



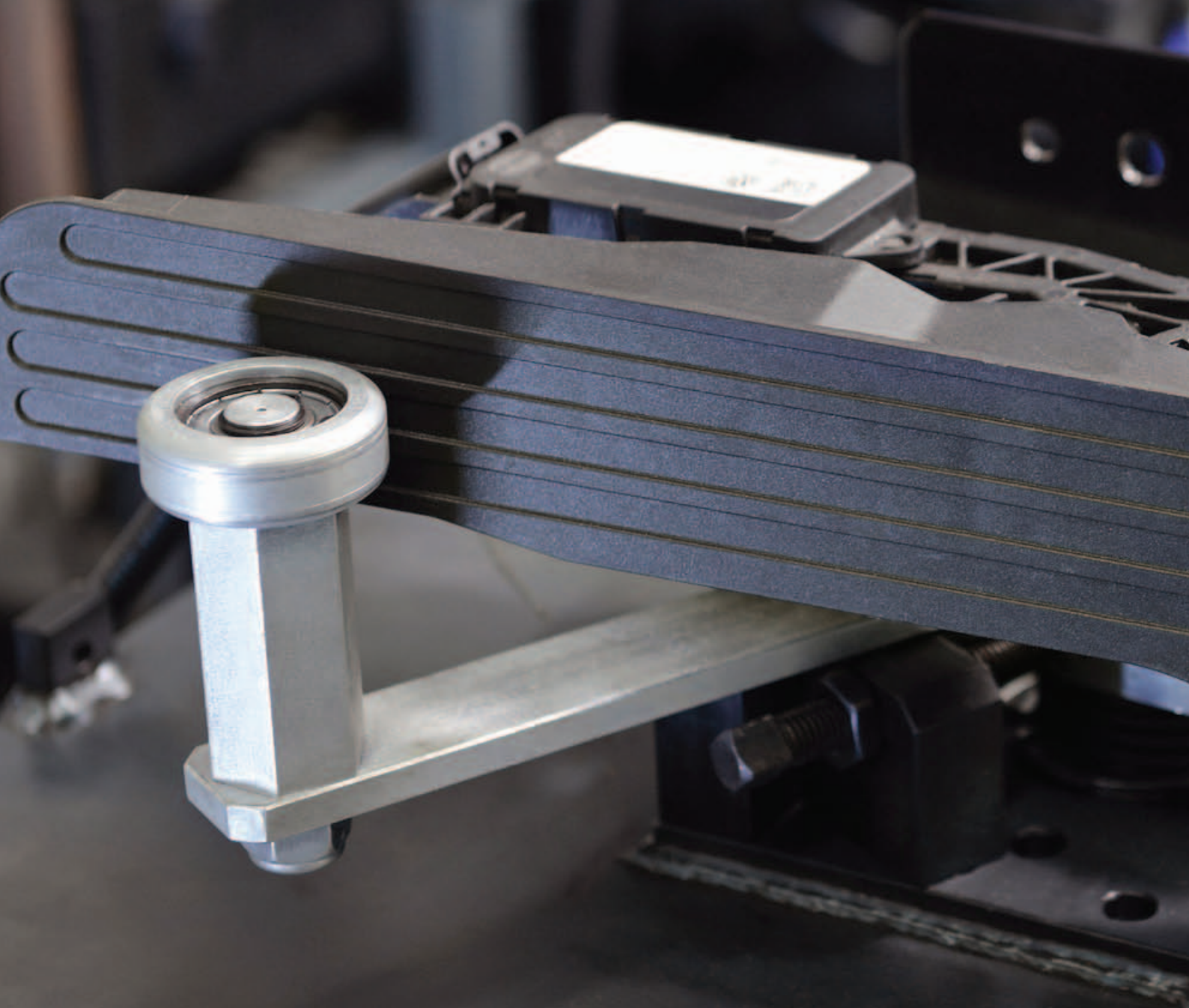
# Test systems

## Industrial automation



# Advanced and custom solutions

Electric drives for a wide range of applications  
Modern equipment for specific individual needs

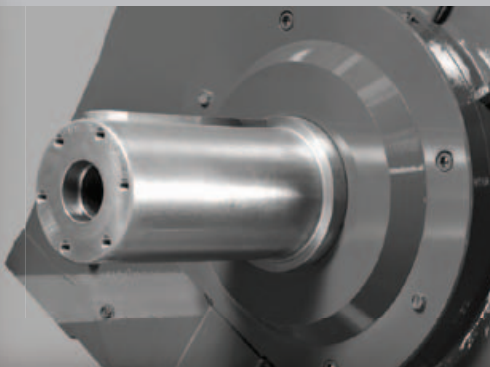




Electric Drives



Electric Machines



Electric Components



## Competence in the design and production of electric drives and machines

Delivery of equipment and services for producers and users of automation technology.

## Our long tradition in manufacturing and international experience

Support sales to global industrial leaders. Stable production processes and the ability to find solutions to meet even the most demanding customer needs.

## Proven technical solutions

An extensive portfolio of standardized types of test facilities, drives, and of other products, as well as customized, tailored products to meet our clients' specific requirements.

## Expertise and professionalism

Of a well coordinated team founded in our staff's qualifications and experience as well as our focus on working conditions.

Active and empathetic care in satisfying customer needs resulting in a transition from a supplier relationship to a long-term partnership.

