



SANDING SYSTEM

PZKV-01, KOVA-03D

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UNIVERSAL SYSTEM FOR ALL CONDITIONS

Tribotec's sanding systems offer an effective and efficient solution of friction between wheel and rail. The systems for the railway, as well as for the LRV, are based on the philosophy of a separate and fully independent sander for each single wheel. This enables high design variability and simultaneous assurance of high reliability of the vehicle sanding system as a whole, consisting of several independent sanding units. Caring for the environment and using the optimal amount of sand is an important factor when designing a specific device.

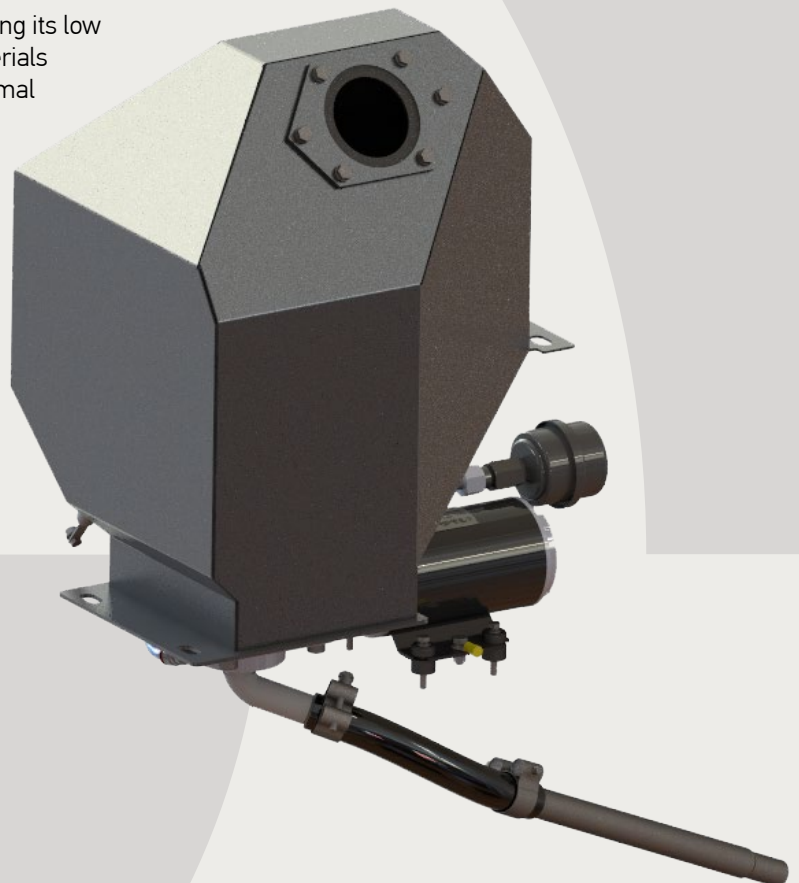
Sanding systems are designed individually for each customer and their project using its modularity.

The built-in dimensions of the system are minimized, the maximum yield of the available built-in space for the volume of the operational sand stock is achieved through the tried and tested type shapes of the sandboxes.

For the construction of the system, materials ensuring its low weight are used, and at the same time, special materials can also be used for noise reduction and event. thermal insulation. The systems are commonly supplied in aluminum and stainless steel. The system is equipped as standard with sensors for signaling of the sand level in the reservoir.

Sanding systems are designed with an open system control architecture. Control of the system operation is realized from the superior control system of the vehicle. If necessary, a separate sanding control unit is included as an intermediate stage that controls the operation of individual sanders and provides feedback and control for the superior vehicle control system.

From us, the customer receives everything from project planning, device development, production and delivery, to commissioning on the vehicle and assistance during tests from one source.



FEATURES AND BENEFITS

- a significant reduction in sand consumption, the associated savings in operating costs and a contribution to the preservation of the environment
- significant reduction of dust in the urban agglomeration
- continuous flow of sand under the wheel throughout the sanding cycle
- the possibility of setting the supplied amount of sand according to the needs of the driving profile of the tram line
- keeping the sand in the sandbox in a condition for immediate use – drying, heating, blowing
- manual or semi-automatic filling of sand into reservoirs using a filling gun
- signaling of the amount of sand level in the reservoir
- modular construction, minimization of built-in dimensions, low weight
- without moving parts in contact with abrasive material
- function of the cleaning draft
- no need for pressure-tight sandboxes
- low noise level of the system enabling installation in the interior of the vehicle
- high reliability and long service life of the equipment

SIMPLE AND VERSATILE

Sanding systems consist of a few components, thanks to the variability of which we can prepare a customer version for each project.

