



NAWARA[®]

SERWIS



RUBIN MODULAR FILTERS

Vacuum Filters are modern and economical solutions in the field of extraction and filtration of dust and sawdust. Thanks to the innovative technology of regeneration of filter bags as well as the location of fans on the "clean" side of the filter, devices can work 24 hours without need to be turned off. Fans, having a special high-performance design, increases their efficiency, and thus making them more economical than traditional transport fans. These devices are unmatched in their versatility and performance. The devices can be used as filters in both overpressure as well as vacuum ranges. The installation is adapted to the needs of production tasks. The devices present the latest state of filtration technology due to the diverse application possibilities.



CLEAN AIR WITHOUT COMPROMISE



| TYPE OF VACUUM FILTER | FILTRATION SURFACE [m ²] | FILTER BAG Φ [mm] | FILTER BAG length [mm] | GROUNDS SURFACE [mm] |
|-----------------------|--------------------------------------|-------------------|------------------------|----------------------|
| 2020/20/100 | 100 | 160 | 2.000 | 2.000 x 2.000 |
| 2020/25/125 | 125 | 160 | 2.500 | 2.000 x 2.000 |
| 2020/30/150 | 150 | 160 | 3.000 | 2.000 x 2.000 |
| 2030/20/150 | 150 | 160 | 2.000 | 2.000 x 3.000 |
| 2030/25/188 | 188 | 160 | 2.500 | 2.000 x 3.000 |
| 2030/30/226 | 226 | 160 | 3.000 | 2.000 x 3.000 |

| TYPE OF OVERPRESSURE FILTER | FILTRATION SURFACE [m ²] | FILTER BAG Φ [mm] | FILTER BAG length [mm] | GROUNDS SURFACE [mm] |
|-----------------------------|--------------------------------------|-------------------|------------------------|----------------------|
| 2020/20/100 | 100 | 160 | 2.000 | 2.000 x 2.000 |
| 2020/25/150 | 125 | 160 | 2.500 | 2.000 x 2.000 |
| 2020/30/150 | 150 | 160 | 3.000 | 2.000 x 2.000 |
| 2030/20/150 | 150 | 160 | 2.000 | 2.000 x 3.000 |
| 2030/25/188 | 188 | 160 | 2.500 | 2.000 x 3.000 |
| 2030/30/226 | 226 | 160 | 3.000 | 2.000 x 3.000 |

TOPAZ FILTERS

In overpressure dust filtration systems it is possible to use charging containers, transporting material to the container and return air to the filter through the installation, alternating filling of two containers as well as direct filling of material into the container.

Filtering installations are characterized by wide possibilities of their practical application. Their construction reflects a high level of technological sophistication while ensuring occupational health and safety.

A properly selected system of filtering devices and careful selection of filtering fabric is necessary to protect people and the environment. Poorly selected or incorrectly adjusted filter system may results with the insufficient extraction effect, increased power consumption, excessive wear of the filter cartridges, inadequately cleaned, and even harmful to the health air returning to the production hall.



