CONVEYORS

MECHANICAL GRATE STOKERS

STEEL STRUCTURES

since 1738

FLUE GAS CLEANING SYSTEMS

ZUK STĄPORKÓW S.A.

ZUK STĄPORKÓW S.A.

Experts in flue gas cleaning

Do your installations meet the latest emission standards and environmental requirements?

ZUK Stąporków S.A. is a Polish company with over 50 years of experience, a leader in the field of flue gas cleaning and the provision of modern and advanced technological solutions for a variety of industries, including the thermal power industry. We are engaged in the design, production and implementation of systems that meet modern environmental and technical standards. We specialize in complex filtration systems that are used in industrial plants around the world.

Our offer includes:

- **Team of experts –** We have a team of 24 highly skilled engineers who design installations using modern tools such as 3D technology. Our engineers have extensive experience in customizing solutions to meet the specific needs of each Customer.
- **Own production facilities –** We have our own production facilities, which allows us to fully control the quality of manufactured devices. We use only certified materials, which guarantees durability and compliance with technical requirements.
- **Modern filtration technologies –** Our filtration systems comply with the latest MCP and IED standards, ensuring efficient flue gas cleaning and environmental protection.
- **Supported industries –** Our solutions are used in various sectors such as:

- Power and heat industry
- Cement and lime industry
- Food industry
- Metallurgical industry
- Chemical industry
- Aggregate processing industry
- Coke industry
- Waste incineration industry

We supply not only flue gas cleaning systems, but also comprehensive solutions for the thermal power industry. Our mission is to promote efficient energy generation and reduce emissions by providing technologies that meet the highest European standards. We are ISO-9001, ISO-14001 and ISO-45001 certified, confirming our commitment to quality and safety.

“We support you at every stage of your investment project”

PROJEKT

At the very beginning, we carefully analyze our Customer’s needs and requirements. Thanks to our knowledge and experience, we select the best technological solutions that are perfectly adapted to the specifics of the facility. We create 3D visualizations to better understand the project and identify potential challenges.

PRODUCTION

We have modern production facilities, which allows us to create equipment of the highest quality, complying with the most up-to-date technical standards. Our production lines are equipped with the latest technology, and all components are precisely inspected before installation. We work only with certified materials, ensuring the longevity and effectiveness of our solutions.

INSTALLATION

Safe, precise and professional installation is key to trouble-free operation. Our team of experts carries out installation both in Poland and abroad, ensuring that every detail is properly taken care of. With many years of experience, we guarantee the highest quality of work performed.

COMMISSIONING

Once the installation is complete, our engineers conduct a detailed verification of the correctness of the installation and commission the systems. We offer full support during cold and hot commissioning, ensuring that the installation runs smoothly and safely from the start.

SERVICE

We offer comprehensive service — both warranty and post-warranty service. Our services include not only maintenance, but also the supply of original spare parts. We have all the knowledge and experience to service installations from various manufacturers, providing full technical support.

MODERNIZATION AND EXPANSION

If you need to modernize or expand an existing installation, our experts will conduct a detailed analysis and propose optimal solutions. A modernization will make your plant more efficient and ensure that it meets the latest environmental and technological standards.

INSPECTIONS, AUDITS AND EXPERT OPNIONS

Regular inspections and audits help prevent failures and minimize the risk of unplanned downtime. Our team of engineers performs detailed expert inspections, prepares reports and identifies areas that need attention. This allows the Customer to plan the overhaul and investment budget better.

COMPREHENSIVE SUPPORT FROM DESIGN TO OPERATION

We take care of every stage of the project — from the initial analysis, through design and production, to installation and service. Our solutions are used in heating plants, power plants, steel mills, incinerators and many other industrial facilities around the world. With our experience and advanced technologies, we help reduce emissions, improve energy efficiency and have a positive impact on the environment.

Why trust ZUK Stąporków S.A.?

- Experienced team of engineers and designers,
- The state-of-the-art design software,
- 3D visualizations of the installations created,
- Detailed technical documentation and calculations,
- Comprehensive support at every stage of the project.

Together with our Customers, we are committed to cleaner air, environmental protection and efficient use of energy. We support industrial development by offering innovative technologies that help reduce emissions and optimize production processes.

