PARGET
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Built for the Best

GYPSUM TECHNOLOGY

SOLUTIONS BY PARGET





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Gypsum Processing

• Gypsum

Gypsum is a particularly useful processed material. Its main application is as a building material, mostly produced as so-called plaster of Paris for plastering walls and making decorative features in buildings. However gypsum also has a diversity of other uses including making writing chalk, soil conditioning for agriculture, making moulds for pottery, as an additive in the manufacture of Ordinary Portland Cement (OPC), in surgical splints, in increasing the hardness of water, as an additive in certain foods such as tofu and in some types of medicines and pharmaceuticals. Its construction uses can also include external applications, such as in making walling blocks, where the climate is generally dry and not prone to the dampness that damages common types of gypsum.

• Raw Material

Gypsum rock (calcium sulphate dihydrate – CaSO4.2H2O) was formed in geological time through the evaporation of seawater. It is often laid down in beds, ranging in thickness from a few centimetres to several tens of metres.



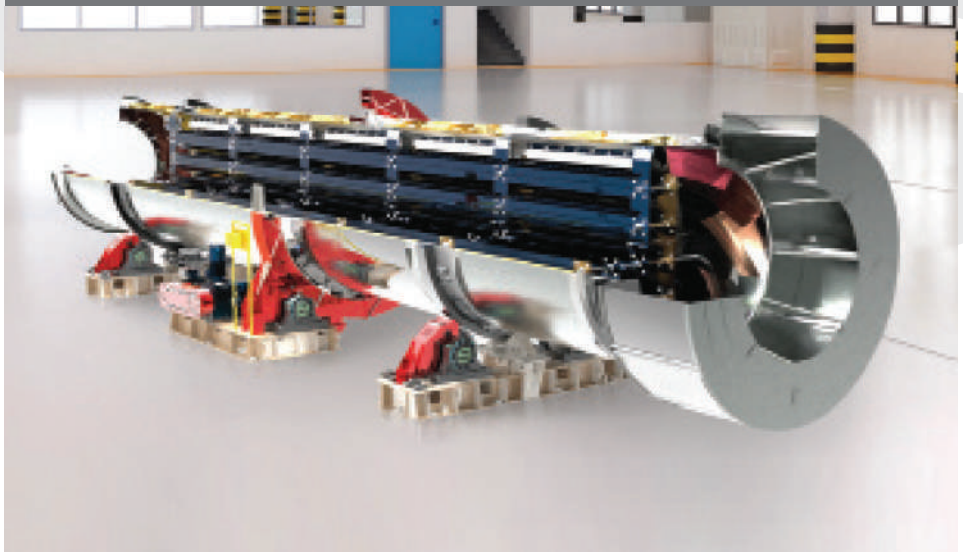
Flexibility of Use

Gypsum production is heavily dependent on construction industries. Approximately 90% of gypsum is used in
The gypsum industry has seen its share of purchase, merger and divestiture activity over the years and this is unlikely to stop at this point in time. There are three key stages to an acquisition: planning and target identification, successful transaction completion and subsequent successful integration. Successful experience in all three of these stages is a significant part of our offering.

No Waste

Gypsum products can be counted amongst the very few construction materials where “closed-loop” recycling is possible, i.e., where the waste is used to make the same product again. Gypsum as such is 100% and eternally recyclable. You can always reuse Gypsum because the chemical composition of the raw material in plasterboards and blocks always remains the same.





High operational safety, low production costs, ideal energy efficiency – Parget Technology sets standards for the gypsum sector with production plants
As one of the few companies in the world, Parget Makina supplies complete plants for the manufacture of gypsum plaster production plants.
Technological Gypsum Plants designed by Parget Makina offer the most accurate and most suitable facilities for our customers by taking into account the characteristics of the raw material, the current fuel type, capacity needs, market targets and facilities, production cost expenses, etc.
Gypsum production plants will be designed specifically according to demanded capacities to be required in production and also final product specifications to be obtained.
Parget Makina works on various parameters for all process equipments and machineries like dimensional accuracy, shapes, sizes and make sure end up satisfying the customers to the fullest.

Features	Benefits
Daily Capacity	Flexibility : from 100 to 1000 tons per day
Final product range	§Possibility to get various fractions: 0-160, 0-200, 0-400, 0-630, 0-1000 µ and other fractions.
	§Possibility to control particle size distribution
Calcination process	Obtaining gypsum with correct, stable and required characteristics based on the field of usage.
Energy Consumption	Very economical and environmentally friendly due to the use of heat recovery system and optimal working regime
Plant Design	**Flexible layout :**
	§Within ready building
	§According to customer needs
Complete automation	Controllable, secure and easy in use process
	low operation cost due to low number of staff involved.
Technical process	§High effectiveness and efficiency
	§No production waste



Parget Gypsum Technology Features

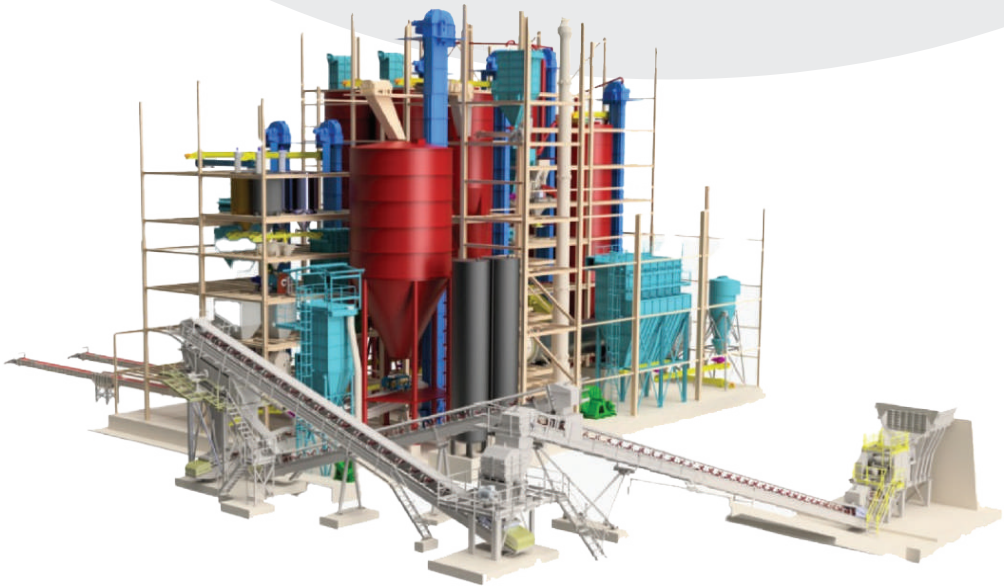
- ***Parget Gypsum Technologies*** offer the best solutions with the most suitable design of the process to get product with optimal quality of calcined gypsum.
- Due to customer focus, experienced project management team and effective after-sales services, Parget Makina is a reliable solution partner that understands its customers' needs.

Our facilities consist of main units;
Raw Material Crushing and Screening
Calcination
Grinding and classifyng
Dedusting
Packing

Gypsum Production Process has become an important study in terms of the product development and improvement of gypsum plant. Gypsum has many types with usages in industrial areas. Such as;

Types of Gypsum:
Plaster Gypsum
Machine Gypsum Plaster
Satin Gypsum
Plasterboard Plaster

Usage Areas of Gypsum:
Adhesive chemicals
Agricultural chemicals (non-pesticidal)
Building / construction materials / wood and engineered wood products
Cement industry; Portland-cement retarder
Fillers
Gypsum industry; gypsum board, bond and plaster
Polishing powder
Boards (white pigment, filler, drier) paper filling, surface coating)
Drying of industrial gases, solid materials and many organic liquids




1
2
3
4
5
6

Parget Gypsum Production line Process

The process described bellow will be applied for the crushing, calcination, grinding and packing of the material designated (calcined, grinded and classified Gypsum Powder).

Gypsum stones are fed to the crushing and screening unit through the inlet of the **bin** 1 passing by the magnetic separator placed before the crusher to prevent occurrence of metal parts into the crusher that might lead to its breakage and damage.

Gypsum stones are later transferred to be crushed and shattered in order to meet the required size, they then pass for granulometric control and check through the vibratory screen where appropriate sized gypsum grains of required granulometry of 0-10 mm proceed in the system through the belt conveyor , whereas gypsum grains of bigger size are returned for a secondary crushing .
Within the **crushing and screening unit,** dedusting equipment accompanying filter are foreseen to execute the dedusting in the unit enabling a dust free environment and a loss-free production.

At the outlet-hood of the crushing and screening process we get an output material (crushed gypsum) sized between 0 and 10 mm that will be parallelly fed and stored inside of the **storage and feeding unit.** 2
As the raw material storage silos get fully fed in a way that they fulfil and prepare the need of 18 hours of calcination works, they automatically stop their operation after receiving the signal from the sensors placed at the top of each silo and indicating the maximum level of storage and they will resume their activity as they receive the signal from the minimum indicator sensor placed in their bottoms.

