PARGET
MAKİNA

Built for the Best

DRY MIXTURE TECHNOLOGY

SOLUTIONS BY PARGET

RTH 5.25

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Dry Mixture Processing

• Dry Mixture

In contrast to construction-site mortars, the modern dry-mix mortars are produced in a dry-mix mortar plant by mixing together all necessary ingredients such as binders, aggregates, and chemical additives .
In this way different kinds of dry-mix mortars with well-defined product characteristics that correspond to the requirements for specific applications can be produced.

The use of premixed and pre-packed dry-mix mortars not only increases significantly production performance and the productivity on construction sites, but also guarantees a high degree of application safety and reliability in avoiding on-site mixing errors. Pre-packed dry-mix mortars produced in a dry-mix plant assure that binders ,aggregates, and additives of high and constant quality are mixed exactly in the same ratio, thus ensuring a consistent high level of quality.

- Workability time gets longer
- Product strength gets higher
- Labour cost gets lower

Gypsum and cement are main bases for dry mortar production the key point of which is accurate dosing, constantly homogeneous mixing and accurate packing.

Parget Dry Mortar Technologies provide the same homogeneity and product quality in every bag with weight accuracy ± 1%.

Parget Dry Mortar Technologies additive feeding system, components storage, dosing and weighing, mixing and packing unit.

Longer workability time

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.

High product strength

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.

Low labour cost

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.

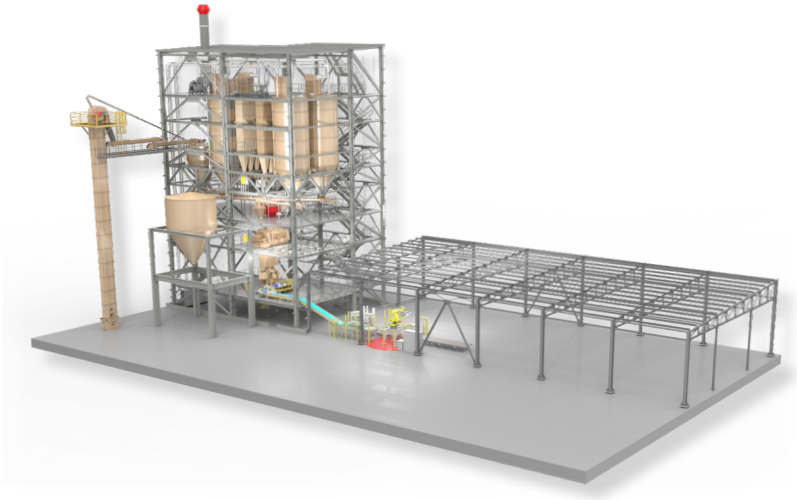
Features	Benefits
Daily capacity	Flexibity : from 5 to 100 tons per hour
Final product range	Possibility to produce different types of product according to different formulation
Dosing, mixing and packing	Stable high accuracy
Energy consumption	Very economical due to smart and optimal design of the plant
Plant design	Flexible design of the plant based on Customer`s product formulation
	Horizontal and vertical design of the plant
	Can be easily integrated with existing units
Software	Automatic control system based on Siemens SCADA and PLC with production reporting software
Technical process	High effectiveness and efficiency
Formulation	Provision of formulation according to the market needs

Parget Dry Mixture Technology Features

- Gypsum and cement are main bases for dry mixture production the key point of which is accurate dosing, constantly homogeneous mixing and accurate packing.
- **Parget Dry Mixture Technologies** provide the same homogeneity and product quality in every bag with weight accuracy ± 1%.
- **Parget Dry Mixture Technologies** additive feeding system, components storage, dosing and weighing, mixing and packing unit.

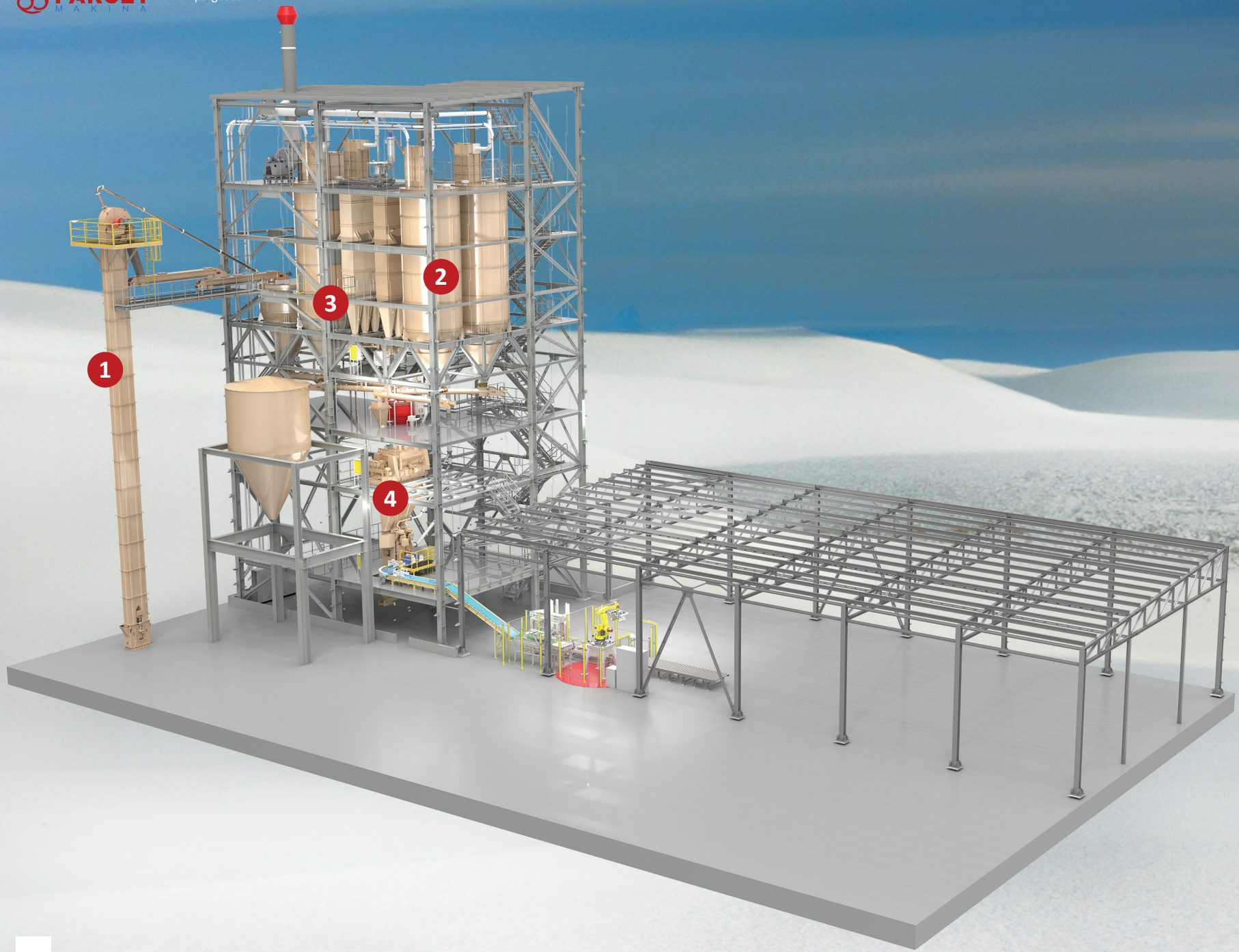
Types of Gypsum based Dry Mixture
Hand applied gypsum plaster
Machine applied gypsum spray plaster
Plaster of Paris (Moulding plaster)
Fine Finishing gypsum plaster (Satin plaster)
Joint filler for plasterboard
Adhesive plaster
Construction plaster etc.

