IdeaPro

NOWA SÓL
POLAND

PROCESS LINES

Mixing • Granulating • Drying

TECHNOLOGY • PRODUCT • QUALITY

PROCESS LINES

IdeaPro designs and constructs various process lines from the concept to comprehensive turnkey delivery. The process involves modern production control systems with PLCs, visualisation and storage systems, and online technologies.
We offer process systems for various industries such as founding, steel industry, coal (and other minerals) mines, automotive, metalworking, ceramics, food, refractories, and other industries.

Our offer of machinery and equipment includes:

- mixing/granulation technology
- drying and cooling technology
- raw material weighing systems with electronic weighing modules
- raw material storage systems
- row material feed systems: pneumatic transport, screw conveyors, belt conveyors, bucket elevators, and other types designed and adapted to the technological requirements and raw material properties

We provide mechanical and electrical installation of machinery and equipment and comprehensive process lines. At **IdeaPro**, we provide such comprehensive installations as fume and dust extraction systems, compressed air systems, water supply systems, transmission pipelines with automatic control systems, raw material dosing and transport systems, and pneumatic transport systems.

Moulding sand preparation system

Automatic raw material weighing process line

Concrete mixing process line

Quartz sand and clay mixing process line

Flux powder mixing and granulating process line

MIXING IN DYNAMIC MIXERS

Mixing is a basic process operation aimed at combining at least two different materials to obtain as homogeneous a substance as possible. Mixers used in the process have the greatest impact on the quality and homogeneity of the mixture.
IdeaPro's MDV, **MDH**, and **MD** dynamic mixers are new generation machines for mixing various raw materials such as synthetic moulding sands with bentonite, resin mixtures, cement mixes, refractories, ceramics, household waste and many other.

IdeaPro manufactures dynamic mixers of various sizes and capacities:

- **MDV dynamic mixers** with an inclined revolving pan, fixed scraper blade, and one high-speed turbine
- **MDH dynamic mixers** with a vertical revolving pan, movable scraper blade, and two high-speed turbines
- **MD dynamic mixers** for various applications and with various structural and functional features

The unique mixing process in dynamic mixers combining macro-mixing (the revolving pan) and micro-mixing (the turbine) ensure high efficiency of mixing. The 'hybrid' mixing approach to various materials guarantees high quality of the end product and reduces process time.

Dynamic mixers facilitate:

- perfect homogeneity of the product even for light materials, colourants, binders, and other additives
- mixing without the segregation of components
- careful mixing of light materials (fibres, suspensions, polystyrene, foams, light mineral materials, etc.)
- adjustable mixing intensity through the control of the input power (variable rotational speed of the turbines)
- use of mixing tools (turbines) with geometry selected for the specific task
- processing of materials with various consistences in a single mixer
- economical operation thanks to the short mixing duration resulting in a high output
- hermetic mixing process

Structural and operational advantages of dynamic mixers:

- automatic feed and discharge possible
- control and visualisation system for automatic control
- a durable and sturdy structure
- a small number of parts and easily replaceable wearing parts
- very durable mixing components
- low operational costs for dynamic mixers
- high operational reliability

GRANULATION PROCESS

Granulation is also referred to as agglomeration, palletisation, or granulation. The process consists in combining small particles such as dust and powders into larger agglomerates (granules) with specific mechanical strength. The granulation can be a wet process with a fluid or a hot process.
In terms of processes and equipment, granulation can be a non-pressure or pressure process.

Non-pressure granulation may take place in a fluid bed or a freely flowing layer of material for granulation (dynamic, tumbler, disc, and vibration granulators).
When powder raw material is granulated, a binder fluid is used both for pressure and non-pressure granulation.

Granulation is used to ensure the product has the form required by the user. Raw materials and products are often granulated to make their use with specific technologies easier or even possible at all. Materials that can be granulated include raw materials, household or mine waste prior to further processing, and solid biofuels.