## Quality is a given

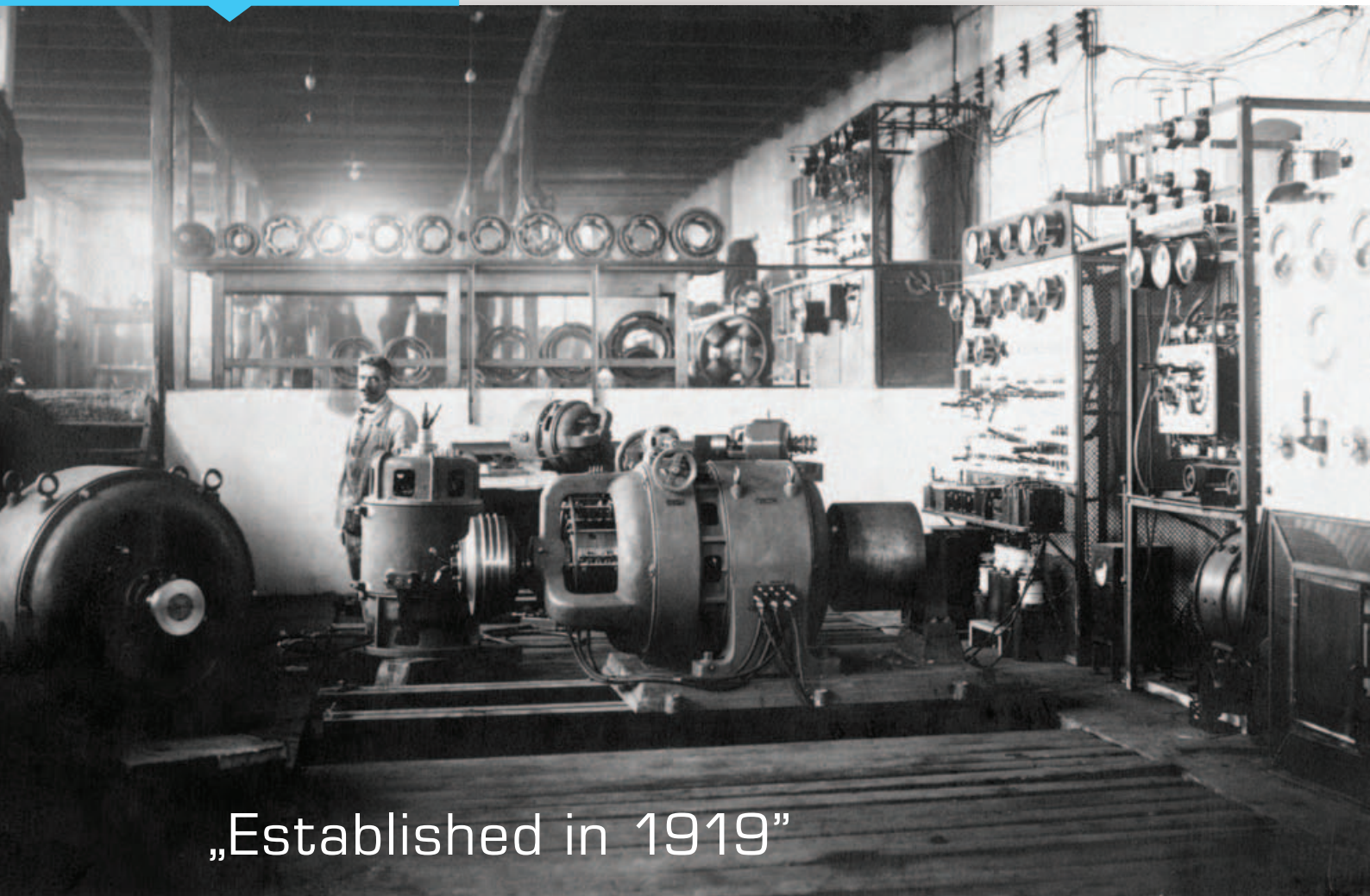
ISO 9001 + ISO 14001, OHSAS 18001, EN ISO 3834-2, EN 15085-2, DIN 18800-07, ČD V95, testing methods, audits and investments in precision measuring instruments.

## Continuous improvement

In company processes with application of 5S, VSM, TPM, SMED and other state-of-the-art methods ensure the effective usage of resources and the elimination of waste.

## Synergy

Combination of autonomy and cooperation within a product-structured divisional organization of the company.



## „Established in 1919”

Long-term proficiency in the production of electric drives and development of advanced solutions in the field of heavy-current electrical engineering is a reflection of the company's experience and acumen.

Innovations in all areas, from the development of the product itself to production processes, as well as our knowledgeable and skilled staff, are a guarantee of sophisticated technical solutions. The electrical machines, drives and components produced in our plant in Vsetín, its grounds covering 100,000 square meters, featuring a large assortment of production machinery and nearly 800 employees, satisfy the needs of our clients on all continents.

### 1919-1945

Elektrotechnická  
továrna Josef Soušedík



### 1945-1995

MEZ Vsetín



### 1995-2011

TES Vsetín  
and Mezservis



### od 2012

TES Vsetín





### Client-tailored solutions

Fully respecting project needs tailored to the specific application.



### High technical standards

Innovative product solutions designed by an experienced team of technicians.



### Individual approach

Of a team of experts with many years of experience with hundreds of completed projects.



### Development

For the optimization of the designed solution making use of high-performance 3D software, prototyping and functional verification of solutions before their actual implementation.



### Comprehensive solutions

From initial conception to final implementation, testing, commissioning and training of machine operators.



### Service and long-term support

On-going care of equipment and maintenance of software and hardware to ensure stability.