We produce comprehensive solutions, including but not limited to:

VERTICAL BAG FILTERS

Vertical bag filters are traditional high-capacity dust collectors suitable for dry dust gas purification in various industries. Their design allows them to filter significant gas volumes — even above 1,000,000 m^3/h, making them ideal for demanding installations.

Operating principle

Vertical filters are based on the proven technology of dust separation on the surface of the filter bags. The purified gas passes inside the bags and is removed to the outside, while the dust settles and falls into the chute funnel, from where it is picked up by the conveyor system. In addition, mechanical dust collectors or special separation chambers allow coarser particles to be pre-filtered, increasing the life of the bags.

Construction and materials

The filters have a modular design, which allows them to be adapted to the required performance and installation conditions. Long bags (up to 10 m) allow for a smaller installation footprint, which is beneficial in cases of limited space. Ex versions enable dust removal from explosive dust-air mixtures.

Benefits

- Uniform gas flow on the filter surface
- Optimal airflow to aid dust settling
- Stable positioning of bags to eliminate mechanical wear and tear
- Twin-Jet regeneration system — efficient regeneration using purified gas, reduced compressed air consumption
- Possibility to remove dust from high-temperature gases (PCH filters)
- Optional ceramic cartridges with catalytic coating to neutralize contaminants

Thanks to their heavy-duty construction, high efficiency and state-of-the-art regeneration systems, vertical bag filters provide long and trouble-free operation even in the harshest industrial environments.

HORIZONTAL BAG FILTERS

Modular horizontal bag filters are state-of-the-art devices for efficient industrial dust gas purification, combining high filtration efficiency with optimal operating and investment costs. Their applications span a wide range of industries — from power generation and metallurgy to the chemical, food and cement industries. With ATEX versions, they also enable dust removal from explosive dust-air mixtures.

Operating principle

The contaminated gas enters the filter stub, where it stabilizes and spreads evenly over the filter surface. The dust settles on the outside of the filter bags, and the purified gas passes inside the bags and is discharged outside. The deposited dust falls into the chute funnel, from where it is removed by the collection system. To protect the filter bags, the filters can be equipped with pre-chambers to separate larger particles.

Construction and materials

The filters are available in anti-corrosive or acid-resistant steel versions, and the filter bags are made of materials tailored to the application — from polyester to advanced non-woven glass with a Teflon membrane, resistant to temperatures up to 260 °C.

Benefits:

- Dust collection efficiency meeting European standards (dust emissions below 1 mg/m^3)
- Possibility of phased expansion depending on tightening regulations
- Compact design — smaller in size than vertical filters
- Possibility to remove dust from explosive mixtures (Ex version)
- Low operating costs and longevity of filters

Thanks to their modern design and innovative solutions, horizontal bag filters are the optimal solution for companies requiring efficient and economical filtration of industrial gases.

CYCLONE FILTER

Mechanical gas purification is one of the oldest and simplest techniques for removing particulate matter. It uses basic physical principles, such as sudden change in direction of flow, centrifugal force or vortex motion. ZUK “Stąporków” S.A. designs and implements both basic and advanced dust collection systems based on cyclone separator sets, as well as provides dust collector service.

Application

Mechanical dust collectors are reliable air protection systems widely used in industry. They are characterized by compact design, lack of moving parts and the ability to operate at high temperatures (up to 600 °C) and under high pressure. They are most often used as a preliminary dust removal stage, effectively separating coarse and erosive dust fractions before further filtration.

Our offer includes:

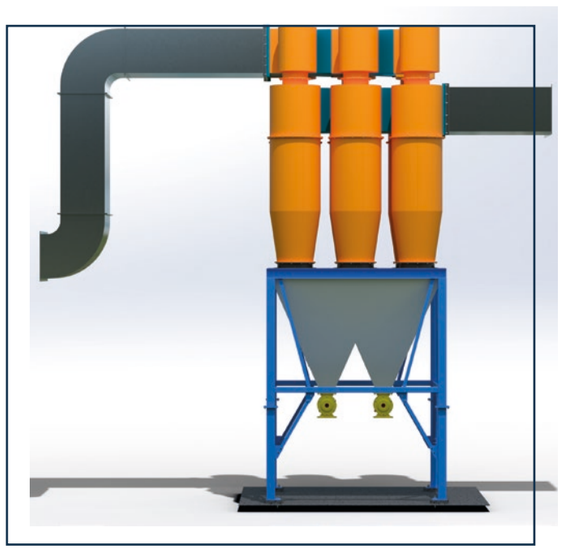
- Cyclone separator sets (CE/S), single cyclone separators (CO) and horizontal cyclone separators (CP)
- Horizontal multi cyclone separators (MOS)
- Chamber dust collectors (OK)
- Spark igniters (IS)