IdeaPro offers a wide array of mechanical granulation equipment including **MDV** and dynamic mixer granulators and **AO** agglomeration discs. With the unique mixing/granulation sequence, our granulation technology meets the highest product quality, energy consumption, and efficiency standards.

The combination of intense mixing with granulation in a single machine works great in the granulation of many materials such as compound fertilisers or dusts.

The most important advantages of non-pressure granulation include:

- reduced dust emissions during the process
- no caking
- easier transport and dosing of granular materials
- prevented segregation in multi-compound materials

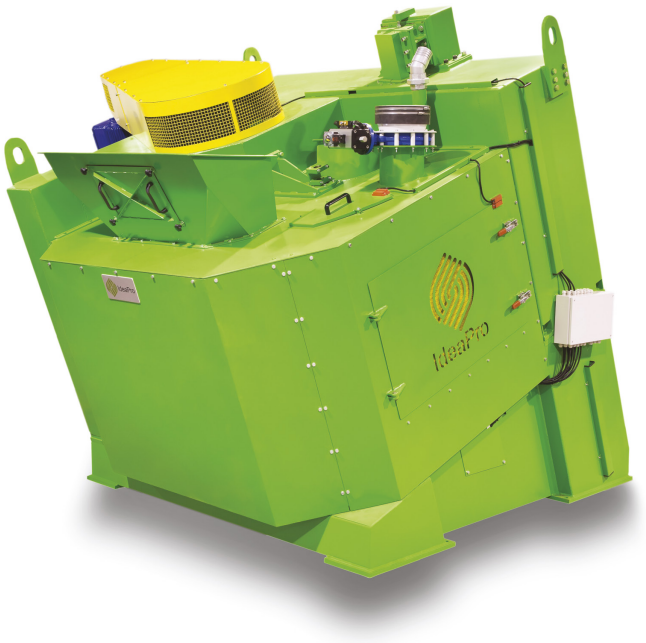
MDV DYNAMIC MIXERS

The mixing process in MDV dynamic mixers takes place in a revolving pan and uses a rotary mixing tool (turbine). The material in a dynamic mixer is lifted up by the rotation of the pan and it falls from the highest point pulled by gravity. The process is aided by a fixed scraping blade that feeds the material to the turbine area.

MDV dynamic mixers by IdeaPro Nowa Sól have the following mixing equipment:

- an inclined revolving pan that feeds the mixture towards the scraping blade and turbine
- an eccentric impeller (turbine)
- a fixed scraper blade

MDV dynamic mixers		
Type	Capacity	
	litres	kg max
MDV-11	350	490
MDV-16	600	840
MDV-19	1000	1400
MDV-21	1800	2500
MDV-24	2500	3500
MDV-26	3200	4500
MDV-29	4000	5600
MDV-32	5000	7000
MDV-32A	6000	8400
MDV-32B	7000	9800



MDH DYNAMIC MIXERS

MDH dynamic mixers by IdeaPro Nowa Sól have the following mixing equipment:

- a vertical revolving pan that feeds the mixture towards the scraping blade and two turbines
- two eccentric impellers (turbines)
- a movable scraper blade

MDH dynamic mixers		
Type	Capacity	
	litres	kg max
MDH-24	2500	3500
MDH-29	4500	6300
MDH-32	6500	9100

MD DYNAMIC MIXERS

MD type dynamic mixers are intended for mixing materials in the founding, ceramics, food, glass, refractories, and other industries.
MD dynamic mixers offer a variety of designs, mixing toll shapes, and additional equipment adapted to the specific mixing process. **IdeaPro** experts select the right parameters, technology, the shape of the scraper blade, and turbine depending on the intended use and application of the mixer.