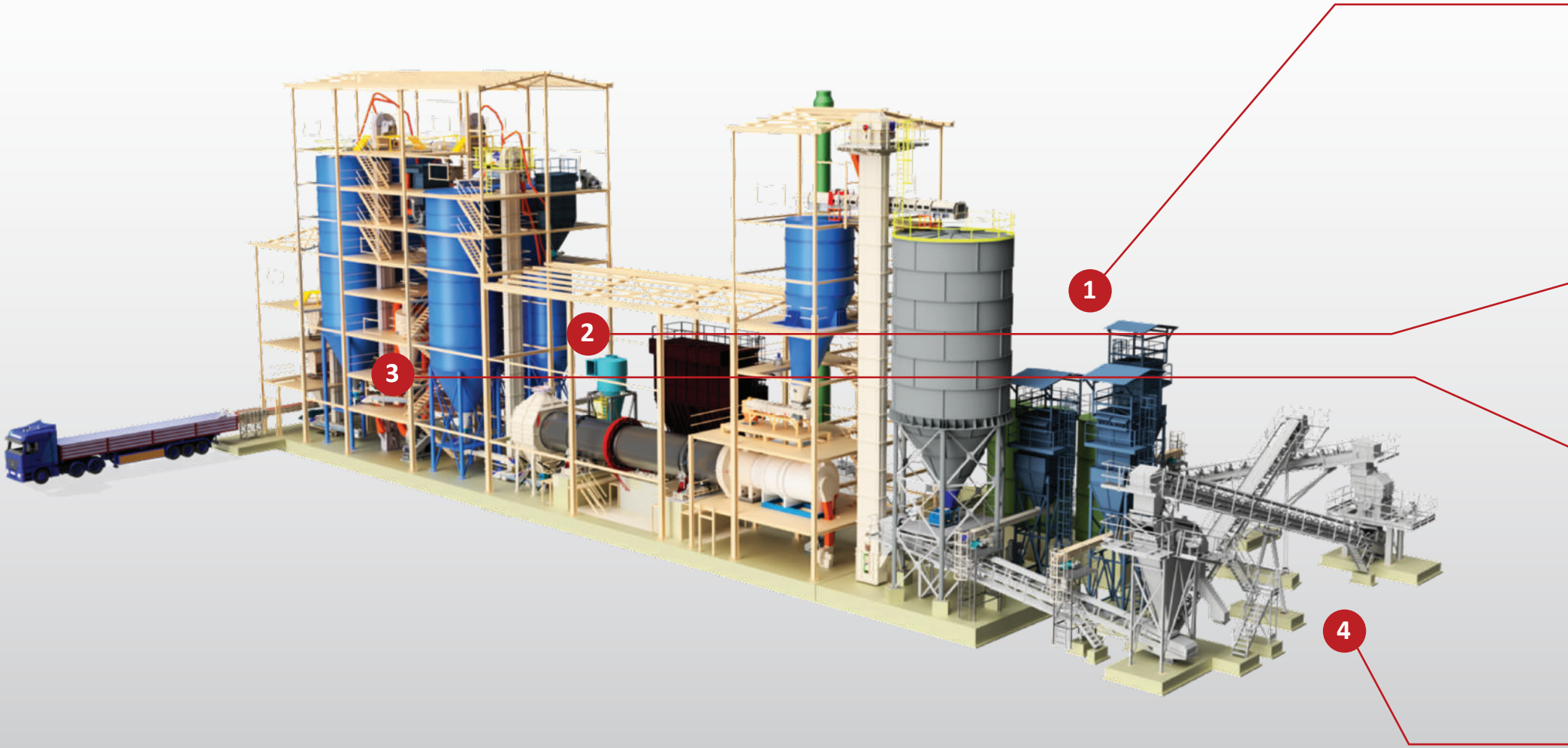
Out of the storage unit, crushed gypsum will be transferred through a weighing belt conveyor that enables stable and accurate weighing and feeding of gypsum to the **rotary calcination kiln** 3 where it will be calcined continuously and non-stop for a 24 hours process.

After gypsum is calcined, it is eventually conveyed to the **interim storage and stabilization Unit** 4 that where all the particles get stabilized thus the gypsum characteristics get improved and enhanced.
Calcined gypsum is afterword's transferred through the conveying system until the **grinding and classification unit** 5 to be processed through the Mills . Calcined gypsum sized up to 10 mm are fed to the Beater Plate mills passing by the magnetic separator placed before the mills to prevent occurrence of metal parts into the mills that might lead to its breakage and damage.

The gypsum powder will be later-on conveyed to the **packing unit** 6 consisting of 4 linear packing machines where it is automatically weighed, filled and dropped on the conveyor, just manually placed on pallets by workers.

The packing unit is further equipped with a spillage collecting system that recuperates all the wastage collected in the bunker and feeds it back to the system along with the dust collected through the filter.

Factory's Units



1

Crushing and Screening Unit



- The Crushing and screening Unit is designed based on the inlet size of the raw material that will be fed to the system.
- the main purpose of the use of this unit is the decrease the size of raw material (gypsum stone) to 0-10 mm to be fed later to the calcination unit (the rotary kiln)

2

Calcination Unit



- During the calcination, there is no direct contact between the raw gypsum and the by cause of the forecast of combustion and dilution chamber placed just after the burner.
- Our calcination system has an energy recovery system, by the help of secondary fan operated by frequency converter we are taking hot air with gypsum steam from exhaust and feeding to calcination process through the combustion chamber. In this way, we reduce the heat consumption and improve the quality of gypsum by increasing compressive resistance.
- As the kiln is operated with frequency converter, that enables its operation with different speeds and allow the obtention of gypsum with different characteristics.

3

Grinding and Classifying Units



- Grinding, screening and classifying unit designed to reach the requested final material fraction.
- Grinding and separation unit is equipped with dedusting system to execute the dedusting in the unit enabling

  *dust free environment .
  *loss-free production.

4

Packing Unit



- Automatic Weighing and filling
- Packing unit has separate Siemens PLC system.
  The packing unit is further equipped with a spillage collecting system that recuperates all the wastage and feeds it back to the system along with the dust collected through the filter.
- Ease of maintenance in case of breakage


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Expamle flow sheet of Gyspum production and dry mixture plant by Parget Makina

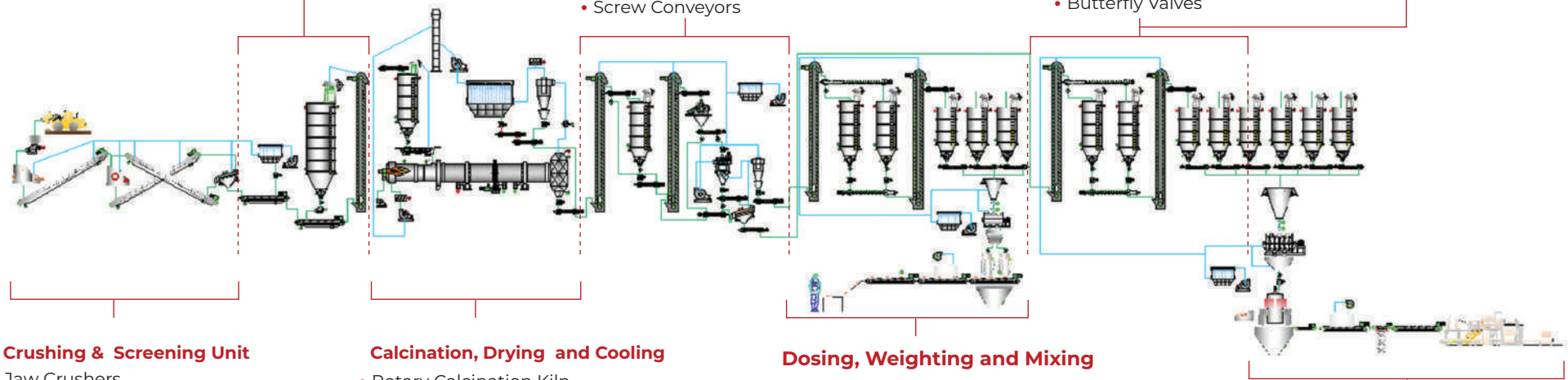
Material Storage and Silo Discharge Systems
- Silo
- Bin
- Vibrating Silo Discharge
- Silo Aeration Systems
- Bin Activators

Grinding and Classifying
- Centrifugal Type Beater Plate Mills
- Dynamic Air Classifiers
- Vibrating Screens

Vertical and Horizontal Conveying Systems:
- Bucket Elevators
  - Chain Type
  - Belt Type
- Belt and Roll Conveyors
- Screw Conveyors

Valves and Feeders
- Rotary Valves
- Vibratory Feeders
- Slide Gates
- Diverter Flap Valves
- Drallregler Valves
- Jalousie Valves
- Air Damper Valves
- Rod Gate Valves
- Butterfly Valves

Plasterboard Recycling System
- Plasterboard Waste Separators
- Plasterboard Shredders
- Twin Screw Conveyors



Crushing & Screening Unit
- Jaw Crushers
- Horizontal Shaft Impact
- Crushers
- Cone Crushers
- Vertical Shaft Impact Crushers
- Roll Crushers
- Reversible Impact Crushers
- Hammer Crushers
- Vibrating Screens
- Feeders
- Belt Conveyors

Calcination, Drying and Cooling
- Rotary Calcination Kiln
- Vertical Kiln
- Rotary Dryer
- Rotary Cooler

De-dusting
- Jet Pulse Bag Filters
- Silo Top Filters
- Cyclones

Dosing, Weighting and Mixing
- Dry Batch Mixers
- Continuous Wet Mixers (for plasterboard)
- Weighing Bins
- Micro weighing Bins
- Volumetric Dosing Bin
- Moving Additive Feeding System
- Additive Bin
- Manuel Additive Bin
- Micro dosing Screw Conveyors
- Weighing Belt Conveyors
- Belt Weigher

Packing and Packaging
- Linear Packing Machines
- Rotary Packing Machines
- Big-bag Filling Stations
- Big-bag Discharge Stations
- Bag Cleaning Conveyor
- Check Weigher Conveyor
- Bag Discharge Conveyor
- Bag Reject Conveyor
- Palletizing and Packaging Equipment

Gypsum Technologies Machinery

Calcination, drying and cooling system

1.Rotary kiln

Rotary calcination kiln is designed depending on required capacity and considering particle size and particle structure. Product type, particle size and feeding capacity define diameter, length and inner construction of the kiln as well as filtration space.

Gravitational flow and mechanical mixing enables movement of particles inside of the kiln, that ensures continuous change of contact area of a particle with heat. Thus, it enables high speed of calcination. Rotation speed of the kiln differs depending on characteristics of raw material and final material. Steam, emitted during calcination, is relieved outside by means of cyclone and jet pulse filter due to vacuum affect.

Material comes inside the kiln through the inlet placed on the upper part of cylindric body and comes out through outlet screen.