## Test systems

### Turnkey test technology

Modern complete test systems suitable for industrial, military, and research applications. Complete services beginning from project design, through delivery and installation to training and after-sales service.



### Items tested

- Complete vehicles - cars, trucks, motorcycles, tractors, buses, etc.
- Electric motors, generators, and other electrical rotating machines
- Internal combustion engines - cars, trucks, motorcycles, boats, tanks, aircraft, etc.
- Gearboxes, final drives, complete timing mechanisms
- Pumps, compressors, fans
- Other rotating machinery and equipment
- Other items, according to customer needs



### Measured and evaluation of values

- Power output, revolutions, torque
- Temperature, pressure
- Other electrical, magnetic, mechanical, chemical, and other values
- Values according to Euro 5 and Euro 6 emission standards
- LifeProtect® remote data management



## Examples of applications

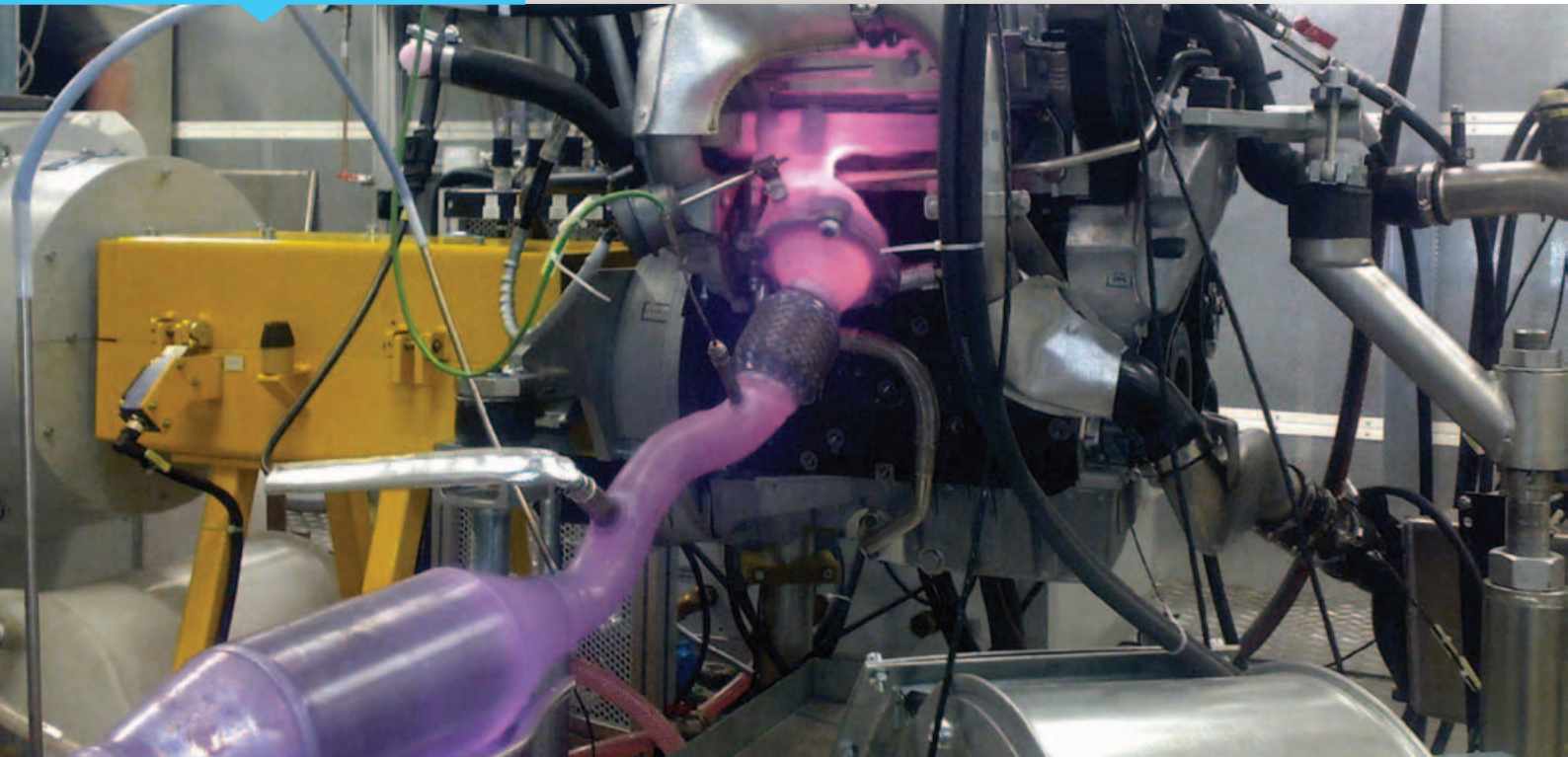
- Automotive
- Aeronautics industry
- Heavy road transport
- Railroad transport
- Shipbuilding
- Energy generation and distribution
- Electrical engineering
- Oil and gas extraction
- Special military equipment
- Education and research facilities
- Other application segments



## Examples of applications

- Vehicle test stations
- Audit engine test stations
- Automatic hot engine test stations
- POWERTRAIN vehicle test stations
- Gearbox and final drive test stations
- Container-type mobile test stations
- Test station modernizations





## Test station modernizations

### Complete or partial test facility modernizations

- Modernization of analogous test stations
- New digital control, measurement, and failure diagnostics
- Rehabilitation or exchanges of DC dynamometers, motor-generators, switch-boards and control consoles, measuring blocks, evaluation devices
- Equipment of test vaults by new technology including cables



### Benefits of the modernization

- Quality-improving modern test methods
- Meeting new requirements in the field of measurement and control
- High efficiency, precision, and reliability of the equipment
- Visualization, digitalization, and ergonomics of tests
- Control system for automatic testing and measurement archiving
- Meeting of present EU safety at work standards
- Meeting of the Euro 5 and Euro 6 emission standards
- Audit combustion engine tests; automotive
- Improvement of performance, measurement, control, visualization
- Hottest; automotive
- Production cycle acceleration under automatic mode, new fuel



## Industrial automation

### Comprehensive and reliable solutions

Drives for single-motor and multi-motor machines and process lines are offered. Project preparation, supply of electrical equipment, commissioning, and follow-up care in the form of servicing and technical support are included.