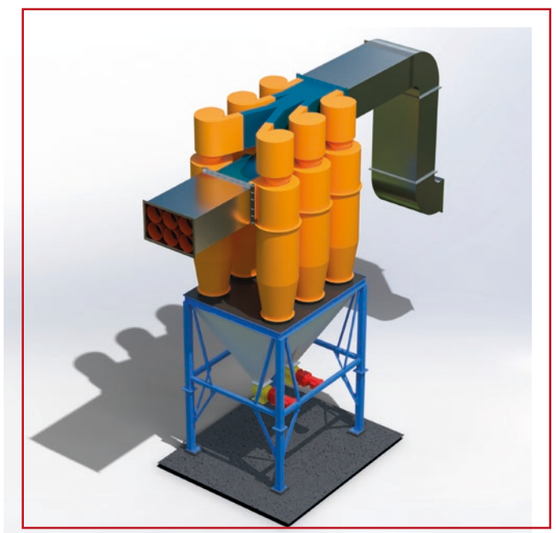
These devices can be used for both cold gases and hot flue gases.

Benefits

- Low investment and operating cost
- Compact design and simple operation
- Compliance with emission standards
- Modern design solutions, adapted to industrial requirements
- Professional advice in selecting the best solution

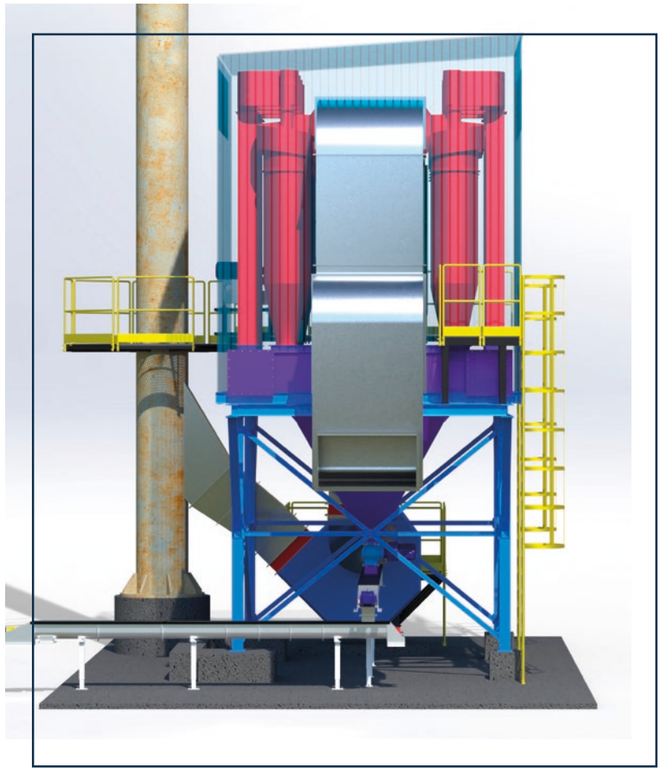
INSTAL-FILTER offers reliable and efficient dust collection systems that meet the highest technological and environmental standards.





CYCLO-FILTERS - HYBRID FILTERS

Cyclo-filters is a modern dust collection device that combines the advantages of bag filters and cyclone filters. Mainly used in the district heating industry, it effectively cleans the flue gas of small- and large-capacity (1 – 50 MW) grate boilers, ensuring high dust removal efficiency with low operating costs.



Operating principle

The ICF-type cyclo-filters is a hybrid dust collection system in which the dusty flue gas first passes through a cyclone set, where larger dust particles are removed. Some of the gases are then directed to a filter chamber with flat bags that catch the fine dust fractions. After cleaning, the gas streams merge and go up the chimney. In addition, it is recommended to use a MOS multicyclone separator as the first filtration stage.

Construction and operation of the system

- Modular design allows adaptation to different boiler capacities.
- Efficient dust separation — thanks to the combination of cyclone and bag filtration, very high dust removal efficiency is achieved.
- Controlled gas flow — only about 20% of the total flow passes through the filter bags, optimizing performance.
- Automatic control (Control and Measurement Instruments and Automation) adjusts the operation of the system to the operating conditions.