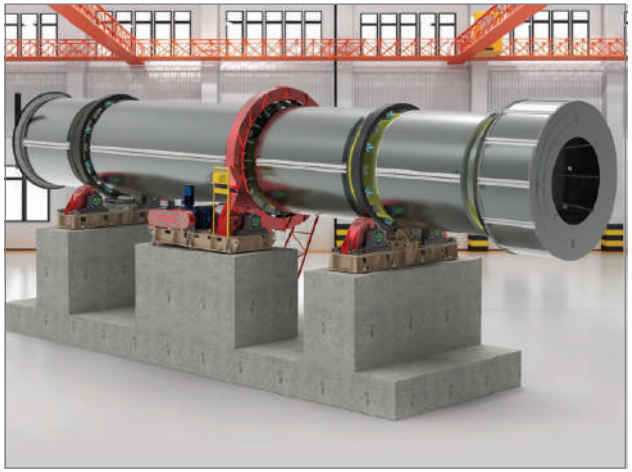
Dilution chamber is the first place where hot air contacts with material. In order to keep heat inside, inner part is lined with refractory bricks). Inlet hood is installed between stationary dilution chamber and rotary kiln body. Connection place is sealed for heat insulation.
Rotary kiln is a cylinder with a special inner longitudinal construction. It has four moving bearing houses and is installed on bearings in a certain angle. It rotates with a certain adjustable, normally, low speed by means of bull gear, pinion gear and rings. Rotary kılns are suitable for interrupted and uninterrupted processes.

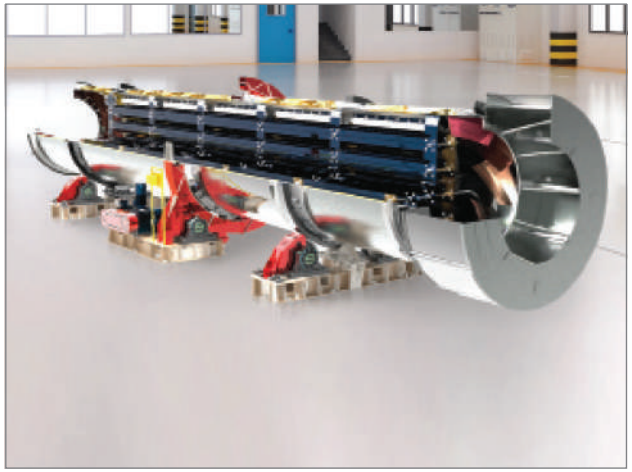
Due to special inner construction, material moves forward slowly and stays longer inside of the kiln. Thermocouples, placed at a certain interval along kiln body, enable control of inner temperature of kiln.
Inlet helixes enable forwarding of material towards the kiln body without collection at the inlet. Outlet helixes, installed to the opposite direction of transportation, ensure collection of material at the outlet of the kiln and discharge it. Screen, coupled with the kiln, rotates together with the kiln and screens the material.

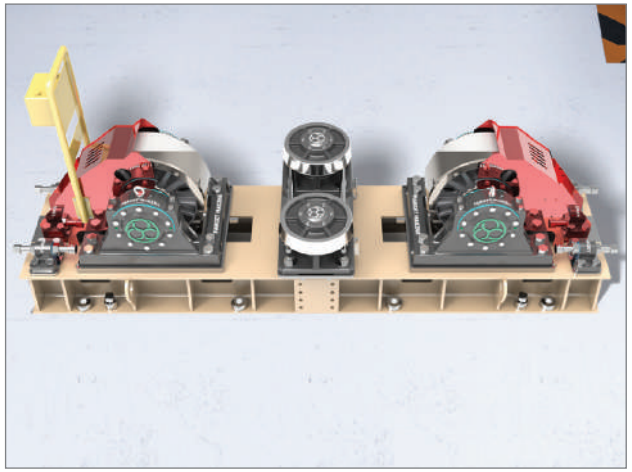
Machine Type	Burner Capacity	Machinery Capacity (t/day)
PM-RK1608	2 MW	100 - 120
PM_RK1810	2,5 MW	120 - 150
PM_RK2012	3,5 MW	200 - 240
PM_RK2214	c	240 - 300
PM_RK2417	6 MW	350 - 420
PM_RK2618	8 MW	500 - 550
PM_RK2820	10 MW	600 - 700
PM_RK3022	12 MW	750 - 900
PM_RK3224	15 MW	900 - 1200

Rotary Kiln Advantages
Stable feeding to the kiln
Continuous rotary kiln with special inner design;
Easily operated
Have high controllability,
Acquiring calcined gypsum with correct, required characteristics
Achieving higher capacity with signle unit


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Calcination, drying and cooling system

According to customer request, fuel type, final product quality and capacity; Parget Makina can offer 2 different calcination system for gypsum industry;

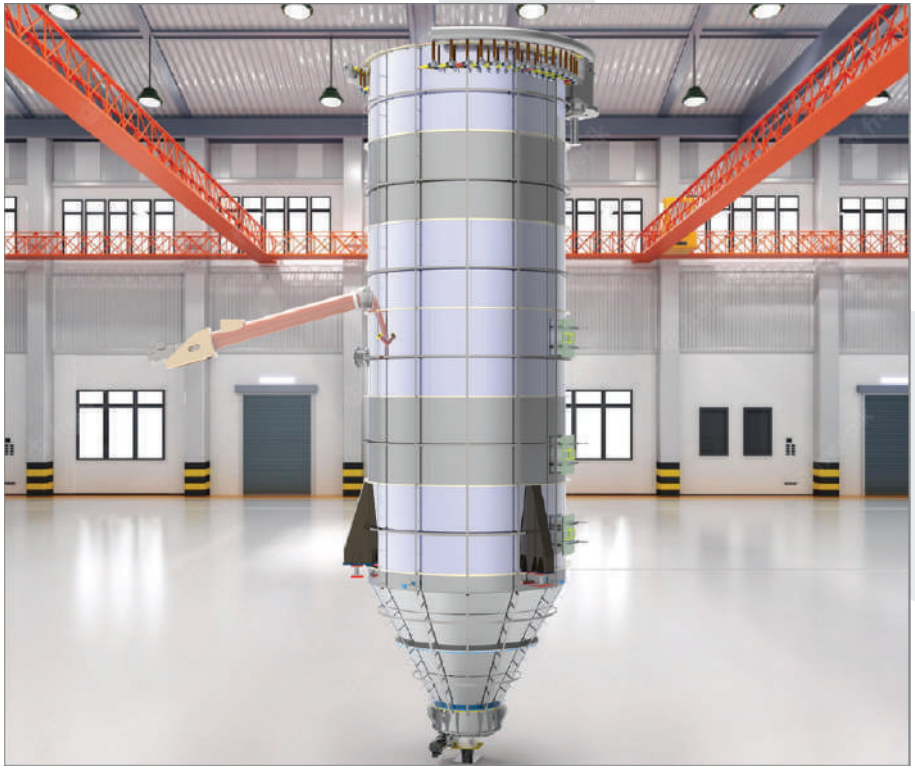
2.Vertical kiln

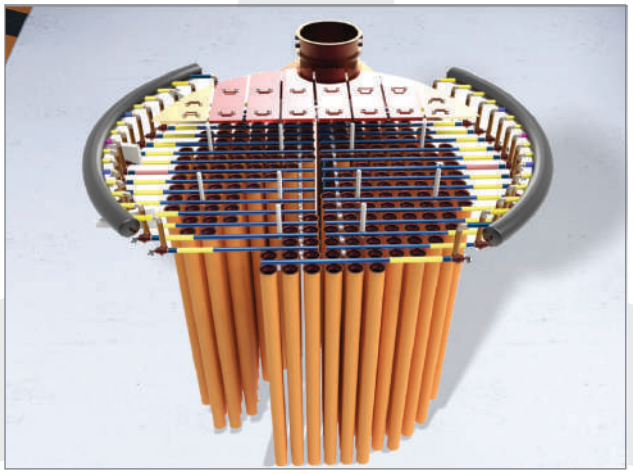
With the vertical kiln process; calcination takes place slowly under high pressure and in direct contact with hot air.
Thanks to this slow and pressured calcination; high quality plaster obtained has similar characteristics to a mixture of 85% hemihydrate and 15% alpha-hemihydrate.
This type of kiln is static type and the plaster moves by gravity. The raw gypsum feeds into the kiln via screw conveyor from weighing silo and gypsum fed from top into the center of the kiln. The combustion chamber is in the center and manufacturing material is 1.4301 and 1.4845 quality stainless steel. Burner placed at the top of the kiln produces hot gases flowing through the gypsum, descending from bottom to top, ensuring the rotational movement and, therefore, the uniformity of the calcination.

PRODUCT AND GAS FLOW DESCRITION

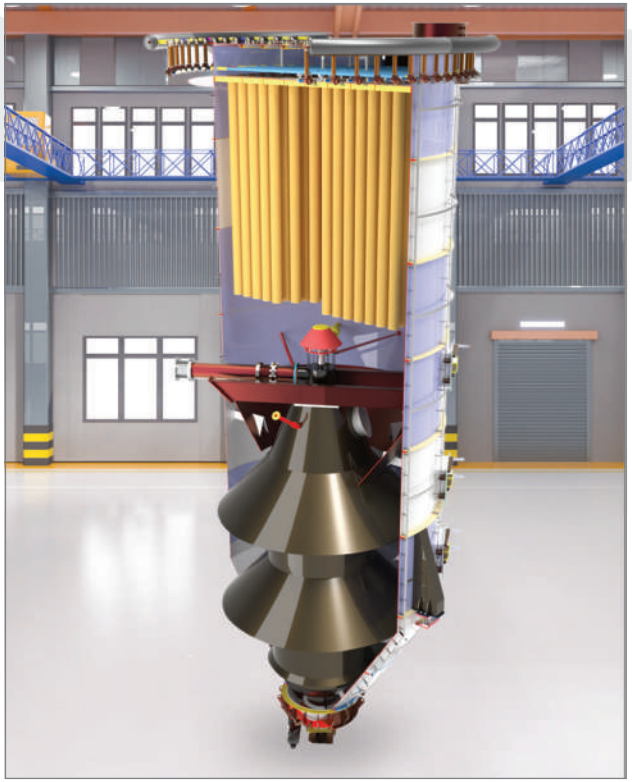
As shown in next picture; the raw gypsum is feed into the kiln from the center of the kiln via screw conveyor. These raw gypsums are going down vis gravity from the surface of the combustion chamber and while pile up on the each section of the chambers; the hot gas which comes from the combustion system come into contact with raw gypsum. During this time; the calcination occurs.
The rising hot gas are collection into the dedusting filter which are connected directly on top of the kiln. The kiln has the pressure inside and to the this pressure and gas / dust from the system; the kiln has a dedusting filter on top pf the kiln. This filter will be jet pulse cleaning system and with proper type of bags. And the emission of the value from chimney will be like below:
The vertical kiln is also equipped with loadcells to measure the final product. Besides; the kiln will be equipped with temperature sensors and pressure sensors to arrange the calcination parameters.
Tempretaure sensors will be totally 6 pcs; 4 is in the side of the kiln with 0-300 °C and 1 is in the filter bags and 1 is in the combustion chamber. Besdies, will be used a pressure switch in the piping from blower to set a pressure (0-1 bar)

Vertical Kiln Advantages
Latest techology
Low fuel and energy consumption
High quality stucco
Low investment cost
Easy installation
Low maintance cost









Centrifugal Type Beater Plate Mills

Description: Centrifugal type beater plate mill is used for grinding materials with low and medium hardness, such as gypsum, calcite, limestone etc. From an inlet size of 0-10 mm to an outlet size of 0-1 mm(%10-14 above 0,2 mm sieve)

AIM

The aim of the specification is to define general design parameters and specification of the centrifugal type beater plate mill manufactured by Parget Makina.