CLEAN AIR WITHOUT COMPROMISE



| NAME | LENGTH OF FILTER BAG [mm] | FILTRATION SURFACE [m2] | BASE | CONSTRUCTION OF FILTER | DIMENSIONS |
|-------------------------|---------------------------|-------------------------|---------------|------------------------|----------------|
| TOPAZ Filters 12/20 - 1 | 1500 | 45 | 3 x bag / box | YES | 1200x2000x4200 |
| | | | | NO | 1200x2000x3800 |
| TOPAZ Filters 12/20 - 1 | 2000 | 60 | 3 x bag / box | YES | 1200x2000x5000 |
| | | | | NO | 1200x2000x4300 |
| TOPAZ Filters 12/20 - 1 | 2500 | 75 | 3 x bag / box | YES | 1200x2000x5400 |
| | | | | NO | 1200x2000x4800 |
| TOPAZ Filters 12/25 - 1 | 2000 | 78 | 4 x bag / box | YES | 1200x2500x4900 |
| | | | | NO | 1200x2500x4300 |
| TOPAZ Filters 12/20 - 1 | 3000 | 90 | 3 x bag / box | YES | 1200x2000x5800 |
| | | | | NO | 1200x2000x5300 |
| TOPAZ Filters 12/25 - 1 | 2500 | 100 | 4 x bag / box | YES | 1200x2500x5500 |
| | | | | NO | 1200x2500x4800 |
| TOPAZ Filters 12/25 - 1 | 3000 | 117 | 4 x bag / box | YES | 1200x2500x6000 |
| | | | | NO | 1200x2500x5300 |
| TOPAZ Filters 12/20 - 2 | 2000 | 120 | 6 x bag / box | YES | 1200x4000x5000 |
| | | | | NO | 1200x4000x4300 |
| TOPAZ Filters 12/20 - 2 | 2500 | 150 | 6 x bag / box | YES | 1200x4000x5400 |
| | | | | NO | 1200x4000x4800 |
| TOPAZ Filters 12/25 - 2 | 2000 | 160 | 8 x bag / box | YES | 1200x5000x4900 |
| | | | | NO | 1200x5000x4300 |
| TOPAZ Filters 12/20 - 2 | 3000 | 180 | 6 x bag / box | YES | 1200x4000x5800 |
| | | | | NO | 1200x4000x5300 |
| TOPAZ Filters 12/25 - 2 | 2500 | 200 | 8 x bag / box | YES | 1200x5000x5500 |
| | | | | NO | 1200x5000x4800 |
| TOPAZ Filters 12/25 - 2 | 3000 | 240 | 8 x bag / box | YES | 1200x5000x6000 |
| | | | | NO | 1200x5000x5300 |

BIOMASS SILOS

The silo is intended for storing sawdust and woodchips dust. It provides rational and very good quality storage of these products. They can be set individually or grouped in batteries of several pieces each. The silo is intended for use in the open areas. The silo on legs with an external funnel, thanks to its construction, allows the tank to be emptied completely. In flat-bottomed silos, there is a dead zone where the chip rots as well as freezes.

The silo consists of a roof, a funnel shell on the supporting structure and cyclone legs located on the roof of the silo. Silo sizes are always selected according to the needs of the plant.

A scraper is mounted at the base of the silo, whose task is to break up the sawdust column and prevent dust from hanging. Taking care of safety standards in the offered silos, we install explosion-proof flaps, dry fire plumbing installations and revision doors.

The silo is specially prepared for biomass storage, equipped with explosion-proof certified flaps with ATEX standards, fire extinguishing riser, platforms, ladder and special reinforcements.



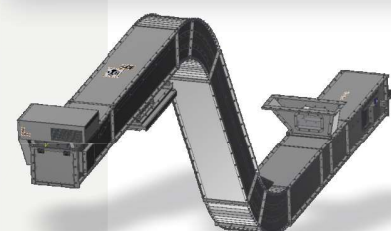
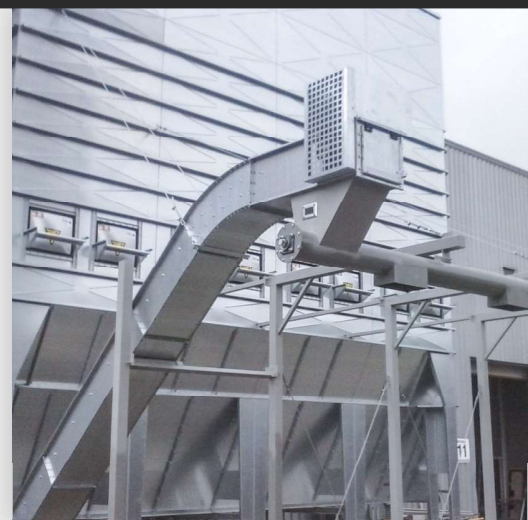
CLEAN AIR WITHOUT COMPROMISE

