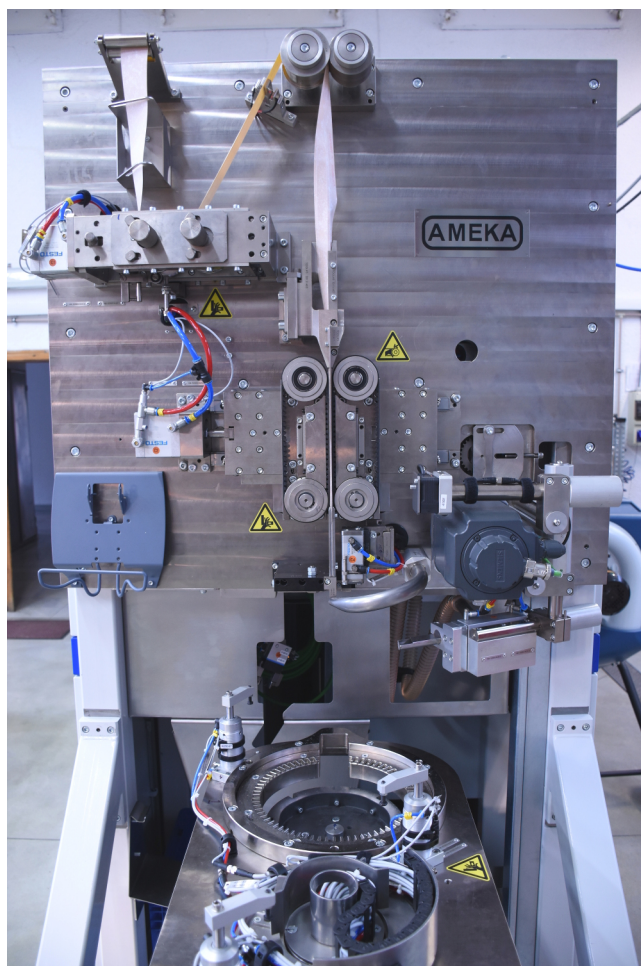
AUTOMATION & MECHANICS

SLOT INSULATION FORMING & INSERTION – ACM176 Series with integrated automatic paper roll change system (vertical axis)



Machinery

SLOT INSULATION FORMING & INSERTION – ACM176 Series with integrated automatic paper roll change system (vertical axis)



Machinery

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AUTOMATION & MECHANICS

SLOT INSULATION FORMING & INSERTION – ACM176 Series
with integrated automatic paper roll change system,
loading/unloading gripper and camera control of slotliner shape
(vertical axis)



Machinery

SIMULTANEOUS NECKING/TWISTING MACHINE – ACM180



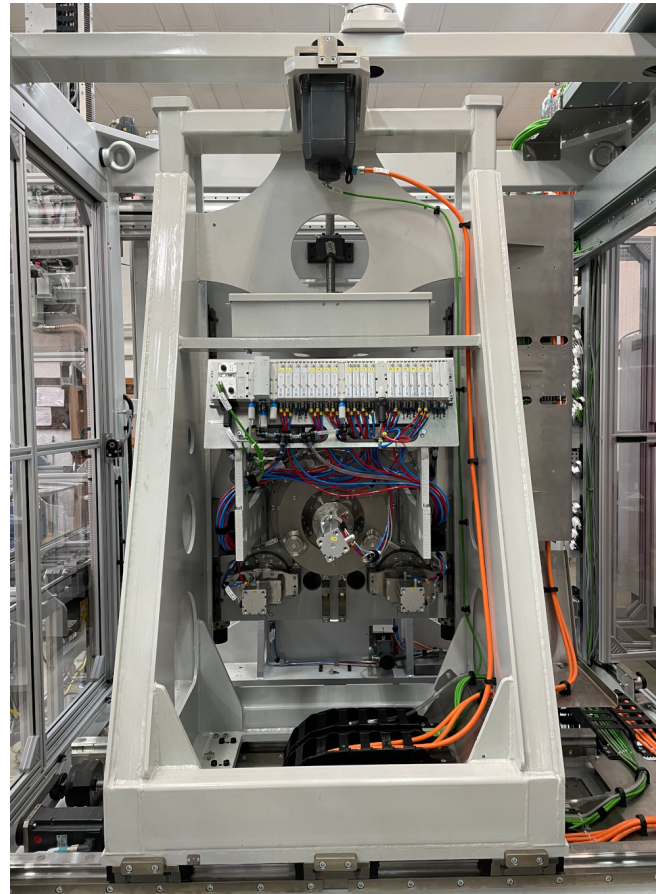
Machinery

SIMULTANEOUS NECKING/TWISTING MACHINE – ACM180



Machinery

SIMULTANEOUS NECKING/TWISTING MACHINE – ACM180



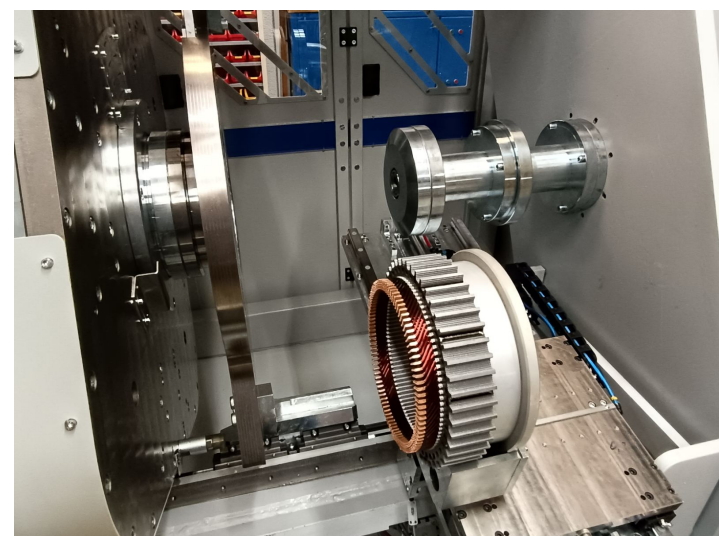
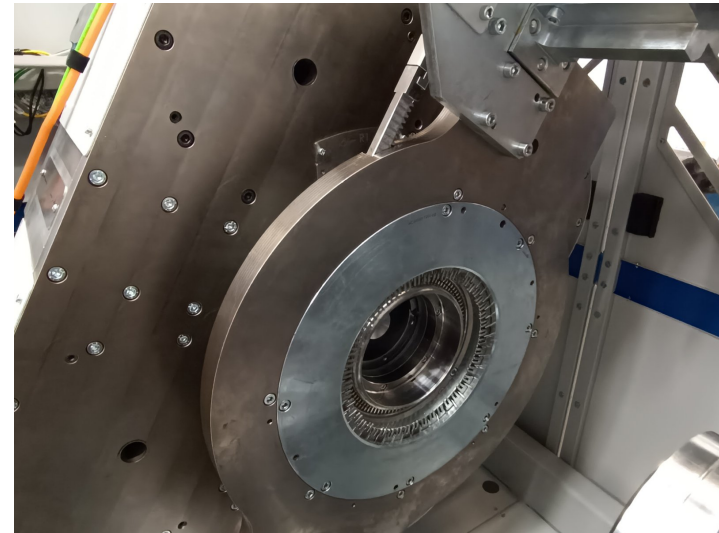
Machinery

SIMULTANEOUS NECKING/TWISTING MACHINE – ACM180



Machinery

4 ROLLS TWISTING MACHINE – ACM183





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Thank you for your attention!

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