### Control systems for optimizing industrial processes

This is a wide range of solutions with different degrees of automation technology implementation. In the simplest applications, our programmable automatic units are designed as elements of control systems operated by low-voltage switchboards. They feature small visualization and control consoles or standard control consoles with switches and indicators. For larger applications, the automation of production lines is generally designed as a two-level control system, in which the process level is implemented by different types of programmable logic controllers (PLC). The selection of a PLC system also depends, along with the current user operation habits, on the optimal ratio between price and the demanded technical requirements of the application. The flexibility of our solution accommodates the addition of different subsystems including various M&R devices.



Drive and control of TITAN SC 33 CNC carousel, switchboard

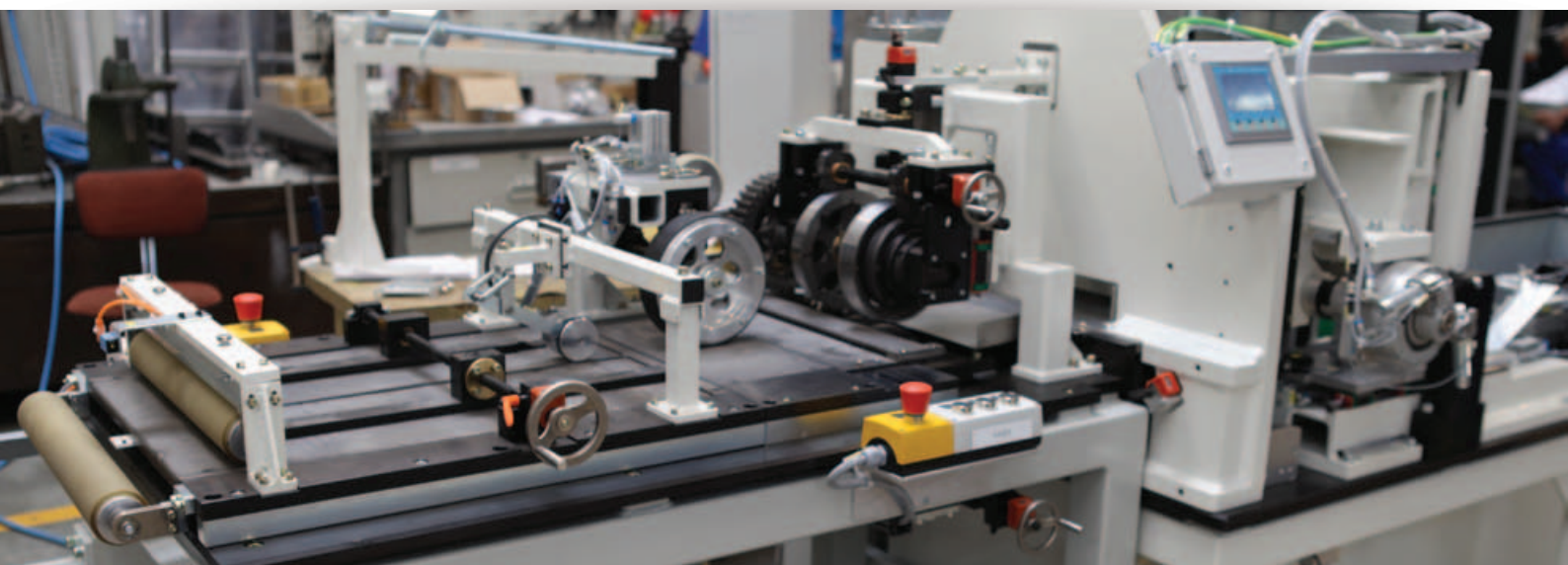
Control console of a magnet bonding machine



## Services

- Designing electric drives
- Delivery of control systems and process visualization
- Complete deliveries of electric drives including accessories
- Deliveries of AC and DC motors
- Rehabilitation of original drives, MEZ Vsetín and Mezservis trademarks
- Installation of supplied equipment including assembly and putting into service
- Complete service and repair of electric drives
- Operator training and technical consultancy