| SILO: ZIRCONIUM | | SILOS DIAMETER - 2,7 m TYPE 27 | | |
|----------------------------|------|--------------------------------|------|------|
| MODEL 27 | 27-3 | 27-4 | 27-5 | 27-6 |
| CAPACITY [m ³] | 23 | 31 | 38 | 45 |
| DIAMETER D [mm] | 2770 | | | |
| NUMBER OF LAYERS | 2 | 3 | 4 | 5 |
| SILO: ZIRCONIUM | | SILOS DIAMETER - 3,7 m TYPE 37 | | |
| MODEL 37 | 37-3 | 37-4 | 37-5 | 37-6 |
| CAPACITY [m ³] | 46 | 58 | 71 | 84 |
| DIAMETER D [mm] | 3692 | | | |
| NUMBER OF LAYERS | 3 | 4 | 5 | 6 |
| SILO: ZIRCONIUM | | SILOS DIAMETER - 4,6 m TYPE 46 | | |
| MODEL 46 | 46-3 | 46-4 | 46-5 | 46-6 |
| CAPACITY [m ³] | 72 | 92 | 111 | 131 |
| DIAMETER D [mm] | 4615 | | | |
| NUMBER OF LAYERS | 3 | 4 | 5 | 6 |
| SILO: ZIRCONIUM | | SILOS DIAMETER - 5,5 m TYPE 55 | | |
| MODEL 55 | 55-4 | 55-5 | 55-6 | 55-7 |
| CAPACITY [m ³] | 136 | 165 | 194 | 222 |
| DIAMETER D [mm] | 5538 | | | |
| NUMBER OF LAYERS | 4 | 5 | 6 | 7 |
| SILO: ZIRCONIUM | | SILOS DIAMETER - 6,5 m TYPE 65 | | |
| MODEL 65 | 65-4 | 65-5 | 65-6 | 65-7 |
| CAPACITY [m ³] | 191 | 230 | 270 | 310 |
| DIAMETER D [mm] | 6462 | | | |
| NUMBER OF LAYERS | 4 | 5 | 6 | 7 |
| SILO: ZIRCONIUM | | SILOS DIAMETER - 7,4 m TYPE 74 | | |
| MODEL 74 | 74-5 | 74-6 | 74-7 | 74-8 |
| CAPACITY [m ³] | 302 | 353 | 404 | 455 |
| DIAMETER D [mm] | 7385 | | | |
| NUMBER OF LAYERS | 5 | 6 | 7 | 8 |



KARAT CHAIN CONVEYOR (REDLER)

The operation of the conveyor is based on the operating principles of commonly used chain conveyors. The conveyor is designed to work with biomass as well as waste from the wood industry. The principle of the conveyor's work is to transport loose and fine granular materials, as well as loose pieces, horizontally with the help of drivers (blades at the chain) with a limited angle of inclination to 45°. The conveyor is made entirely of high quality galvanized steel. All elements are connected with bolted connections, which facilitates assembly, inspection and operation of the devices. Designed as a modular construction which allows you to insert the device in every technological line.



SCREW CONVEYOR



The screw conveyor is used to transport wood waste in a horizontal or slightly inclined direction. It consists of a sheet-metal trough with a cover or a pipe in which a worm shaft driven by a gear motor moves. The drive from the gearmotor to the shaft is transmitted by means of a Rotex elastically torsional clutch, which reduces and dampens vibrations and surges occurring during operation of the device. All moving parts are based on a set of bearings. The efficiency of the conveyor depends on the composition and fraction of the transported medium and the angle of attachment. The conveyor is mounted to the hopper, silo, filter or other tank. The material goes to the hopper of the conveyor and is transported in the assumed direction to the container, briquetting machine or boiler room (furnace supply tank).



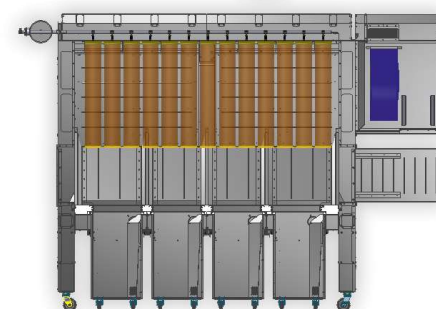
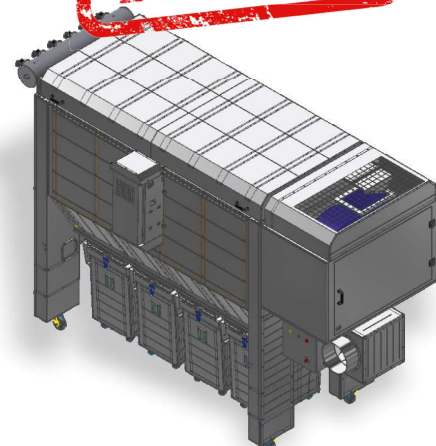
VACOMAX MOBILE FILTER

NEW

VACOMAX is a mobile, vacuum filter (i.e. the fan is on the clean side and has no contact with the transported material).

