SOLUTIONS for
Sacks, Drums, Cardboards, Buckets

- PACKAGING
- FILLING
- CONDITIONING

Palamatic
Powder Handling Solutions
CONTENT

EX

AVAILABLE
CUSTOM
MADE

Means that the equipment can be installed in ATEX zone

Means that design and options can be customised

Palamatic Process reserves the right to make changes in the design of the facilities listed in this commercial documentation.

- Sack Filling Station - Palsack
  - Customized sack filling station
  - Examples of installations
  - Complete process lines
  - Options

- Drum and Bucket Filling Station - PalDrum

- Cardboard Filling Station - PalBox

- Automation

- Test Plant

- Commercial Weighing Guide
PALAMATIC PROCESS offers machines that ensure your powdery products packaging. Due to its test plant and numerous installations, PALAMATIC PROCESS has acquired solid and recognized experience in the development of powder handling technologies.

**ADVANTAGES**

- High rates: till 100 packings per hour
- Ergonomic workplace (height adjustment)
- Precise dosing
- Easy cleaning
- Hygienic filling station place
- Safety of use
- Adaptable to different products
- Commercial weighing

Our engineering department ensures the integration of the equipment to the production lines or to other equipment.
**PalSack Filling Station**

**Rates:** 50 - 100 sacks/hr.
**Capacity:** from 5 to 60 kg/sack
**Objective:** packaging of all sack types

**CONFINEMENT, PRECISION, CLEANABILITY**

**Advantages**
- A double envelope filling head and an inflatable seal for a complete containment
- A whole structure weighing to avoid any weighing interferences (sack tension)
- Dosing system adapted to each issue (precision, cleanability, rate etc.)

**TECHNICAL SPECIFICATIONS**
- **Rate:** from 50 to 100 sacks/hr.
- **Manufacturing material:** mild steel, stainless steel 304L, stainless steel 316L
- **Dosing accuracy:** +/- 40 g
- **Dust collecting rate:** 200 m³/hr.
- **Inflatable seal:** FDA

**OPERATING SEQUENCE**
- Average time of a complete cycle: 1 min.
  1. A sack positioning on the filling station
  2. The sack inlet with the help of inflatable seal
  3. High rate sack filling
  4. Dosing managing: low rate dosing to ensure the accuracy of the process and monitoring of the overrun product quantity
  5. The end of the filling process, deflation of the seal and a sack removal

**GENERAL PLAN**

**Advantages**
- Minimized product retention
- Compact design and cleanability of the system
- Rotary valve for product dosing
- Clamping ring allows accessing of all types of sacks

**AVAILABLE CUSTOM MADE**

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Inflatable seal: It provides a completely sealed connection. A double envelope conception assures the balance between pressure and degassing. There is a possibility of pharmaceutical design for an easy disassembly of all parts.

Half-shells: A sack fixation is ensured by means of half-shells with an oval mouth design equipped with two jaws activated by pneumatic cylinder. This connection type is recommended when the sack is suspended while filling.

Options - Different sack connections

Sack Filling Station

Types of handled sacks

Our sack filling systems are suitable for all types of sacks: burlap, paper, plastic, with open mouth, with liner, single layer, double layer, microperforated sacks etc.

Examples of installations

PALAMATIC PROCESS designs semi-automatic conditioning lines. These lines assure a high level of accuracy of product dosing, workplace ergonomics, high rates and total containment.

According to the options chosen by customers, our engineering office develops solutions with hygienic design: from the disassembly of all constituent parts to the integration of CIP nozzle.
The PALAMATIC PROCESS engineering office offers custom-made solutions for your sack filling installations based on your rates and implantation constraints. We determine together an appropriate tailored solution after visiting your site and taking into consideration your requirements and technical specifications.

**POSSIBLE FUNCTIONALITIES**

- Manual and automatic system
- Bar magnets
- Demountable system
- Mobile set on wheels
- Adjustable height of sack welding and sewing
- Sieving before dosing
- Adjustable rates
- Several filling heads are available depending on the packaging conditions
- Manufacturing: steel, stainless steel 304 L and stainless steel 316 L
- Motorized or gravity sack conveyor with final weight checking
- Weighing scale at the filling station assures the exact product dosing = dosing control and weight checking
- Legal metrology for traceability and direct sales with embedded printer
- Sampling...

