



# **U-VAL** TRANSPORT

## **Rail, Bus and Truck**

Pneumatics | Hydraulics | Electro-pneumatics  
Electromechanics | Systems and Manifolds  
Milling and Turning







# About us



Tu-val d.o.o. Domžale is a successful family company. It was established in 1991 and has been constantly developing and growing over the last decades.

The main activity of the company is development and production of machine parts, assemblies and finished products for a known client. We are proving our competitiveness in all major European markets (Germany, Austria, Great Britain, France, Spain, Netherlands, Czech Republic, etc.), USA and around the world.

TU-VAL is a development supplier from the EU. Our company develops and manufactures components, assemblies and finished products, thereby creating solutions for challenges that its partners are facing in the fields of pneumatics, hydraulics, welding, fastening systems, medicine, transport, mechanical engineering, household appliance and energetics.

TU-VAL strictly follows the legislation and regulations and pays great attention to the maintenance and compliance with numerous industrial standards. Ever since 2000, the company has been developing the **ISO 9001** quality maintenance system. Our products and pro-

cesses comply and follow best practices and industrial standards IRIS, FDA, NSF, ISO 13485 and ISO 16949.

Together with our partner laboratory, we perform testing according to numerous procedures (for example EN60068, EN 50155, DIN 5510-2; EN45545-2 or EN 61373 and EN 50121-3-2) and also meet welding standard requirements (ISO 3834; ISO 15614; ISO 9606; ISO 14732; ISO 5817 Level B; ISO 9712). On customer demand, we can also prepare documentation for ATEX.



# Processes

## Quality Control, Engraving and Traceability

In order to guarantee the highest quality of the offer, TU-VAL invested in the development of its own measurement laboratory. This enabled us to perform final product inspection under controlled conditions in the field of dimensions using a CMM, profile projector and various calibres, to perform inspection of roughness, material strength, surface protection coating thickness, the achieved product purity, product tightness or leak integrity with the help of testing devices developed

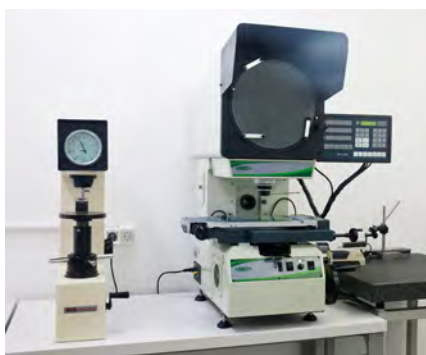


in the company, and to perform other functional tests.

Such equipment also allows us to manufacture top-class measurement reports, measurement analysis, and provides the highest level of control possible in combination with **APQP, FMEA and/or 8D analysis**.

We are also sorting out good and rejecting non-compliant parts. With external partners we provide all the necessary initial sample testing according to numerous procedures:

**EN60068, EN 50155, DIN 5510-2, EN45545-2, EN 61373 in EN 50121-3-2**

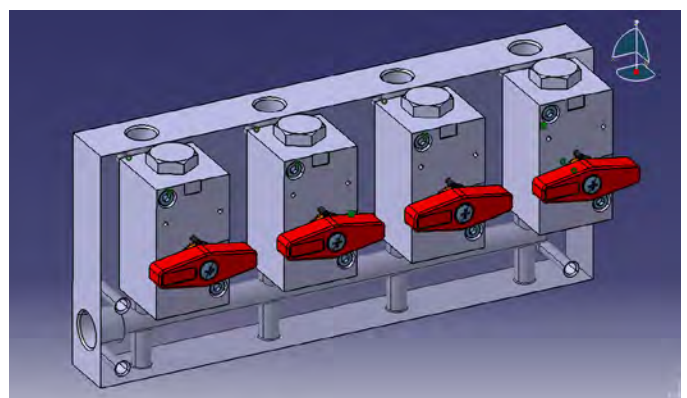
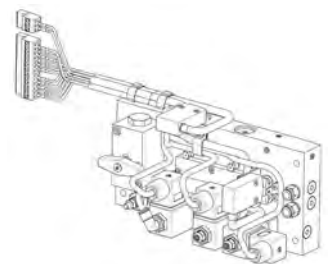