It is characterised by long service life due to the large expansion chamber, the load on the filtering material is low. The filter bags in this system have a service life of 12 years. Easy control of the filling level of waste containers, through revisions installed in the containers. Convenient waste disposal (chip bags). Filter bags made of antistatic polyester needle felt, particularly suitable for high dust content (MDF etc.). Automatic filter regeneration with compressed air (standard). Application especially needed for continuous operation. Filter material for the "G" medium category. Increased safety through an automatic fire extinguishing system using powder extinguishers (does not cause water damage). The extinguishing device is compatible with GS-HO 14. Possibility of extension with a briquetting machine foundation. Savings in heating costs due to full heat recuperation when installing a dust collector in rooms. Space saving thanks to the compact design of the device. The low height of the dust collector allows it to be placed in low rooms.

VACOMAX MODEL S3000 is characterized by extremely high efficiency, very high parameters of air filtration, making it an eco-innovative product. VACOMAX jet dust collectors have been designed especially for the possibility of moving them within the workplace.



| MODEL VACOMAX | SPIGOT fi mm | FILTRATION SURFACE [m ²] | EFFICIENCY OF AIR [m ³ /h] | UNDERPRESSURE [Pa] | REGENERATION OF FILTER | WEIGHT [kg] | POWER OF ENGINE |
|---------------|--------------|--------------------------------------|---------------------------------------|--------------------|------------------------|-------------|-----------------|
| S1000 | 200 | 25 | 2500 | 1800 | with air | ~900 | ~ |
| S2000 | 250 | 40 | 4400 | 2100 | with air | ~1410 | 5,5 kW |
| S3000 | 300 | 50 | 5800 | 2760 | with air | ~1410 | 7,5 kW |
| S3500 | 350 | 40 | 7000 | ~ | with air | | 11 kW |

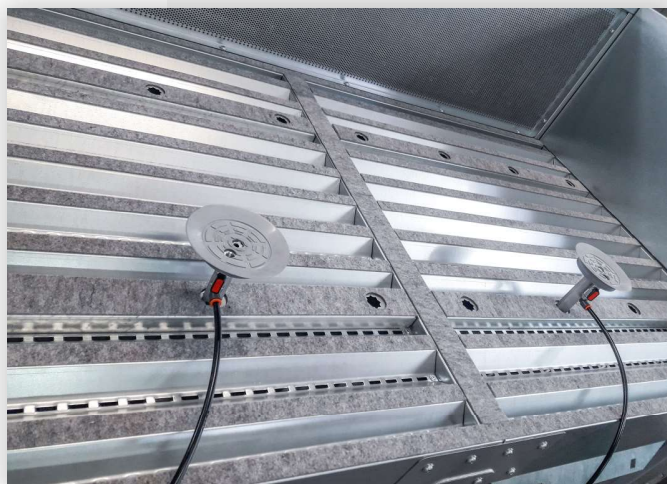
OPAL GRINDING TABLES

Installation of grinding tables ensures dust-free and clean work environment. Our work tables guarantee full satisfaction with perfect surface preparation for further processing.

Tables from Opal series have an extremely ergonomic design that allows to adjust the height of the table.

The trapezoidal shape of the table working surface additionally covered with felt and an innovative air distribution system ensure the highest extraction efficiency. It is possible to connect the tables to both a central extraction system and a dust collector.

Our grinding tables can be additionally equipped with a connection and control panel as well as "Vacum" vacuum clamp, ensuring secure hold of the workpiece.



| TYPE OF GRINDING TABLE | DEMAND OF AIR [m ³ /h] | DIMENSION OF WORK SURFACE (length/width) [mm] | HEIGHT [mm] |
|---------------------------|-----------------------------------------|-----------------------------------------------------|----------------|
| OPAL 10 | 1200 | 1000X1000 | 700-1000 |
| OPAL 20 | 1600 | 2000X1000 | 700-1000 |
| OPAL 24 | 1800 | 2400x1000 | 700-1000 |
| OPAL 30 | 2500 | 3000X1000 | 700-1000 |