MDP tilt lid dynamic mixers		
Type	Capacity	
	litres	kg max
MDP-10	180	250
MDP-11	320	450

MDS dynamic mixers		
Type	Capacity	
	litres	kg max
MDS-11	350	490
MDS-16	600	840
MDS-19	1200	1700
MDS-21	1800	2500

MDL dynamic laboratory mixers		
Type	Capacity	
	litres	kg max
MDL-03	7	10
MDL-04	15	21

MDM tilt lid and tilt pan dynamic mixers		
Type	Capacity	
	litres	kg max
MDM-04	40	55
MDM-06	80	115
MDM-08	160	230

SF FLUID BED DRYERS

SF fluid bed dryers are intended for drying and cooling in granulation, agglomeration, crystallisation, roasting, and calcination of granular and loose materials such as sand, limestone, ceramic raw materials, fertilisers, foods, recycled materials, minor chemicals, and many other materials that can undergo fluidisation.

The dryers are used in various industries, in particular in the mineral processing, chemical, fertiliser industries and recycling. SF dryers utilise the fluidisation process that facilitates intensive heat exchange between particles of the material being dried and the flowing heat medium.

Our fluid bed dryers come in several basic types with the following drying processes:

- high-temperature drying in a fluid bed by a mixture of air and exhaust fumes
- high-temperature drying in a fluid bed with a mixture of air and exhaust fumes with a second drying (cooling) stage in a fluid bed at ambient temperatures
- low-temperature drying with warm air
- with a preliminary mixing zone at the inlet to the dryer

Advantages of SF fluid bed dryers:

- high efficiency, i.e. the maximum use of the heat introduced into the bed of the material
- separation of fine fractions (dust) from the dried material
- stable material temperature at discharge possible
- material at discharge can have a temperature required for further processing
- easy operation and maintenance thanks to simple design and no moving parts in the dryer
- automated drying process
- compatibility with various energy resources such as fuel oil, natural gas, propane-butane, and electric heaters
- any setup of dryer components possible

IdeaPro SF fluid bed dryers offer various capacities from 3 to 48 Mg/h. SF fluid bed dryers can be used for drying various materials, in particular grainy or granular ones that undergo fluidisation. The range of application should each time be consulted with **IdeaPro** experts.
We focus on SF fluid bed dryers used mainly for drying and cooling sands.

SWF VIBRATING FLUID BED DRYERS

Drying and cooling are elemental processing steps when preparing loose materials in all industries. Bulk goods such as sand, gravel, coal, crystalline products, foods and feeds, and waste products need to be dried before final processing.

SF vibrating fluid bed dryers are intended for drying, cooling, granulating, agglomerating, crystallising, roasting, and calcinating mainly granular and loose materials such as sand, limestone, ceramic raw materials, fertilisers, salt, foods, recycled materials, plastics, pigments, feeds, and minor chemicals.
They are used in various industries, in particular in the mineral processing, chemical, fertiliser, mining, metalworking industries and recycling.

SWF dryers utilise the fluidisation process aided by vibrations, which facilitates intensive heat exchange between particles of the material being dried and the flowing heat medium. SWF vibrating fluid bed dryers by **IdeaPro** come in a variety of sizes and capacities matching the process and customer's requirements.

Basic advantages of vibrating fluid bed dryers:

- high drying and cooling capability
- optimum energy consumption
- vibration-controlled fluid bed surface
- easy temperature control and monitoring
- quick product swap
- particularly gentle product transport

Vibrating fluid bed dryers are used mainly for drying:

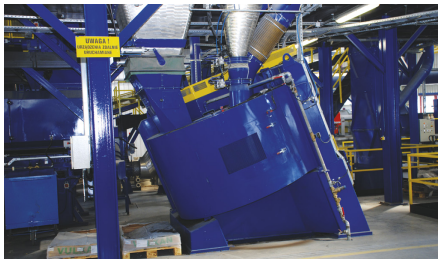
- materials with a broad spectrum of particle size - vibrations of the bottom plate of the dryer help discharge larger particles that would not undergo fluidisation
- fine materials - vibration transport on the bottom plate prevents air bubbles
- products with a broad range of grain size - vibrations prevent material segregation by loosening up large grains
- temperature-sensitive materials - the sub-fluidised state can be achieved to create piston flow and eliminate burning or discolouration of individual particles
- brittle materials - low-amplitude vibrations of the bottom plate of the dryer with the fluid bed at a reduced fluidisation speed create a gentle bed, which results in lower degradation than in conventional fluid bed dryers or other mechanical dryers