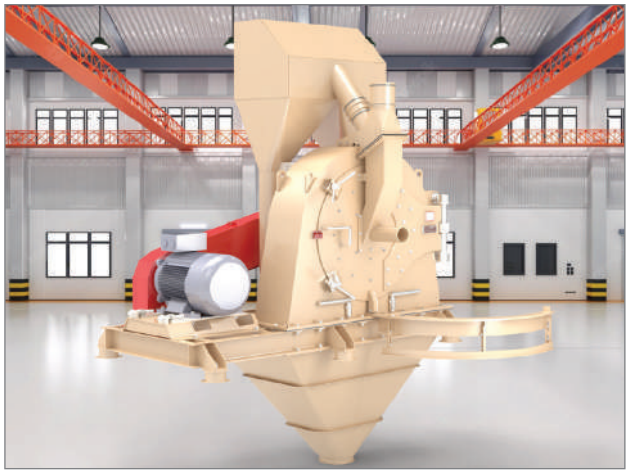
GENERAL DESCRIPTION

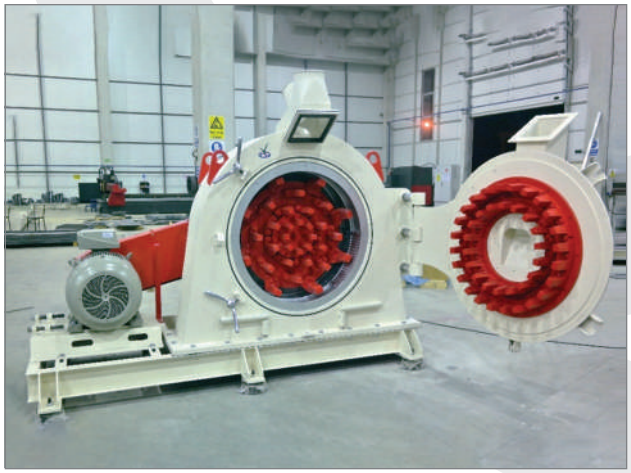
Centrifugal type beater plate mill is used for micronize materials with low and medium hardness, such as gypsum, calcite etc.
Centrifugal type beater plate mill produce a finish product size according to the material structure, cells in perforated screens or grate bars, size and type of hammers, grinding plate settings, rotor speed.
The grinding material is fed into centre of rotor through the inlet that placed on the cover.
The material is grinding by the impact of the hammers that placed on the rotor by throwing up to the stator of the mill. The required material is passing and discharging through the lower sieve, which is adjusted according to the desired material size. The grinding process of the material is implemented between concentric placed rotor with hammers and fixed stator hammers.
The upper hood controls pressure that appears during the rotor rotation. The rubber sealing that placed on the main body prevents dust ingress to the outside

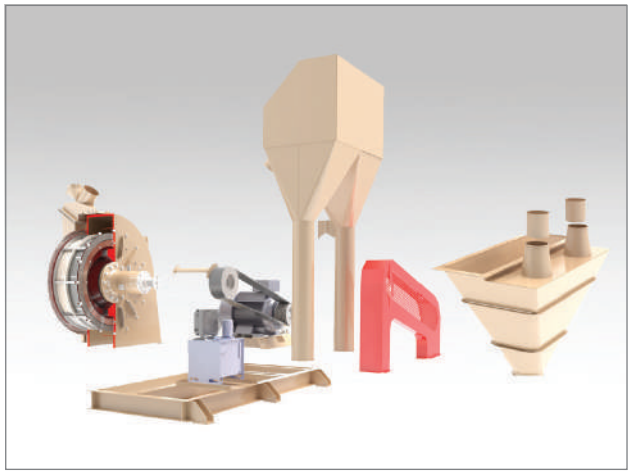
SCREEN SET

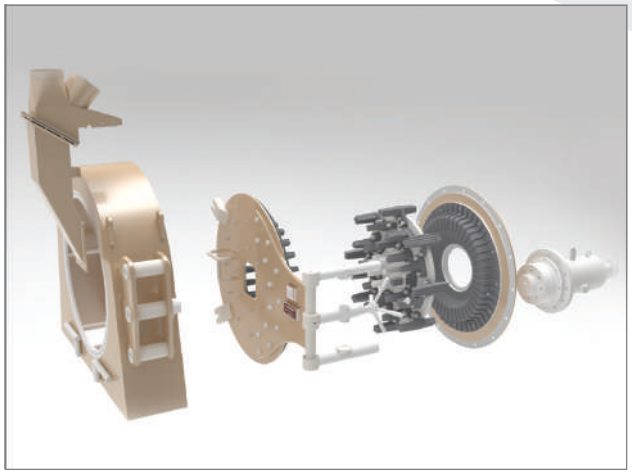
The screen is mounted between 2 and 3 flanges and fixed with studs.
The screen is covered by wear plate. The diameter of the wear plate depends upon the grinding material size. Thus, after receive the required size the material is discharging to the bin placed under the mill. The material that haven't reached the required size stays in the mill and continue grinding. The wear plate can be made from different type of sheet metal with different cells dimensions.
The wear plate can be used in the case of grinding hard materials.
The material of sieve and diameters of cells are designed according to the chemical properties and fineness of the grinding material.

Machine Type	Machinery Capacity (t/h)
PM_D630	10 - 15
PM_D770	15 - 25
PM_D900	25 - 35
PM_D1100	40 - 45











Dynamic Air Separator

Description: Dynamic Air Classifier is used for seperation of materials which has medium hardnesses such as gypsum, calcite, lime etc. It is possible to get particle size on the outlet from 0-1 mm (%10-14 above 0,2 mm sieve) micron till 0-0,2 mm (above 0,2 mm %0)

AIM

The aim of this specification is to describe the general design parameters and specification of Dynamic Air Classifier manufactured by Parget Makina.

SCOPE

Specification scope is limited by description of design details of Dynamic Air Classifier manufactured by PARGET MAKİNA İMALAT İNŞAAT MÜHENDİSLİK SAN. VE TİC. LTD. ŞTİ

GENERAL DESCRIPTION

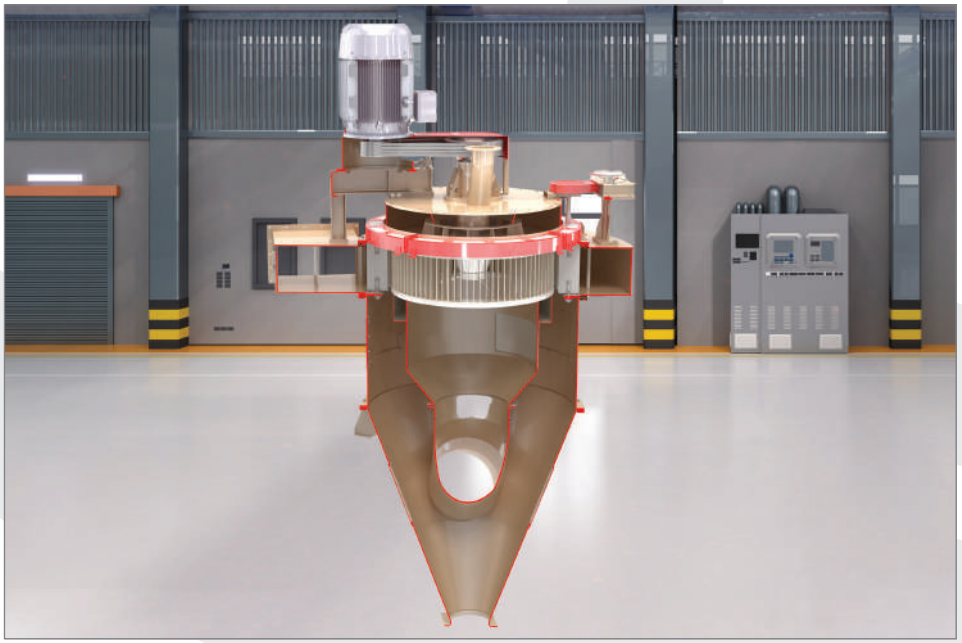
Dynamic Air Classifier is used for separation of micronized gypsum, calcite and cement and other micronized powder materials with medium hardness. Generally, it is used for the separation of required particle size of calcined product. After separation of required particle size, the rest of material can be sent back to the grinding process or to the storage unit to be used in different products.