- Sandbox
- Dispenser
- Filling flap
- Nozzles
- Accessories

The combination of the mentioned components creates a system that satisfies any requirements.

Basic technical data

Dose of sand	up to 1200 g/30 s
Reaction time	0,5 s
Sandbox volume	according to customer requirements

SANDBOX

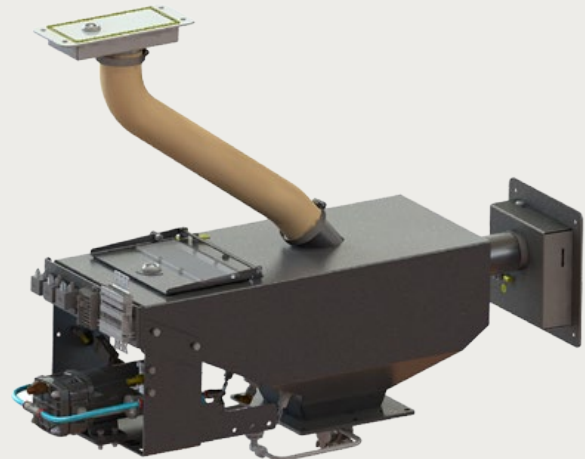
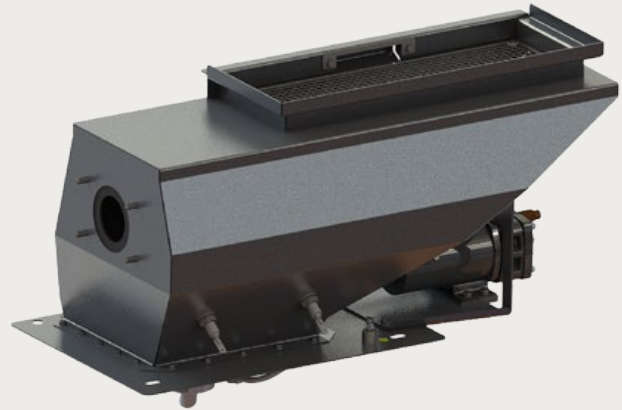
These components are welded from stainless steel or aluminum sheets. They are supplied as customer variants of typical products, or are tailor-made for the respective project by our design department. For retrofits, we can also offer an under-seat variant to which the passenger seats can be attached directly.

Heaters for heating the sand are installed in each sandbox.

Based on customer's specifications, the sandboxes are equipped with:

- Filling holes for filling from the outside/inside
- Service covers for easy access to individual parts and cleaning
- A sight glass for visual inspection of the sand supply
- Sand level sensor according to the customer's specification
- Additional accessories according to customer requirements

The volume of the sandboxes is determined by the installation possibilities for installation in the vehicle, the maximum available space is always used efficiently.



DISPENSER

For each individual application, we offer a suitable dispenser that always ensures optimal device performance. Common features of all dispensers are that they do not contain any moving parts that would bring a higher risk of failure.

DISPENSER PV-01 EASY

- For retrofit or simple applications
- Minimal dimensions and simple installation
- Amount of sand from 300 to 700 g/30 s
- Amount of sand depending on vehicle speed
- Only one hose from the vehicle to the dispenser
- Customizing the installation dimensions to an existing sandbox
- The possibility of turning the sand output freely for easier routing of the hose

DISPENSER PV-01

- Suitable for trams and locomotives/train units
- Amount of sand up to 1000 g/30 s
- After-blow function for cleaning the hose and pipe after sanding
- Amount of sand depending on vehicle speed
- Various variants of outlets for sand output
- The possibility of turning the sand output freely for easier routing of the hose

DISPENSER KOVA-03D

- Designed for locomotives/train units
- Suitable for new vehicles and retrofits
- Sand blowing in the sandbox
- Air preheating of blowing air
- Amount of sand acc. to TSI specification
- Precise adjustment of the amount of sand directly on the sander for each wheel
- Position of inputs and outputs adapted to the vehicle design

DISPENSER KOVA-03D-BDH

- Designed for locomotives/train units
- Installation space saving device
- Sand blowing in the sandbox
- Air preheating for dispenser and blowing air
- Amount of sand up to 1200 g/30 s
- Amount of sand depending on vehicle speed
- Precise adjustment of the amount of sand
- The possibility of turning the sand output freely for easier routing of the hose

The sanding system for vehicles without a central air source requires a DM1 or DM3 blower to perform the functions described above.