Benefits:

- Low investment and operating costs
- High dust collection efficiency in compliance with environmental standards
- Long service life due to durable components
- Possibility to recirculate treated flue gas, reducing NOx emissions
- Possibility to expand the system in stages

Cyclo-filters ae a reliable solution for modern district heating plants, guaranteeing effective dust removal and compliance with emission standards.

ELECTROSTATIC PRECIPITATORS

Electrostatic precipitators for solid fuel boilers are also a very effective way to reduce harmful emissions into the atmosphere. Electrostatic precipitators use the electrostatic phenomenon to separate particulate matter from the flowing air.

This makes the flue gases much less harmful to the environment. This technology is characterized by high dust removal efficiency from all types of particles and allows effective elimination (reduction) of dust into the atmosphere.

Electrostatic precipitators are particularly effective in cleaning flue gases generated during the combustion of solid fuels in coal- or biomass-fired boilers. They are used in heating plants, combined heat and power plants, industrial plants and other facilities where it is necessary to minimize emissions of harmful substances into the atmosphere.

The introduction of increasingly stringent emission standards (MCP Directive and IED) makes it necessary for companies and institutions to use increasingly advanced flue gas cleaning technologies.

FLUE GAS DESULPHURIZATION PLANTS

ZUK “Stąporków” S.A. is a supplier of state-of-the-art technologies that reduce atmospheric emissions of harmful gaseous compounds listed in the IED and MCP Directive. We offer you systems for dry flue gas desulfurization.

Our solutions are perfect for industrial, factory and combined heat and power plants. The installations feature a simple and reliable design. They perform well in the process of desulfurization of flue gases from grate boilers and ensure that the reductions required by EU Directives are achieved when using different grades of coal.

COMPONENTS

Flue gas ducts/SCR

We design and manufacture all types of flue ducts. We offer round ducts in the standard range up to ø 2500 mm and rectangular ducts up to 3500x3500 mm. Depending on the purpose, we manufacture ducts from ordinary carbon steel (black S235, S355), stainless steel, boiler steel and heat-resistant steel. We handle both the installation and the thermal insulation. We produce flue ducts in all possible cross-sections (round, rectangular, etc.).

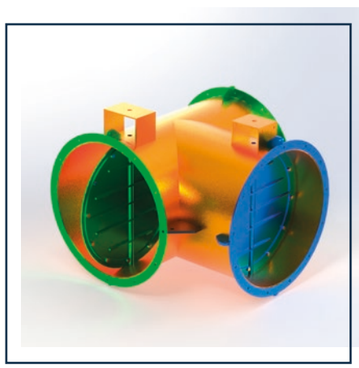
Most of these channels are equipped with additional power supply and communication systems.

Our offer includes:

- Curved ducts,
- Right-angle ducts,
- Collectors,
- Inlets to emitters.