WTM, WTD Bulk Material Scale

Precise dosing of raw materials is of particular importance for mixture production.
Bulk material scale with tensometric systems are the modern standard. Because of usually large weight differences between primary components and additives, bulk material scales come in various designs and capacities:

- primary component bulk material scale - WTM, loading of materials: 250 ÷ 7000 kg
- additives bulk material scale - WTD, loading of materials: 25 ÷ 700 kg
- mobile bulk material scale - WTJ, loading of materials: 25 ÷ 2000 kg

IdeaPro's bulk material scales demonstrate high weighing precision below 1%, which guarantees precise mixture composition. Depending on the properties of the intended raw materials, bulk material scales are made of various materials such as carbon steel, stainless steel, or aluminium.



DT Belt Feeders

DT belt feeders with elastic belts are designed for the continuous feeding of loose, wet and dry materials. Feeder belt width B=500 ÷ 1600 mm, belt speed V=0,25 ÷ 1,0 m/s, length L=1,5 ÷ 8,0 m The belt feeders are mounted under tanks, from which they take the material. The material-feeding capacity may be smoothly regulated by changing the motor's rotational speed (the frequency inverter). It is recommended to operate the belt feeders in the horizontal position.



DS Screw Feeders

DS screw feeders are designed for feeding and carrying loose, medium-grained, dry and wet materials over small distances. Due to their hermetic structure, the feeders are especially recommended for carrying silty materials. The feeders can operate in the horizontal or diagonal positions. The screw feeders are manufactured for different material feeding capacities and in different sizes - D=80 ÷ 400 mm. In the casting industry, these screw feeders are mainly used for transporting coal silt, bentonite, bentonite mixture, quartz sand, and silt from the filter, etc. The screw feeders are mounted under the tanks, from which they take the material. The material-feeding capacity can be regulated by using a motor with two rotational speeds or by the smooth regulation of its rotational speed (the frequency inverter).



PT Belt Conveyors

PT elastic belt conveyors are intended for the continuous transport of loose and granular materials, both wet and dry when placed horizontally or inclined. Inclined conveyors can be constructed as Z-type conveyors. Conveyor belt width: 500 ÷ 1600 mm, belt speed: 0,5 ÷ 2,5 m/s. The conveyors can feature flat or troughing rollers depending on the required capacity and type of transported material. The conveyors can be used for transporting material over large distances and at an incline to various heights.



PK Bucket Conveyors

PK bucket conveyors are intended for the vertical transport of loose fine materials, both wet and dry, that do not stick together and do not adhere to the buckets excessively.
The shape of the buckets, their number and material are selected by **IdeaPro** experts to meet customer's requirements.
Bucket elevators can be designed to offer various capacities: Q=3 ÷ 300t/h and various material lifting (transport) heights.


Pneumatic transport

It is intended for transporting various fine loose materials. The particles are entrained by air molecules. Pneumatic transport is used in: unloading road and railway tankers, interoperational transport between storage silos and production floor, transport between production areas, or transport of the finished product to packing machines. Pneumatic transport pipelines may be placed in any spatial configuration, which is a great advantage of the technology.



PW Vibration Conveyors

PW vibration conveyors are intended for transporting various loose and granular materials and casts (also hot ones) horizontally and on inclines. The vibration conveyor consists of a rectangular or tubular trough and a vibratory drive. They are used in process and storage transport. Rectangular trough width: 200 ÷ 1200 mm, tubular trough diameter: 60 ÷ 400 mm. Vibration conveyors can be installed in a series to form a transport system.