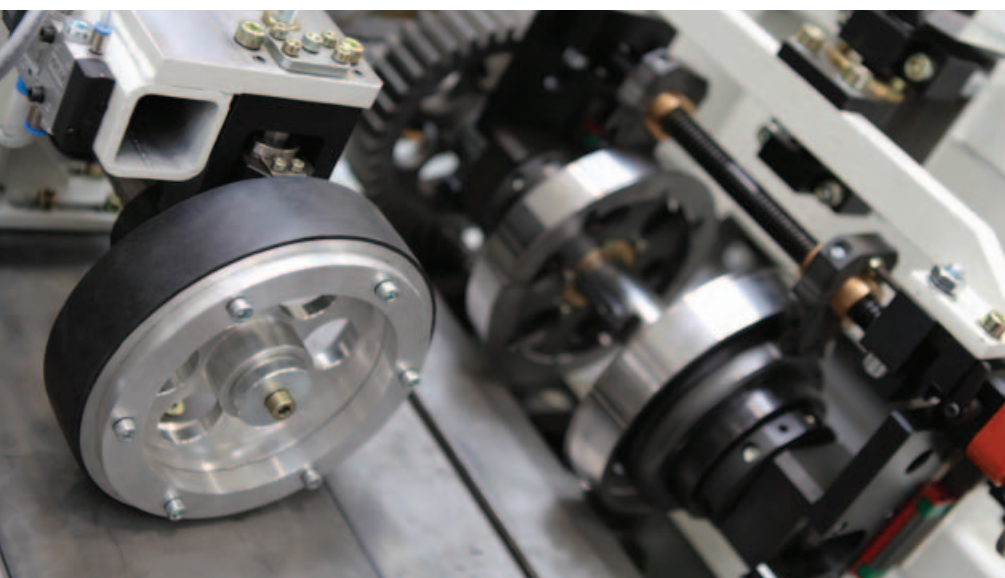
Equipment for production of slot insulation including control

Refurbishment of the SKIQ 20 CNC machine



## References

- Control of compressor station
- Control of generator exciter measuring station
- Control of magnet bonding machine
- Drive and control of TITAN SC 33 CNC carousel
- Drive and control of SKJ 32 - 63 CNC carousel
- Refurbishment of SKIQ 20 CNC machine
- Equipment for the production of slot insulation including control equipment
- 1.4 MW mixer drive
- Drive for steel cord rubber coating line
- Drive for four-cylinder line





## Single-purpose machines

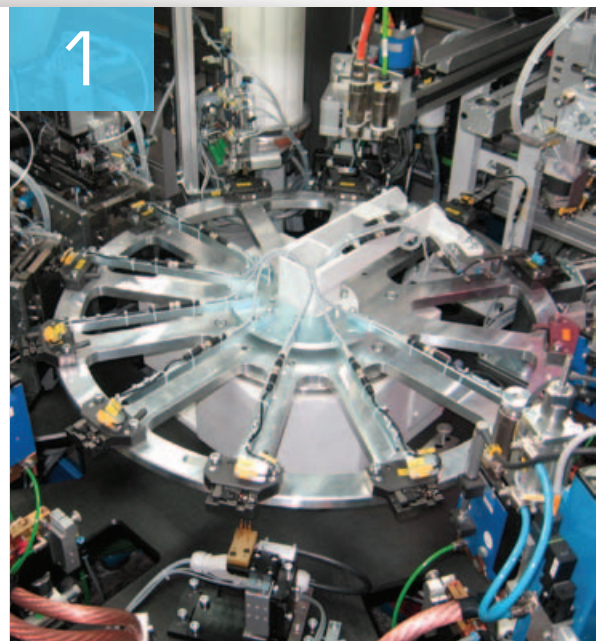
### Production and development of tailored production machines, lines, and special equipment

A vast array of professional competences enables us to provide complete solutions, beginning at initial intent and up to final implementation. For the optimization of the designed solution we make use of high-performance 3D software, prototyping and functional verification of solutions before their actual implementation. Variability and the principle of custom manufacturing provide solutions for all types of applications and industries, including demanding applications in the automotive, electrical and munition industries, or in explosive environments.

### Automatic welding machines and lines

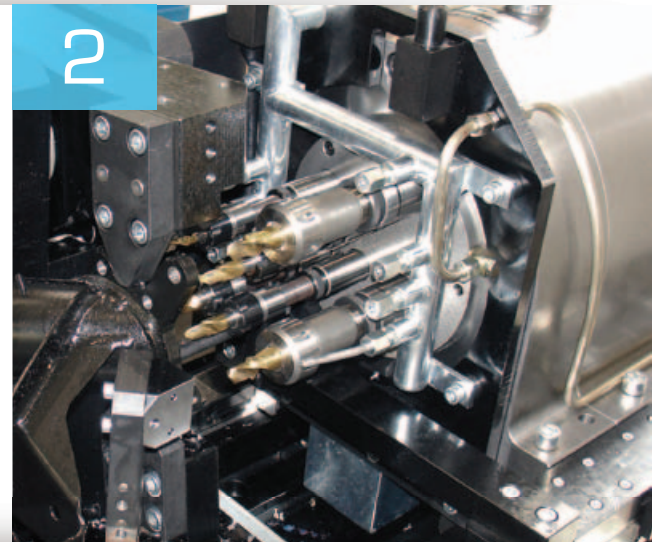
#### **Camshaft sensor assembly line**

The machine consists of two rotary, twelve-position tables with technology and the central conveyor. The electronic parts of the sensor are welded with a micro spot resistance welder. The machine works in fully automatic mode; the operator only manually loads pallets with parts and removes pallets of finished products from the machine. The products are checked by a camera system.



## Machines: brushing, drilling, rolling, machining, cutting

**Machine for drilling holes in rear axles of vehicles** designed for installation in the line. The machine is equipped with a pair of six-spindle drilling heads and two traversing units with servo drives, hydraulically and pneumatically operated clamps, a coolant unit and a chip conveyor.