**DOsing solutions**

- Pneumatic butterfly valve with multiple blades
- Rotary valve
- Screw feeder
- Screw conveyor
- Vibrating tube
- 4-20 mA valve

Based on your product's required rates and accuracy level, we tailor a dosing machine which will assure optimal solutions.

www.palamaticprocess.com/powder-machine/sack-solutions
GRINDING AND CONDITIONING INSTALLATION IN ATEX ZONE

Client: International group specialized in biscuits, chocolate and cocoa products

Product: Icing sugar

Characteristics: The objective of this installation is to transform granulated sugar into icing sugar in order to get a very fine grain and its efficient and optimal use in chocolate dough. The aim of this installation is to avoid lump forming without adding any additives.

PALAMATIC PROCESS equipment: Sack emptying station in stainless steel with embedded Hygienic Sacktip® sieve, screw conveyor in stainless steel for grinding mills feeding with rates 1.5 t/hr., ATEX grinding mill, agitated storage tank with discharge screw, dust collection filter, rotary valve, screw conveying with double outlets, sack filling opening with weighing table, complete control panel.

CONDITIONING AT AUTOMISATION TOWER OUTPUT

Client: Food processing plant

Product: Fish flour

Characteristics: After coming out of the automizing tower, the fish flour is dried and sieved before being packed to the sacks. Magnetic separation ensures the purity of raw material.

PALAMATIC PROCESS equipment: Sieve, VFlow® pneumatic conveyor, conditioning station

MOBILE BIG BAG AND SACK PACKAGING STATION

Client: Taste enhancer

Product: Flavor taste enhancer

Characteristics: Located directly under the mixer, a mobile sack packing station allows conditioning of sacks from 25 to 50 kg, depending on the client’s request. The sack conditioning system can be installed within less than 5 minutes directly on a big bag packaging station.

PALAMATIC PROCESS equipment: Mixing and conditioning line

HYGIENIC CONDITIONING

Client: Industrial chemistry

Product: Magnesium citrate

Characteristics: Product reconditioning from big bags to sacks or drums with internal sack layer. The production line ensures hygienic conditions of the process by means of sieves, magnets, sampling. The line is completely sealed.

PALAMATIC PROCESS equipment: Big bag emptying station, rotary valves, sieve, sack weighing station, big bag discharging, rotary valves, sieve, sack filling weighing station, packed sack conveyor, access platform, control cabinet.
Support
"from CONCEPTION to EXPLOITATION"
for complete processes

SEMIAUTOMATIC SACK CONDITIONING LINE

Company: Food Industry

Final product: Fruit and vegetable powder

Operating sequence: This packaging line is semi-automatic starting from the delivery of the product by means of pneumatic screw till its conditioning to sacks. Sack positioning, cardboard packing, palletizing and labeling are carried out by an operator.

Installation details: Food company wishes to perform packing of fruit and vegetable powder into PE sacks of 5, 10, 20 or 25 kg. The aim of the installation is to ergonomically redesign packaging station in order to maximally reduce operator's charging port and eventually increase the line productivity. After being packed at the output of the descharging tower into plastic sacks of 25 kg, the product is stored and loaded into a one-tonne conical mixer. After the homogenization, the powder is sieved in order to remove all foreign bodies and to get a pure final product. The packaging station is composed of the vibrating sieve, the magnetic bar system (to remove all ferrous particles), the weighing scale (to control the dosing accuracy) and of the welder (for a sealed sack closing). The operator puts a sack between the inflatable seal and the clamping ring. Via a pneumatic control, the operator autorises the inflation of the seal which blocks the sack against the clamping ring. The dosing device allows balancing the volumes via a double envelope filling tube.

PALAMATIC PROCESS industrial equipment: Pneumatic conveyor, conical mixer, transfer screw, vibrating sieve, sack filling station, belt conveyor, dosing table.

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Volumetric test of the product flow in order to ensure a representative sampling. The sampler is positioned at the sack packaging station. It ensures an automatic sampling during each packing. Thus the traceability is guaranteed.

Screw feeder, belt or vibrating conveyor. Product weight managing is based on the product type, desired dosing accuracy level in order to get the required quantity of the product.

It allows to remove ferrous particles from the product in product freefall applications. The magnetic sensor is a metal detection system adapted to gravity applications. The device can be equipped with an automatic valve ejection system.