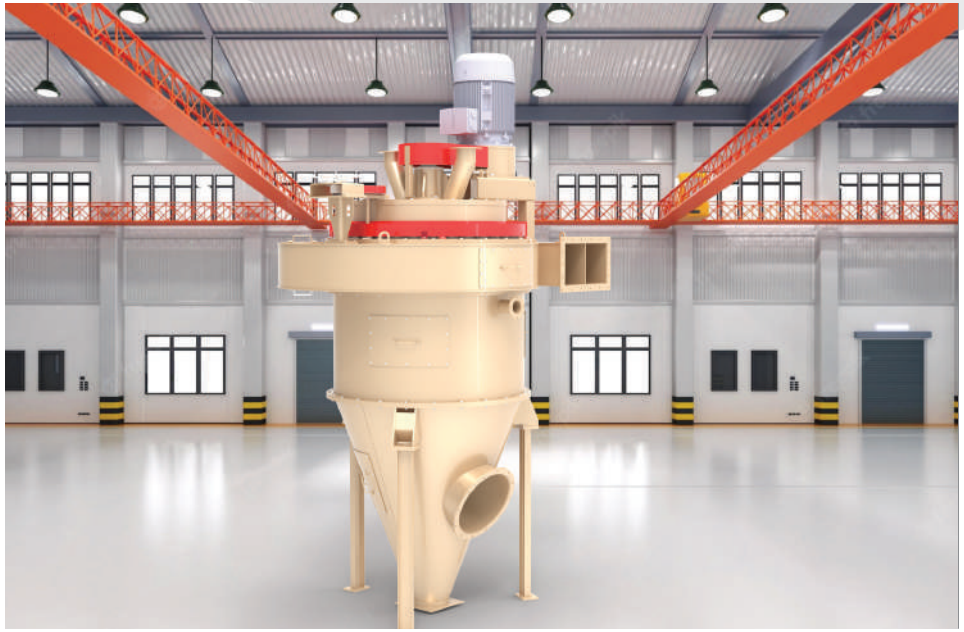
Dynamic Air Classifier can be designed in different sizes and capacities depending on the required particle size of final product, capacity, particle size, structure and other characteristics of material to be separated.

With the help of the classifier, it is possible to obtain two different products with minimum and maximum particle size distribution. Product, bigger than required, comes out of bottom outlet cone. It can be returned to the process for re-grinding, thus, to conform to the required size. With the help of the cyclone, it is possible to obtain product with small and fine particle size.

Machine Type	Capacity (t/h)
PM_DAC630	4 - 5
PM_DAC800	8 - 10
PM_DAC1000	12 - 14
PM_DAC1250	16 - 20
PM_DAC1500	26 - 31
PM_DAC1750	32 - 38







Jet Pulse Bag Filters

Description: A bag pulse filter is an equipment that serves to monitor air pollution. The filter cleans the air from particles generated during the production process.

AIM

The aim of this specification is to describe general design parameters and specification of Jet Pulse Filter manufactured by Parget Makina

SCOPE

Specification scope is limited by description of design details of Jet Pulse Filter manufactured by PARGET MAKİNA İMALAT İNŞAAT MÜHENDİSLİK SAN. VE TİC. LTD. ŞTİ

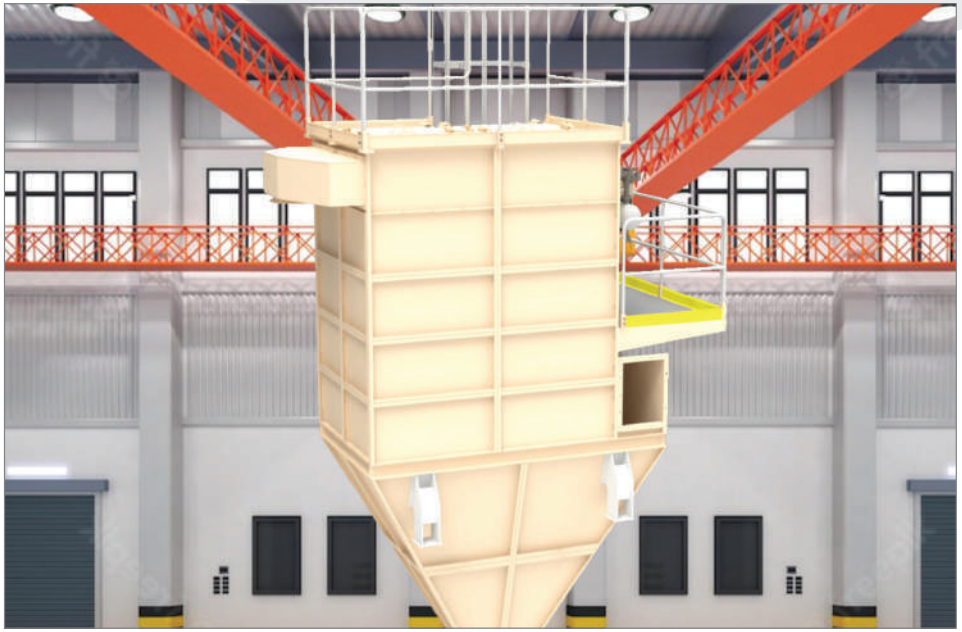
GENERAL DESCRIPTION

Jet Pulse Filter is air pollution control device that removes particulates from industrial processes. Dirty gas enters from the smog inlet, that is in the upper part of the bin and flows from outside to inside the vertical bags, supported by the metal cages. Due to the suction from the middle of the cages, dust collects on the outside of the bags. It falls into the dust collector bin due to short bursts of the compressed air. Entering inside the filter, dirty air spreads equally on bags. In jet pulse filters, gas flows downwards and dust precipitates into a storage hopper below. Cleaned air passes though inside the bags to the clean air chamber.

The Clean air is released to the atmosphere through the clean air exhaust. Bags are cleaned by a short burst of compressed air injected through a common manifold over a row of bags. The compressed air is accelerated by a venturi nozzle and directed to the center of bags. Since the duration of the compressed-air burst is short, it moves rapidly, traveling through the entire length of the bag and causing the bag surfaces to flex. This flexing of the bags breaks the dust cake, and the dislodged dust falls into a storage hopper below from there it returns back to the process through a filter discharge screw conveyor or a rotary valve.







Vertical and Horizontal Conveying System:

BUCKET ELEVATOR :

Chain Type
Belt Type

Description: Bucket elevator is the mechanism for conveying bulk, powder and granular materials such as gypsum, calcite, lime, cement etc, vertically

AIM

The aim of this specification is to describe general design parameters and specification of bucket elevator manufactured by Parget Makina

SCOPE

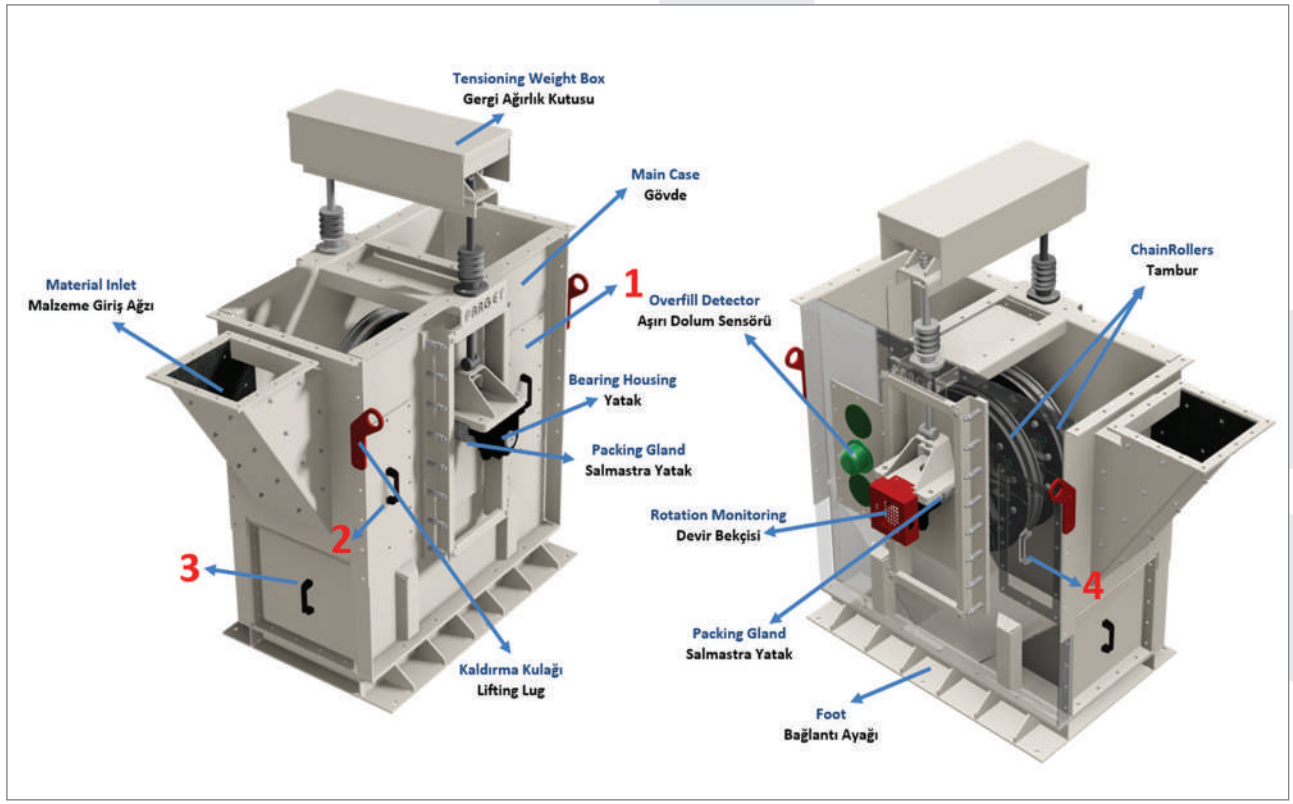
Specification scope is limited to description of design details of bucket elevator manufactured by PARGET MAKİNA İMALAT İNŞAAT MÜHENDİSLİK SAN. VE TİC. LTD. ŞTİ