2



3

## Cleaning and labelling machines: labelling of intermediate products, engraving, cleaning stations, pressure cleaning

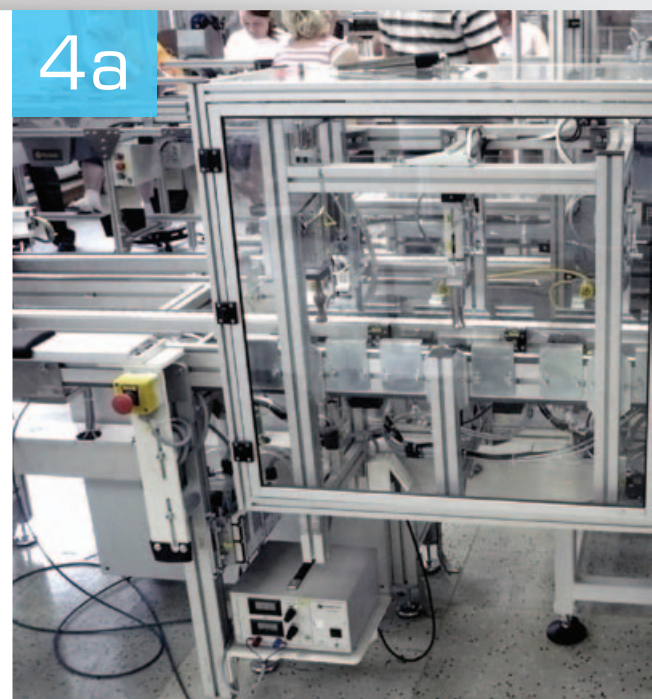
### **Brushing machine for pump shaft components**

for brushing cylindrical forms, eccentric forms and necks of injection pump shafts of different diameters. The machine collects parts from a tray filled by operators. A sliding linear servo-unit grabs a component intermediate product and gradually performs brushing of cylindrical forms and recesses. After brushing, the finished piece is placed on the output conveyor belt.

## Production lines: manipulators, conveyors, gantry machines

### **Production line for the assembly and testing of electric motor brush holders**

The device is used for soldering and testing motor brush holders. The base is an aluminium frame with a conveyor pallet system and functional and test units of the line attached to it. The operations of manual soldering, testing spring pressure and electric properties, laser marking and camera surveillance are carried out at 14 stations. The switchboard with the control panel stands alone.

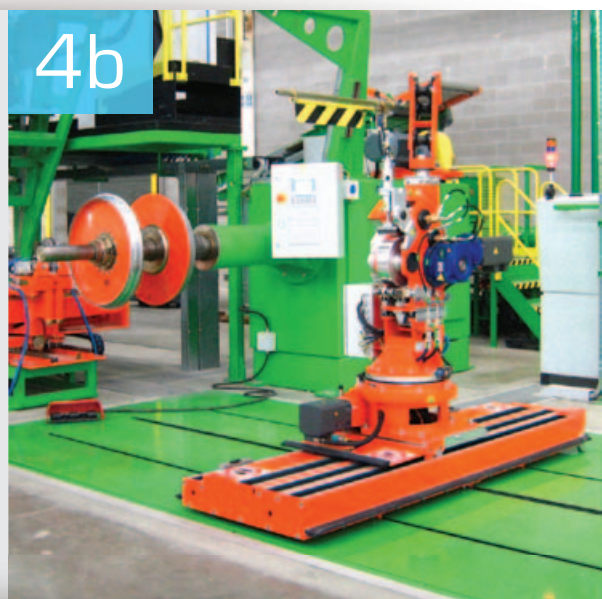


4a

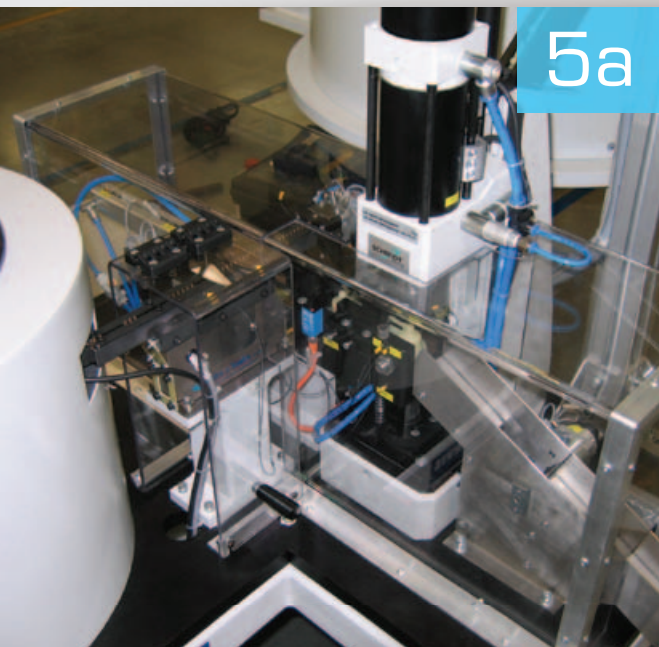
#### Production line for fitting treads of large tires

is used to fit the tread on the casing of tractor tires, which are prepared on a front-end standard machine. The tire casing, which is already fixed on the front-end machine, is fitted with a hot rubber band from the extruder to form the tread cross-profile as programmed by the machine control system. The rubber band is formed between two calender rollers and rolled onto the tire casing with a coating pulley turning the casing.

4b



5a



#### Assembly machines and lines: assembly lines, finishing automatic machines

##### Assembly line for the production of car seats

Machine for striking brass saddles is a separate unattended workplace. The base is a welded frame with attached vibrating magazines, a component feeder, a stamping unit, switchboard and control panel. The components are fed through a vibrating magazine and bars to the stamping unit. The stamping unit forms brass saddles for the stop surfaces in the connector holes. The strength and position of insertion are evaluated during stamping.