Types of Cement based Dry Mixture
CIT CERAMIC ADHESIVE
Manual machine-applied plaster
FINE PLASTER
JOINT FILLER FOR TILES



Dry Mixture 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;

Our facilities consist of main units
Main additive feeding unit
Main additive storage and dosing unit
Chemical additive storage and dosing unit
Weighing, mixing and packing unit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2
3
4

Parget Dry Mixture Production Line process

- **The process described bellow will be applied for the main additive feeding unit, main additive storage and dosing unit, chemical additive storage and dosing unit, weighing, mixing and packing unit).**
- **The main additives which will be used depending on the type of the dry mortar will be fed to the production line by using transfer machinery 1 and equipments.**
- **The unit will be designed specifically based on the type and characteristic of the product.**

The main additive storage and dosing unit consist of storage silos where the main additives will be stored and the all the machinery and equipments which necessary for dosing and dedusting. The main additives will be defined based on the final product which will be produced in the line and the **dosing machinery 2** dimensions will be calculated depending on the quantity of the each product used in the mixture.

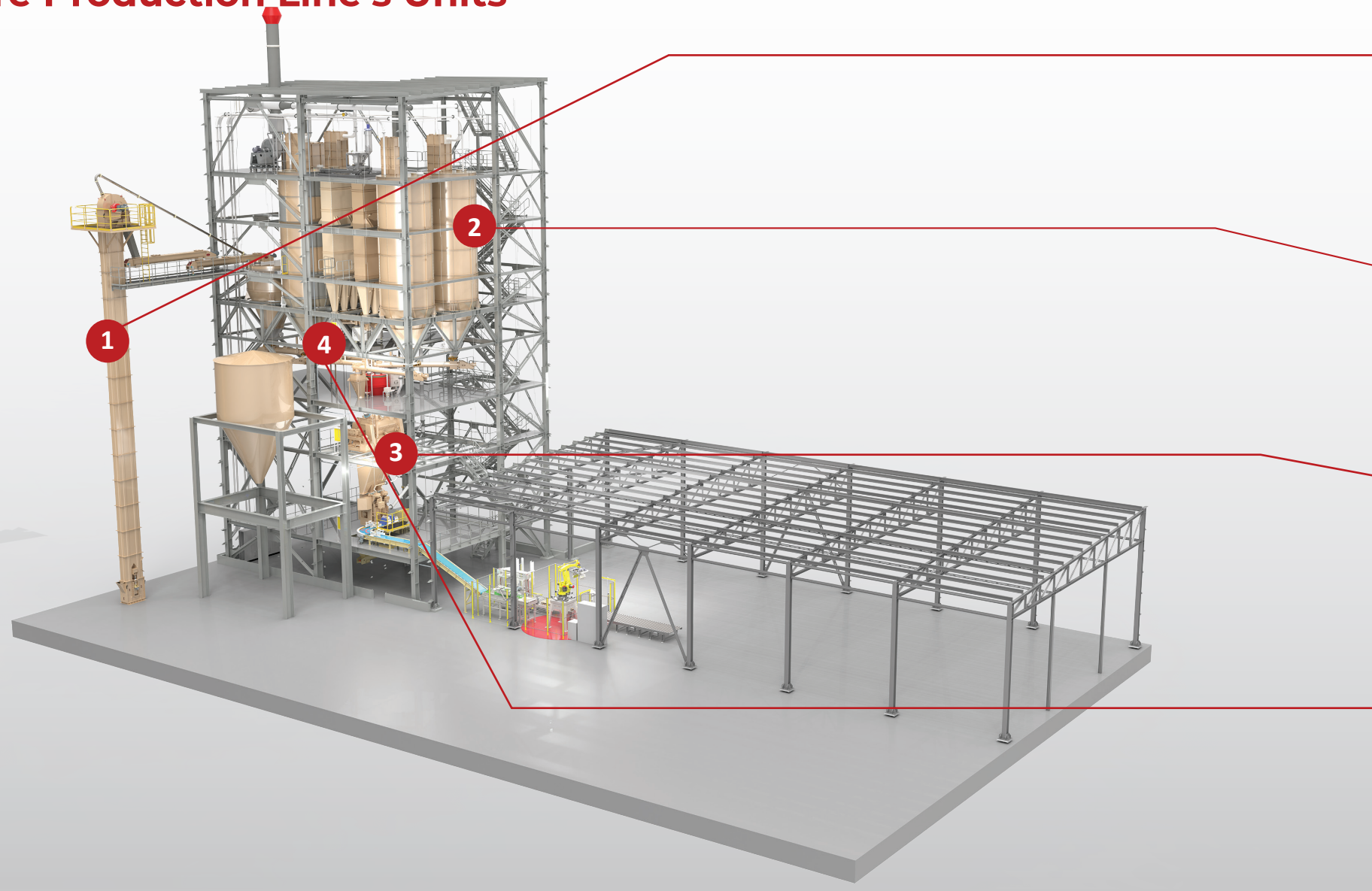
Chemical additive storage and dosing unit consist of the storage bins and also machinery and equipments which necessary to dose the additives and dedusting purpose. The machineries will be designed by considering the quantity and properties of the additives. The dosing will be done with **micro dosing equipments 3** with high efficency. The stored additives will be dosed and transferred to the weighing, mixing and packing unit according to the receipt one by one aumatically. All additives will be weighed by considering the characteristic of the additive. Once the weighing process is completed, the additives will be fed to the mixer to be mixed together.