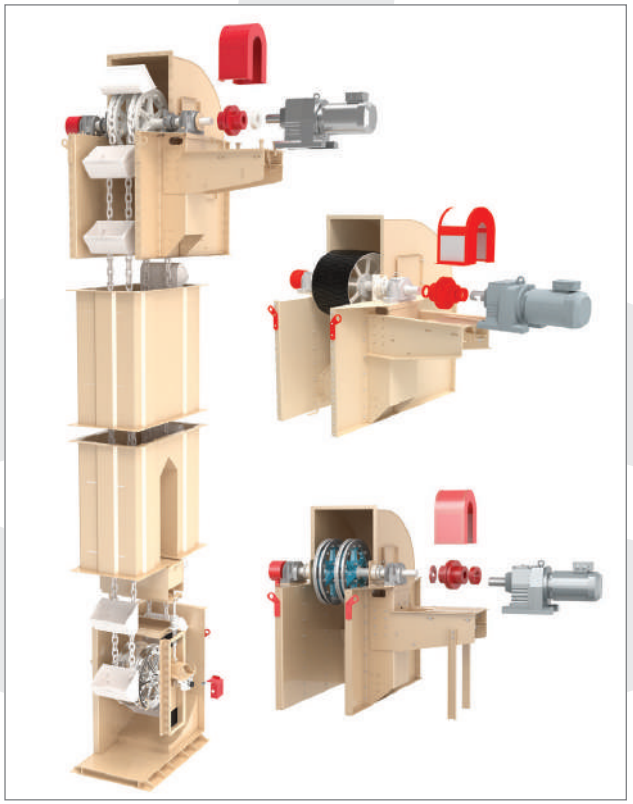
GENERAL DESCRIPTION

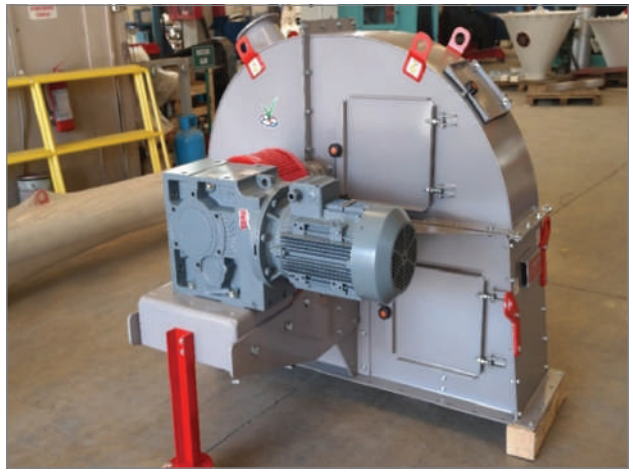
Bucket elevator is a mechanism for hauling flowable bulk materials, often powder and granular, vertically.
A chain, placed between the chain rollers, carries the buckets elevating material from the feeding point until the top.
Bucket elevators are designed depending on material type and density, conveying distance, capacity and other criteria.
There are two main designs:
Belt elevator,
Chain Bucket Elevator
Central Chain Type,
Double Chain type,

Bucket elevator consists of tension unit, drive unit and intermediate vents.
Tension and drive units include chain rollers, shaft and bearing houses.
Buckets are mounted to the tense chain which is placed between rollers of tension unit and drive unit.

Machine Type	Capacity (m3/h)
PM_ECC200	16
PM_DAC800	22
PM_DAC1000	32
PM_DAC1250	50
PM_DAC1500	71
PM_DAC1750	100


Tensioning Weight Box
Gergi Ağırlık Kutusu
Main Case
Gövde
Material Inlet
Malzeme Giriş Ağzı
1
Overfill Detector
Aşırı Dolum Sensörü
Bearing Housing
Yatak
Packing Gland
Salmastra Yatak
2
3
Kaldırma Kulağı
Lifting Lug
ChainRollers
Tambur
Rotation Monitoring
Devir Bekçisi
4
Packing Gland
Salmastra Yatak
Foot
Bağlantı Ayağı









Belt Conveyor

Description: The belt conveyor is used for conveying different kind of materials in horizontal or inclined way on a certain angle positions.

AIM

The aim of the specification is to define general design parameters and specification of the belt conveyor manufactured by Parget Makina.

GENERAL DESCRIPTION

The belt conveyor is used for conveying different kind of materials in horizontal or inclined way on a certain angle positions.
Belt conveyor can be produced in different kind of models depending on the used area, material properties, capacities, conveying distance.
Belt conveyors with the high reliability and low energy consumption are preferred to be used in every area where different materials are being conveyed.
Modified conveyors can be operated with abrasive, corrosive, hot, chemicals, fragile and brittle materials.
Types of the belt conveyor;

- **Flat type**
- **Trough type**
- **V type**

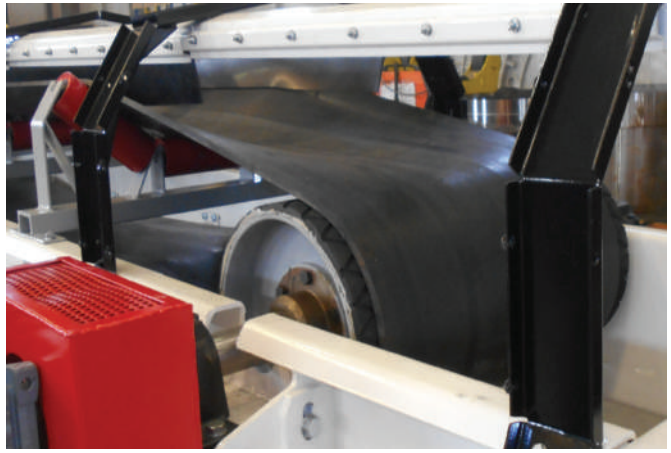
The basic elements of the belt conveyor are: support frame, drive and tensioning stations, carrying idlers, conveyor belt, inlet and outlet, ladder and platform. The elements of the tensioning station are: tensioning drum and bearings. The elements of the drive unite are: drive drum, bearings, geared motor.
In addition, there are maintenance hatches that enable an easy intervention in cases of breakdown.

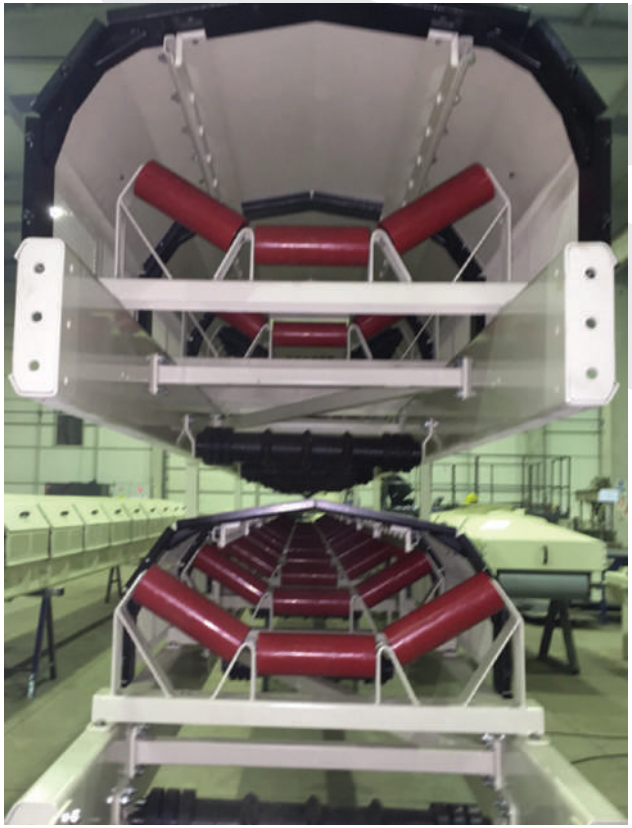
CONVEYOR BELT SPECIFICATIONS

Conveyor belt is chosen according to the conveyed material specifications can be PVC, polyurethane, rubber etc. The appropriate width of the belt conveyor prevents material spillage and the inlet width allows the largest parts of the material to pass smoothly. Belt thickness range is 8-16 mm depending on the conveyor design.

Machine Type	Motor Power	Capacity (t/h)	Dimensions (distance from feeding to discharge point)
PM-BCV500	Depends on the capacity, length and inclination of the machine and product features	Different capacity from 5 t/h until 400 t/h, depending on the product features and customer request.	Different lengths depending on the customer request and the project requirement.
PM-BCV650			
PM-BCV800			
PM-BCV1000			









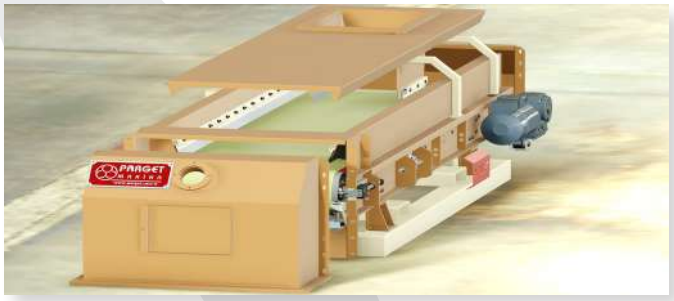
Vertical and Horizontal Conveying System:

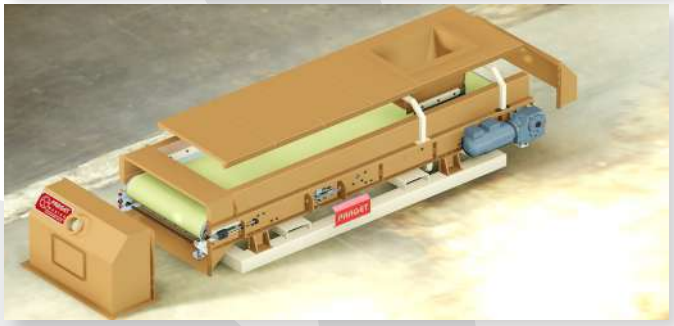
Weighing Dosing Belt Conveyors

Description: Weighing belt conveyor is used for feeding powder and granular materials as continuously weighing within a fixed time period. It is designed depending on the material type to feed, handling capacity and dosing volume.
The material is passing through on the belt is weighed in short periods and constantly, thanks to the weight-sensitive platform and high-precision measurable load-cell.