## Design, development and engineering

TU-VAL is constantly investing in the ability of generating knowledge and finding new solutions. With our team of qualified engineers, Solidworks equipment and the support of our partners (University of Ljubljana, our suppliers) we are able to provide efficient technical support for the development of production, especially in the following areas:

- Refurbishment projects in rail (door control, systems)
- Reduction of costs in the production of machine parts
- Improvement of assembly processes (shorter assembly times, increased consistency)
- Development of testing devices to measure tightness, leak integrity or flow
- Preparation of technical drawings and 3D models on the basis of samples
- Development of pneumatic control panels and cabinets on the basis of pneumatic diagrams

- Development of special rodless pneumatic cylinders
- Development of linear units
- Development of special pneumatic and hydraulic cylinders and valves

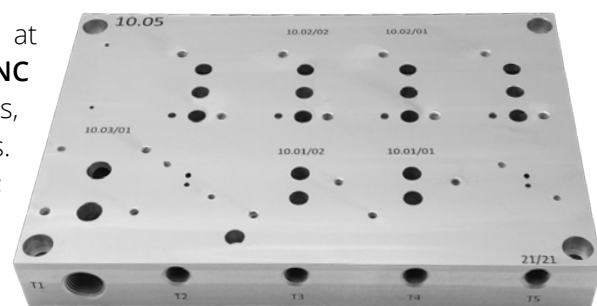






## Milling and Turning

TU-VAL manufactures quality products in a timely manner and at competitive prices. We manufacture machine parts on modern **CNC lathes and milling centres**. Machines are equipped with feeders, driven tools, robotic assistance and other productive technologies. All processes are managed in accordance with ISO 9001:2015; we are also implementing advanced process management techniques – constant improvement, EFQM, 5S + S, lean manufacturing, etc.



Typical batch volumes range from a single to several hundred thousand pieces. CNC machining is performed on rods with diameters of 2 – 65 mm; CNC machining with assistance is performed on rods with diameters of up to 300 mm. CNC milling is performed on pieces with dimensions of 1000mm x 600mm x 500mm. We process various materials: aluminium, stainless steel, plastics (POM, Novilon, PEEK, Torlon, etc.), brass, steel, castings, etc.

## Assembly and Test

TU-VAL offers assembly facility with **final inspection and 100% functional tests** incorporated into the main process. All products – valves, cylinders, systems and other process control equipment is assembled with care from our long-term experienced staff and 100% tested.



## Logistics

**We provide our partners with solutions within the framework of:**

- Just in Time
- KANBAN
- long-term contracts
- consignment warehouses
- project ordering of sets (in order to reduce the number of different items per order)
- and maintenance of the agreed upon emergency stock
- design of product specific packaging
- organisation of deliveries, pick-ups and complete logistic solutions

# Application

## Transport solutions

TU-VAL offers various transport solutions. Many of our solutions are already built into modern trains driving through-out the world. Our offer is to build robust and reliable components for transport sector.

Components that can be used in any environment and circumstances. Our promise to you is to be reliable and effective partner for you.

## Urban and high speed transportation solutions

With over 20 years of experience in this field we can offer you various components for urban trains which are built to last. All our solutions are tried and tested for every scenario possible. This is to ensure minimal downtime of our components and reducing maintenance downtime.

- Auto coupling controls and actuators
- Mirror control systems
- Minimum pressure valves
- HVAC Pressure protection controls and actuators
- Toilet and water control systems
- Horn control valves
- Isolation and drain valves
- Secondary suspension control
- Pressure regulators and foot pumps for pantographs
- Pressure switch and regulators
- External pneumatic door actuation and control system
- Brake system valves
- Pneumatically operated mirror



## Freight transportation solutions

Moving freight from point A to point B must be efficient and fast. With TU-VAL components there is no need to worry about downtime of the equipment. TU-VAL is able to design and manufacture different pneumatic freight systems. Our promise is to build reliable and quality components for this field.

- Customized actuators for bottom discharge door system and top hatches
- Solenoid valves
- Isolation and drain valves
- Retarder cylinders
- Wagon discharge automation systems
- Latching cylinders
- Systems for locomotives
- Horn valves, sanding system controls and regulators



## Hydrogen trains

TU-VAL offer components and system for controlling the flow of hydrogen at high pressure, with no leakage and with required ATEX-certificates.