Thanks to our years of experience and R&D, all procautions will be taken so that the additives will be **mixed 4** together homogeneusly without having problem with the quality.

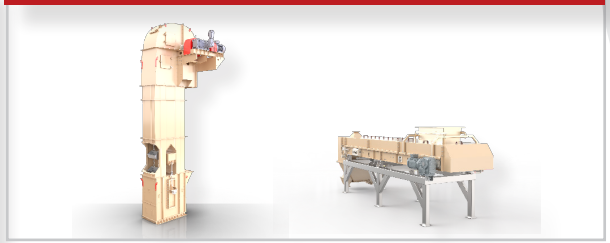
After mixing is completed, the mixed product will be fed to the packing bin automatically. The final product will be packed based on the customer request. The product can be filled to the big-bags or PP bags. Thanks to Parget packing solutions, the product can be filled to the PP bags within a range of 25 to 50 kg. The final product can be also filled to the silobus or open trucks based on the customer request.

The packed products can be palletized manually and also automatically by using palletizing and strechhood systems. To reduce the production cost and shorten the pay back period of the invesments, Parget is taking in to consideration all the possible problems which can occour during operation. To give an example to store and feed back the spilled product, Parget has spillage collecting and feeding system.

Dry Mixture Production Line's Units

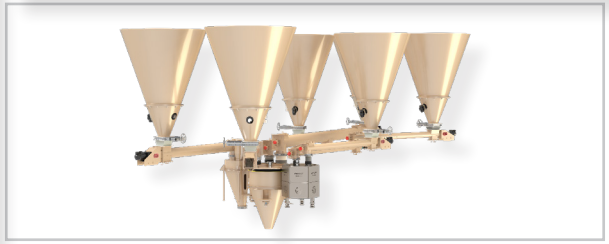


1 Main additive feeding unit



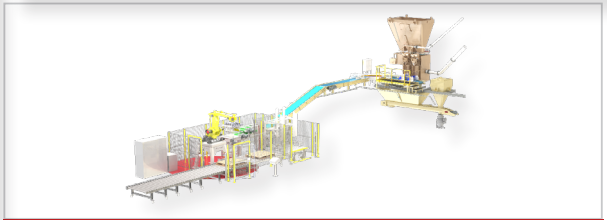
- Properly choosen machinery and equipments based on the additive and how the additive brought.
- Smart designed machinery and equipments for ease of maintenance.

2 Main additive storage and dosing unit



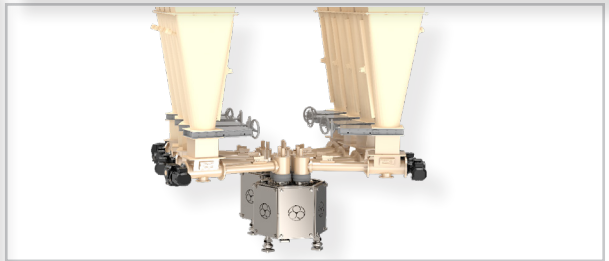
- Flexible design according to the quantity of additive used in the mixture.
- High accuracy and efficency dosing equipments.

3 Weighing, mixing and packing unit



- Automatic weighing.
- Homogeneus and effective mixing.
- Automatical and high accuracy packing.
- Gain the spilled material back by the help of spillage collecting system.
- Solutions for all possible request.

4 Chemical additive storage and dosing unit



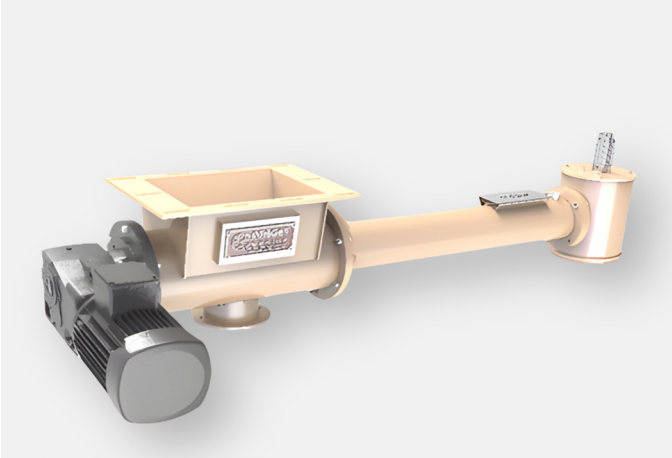
- High accuracy and efficency dosing equipments.
- To extend the life time, properly choosen materials depending on the characteristic of the additive.

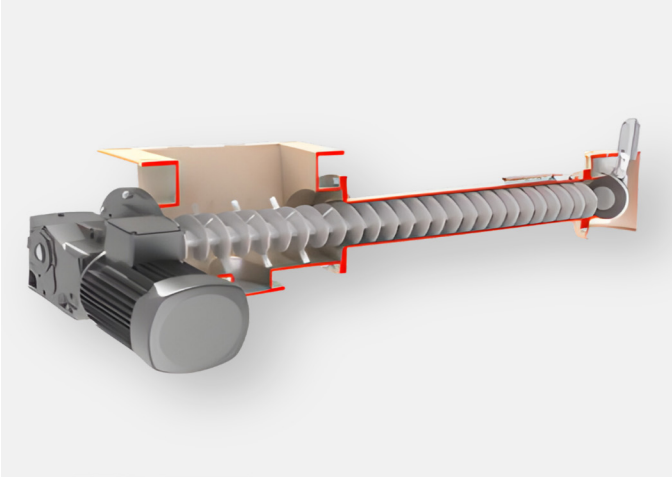
- Parget Makina designs the machines by making all the necessary calculations to catch the final product quality parameters in the designed plants.
- It aims to provide customer satisfaction without any commercial concerns, with ease of maintenance, easily accessible spare parts with long-lasting machinery and equipment.
- Learning is a never ending process. Parget makina uses all the knowledge which learned and experience on this way and applies to the projects. In case of possible problems, you can easily contact and get fast and effective feedback.
- The electrical automation system is designed to minimize the human factor to minimize the production loses.
- The used equipments are choosen from the well known and easily accessible brands. At the same time, heavy-duty products of these brands will be used.
- During the project execution, it is aimed to stay in contact with the customer to eliminate all possible problems, answer all questions and clarify all open points.