Parget Makina designed weighing belt conveyor is an economical and effective solution for dry dosing systems. It can be used especially for dosing of free-flowing materials with irregular flow and non-free flowing materials (very dry and fine or wet materials)

FEATURES	BENEFITS
WEIGHING BELT CONVEYOR – CAPACITY	• WIDE RANGE OF CAPACITY 1 - 80 T/H
WEIGHING MECHANISM	• AUTOMATIC TARE AND CALIBRATION SETTINGS • +-%2 WEIGHT ACCURACY • COMLIANCE WITH OIML (ORGANISATION INTERNATIONALE DE METROLOGIE) STANDARDS • OPTIONAL AUTOMATIC AND MANUAL OPERATION • HIGH WEIGHT ACCURACY OF LOADCELLS • ACCURATE AND STABLE WEIGHING IN REQUIRED CAPACITY AND TOLERANCE • HIGH DOSING EFFECTIVITY
CONVEYOR BELT	• WEAR RESISTANT • NATURAL OR SYNTHETIC RUBBER MATERIALS • RESISTANT TO WEATHER CONDITIONS,SUITABLE FOR CONVEYING ABRASIVE AND COARSE MATERIALS • HIGH IMPACT RESISTANT • SIDE SCRAPPER SYSTEM, PREVENTING FALLING OUT OF MATERIAL FROM BELT EDGES • BELT DIRECTING SYSTEM, CONTROLLING BELT MOTION AND PREVENTING BELT SLIPPAGE • LIMIT SWITCH, WARNING IF BELT SLIPPAGE OCCURS
DRIVE UNIT	• OPERATION OF MIXING, FEEDING AND CONVEYING UNITS WITH SINGLE DRIVE
AUTOMATION SYSTEM	• USER - FRIENDLY • INTEGRABILITY WITH EXISTING SYSTEM • EASY PRODUCTION DATA REPORTING SYSTEM





Tip	Capacity range	Motor power	A	B	C	H	H1	L
			mm	mm	mm	mm	mm	
PM-WBC500	1-10 t/h	2,2-3 kW	820	*	*	114	min.650	*
PM-WBC650	2-15 t/h	2,2-5,5 kW	1000	*	*	114	min.710	*
PM-WBC800	10-30 t/h	3-5,5 kW	1150	*	*	114	min.850	*
PM-WBC1000	20-50 t/h	3-7,5 kW	1300	*	*	114	min.940	*


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Screw Conveyor

AIM

The aim of this specification is to describe general design parameters and specification of screw conveyor, manufactured by Parget Makina.

GENERAL DESCRIPTION

Screw Conveyor is used for vertical transportation or slightly inclined transportation of bulk materials, often powder or granular. It is designed in required length and capacity depending on the field of use, characteristics of conveyed material, required capacity, conveying distance and inclination.
Rotation of helical screw drives material from inlet point to outlet with fixed or variable speed.

Design parameters of screw conveyor:
Capacity (ton/hour)
Diameter of rotor
Diameter of rotor pipe
Screw pitch and screw thickness
Inclination
Rotation speed
Inputted filling level
Screw Length
Type of conveyed material
Screw conveyor is designed considering foresaid parameters. Suitable motor is
selected according to filling level of 40-45%. Maximum rotation speed is 70 rmp.
However, per customer request it is possible to exceed the rotation speed.

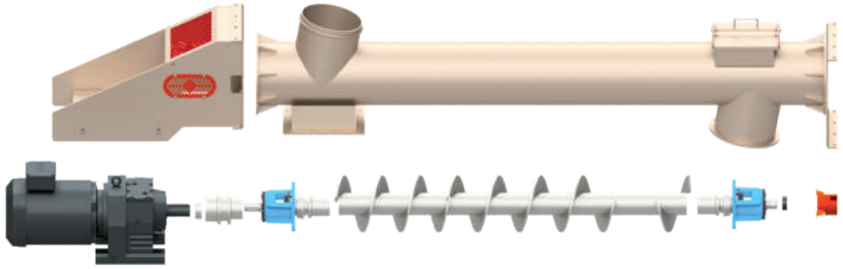
Machine Type	Capacity (m3/h)
PM_SCU250	12
PM_SCU300	23
PM_SCU350	34
PM_SCU400	47
PM_SCU450	70
PM_SCU500	111

Standard design of screw conveyor can be:

• Tube type (O type): outer pipe is made of seamless drawn steel pipe with front welded-on detachable flanges.
Helical screws with variable pitches are welded to the center pipe (screw inside pipe) and are installed on floating bearings of the drive and end plates. Due to use of floating bearings it is possible to prevent deformation that can occur because of the temperature change. Depending on customers' request, maintenance openings, inlets, outlets and bolt connected cover, ensuring fast material discharge in urgent situations, can be added in different quantity.

• Trough screw (U type): trough, made of bent steel sheet (Hardox, S235JR), is welded and/ or bolt connected with main parts. Helical screws with variable pitches are welded to the center pipe (screw inside pipe) and are installed on bearings of drive and end plates. Due to use of floating bearings it is possible to prevent deformation that can occur because of temperature change. Depending on customer request, maintenance openings, inlets and outlets and bolt connected cover, ensuring fast material discharge in urgent situations, can be added in different quantity.

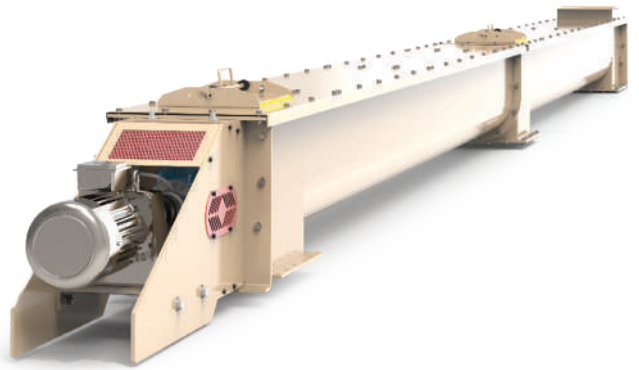
Additionally, special designs can be provided according to customer requests and different sectors. Depending on characteristics of conveyed materials, screw conveyors can be made completely of S235JR, stainless steel or HARDOX.











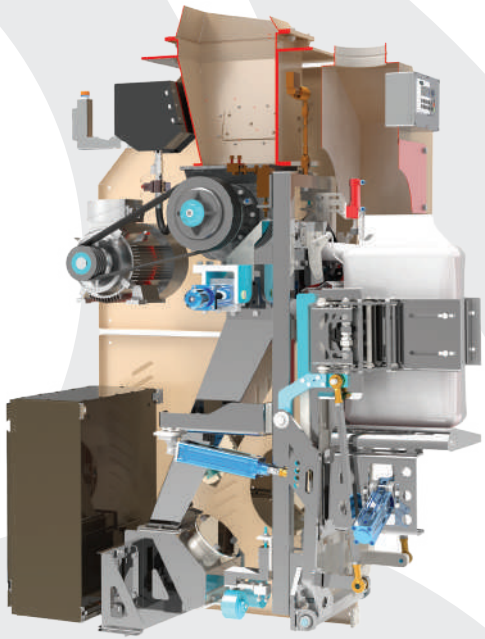
Packing and Packaging System :

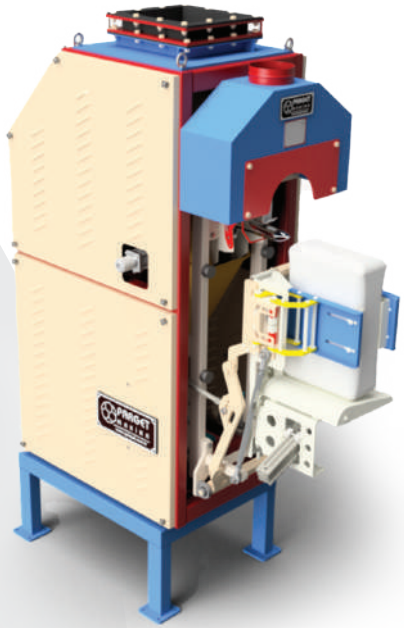
Linear Packing machine

Linear Packing Machine is used for precise weighing and automatic packaging of granular, granular or crystallized powder products with free flowing feature. In addition to its linear weighing feature, it is generally suitable for weighing materials with stable granular structure.
Linear packing machines, which offer the possibility of filling valve bags made of Kraft or PP (Polypropylene) material in the range of 15-50 kg at the desired capacity depending on customer demand, provide the ability to weigh products in certain micron ranges with a tolerance level of ± 2%, depending on the process conditions.

Advantages

- **Capability of working with different products, bag types and bag sizes.**
- **Easy calibration and integration to the automation system.**
- **Minimum damaged bags.**
- **Automatic and precise measurement.**
- **Filling group that can be easily changed in case of wear.**
- **Wear-resistant rotor lining option.**





FEATURES	
Machine Type	Capacity (t/h)
PM_LPM1	5 - 8

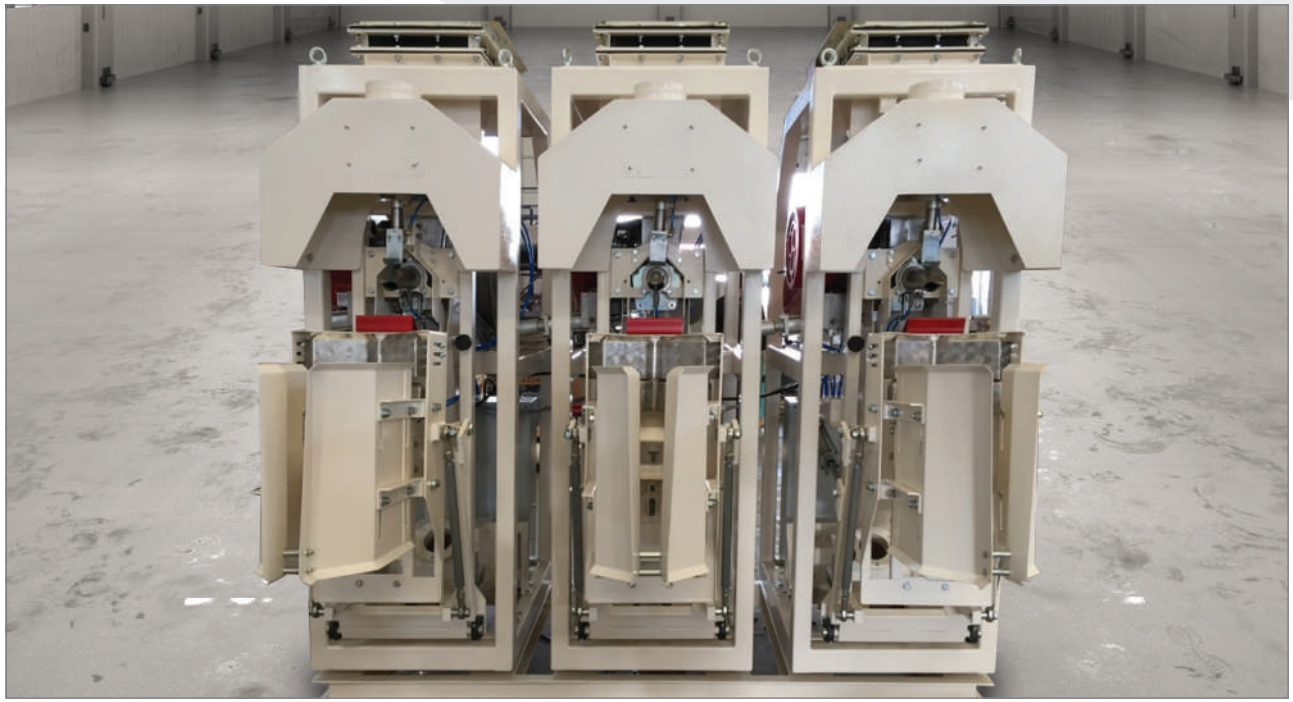
Working Principle

The linear packing machine precisely weighs the material fed to the scroll-rotor group connected to the drive unit and ensures that it is packaged. The rotor blades inside the scroll made of casting material facilitates the fluidity of the material. The material fed to the rotor is transmitted to the filling nozzle by means of the rotating rotor blades, fills to bags connected to filling nozzle automatically. There is a bag fixing cylinder on the top of the filling nozzle and a switch on the bottom that gives a signal when the bag is attached to the nozzle. The bag fixing cylinder works in integration with the switch and moves downwards when the bag is connected, ensuring that the bag is in the filling position.
To facilitate the filling of the bag and to prevent possible nozzle clogging, preliminary air is supplied during the first start-up.