DUST FREE AND CLEAN WORKPLACE
HEIGHT ADJUSTMENT TO 600mm

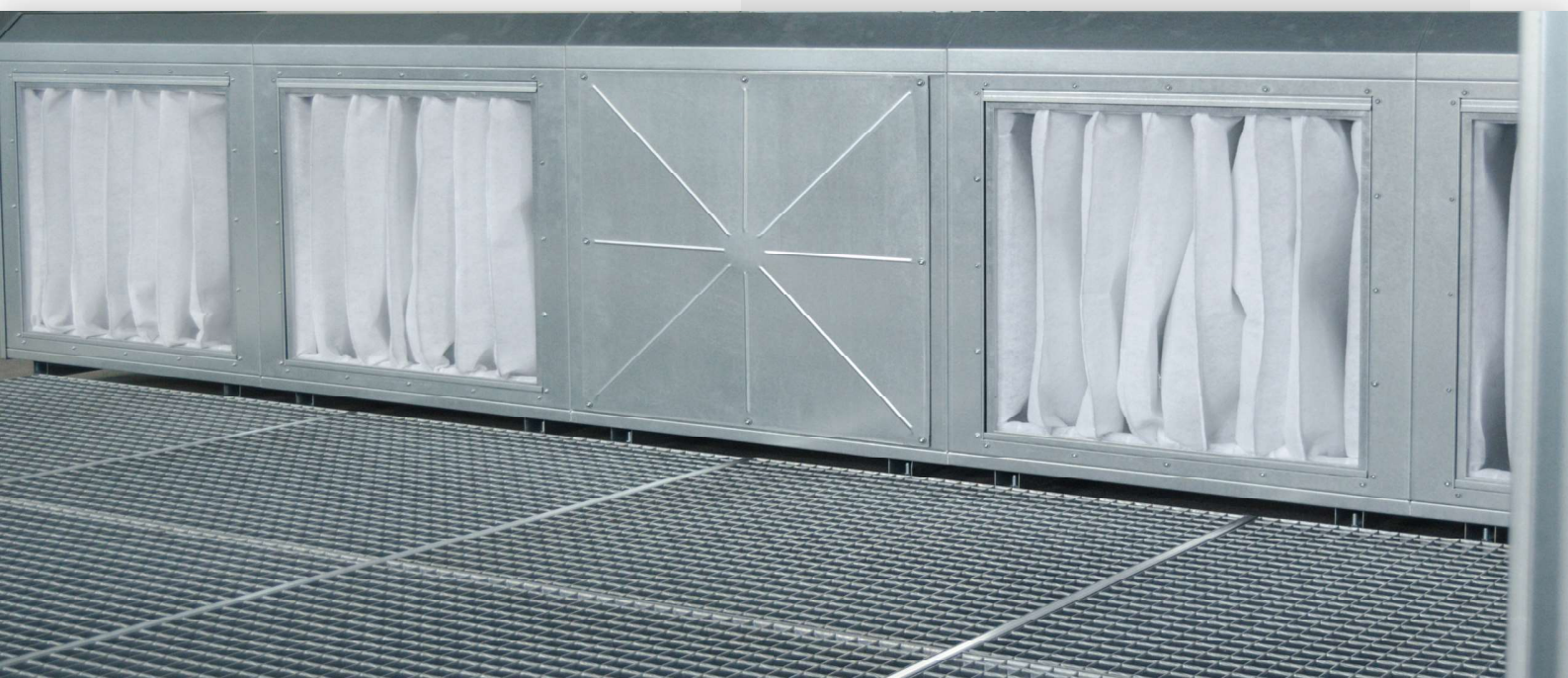
KORAL ADHESIVE EXTRACTION



Adhesive extraction is a device supporting the production quality of various products. Its task is to remove particles of coating materials floating in the air from the surroundings of the produced objects, which did not hit the surface of the object, and - by floating - create a risk of damage to the product. Vapors that will not be sucked out also pose a threat to the health and life of people in the room. The extraction chamber, removing most of the coating material sprayed in the atmosphere, is also intended to separate the working material particles from the sucked air, before discharging the used air into the atmosphere. A set of filters serves this purpose. The pre-filtering with a cardboard filter is designed to stop most of the solid impurities and the main filtering - with a non-woven filter - is designed to stop the remaining impurities. An additional task of the non-woven fabric is to ensure even air extraction over the entire surface of the cardboard filter. The residual dust content should not exceed more than 3mg/m³ in the air blown into the atmosphere that has been filtered. Solid impurities that will not be sucked off by the suction and fall to the ground should be emptied manually or by using cleaning devices.