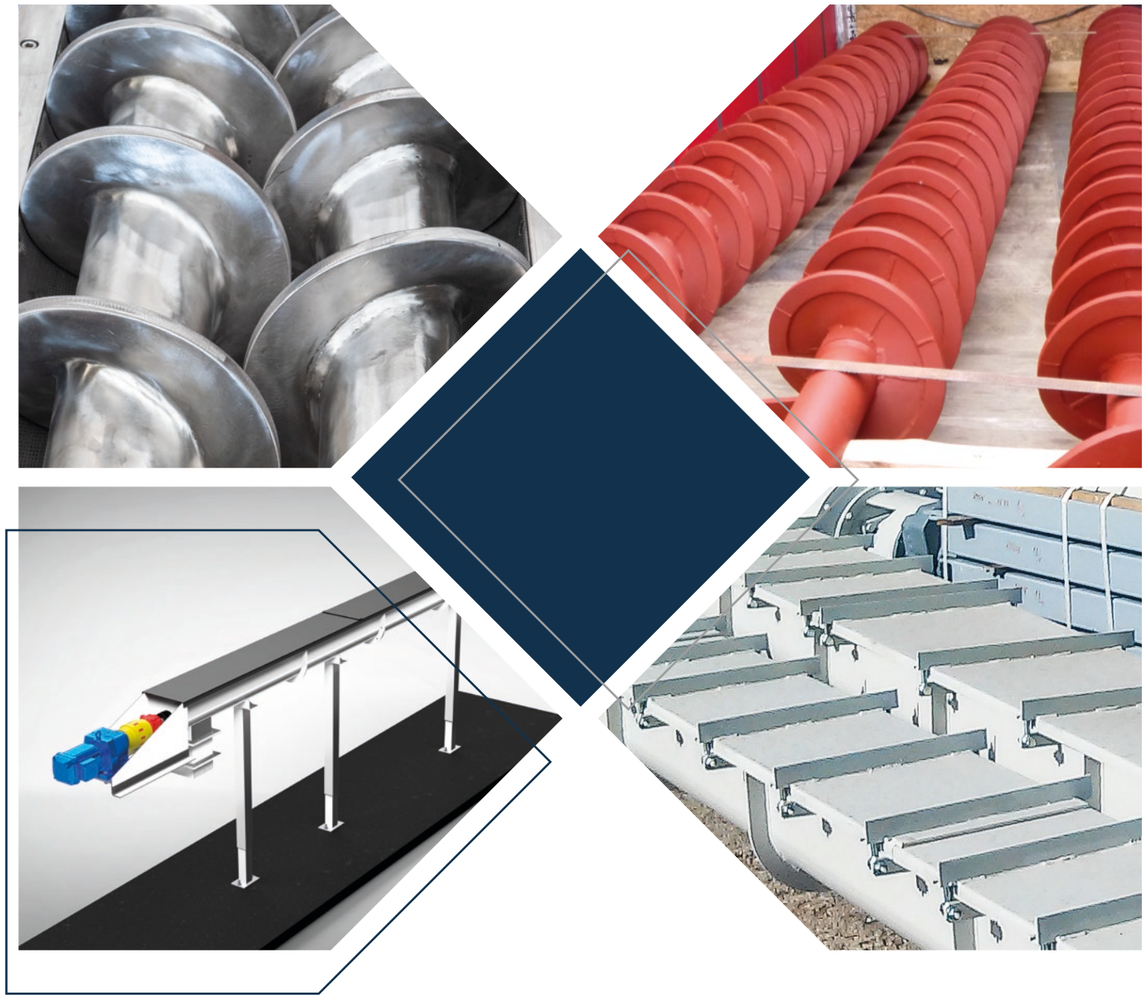
Diverters (gate valve assemblies) for round and rectangular ducts

Assemblies of shut-off gate valves with a single actuator in a common body called diverters are used to divert the flow of gases (e.g., flue gas, air) at pipeline branches. We offer our Customers diverters with a wide range of seal types, making them suitable for a variety of applications — depending on the needs and type of flue gas cleaning installation. The projects we carry out are characterized by extensive functionality. We can use any type of actuator designed to drive diverters. The essence of the construction of diverters is in the precision of their design and assembly, taking into account the changes associated with thermal expansion. The materials used are resistant to high temperatures. Good thermal insulation prevents heat loss and at the same time protects the housing from the adverse effects of high temperatures.



SCREW CONVEYORS

Screw conveyors are conveyors that make it possible to streamline production processes, ensuring the optimization of a company's operating costs. We can custom design a machine for handling highly abrasive materials or for safe dust handling. We are able to meet the needs of Customers from various industries.



BELT CONVEYOR

Due to a wide range of conveyor belts available, belt conveyors find application in numerous industries. They work well with both light loads (cardboard boxes, crates, bags) and heavy bulk materials (aggregates, grains, industrial raw materials). They are used in warehouses, assembly lines, agriculture, and on storage yards and construction sites. With a variety of configurations, they provide efficient and reliable transport in any industry.

TUBULAR CABLE CONVEYOR

Innovative solutions tailored to various industries. Specialized design that allows hermetic collect, dispensing and transport of all dust and bulk materials in technological processes. Used to collect and transport the following materials: dust, cement, lime, carbon black, molding compound, etc. The use of a system for the automatic collection and transport of dust brings great power savings and a reduction in the wear of the mechanical components of the system.

FANS

We supply industrial fans to all industries. The extensive range of types allows us to create user-oriented and application-specific solutions.

All our devices are characterized by energy efficiency combined with high performance. The rotors of the devices are designed and manufactured taking into account the latest developments in flow mechanics.

Safety and reliability are key to us.