Dosing, Weighing and Mixing System

Microdosing Screw Conveyors

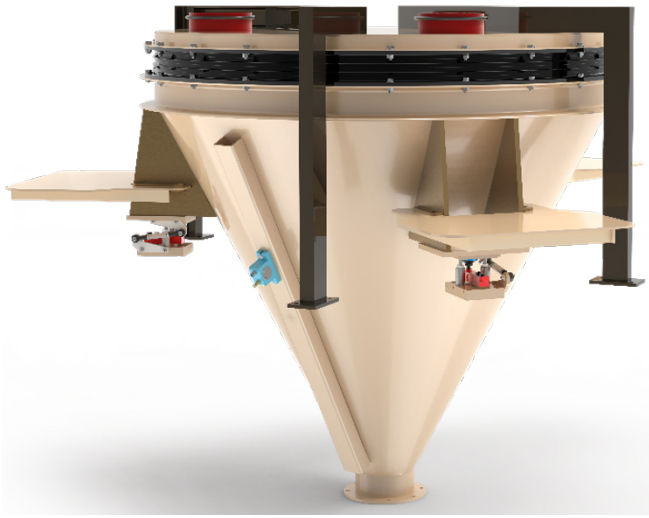
Description: They are used for dosing chemical and micro additives in a very small quantity in order to get high accuracy in micro weighing bin, during dry mortar production. Dimension depends on capacity and formulation of dry mortar. High accuracy obtained by special screew desing and pneumatic shut-off valve. Other sizes of equipment are also available.





Dosing, Weighing and Mixing System

Dosing Weighing Bin



AIM

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

GENERAL DESCRIPTION

Weighing bins are used for the precise weighing of bulk solids. Custom designed weighing bins are adapted to the specific powder characteristics, usage area and capacity.

Weighing bin provides precise and high accuracy dosing of up to 8 different chemical materials. Load cells that placed on bin in three different points provide balanced and sensitive dosing. Due to integrated automated system the dosing and weighing process are carried out automatically.

Weighing bin is connected to the local filter that provides intake of the air pressure that may occur during the working process. This process prevents the formation of vacuum in the machine and thus can be obtained more precise weighing.
The air bellows in the bin that are filled with constant compressed air provide the equivalent balance of the machine.

Machine Type	Technical Size	Motor Power	Capacity (m3/s)
PM-SCO219	200*6000	1,1 - 3	7 - 10
PM-SCO273	250*6000	1,5 - 4	12 - 16
PM-SCO324	300*6000	2,2 - 5,5	24 - 30
PM-SCO406	350*6000	5,5 - 9,2	40 - 65

Dosing, Weighing and Mixing System

Weighing Bin

The material is fed into the weighing bin through the various stocking equipment such as silo, bin etc. The weighing is carried out through the load cells that placed on the three points of the bin body. The required amount of the material is weighed automatically by automatic system PLC. After the dosing the weighing system automatically resets and get ready for new dosing. This process is carried out by the amount of materials that fed to the weighing bin and continues until all required doses of the prescription have been dosed to the weighed bin. After the dosing all materials in required weigh the materials are discharging through the valve that mounted to the bin.

Dosing, Weighing and Mixing System

Dry Batch Mixers

Dry Batch type Horizontal Single Shaft Mixers offered reflect the high quality of solutions originating from profound know-how in process technology, from individual tuning of machine components in compliance with the mixed product, as well as from the selection of specific materials in conjunction with state-of-the-art manufacturing technologies.

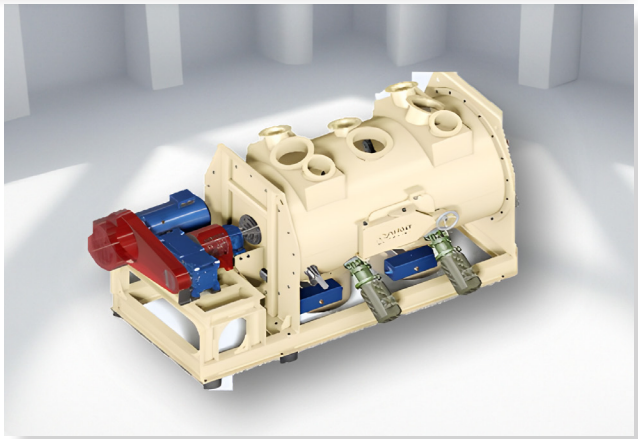
The dry batch mixer works according to the principle of centrifuging and conveying effectively and is used for homogeneous mixing of different types of materials (such as base material and additives). It is designed in desired size and capacity depending on usage area, material properties to be fed and material capacity.