For use in sanders, we recommend sand with a SiO_2 content of at least 85%. The use of another type of sand is possible, but it is necessary to contact our specialists in advance and set the system during the preparation of the equipment.



FILLING FLAPS

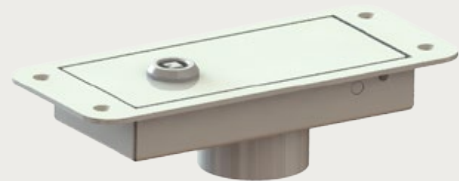
We understand that different vehicles and operating conditions require different sand filling solutions. That is why we offer a range of filling flaps or filling lids as accessories for sanding systems. You can choose from standard solutions or choose a filling flap design for a specific project. Our systems can be equipped with:

- A simple filling hole with a sifter against the ingress of dirt
- External filling flap in with frame or in a non-frame design
- Internal filling flap
- Filling lids with closing mechanism or closed by screw/bayonet

Each flap can be equipped with a LED signal indicating the level of sand in the sandbox, or a sensor detecting its closure.

The filling flaps are manufactured to enable semi-automatic filling using the most widespread filling devices.

Our filling flaps become part of the visual surfaces in the interior and exterior of the vehicle, we offer the option of delivering them painted in the desired shade or according to the customer's specification. It is also possible to equip the filling flaps with an anti-graffiti treatment, which facilitates cleaning the surface after damage by vandals.



SANDING NOZZLES

A sanding nozzle is also an obvious part of our sanding systems. To increase safety, we recommend the option with heating to our customers, which limits the risks associated with the formation of ice in winter conditions. You can choose from the typical variants of sanding nozzles, we also prepare customized sanding nozzles for a specific project according to the installation options on the vehicle.

The sanding nozzles are mechanically highly resistant, they are fixed in special holders, but at the same time they ensure easy adjustment in three axes, which is highly user-friendly when readjusting after reprofiling the vehicle's wheels. This ensures targeted and efficient routing of the sand to its destination.

Sanding nozzles can be selected in different power levels and supply voltages:

- 10, 20, 30, 50 W
- 24, 48, 72, 110 V

The tube accessory is always a hose that connects the tube to the sanding device.



ACCESSORIES

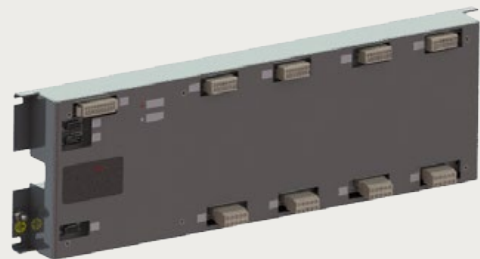
An integral part of our devices in vehicles without a central air source is a blower. It is an autonomous air source for each sandbox.

Depending on the arrangement of the sanding system, electropneumatic valves may also be part of the equipment, which are necessary for the use of all the mentioned functions.

Our devices always include a sandbox heater and an electronic sand level sensor in the basic version.

The sanding system can be upgraded with additional components such as

- Sight glass
- A more advanced way of monitoring the sand level
- Specific heating elements and a system for blowing sand in the sandbox
- Control unit for communication with the vehicle using a CAN protocol





WHO WE ARE



WE ARE A CZECH MANUFACTURER OF CENTRAL LUBRICATION SYSTEMS, LUBRICATION EQUIPMENT, HYDRAULICS AND SPECIAL SYSTEMS FOR RAIL VEHICLES.

FOR RAIL TRANSPORT WE PRODUCE:

- sanding systems
- wheel flange lubrication systems
- system for railhead conditioning
- stationary track lubricators for rail curves and rail heads.

CUSTOMIZED SOLUTIONS are our key strength. Product development focuses on standard solutions that allow a wide range of modifications according to specific technical specifications with low project preparation costs. We offer consultation, advice processing of variants of individual systems according to customer requirements. We also develop and produce technically unique pieces and single-piece deliveries that are designed based on defining the utility and functional parameters of the equipment.

We provide installation, assembly and commissioning directly at the customer's site. Our after-sales services include **after-sales service, preventive maintenance, spare parts supply and consulting.**

Our products for rail transport are certified in accordance with TSI.

WHERE WE ARE



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