# Railway equipment



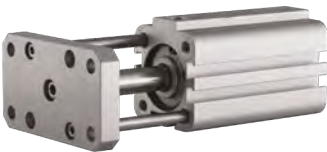
## Pantograph

Pneumatic pantograph control system is used on trains to lift and lower the pantograph. The system needs to be designed and manufactured with greatest precision and resistance to the environment in which it is operating. We can design and produce pneumatic pantograph control system for existing and new trains.



## HVAC Damper controls

Trains traveling in high speed need HVAC damper control to close the inlet vent quickly whenever the train enters a tunnel or passes another train. TU-VAL can design and manufacture wide range of HVAC damper control systems according to your needs and requirements.



## Couplings and nose cones

Different pneumatic components can be built by TU-VAL for couplings and nose cones. Actuators, valves, modular control units and manual valves are tailor-made for each project according to project specification.



## Door control system

Door control systems are made with latest rail quality standards. Pneumatic door control systems consist of pneumatic rodless cylinder and control valve system. All component used by TU-VAL are rail certified and tested to perfection.



## Levelling valve

Levelling valve is a part of suspension control. This valve is built to withstand harsh environment in which it is operating. We can fully customize this valve according to your needs.



## Freight automated control

Control systems for automated control of different application such as discharge doors and wagon top hatch. All components used by TU-VAL are rail validated and are made for extreme environment.



## Toilet and water control systems

Toilet and water control system needs to be robust and corrosion resistant, our systems is designed and manufactured to be just that. It is also designed to minimize air and water consumption.



## Isolating valves

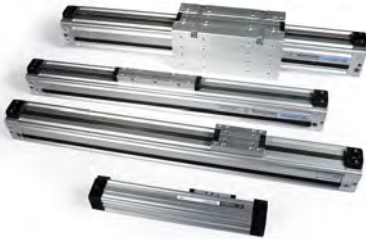
Isolating valves are used to ensure safe working environment when maintenance is carried out on the train. All isolating valves are tailor-made according to customer requirements. They are made by international rail standards (US Standards, EU Standards, etc.). Offered in various options: DN10, DN20, different colour/type of handles, positional signal.

# Products



## Systems and manifolds

Design of systems and manifolds is one of the key advantages of our company. We help our customer reduce the number of components needed, the assembly time of the train is reduced to minimum and also maintenance work on train itself is reduced to minimum. TU-VAL engineers combine pneumatic, electro-pneumatic and electric components.



## Rodless cylinders (pneumatic, electric)

Rodless cylinders are offered in 6 sizes from diameter 18 to diameter 63 with several customisation possibilities – long cushioning, double carriages, obstacle detection option. The cylinder range offers one of the lowest leakage rate in the market due to innovative sealing design.



## Pressure regulators, air preparation line

TU-val offers broad range of air preparation components from air filters, lubricators and regulators. Also available manifold mounted regulator and precision regulators



## Cylinders / actuators (pneumatic, hydraulic, electric)

TU-VAL offers a great range of cylinders used in various application on rail – for example HVAC, Door actuation, Rail maintenance vehicles etc.



## High pressure, low leakage valves

The innovative series of coaxial valves offer specific characteristics, which allow us to use them in high-demand environment. Typical application is in control of hydrogen on the hydrogen trains – solves the demand for high pressure, low leakage and ATEX-certification. Also very good fit on test benches.



## Manometers and Test benches

TU-val railway products include also manometers and thermometers to use on train or test benches. All with relevant rail and/or accuracy certification.





## Mechanical valves

High quality valve range for use in required temperature range with broad option of valve actuation (push buttons, colour, emergency stop button etc.) Typically used as an emergency exit button.



## Vacuum components

Due to no mechanical movement of the internal parts of vacuum pumps they can be used in the most demanding fields. The main rail application is in toilet systems.



## Magnetic Cylinder Sensor

Magnetic sensors are proven in railway environment and solving the challenges in this field regarding vibration, voltage stability and temperature.



## Solenoid valves

The valves from metal series are known for its reliability and very good operation also in low temperatures. Mainly used on HVAC application.

# Reliable, Simple, Efficient.



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