#### Assembly line for the production of car seats

Assembly line is 30 meters long and is intended for the manufacture of left and right front vehicle seats. The chain conveyor on aluminium profiles is driven by gear motors and an induction motor designed for three-shift operation.

5b



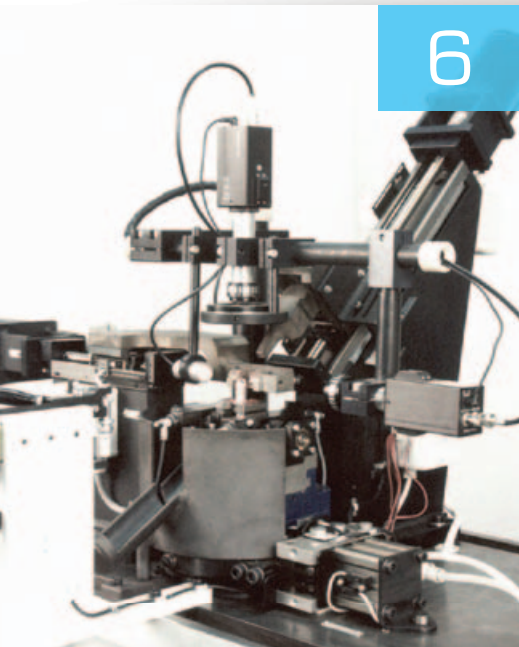
5c



#### Machine for winding plastic tubes for fuel filters

The machine for winding the plastic tube is used for the automatic winding of mechanically inserted plastic tubing with one type of material followed by another type of material. Both of these materials are of the same width for the respective length of the plastic tube. The ends of the wound material are ultrasonically welded to the plastic tube.

6



#### Visualization systems: control station, measuring of forms and distances, automatic finishing machines

##### 2D setting of the spark-over distance between the outer and inner electrodes of engine spark plugs

The CCD visualization system accurately measures the actual distance between the electrodes in real time. Based on the measured data, the outer electrode is bent using a forming tool and actuator. The possible number of electrodes set in this way on one plug is 1, 2, 3, 4.

#### Machines for explosive environments: loading of explosives, injection of flammable materials, dipping and mixing of ignition heads for vehicle belt tensioners, mixing of compositions

**Pyrotechnic composition mixer** is located in the explosive environment of the vault; the switchboard is in the hallway of the building. It is protected against switching by a safety limit switch at the vault door and a safety limit switch at the tub cover. When the temperature limits are exceeded, the machine is stopped by a temperature sensor. The operator adds the composition charge gradually into the tub. After mixing, the resulting mass is poured into the container on the table.

7





## Switchboard manufacture

The production builds on the traditional manufacture of low voltage switchboards used for electric drives, manufacturing lines, dynamometric stations, single-purpose machines, and on other industrial applications.

- Custom or mass-production for various industries
- Based on our own documentation or based on the client's documentation
- Design and structural design solutions
- Reconstruction and modernization of switchboards including control
- Verified components from renowned manufacturers

### Production portfolio

- Switchboards for electric drives
- Switchboards for production lines
- Switchboards for machining centres
- Switchboards for single-purpose machines
- Switchboards and control cabinets custom-built for the client

### Parameters

- Rated voltage up to 1,000 V
- Rated current up to 2,500 A

A close-up photograph of a Siemens SIMATIC S7-1500 industrial control unit. The unit is blue and black, with the Siemens logo and 'SIMATIC S7-1500' clearly visible. It features a small screen and various ports. The background shows other similar units in a rack.

# Supplies of Siemens components

Our long-term cooperation with Siemens, one of the world's top suppliers in the field of electric drives and power electronics, enables us to offer our customers a complex portfolio of components with the support of a renowned manufacturer of drive engineering.

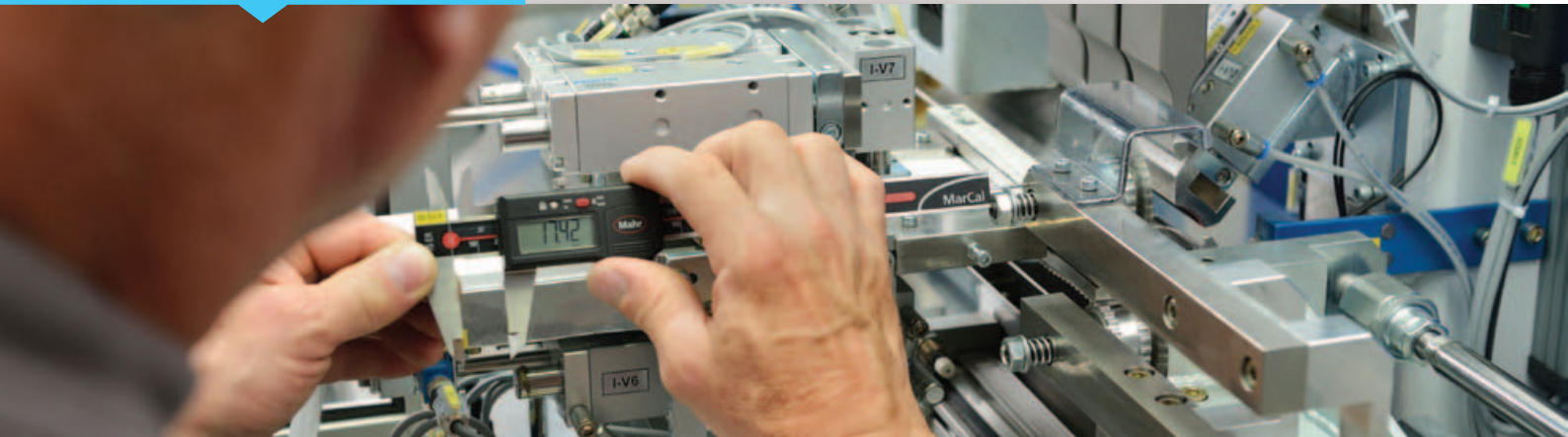
TES = Siemens Solution Partner, a holder of certificates for:  
[Automatic System Simatic](#) | [Large Drives](#) | [Drives&Motion](#)