KALCYT GRINDING EXTRACTOR



The grinding extractor is designed for extracting wood dust from manual grinding. Suction works over the entire working surface.

The extraction consists of a suction box, on which pocket filters and an exhaust fan are installed, the return of purified air directly above the grinding stand and drop baths where the elements are processed.

The drop tray is made in the form of a tabletop of perforated metal or gratings.

With a filter capacity of $\leq 0.1 \text{ mg/m}^3$, 100% of the purified air can return to the production hall.

The cleaned air can only be returned to the room from which it was sucked out previously.

Technical data:

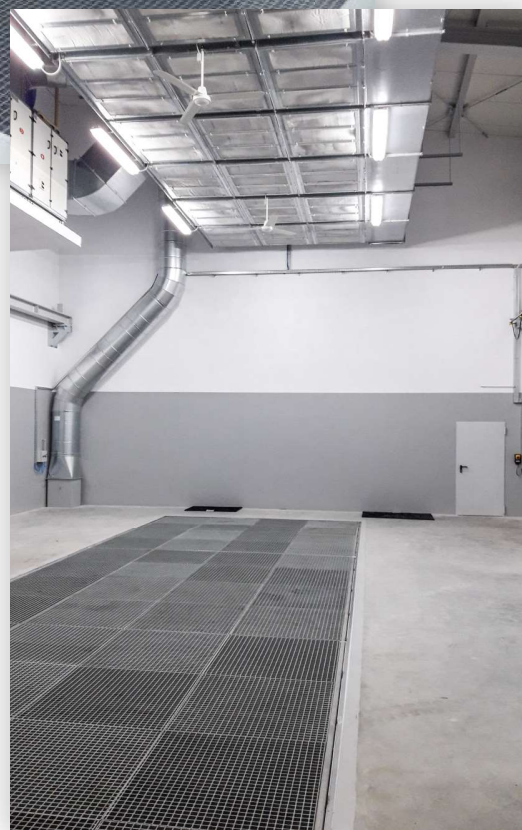
- Volume flow: 8,000 m³/h at 800 [Pa]
- Fan power: 3 kW, 400V
- Filter type / class: Pocket / Eu 4
- Explosion protection: EXII (ATEX)
- On/off switch with current protection up to 10A with 16A plug

VARNISH FLOOR EXTRACTOR

Varnish floor extractor is the optimal solution for painting larger elements.

In order to rationally manage the extracted warm air and electric energy, we make floor extractors divided into sections operated from separate fans, attached if necessary. The fans can be controlled automatically or manually. We also equip floor hoists with air supply systems. Thanks to innovative, economical and ecological solutions we can offer comprehensive adaptation of the room to the paint shop.

We are able to design and make varnish floor extractor with dimensions optimally suited to any product profile. Our offer also includes innovative stays that do not require significant interference in the structure of the room. Our extractors are equipped with cardboard pre-filter as well as basic "Paint-Stop" filter or EU3 filter, along with efficient fans with explosion protection.



| DIMENSION OF WORK SURFACE (mm) | EFFICIENCY m ³ /h | POWER OF FAN |
|-----------------------------------|---------------------------------|-----------------|
| 2000x2000 | 3600 | 1,5kW |
| 2500x2000 | 4500 | 3kW |
| 3000x2000 | 6800 | 4kW |
| 3000x3000 | 8100 | 4kW |