Mixer Type	Empty Mixer Capacity(L)	Capacity (L)	Motor Power	Capacity (t/charge)
PM-MXDV1000	1000	700	18,5	0,56
PM-MXDV2000	2000	1400	30	1,12
PM-MXDV3000	3000	2100	45	1,68
PM-MXDV4000	4000	2800	55	2,24
PM-MXDV5000	5000	3500	75	2,8
PM-MXDV6000	6000	4200	75	3,36
PM-MXDV7000	7000	4900	90	4
PM-MXDV10000	10000	7000	132	5,6

Dosing, Weighing and Mixing System

Dry Batch Mixers

Single Shaft with discharge flaps type



Mixer Type	Empty Mixer Capacity(L)	Capacity (L)	Motor Power	Capacity (t/charge)	Capacity (t/hour)
PM-MXDV1000	1000	700	18,5	0,56	6
PM-MXDV2000	2000	1400	30	1,12	12
PM-MXDV3000	3000	2100	45	1,68	18
PM-MXDV4000	4000	2800	55	2,24	25
PM-MXDV5000	5000	3500	75	2,8	31
PM-MXDV6000	6000	4200	75	3,36	37
PM-MXDV7000	7000	4900	90	4	44
PM-MXDV10000	10000	7000	132	5,6	62

Advantages

- High Capacity range (empty volume from 500 till 12000 lt/batch)Main additive storage and dosing unit
- Maximum mixing homogeneity
- Excellent reproducibility of batches
- Robust design
- Safety and easy oparate
- Adjustable, replaceable mixing tools
- Reliable reproducibility of the mix quality
- Maintenance-friendly design

Working Principle

The dry batch mixer is a machine used to obtain homogeneous mixing by means of the mixing blades and side mixing blades on the rotor shaft by the rotation of the rotor shaft by the drive group.
The mixer discharge flap operates by means of a pneumatic cylinder bearing at both ends. The flap is opened and closed by the movement of the cylinder. After the material is mixed homogeneously, the cover is opened by the back movement of the piston and the material is poured.

Dosing, Weighing and Mixing System

Single Shaft with complete opening type

Working Principle

The dry batch mixer is a machine used to obtain homogeneous mixing by means of the mixing blades and side mixing blades on the rotor shaft by the rotation of the rotor shaft by the drive group.

The construction of this type of mixer with an outlet opening along the entire length of the drum ensures almost residue-free discharge of the product in the shortest possible time.

Mixer Type	Empty Mixer Capacity(L)	Capacity (L)	Motor Power	Capacity (t/charge)	Capacity (t/hour)
PM-MXDF1000	1000	700	22	0,56	7
PM-MXDF2000	2000	1400	37	1,12	14,5
PM-MXDF3000	3000	2100	45	1,68	22
PM-MXDF4000	4000	2800	55	2,24	30
PM-MXDF5000	5000	3500	75	2,8	36
PM-MXDF6000	6000	4200	75	3,36	44
PM-MXDF7000	7000	4900	90	4	52

Advantages
High Capacity range (empty volume from 500 till 12000 lt/batch)
Maximum mixing homogeneity
Excellent reproducibility of batches
Robust design
Safety and easy oparate
Short mixing time
Adjustable, replaceable mixing tools
No product deterioration or damage
Easy cleaning and access to all internal parts of the mixer
Residual material < 0.1 % due to 90° opening angle

Packing and Packaging System

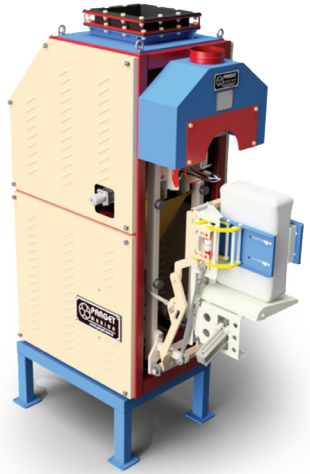
Linear Packing machine

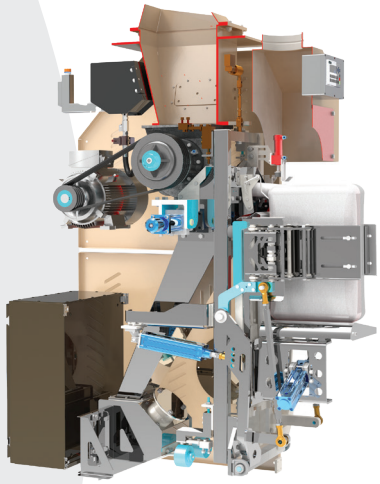
Linear Packing Machine is used for precise weighing and automatic packaging of granular, granular or crystallized powder products with free flowing feature. In addition to its linear weighing feature, it is generally suitable for weighing materials with stable granular structure.
Linear packing machines, which offer the possibility of filling valve bags made of Kraft or PP (Polypropylene) material in the range of 20-50 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.**
- **By the help of compressed air applied to the filling rotor; fast and sensitive filling by preventing material jamming in the filling nozzle.**