## Supplies of

- Automation systems (Simatic, Simotion, Sinumeric, microsystems, visualization, TIA Portal and Step 7 software)
- Electric drives (Simotics electric motors, Micromaster and Sinamics frequency converters, software for electric drives)
- Switching components (Sirius)
- Power supply sources (Sitop, Sirius)
- Simatic industrial sensors, industrial communication (Simatic, NET) and others

## Services

- Repairs of Siemens control systems
- Express replacements of non-functional drive parts
- Supplies of discontinued parts
- Repairs and Service of Siemens electric motors



## Servicing and repairs

Complete and partial service of electric drives, automated industrial facilities

Preventive and after-sales services for reliable and continual performance and long-term equipment life. High added value of a long-term partnership and experience.



### Equipment diagnostics

Remote diagnostics of problems by phone, service visits and technical consultations according to the customer's needs.



### Complete nature of services

Complete services with additional assistance in areas including technical guidance, regular calibration of devices, complete solutions to customers' needs and smooth order processing made possible by our wide-ranging cooperation with other suppliers.



### Expert repairs of electric drives manufactured by MEZ Vsetín and by MEZSERVIS

Repairs and refurbishments of electric drives for models as old as from the 1960s and 1970s manufactured under the MEZ Vsetín and MEZSERVIS trademarks.



### Service both home and abroad

Comprehensive experience with various drive types, dynamometers and test systems, and providing services abroad, e.g. in Germany, China, India, Russia, Ukraine, Slovakia etc.



## Drives and automation

- Installation and commissioning of new equipment
- Programming of converters and PLCs
- Upgrades for older drives
- Replacement of irreparable W-L drives or DC converters
- Calibration of test stations with dynamometers
- Testing, measurement and analysis of PROFIBUS DP/PA, MPI networks
- Operator training



## Repairs and services of motors

- Repairs and service of electric motors - replacement of bearings, sensors and other components, rewinding of electric motors, inspection reports.
- Refurbishment of DC motors - cleaning, restoration of insulation coating, replacement of bearings, rewinding of commutators, replacement of brushes, inspection and setting of brush pressure, replacement of original DC tachogenerators with IRC sensors.



## References

- Special DC control drives with converters (M4, 3M, 4M, 5M, Formic, ITM, MTM, IRO, Control Techniques, Siemens, Lenze, Omron)
- Dynamometers, DS, 1DS, 2DS, made by MEZ Vsetín and by MEZSERVIS Vsetín
- Eddy-current dynamometers, V125, V 250, V 500 made by MEZ Vsetín
- Express lifts, RV10, RV20, RV30 made by MEZ Vsetín and by MEZSERVIS Vsetín
- Drives for cableways and ski lifts, BVL, TATRAPOMA with converters by MEZ Vsetín, ZPA Děčín, Control Techniques, Siemens
- Horizontal boring machines, WH Škoda Plzeň, TOS Varnsdorf
- Planing machines, HD TOS Holoubkov
- Vertical boring and turning mills, SK ČKD Blansko, TOS Hulín
- Lathes, SPT Kovosvit Sezimovo Ústí, SPS ZPS Zlín
- Peeling machines, veneer slicing machines, KPS Moravské Budějovice
- Dry and wet wire-drawing machines, ZOM Nymburk
- Regulated drives for centrifuges, beet cutters, sugar extractors in sugar mills



With 100 years of experience in the production of electrical equipment, TES aspires to be the global partner of choice for purpose-built rotating electrical machines, drives, and components.



Industrial  
automation



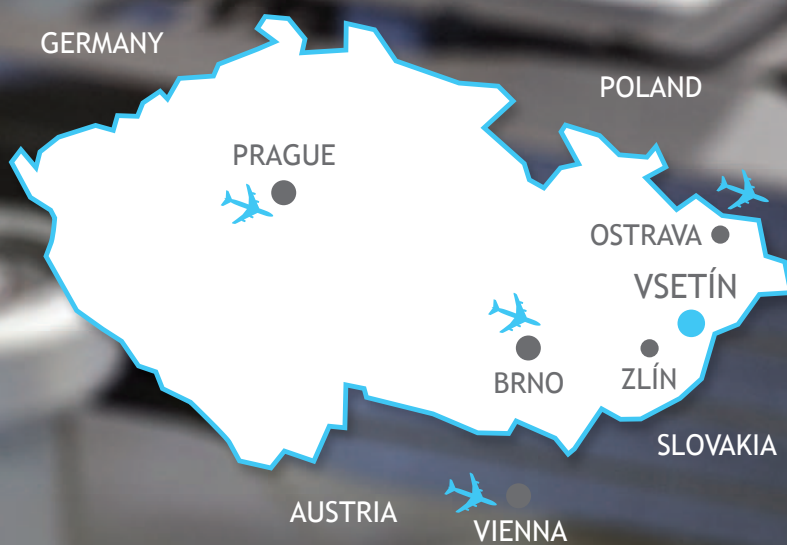
Test  
systems



Subcontracted  
production



General  
industry



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