AGAT VARNISH WALLS

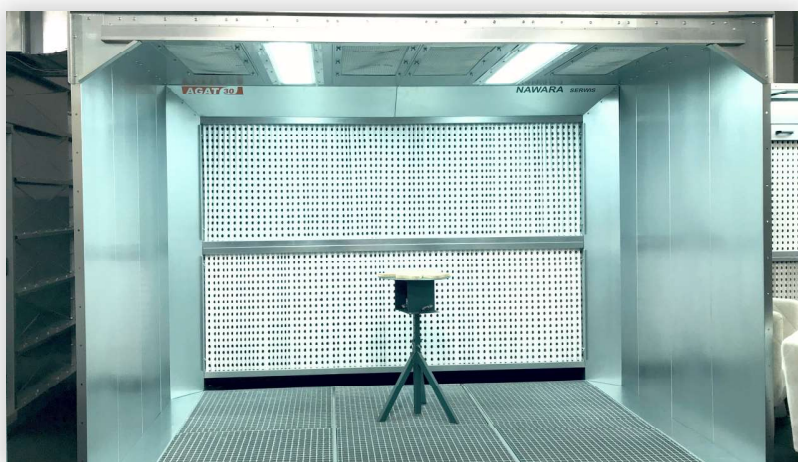
Agat varnish walls are ideal for companies of all sizes. Devices of this type have been recognized in many factories in the country and abroad for the highest quality of workmanship, reliability and effectiveness of paint pollen filtration.

Innovative construction and the highest quality of materials from which Agat varnish walls were built enables operation in a multi-shift system.

The devices are offered with two types of pre-filters: cardboard for polyurethane varnishes and lamella for water varnishes made of special metal profiles.

Triple filtration system, consisting of a cardboard filter, "Paint-Stop" nonwoven and EUS-class nonwoven. The noise suppressor is standard mounted, which provides an additional noise reduction inside the wall.

Additionally, radial fan with explosion protection is mounted outside the varnish wall. This solution ensures safety and easy access to the rotor, and allows to carry out recommended inspections without any problems.



- PROFESSIONAL AUTOMATION
- MODULAR CONSTRUCTION
- INDIVIDUAL CONFIGURATION

CLEAN AIR WITHOUT COMPROMISE



| TYPE | EFFICIENCY [m ³ /h] | TYPE OF FILTER | DEVICE DIMENSIONS length x height x depth [mm] | FAN POWER |
|------------|-----------------------------------|------------------|---------------------------------------------------|-----------|
| AGAT 10/10 | 1800 | cardboard/lamell | 1850 x 1650 x 810 | 1,5 kW |
| AGAT 10/20 | 3500 | cardboard/lamell | 2950 x 1650 x 810 | 1,5 kW |
| AGAT 10/25 | 4500 | cardboard/lamell | 3250 x 1650 x 810 | 3 kW |
| AGAT 10/30 | 5500 | cardboard/lamell | 3950 x 1650 x 960 | 3 kW |
| AGAT 15/15 | 4000 | cardboard/lamell | 2450 x 1950 x 810 | 1,5 kW |
| AGAT 15/20 | 5500 | cardboard/lamell | 2950 x 1950 x 810 | 3 kW |
| AGAT 15/30 | 8000 | cardboard/lamell | 4095 x 1950 x 960 | 4 kW |
| AGAT 20/20 | 7200 | cardboard/lamell | 3095 x 2450 x 960 | 4 kW |
| AGAT 20/25 | 9000 | cardboard/lamell | 3550 x 2450 x 960 | 4 kW |
| AGAT 20/30 | 10800 | cardboard/lamell | 3950 x 2450 x 960 | 4 kW |

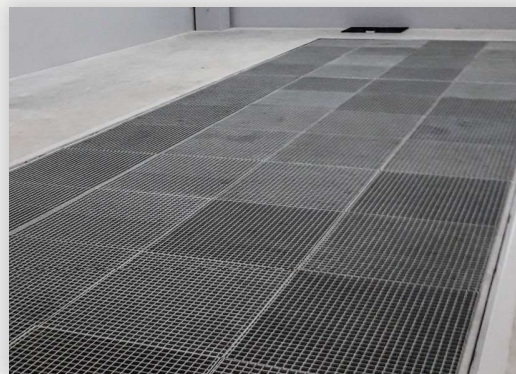
GRINDING FLOOR EXTRACTORS



Grinding floor extractors are an ideal solution for grinding elements with large surfaces. This type of extraction ensures perfection and cleanliness at the workplace, which will directly translate into the quality of products.

Our extractors are made from 1m x 1m modules, which is why we are able to perfectly adapt to the product profile of the company and the technical conditions of the grinding room. In the case of a large variety of processed elements, we make floor stays working on the basis of sections, attached if necessary.

The innovative design allows quick and trouble-free inspections, while the special air distribution system in each module will ensure even dust extraction over the entire working surface.