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



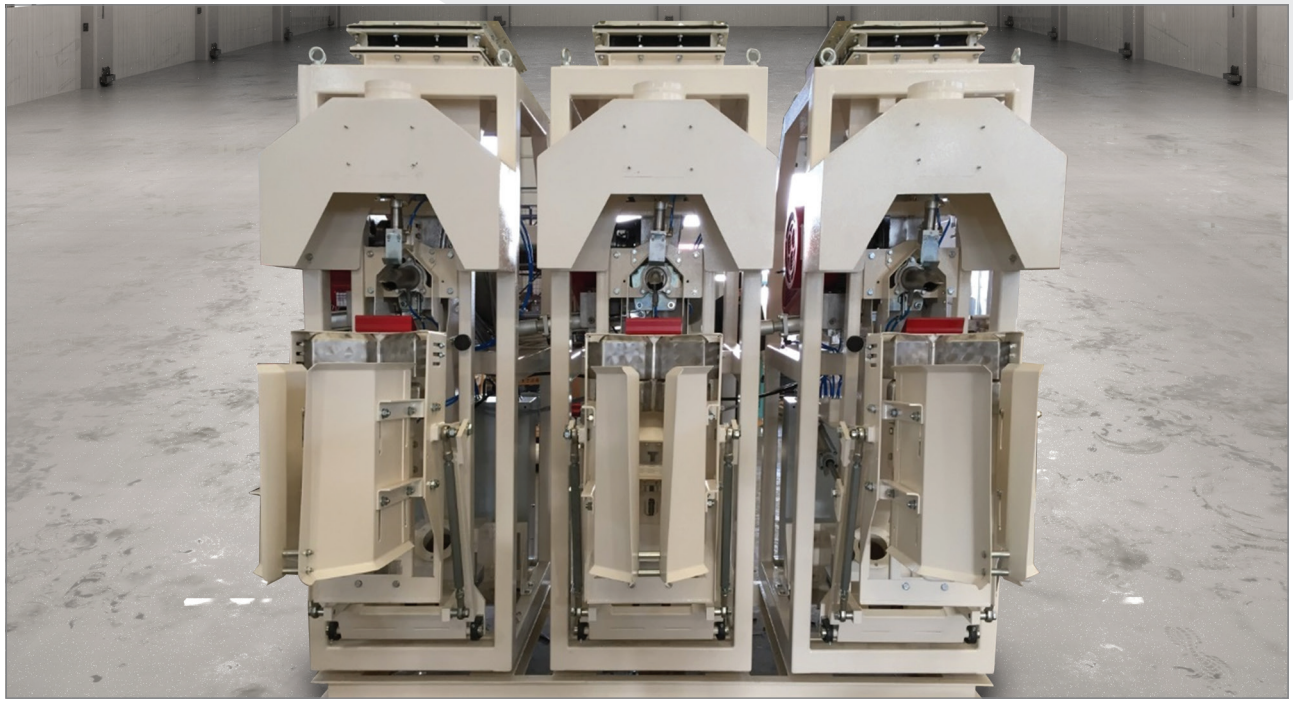


Working Principle

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.

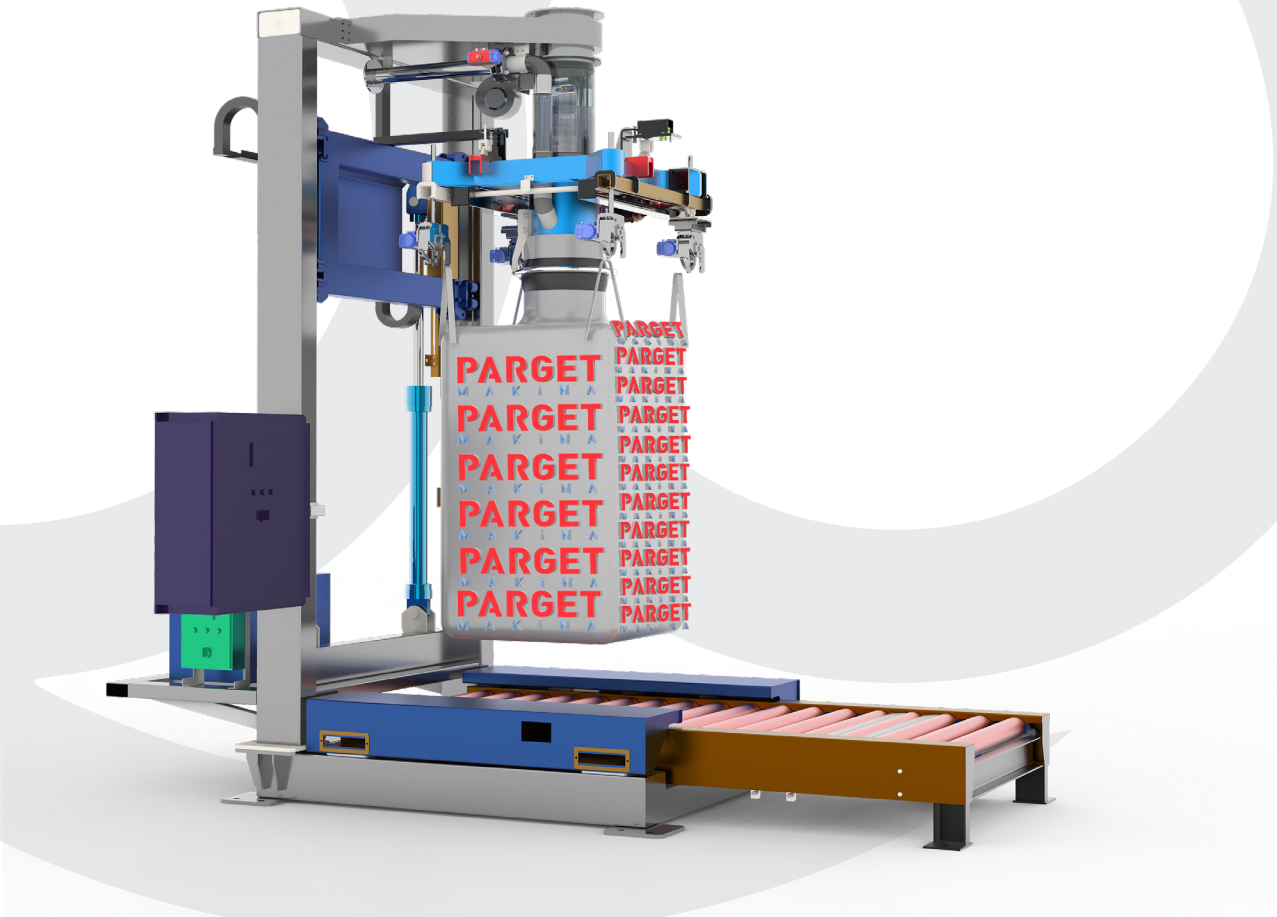
Technical Features:	
Max. Capacity	9-11 bags/hour*
Dimension	2250 x 3935 x 1940 mm
Bag dimension	max. 150x150x150 cm / min. 85x85x85 cm
Filling rate	500-2000 kg
Accuracy	±%1
Loadcell	3 pcs / (located on the big bag filling machine)
Weigh module	Siwarex- Siemens
Panel	Simatic-Siemens
Filling time	approx.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



Vertical and Horizontal Conveying System

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.