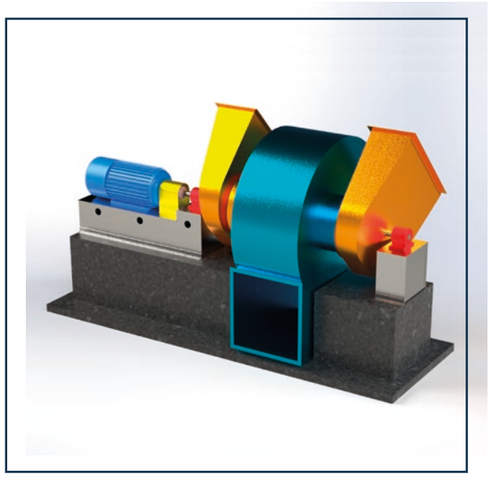
Features

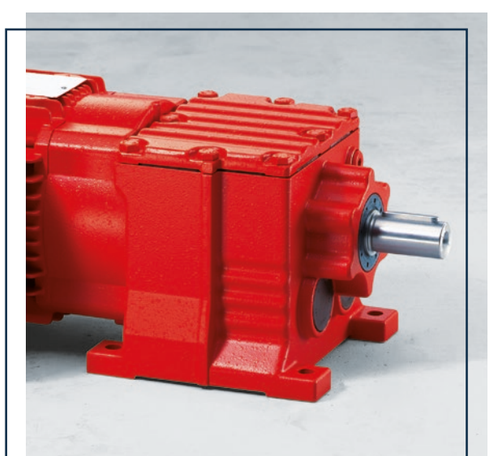
- modular design
- stable construction
- tight welded construction
- rotors made of high strength steel grades
- optimal efficiency
- suitable for indoor and outdoor use.

Gearmotors, Gear Units and Frequency Inverters

Our product range includes all key types of gearmotors (gear units: parallel shaft, bevel, planetary, helical, and bevel-helical). We focus on reliable and energy-efficient devices.

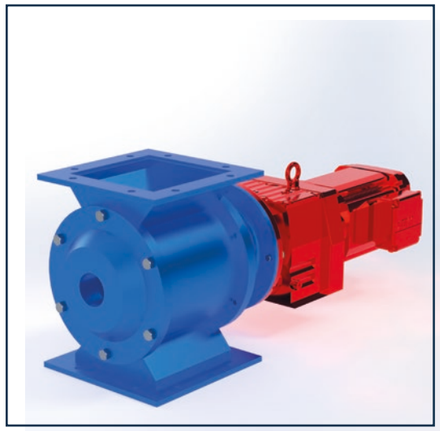
As a leading manufacturer of machinery and equipment for the thermal energy sector, we also offer frequency inverters that are compatible with our mechanical components as well as other applications.



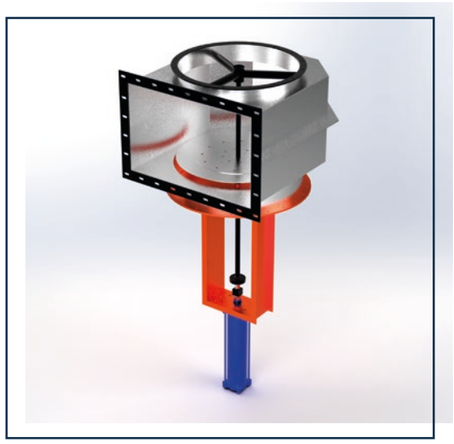


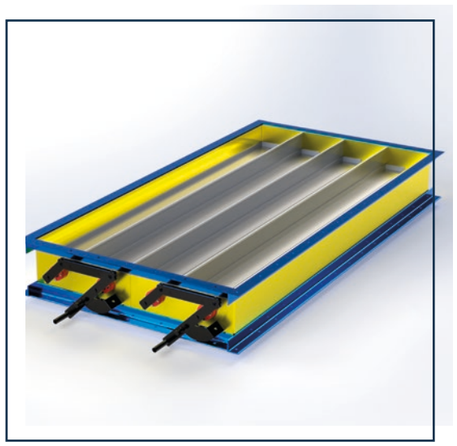
CHAMBER DISPENSERS

This is the primary equipment used to collect dust and various types of bulk materials from filters, cyclone dust collectors or silos. Their special design allows them to transport raw materials without decompressing the tanks. We offer a wide range of chamber dispensers to suit most industries. Our designers provide comprehensive technical support.