PAINT ROOM AIR SUPPLY SYSTEMS



The condition for effective work of the varnish line is to balance the air in the paint room. For this purpose, it is necessary to supply properly treated air in terms of temperature and purity. A properly designed paint room allows to get the highest quality of the paint coat and virtually eliminate the problem of inclusions.

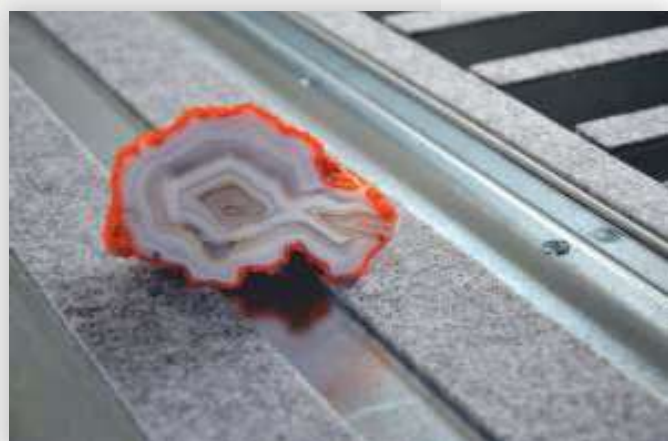
Our task is to learn about the technological process and technical capabilities of a specific customer and to propose the optimal solution.

Our systems are built modularly and allow the development of systems alongside with the evolution of the company.

In addition to the basic ventilation systems for paint rooms, we also offer systems with heat recovery up to 70%. We build recuperation systems on counter-current and rotary heat exchangers with the highest efficiency.

The basic element of the air supply system is a well-configured automation, which is designed to protect the equipment and ensure stable parameters in the paint room. We build our control systems on the highest quality components that guarantee trouble-free operation for many years. We use drivers in the offered solutions

- PROFESSIONAL AUTOMATION
- MODULAR CONSTRUCTION
- INDIVIDUAL CONFIGURATION



RECYCLING

BRIQUETTING

Planes, sawdust, wood dust etc. are collected in all workshops and industrial plants in the wood processing industry. Every day, huge storage and transport costs arise because of this. Briquetting presses offer an ideal solution in such situations because the briquette is easy to store and transport, while taking up little space.

In addition, the risk of self-ignition is much lower here. Briquetting machines take up little space, are durable and made in technology that requires minimal maintenance. Regardless of whether it is wood, biomass, foam or polystyrene, briquetting presses process every suitable material.



CHIPPERS

Industrial single-shaft wood chippers are used in workshops and woodworking companies to guarantee the industrial processing of wood waste and many other materials. The machines have been developed for high requirements and reliability in continuous use. Each machine is prepared individually, according to the client's wishes (material, throughput, granularity). Single-shaft chippers work quietly and almost dust-free.

The material to be crushed is fed through a high-capacity funnel (manually, by forklift, etc.). Then the material is fed through a slightly sloping forward hydraulic pusher to the rotor and crushed by the rotor and stator knives. The hydraulic pusher is directed depending on the load by the current consumption of the drive unit.



INSTALLATION ELEMENTS

A wide range of products includes galvanized piping systems. They constitute the basic element of the de-dusting and pneumatic transport installation.

Our offer includes round and rectangular pipe elements made of the best quality certified sheet.

The assembly system used by our company allows for the development and modernization of existing installations in a very quick and simple way.





NAWARA

ABOUT US

Nawara Serwis is a specialist and POLISH PRODUCER in the field of complete filtration and extraction systems in the wood, metal and construction industries as well as paint mist removal systems in the process of surface varnishing, alongside with waste management and recycling.

For over a dozen years, we offer a wide range of services ranging from consulting, production planning, through delivery, assembly, commissioning, service, to training in the use of offered devices.

A dynamically developing team is working on fulfilling our mission, which is to provide clients with comprehensive solutions in the field of environmental protection, which, through contacts with both Polish and foreign companies, offers professional and current knowledge in the industry of filtration and extraction of waste generated during the processing of wood, metal etc.

Our abundant offer of equipment and installations, based on a wide range of services, is the result of many years of market analysis resulting from the service of both craftsmen as well as medium and large enterprises.

Many years of experience on the market is a guarantee of successful cooperation with the customer.

COMPANY ADDRESS

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ATEX