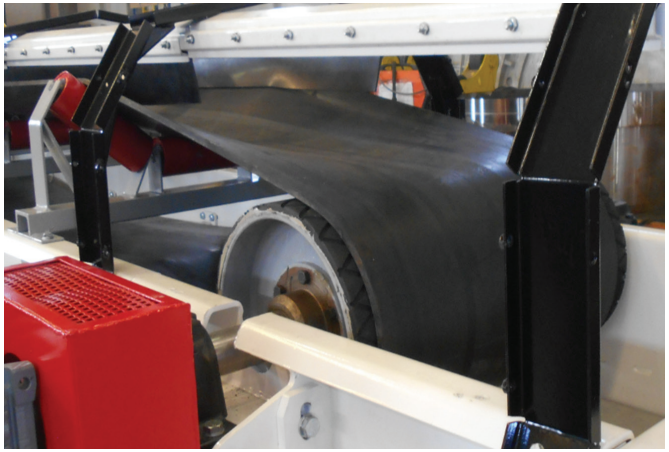
GENERAL DESCRIPTION OF MACHINE

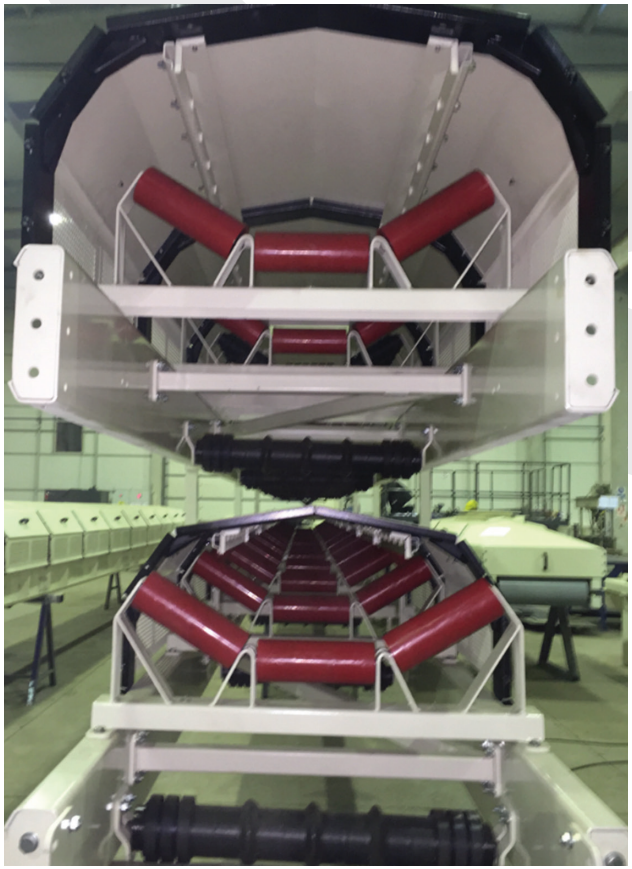
The belt conveyor is used for conveying different kind of materials in horizontal or inclined way on a certain angle positions.
Belt conveyor can be produced in different kind of models depending on the used area, material properties, capacities, conveying distance.
Belt conveyors with the high reliability 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.





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

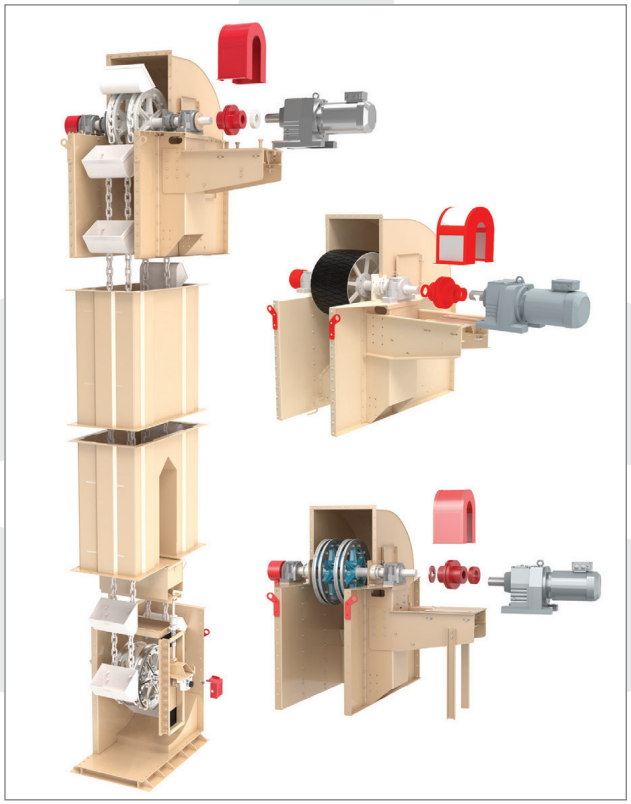
Specification scope is limited to description of design details of bucket elevator manufactured by PARGET MAKİNA İMALAT İNŞAAT MÜHENDİSLİK SAN. VE TİC. LTD. ŞTİ

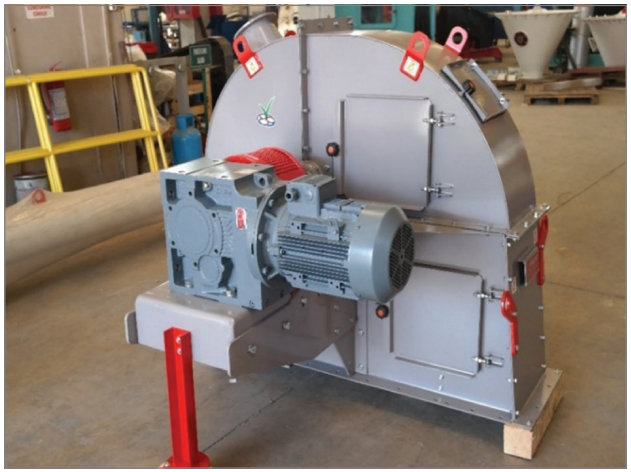
GENERAL DESCRIPTION

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.

FEATURES			
Machine Type	Motor Power (Kw)	Capacity (t/h)	Dimension (length)
PM-ECC200	Depends on the Capacity, length of the machine and product features	Different capacity from 5 t/houruntil 200 t/hour, depending on the product features.	Different leghths depending on the customer request and the Project requirement.
PM-ECC250			
PM-ECC315			
PM-ECC400			
PM-ECC500			
PM-ECC630			





Vertical and Horizontal Conveying System

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.