DESIGN

The high quality of machinery and process lines manufactured by PPP IdeaPro Sp. z o.o. in Nowa Sól is guaranteed by experienced designers.

Design of machines, devices, and systems using the latest and reliable solutions within the general field of engineering is a vital part of **IdeaPro**. The company designs structures, modifies them, and offers cost-effective solutions to practical problems. This is where the scientific and technical knowledge of our personnel steps in.

We have professional engineers and fully equipped design department. This way, we can create the best and most modern solutions that are not only functional but, first and foremost, safe in use. Our design engineers use the following software: Solid Edge, T-Flex, AutoCAD, and INVENTOR.

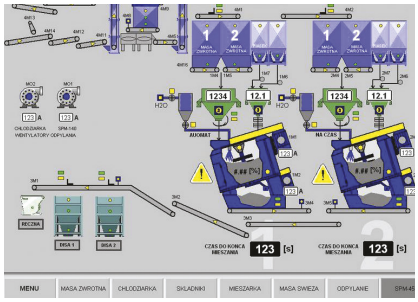
The software they have at their service guarantees efficient and effective teamwork. It helps draft new structures of machines, equipment, and process lines achieving very high technical performance, thus facilitating quick implementation of innovative ideas. Our designs take advantage of **IdeaPro's** proprietary patented innovative technical solutions.

AUTOMATION, CONTROL, AND VISUALISATION

Machinery, equipment, and process lines manufactured by **IdeaPro** are equipped with advanced control, visualisation and storage systems.
IdeaPro's advanced control systems are constructed in our automatic control department using the latest software such as: EPLAN, SEE-EE, TIA, STEP7, and WinCC.
Machines, equipment, process lines, and industrial processes are controlled by interconnected devices that make up the industrial automatic control system.

Industrial automatic control systems use:

- instrumentation installed on machines and equipment (measurement systems, sensors, transducers, meters, gauges, and loggers)
- control devices: PLCs, industrial PCs, and control panels
- to control and visualise production and industrial processes: controller software, HMI/SCADA, and DCS
- communication systems: industrial networks, radio and modem systems, and GPRS



Visualisation systems help monitor equipment operation in real time using a central control panel. By connecting the control and visualisation system to the Ethernet network, controls can be accessed remotely online.
This facilitates quick diagnosis and analysis of the operation of individual systems (drives) and adjustments in the control program without a visit from a serviceman or automatics engineer.

The machines, devices, and complete production lines manufactured by IdeaPro are designed specifically for use e.g. in the foundry, automotive, glass, iron and steel, mining, ceramics, insulating and refractory materials industries, and many other

We provide assistance and technical support services, putting our consultants and their extensive experience at your disposal

We provide comprehensive project implementation services, which include:

- the development of underlying concepts
- the formulation of technical and business objectives
- industry-specific projects, e.g. water supply and compressed air lines, gas and electric systems
- foundations and construction works
- machinery and equipment
- shop floors and steel structures
- dust removal systems
- power supply and electric control systems
- the organisation of project-related supplies and deliveries
- the installation and start-up of the resulting technological lines
- the implementation of manufacturing processes

Drawing on our many years of experience, we have developed our own know-how basedon technologies designed for building machines and technical equipment, including in particular:

- shot-blasting machines
- sand processing stations
- turbine mixers
- vibro-fluidised bed and blade-mixer coolers
- fluidised bed and vibro-fluidised bed dryers
- pulse-press moulding machines
- automatic moulding lines
- the maintenance and online monitoring of manufactured and operating equipment and production lines

We also provide supply services in the following areas: designing, engineering, control and automation, repairs, mechanical treatment, welding steel structures, shot blasting, and painting, as well as other services, according to our own machinery park

IdeaPro®
NOWA SÓL POLAND

PPP IdeaPro Sp. z o.o.
Dolnośląska 8
67-100 Nowa Sól
tel. +48 68 444 89 42
www.ideapro.com.pl
marketing@ideapro.com.pl