The guillotine flap, which can move precisely in three stages as open, semi-open and closed, provides flow control of the material. Thanks to the step that is activated at certain periods depending on the process conditions, high precision filling is ensured. In the first stage, the material coming from the rotor is filled while the damper is in the open position. In the semi-open stage, the rotor continues to operate, but the amount of material fed to the filling unit through the flap is reduced. In the sensitive filling stage, when the guillotine flap comes to the closed position, the motor and accordingly the filling group stop. The material accumulated in the distance from the filling nozzle tip to the guillotine flap is filled into the bag with the help of air. Thus, sensitive filling is ensured and the machine is made ready for the next filling process by preventing the solidification of the material waiting in the machine.

By the help of hood located at the top of the machine, the dust that occurs during filling operation is absorbed. Thus, the process quality is increased, especially during filling.
At the bottom of the filling unit, there is a powder pouring chute that ensures the removal of the material overflowing with air from the filling nozzle. The pendulum flap located at the end of the powder discharge chute provides the exit of the dust accumulation. In addition, the material collected in the dust discharge channel can be transferred to the dust collection bunker (optional).





Packing and Packaging System :

Big Bag Filling Machine

Big-Bag filling machine realizes the filling of powder and granular materials to Big-Bags by means of PLC control.
Pallet magazine, film sheet applicator and rotate table are using as auxiliary equipment while the filling process as optional.
Depends on the customer request, different type of properties can add to the machine like automatic big bag hanging mechanisim and semi- mobile system etc.
customer demand, provide the ability to weigh products in certain micron ranges with a tolerance level of ± 2%, depending on the process conditions.

Capacity	max. 20 bags/ hour *
Bag dimensions	max. 150x150x150 cm min. 85x85x85 cm
Accuracy	±%1
Weighing system	Loadcell
Filling time	approx. 3-5 min (grapple-filling-second big bag grapple duration) **

*The limit for system's working capacity and time is operator's speed

**The capacity and filling time can show a change according to operator speed and material features.



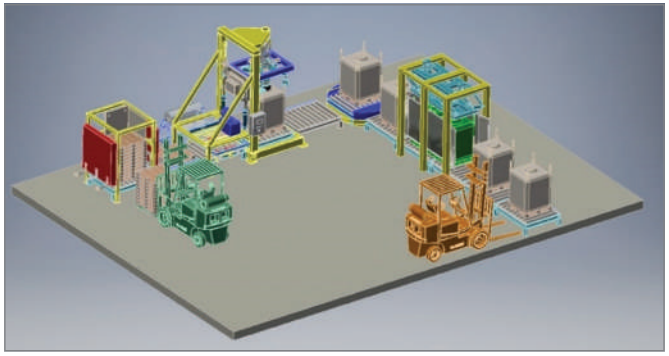
Technical Features:	
Max. Capacity	9-11 bags/hour*
Dimension	2250 x 3935 x 1940 mm
Bag dimension	max. 150x150x150 cm / min. 85x85x85 cm
Filling rate	500-2000 kg
Accuracy	±%1
Loadcell	3 pcs / (located on the big bag filling machine)
Weigh module	Siwarex- Siemens
Panel	Simatic-Siemens
Filling time	approx. 3-5 min (grapple-filling-second big bag grapple duration) **

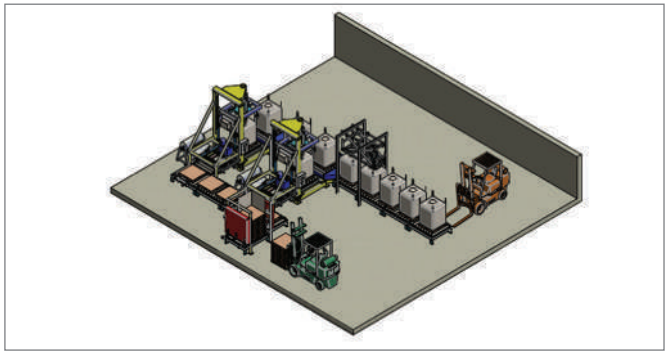
Big-bag filling machine will be manufactured with hydraulic system, level and position sensors mounted onto, single opening, automatic filling, bag blowing and big-bag release system
*The limit for system's working capacity and time is operator's speed
**The capacity and filling time can show a change according to operator speed and material features.

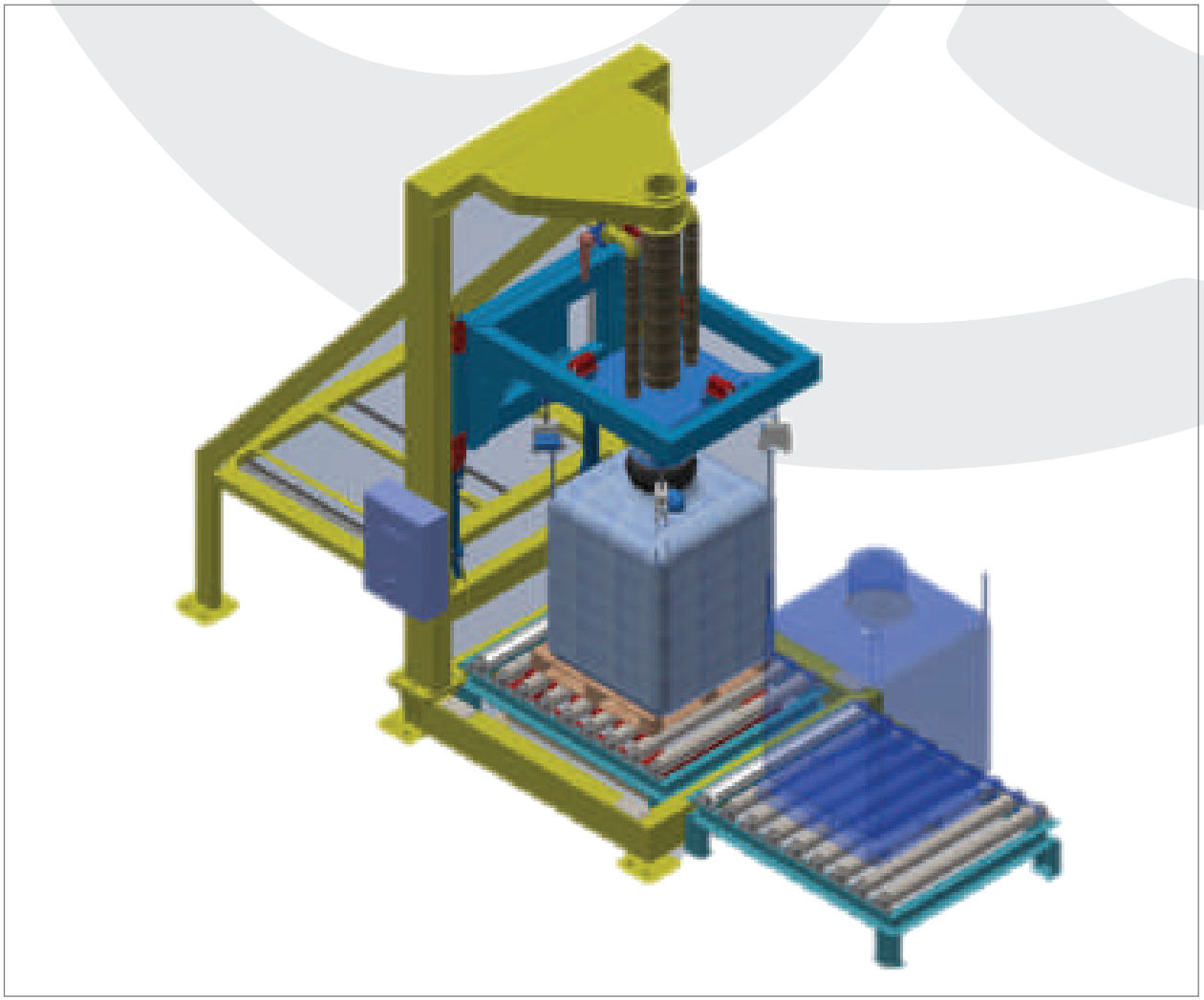
Working Principle

Firstly, the pallet tier that is positioned on the pallet magazine by forklift is fed to big bag filling machine. (Pallet feeding can be by manually) Bag mouth holders are movable and the back side of the holders are moving to the operator. Thus, operator can hold the bags easily. By the value of filling which is entered to the system, material which is received by hopper transported directly and thus automatic filling process is realized. Dusty air which composed inside of the bag is expelled via outer wall. When filling process is over, grapples are automatically open, and bag is sent down onto the rolling conveyor automatically. New bag attached and process is repeated. Big bag with pallet which is completed the filling process is stocked on the roller conveyor. If required, the pallet is turned by rotate table and conveyed by the forklift.

Options	
1	Automatic big bag hanging mechanisim
2	Semi mobile design
3	Pallet maganize
4	Film sheet applicator
5	Rotate table
6	Second densification device









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