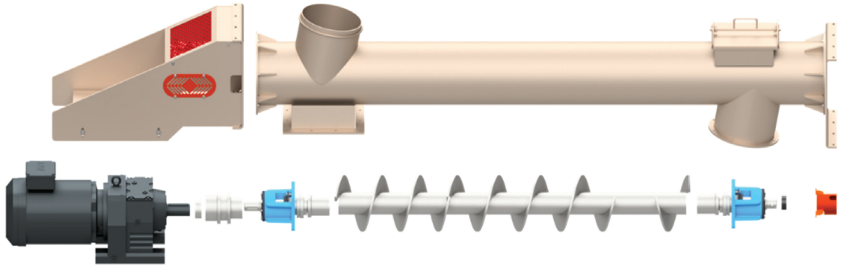
Machine Type	Capacity (m3/hour)
PM-SCU250	12
PM-SCU300	23
PM-SCU350	34
PM-SCU400	47
PM-SCU450	70
PM-SCU500	111

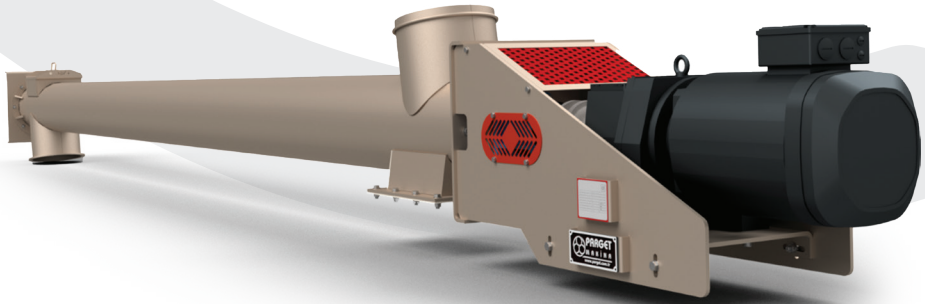
Standard design of screw conveyor can be:

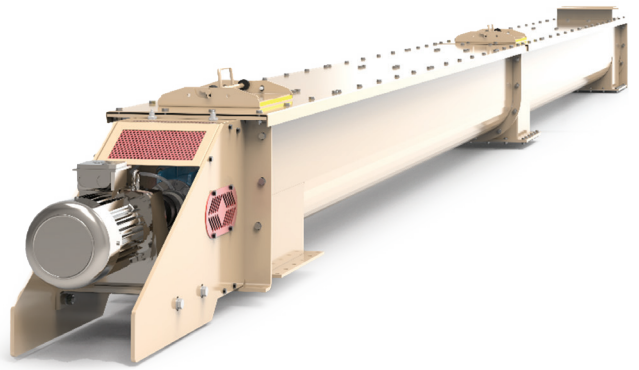
• Tube type (O type): outer pipe is made of seamless drawn steel pipe with front welded-on detachable flanges.
Helical screws with variable pitches are welded to the center pipe (screw inside pipe) and are installed on floating bearings of the drive and end plates. Due to use of floating bearings it 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.

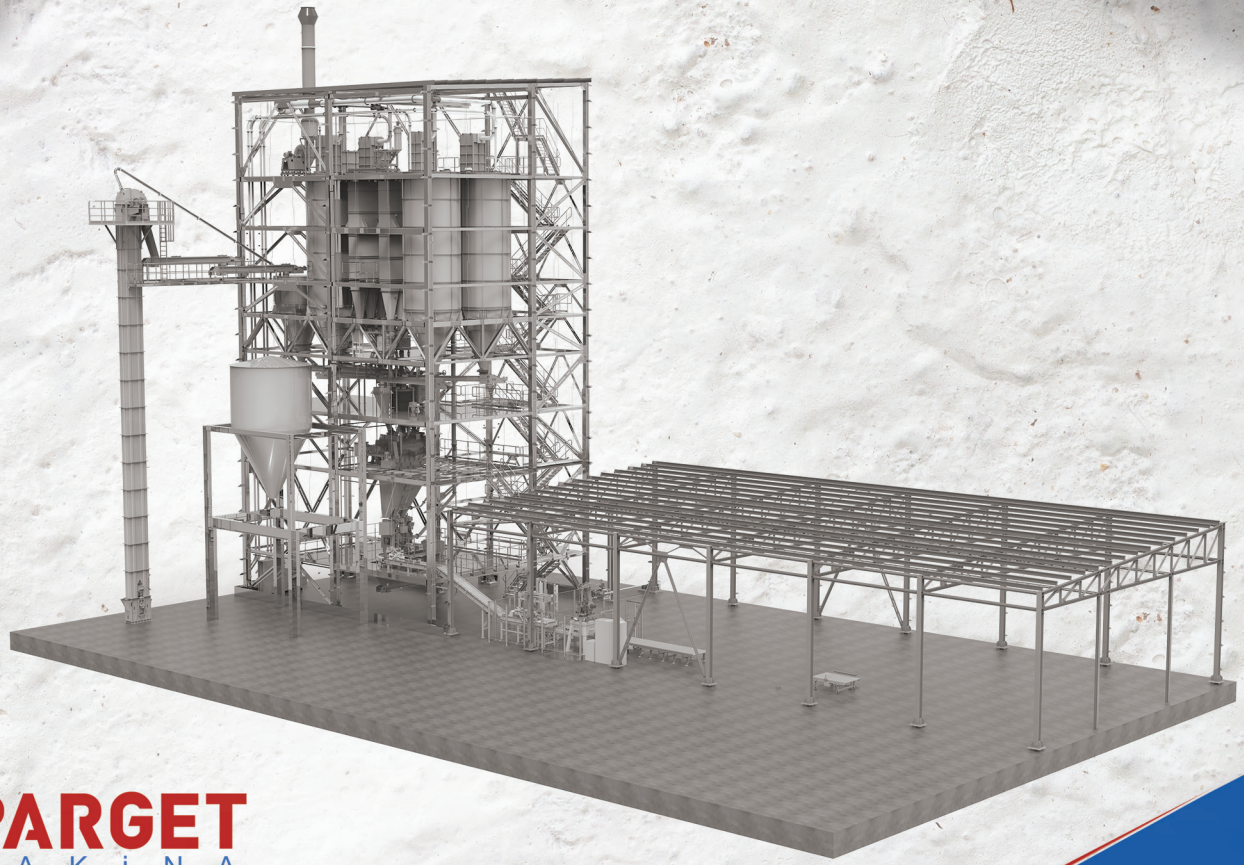
• Trough screw (U type): trough, made of bent steel sheet (Hardox, S235JR), is welded and/ or bolt connected with main parts. Helical screws with variable pitches are welded to the center pipe (screw inside pipe) and are installed on bearings of drive and end plates. Due to use of floating bearings it 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.









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