BUTTERFLY VALVES
EXPANSION JOINTS
GATE VALVES





In order to provide comprehensive solutions for dust collection systems, a whole range of additional components and solutions are required in addition to the design and production of equipment. With our projects, we focus on comprehensiveness. ZUK “STĄPORKÓW” S.A. manufactures expansion joins, gate valves and butterfly valves in both standard types and in custom dimensions providing individualized solutions.

Butterfly valves and double flap gate valves are designed to close and open or regulate the flow of gases in installations. The butterfly valves are available with manual or motorized control. Gate valves designed for motorized control are equipped as standard with an electric drive (slow-speed actuators) or pneumatic drive (rotary actuators). The dimensions of the gate valves are adapted to the types (dimensions) of the ducts.

Expansion joints are designed to compensate for thermal elongations in piping systems in which hot gases flow. We offer in metal and fabric versions (the expansion element made of special fabric resistant to temperature and chemical effects of the medium and impermeable to gases).

Our offer includes::

- round expansion joints (steel, fabric)
- rectangular expansion joints (steel, fabric).

SPARE PARTS

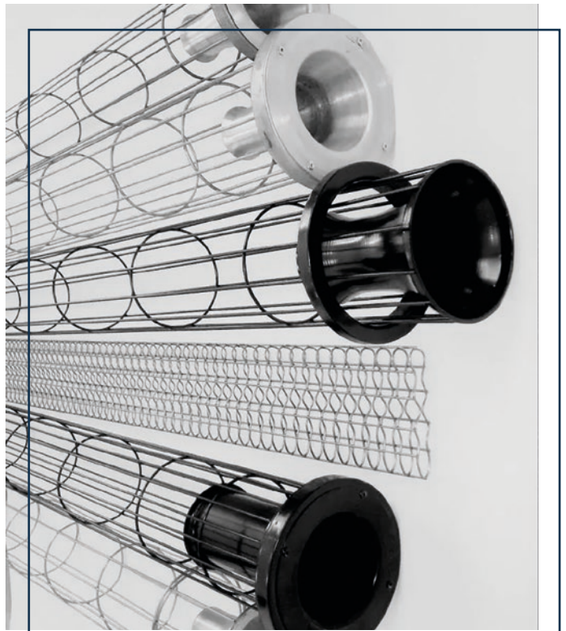
We offer spare parts for flue gas cleaning systems:

- Cages for Industrial Dust Collectors

We offer the highest quality cages and filter bags for industrial dust collectors. Cages are an indispensable part of industrial filter design to ensure proper operation and regeneration of filter bags

Our offer includes cages in the most common designs:

- round cages
- oval cages
- flat cages
- other types for all commonly used flue gas cleaning systems.



The cages can be made as a composite of one or multiple elements (depending on the length), as well as in versions with or without a Venturi flume.

Material: stainless steel, galvanized steel, black steel and powder-coated steel.

FILTER BAGS

We supply filter bags for a wide range of filtration plants.

ZUK Stąporków S.A. designs (selects) filter bags to meet the individual requirements of a given dust removal process.

Filter bags allow effective separation of industrial pollutants and are the most effective materials for influencing atmospheric air quality and reducing the amount of post-production dust emitted into the atmosphere. Our filter bags guarantee high filtration efficiency and have very low emission values.

The varied parameters and chemical properties of the filter fibers we use make it possible to select a material for numerous filtration processes, including those carried out at high temperatures or in aggressive reactive environments.

Filter bags and sleeves are also made to order. We use only the highest quality materials.

Material (fabrics) used in filter bag production:

- POLYPROPYLENE (PP)
- POLYAMID (nylon, perlon)
- POLYIAMID (P84)
- POLYESTER (PES - geotextile, trevira, terylene)
- PPS (polyphenylene sulfide)
- PTFE (polytetrafluoroethylene)
- POLYACRYLONITRILE (dolanit, ricem)
- POLIFENYSULFID (riton)
- ARAMID (nomex)
- POLYTETRA (Teflon, profilen)
- Venturi nozzles

In the case of custom-made parts, we carry out orders based on documentation entrusted by the Customer or on the basis of our own documentation, created by a team of experienced designers and technologists.

ZUK Stąporków S.A.
St. Górnicza 3, 26-220 Stąporków

Phone: +48 (41) 230 67 76
E-mail: zuk@zuk.com.pl
Taxpayer Identification Number (NIP): 658 000 11 42

www.zuk.com.pl