To ensure the hygiene and security of the process. The vibrating sieve ensures the control and protection of your production line. It guarantees the absence of foreign bodies in the packaged products.

It consists of a filling tube with double envelope, of an inflatable seal and a clamping ring. Different sizes can be used depending on the type of the conditioning.

Vibrating motor. The vibration of the sack at the end of conditioning process ensures the optimization of the sack volume. Another alternative: compression by air or mechanical pression.

Double envelope filling head with filter sleeve or dust collector for the connection to your dust collection network. The balancing ensures healthy environment without dust.

Dust collection of the filling head. At the moment of the sack removal, the suction booth installed around the filling head ensures the aspiration of any possible product traces near the sack opening. The dust collection system is connected to the double envelope system.

Sack welder - from 4 to 20 sacks/min. Different welding technology: double pulse welding, thermal welding, hot air welding etc.

Automatic or manual sack sewer. It is mainly used for paper sack closing.
**OPTIONS**

**Sack Filling Station**

**CLIPPING MACHINE**
- **Internal bag closing**
  - Manual or automatic clip (staple) closing system.
  - Compatible with food industry applications.

**DRUM STRAPPING MACHINE AND COVER POSITIONING**
- **Sealed closing of the drum manually**
  - The cover positioning can be performed automatically.

**CONVEYOR**
- **Gravity and motorized feed and/or evacuation conveyor**
  - The conveyor can be equipped with a raised frame in order to ensure maintenance of sacks, drums, buckets and cardboards.

**SACK MANIPULATOR**
- **Effortless sack lifting and handling**
  - The manipulator offers a maximum workplace ergonomics. The charging ports problem is completely solved by means of this equipment. The manipulator is suitable for all types of sacks (different materials and weight).

**AUTOMATON**
- **It ensures sack palletizing at the end of the packaging line.**
  - During the stacking process, it is possible to overlap sacks in order to stabilize the pallet.

**COMMERCIAL WEIGHING**
- **Net and gross weighing**
  - Commercial weighing.
  - NAWI (Non-automatic weighing instruments) device is a weighing system requiring operator’s intervention during the weighing process.

**ETIQUETTE PRINTER**
- Printing of the etiquettes, labels, stickers, tags, inkjet printing directly on sack, containing the information regarding product weight, basic data, operator’s number etc.

**STRETCH HOOD PALLET WRAPPING MACHINE**
- Installation of the hood wrapping machine at the end of the production line offers an optimal containment of the full pallet (4 or 5 sides)

**BAR MAGNETS**
- Ferrous particles captation before product conditioning in order to ensure a high quality of final product
  - The bars are set in the middle of product flow in order to remove ferrous particles.

**PALLETS WRAPPING MACHINE**
- Stretch wrapping machine with the film.

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**Our engineering office is listening to you for any special options.**


Downloadable videos & plans on our website
DRUM AND BUCKET SEALED PACKAGING

Drum and bucket filling is a common operation while working with powders in pharmaceutical, chemical and food industries. However, depending on their products and applications, companies frequently need completely sealed filling stations in order to protect operators, or to preserve product characteristics. PALAMATIC PROCESS offers standard and custom-made packaging solutions for drums and buckets that guarantee healthy working environment with no dust particles. We offer automatic and semi-automatic stations that can be completed by roller conveyor systems.

- Material in contact with the product: stainless steel 304L/316L
- Feeding mode: continuous or under a storage hopper
- Weight or volume dosing
- Dosing control system for a high level of accuracy
- Manual or automatic dosing
- Dosing methods and tools adapted for a desired accuracy

Drum and bucket filling requires an optimal containment to prevent dust emission and product contamination by foreign bodies. In order to meet this requirement, PALAMATIC PROCESS offers several packaging versions depending on the height, accuracy and product type constraints.

Options

- Drum manipulator
- Conveyor

Available custom made

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Downloadable videos & plans on our website
**MANUAL PALDRUM STATION**

**Operating sequence**: Manual gravity filling station. The drums/buckets are positioned under the filling opening (its height is previously configured according to your technical specifications) by an operator. Product filling is carried out by gravity. Once the packaging process is over, the operator moves drums/buckets to the storage place.

The economic version of the PalDrum product range, this packaging station can be custom-made according to your product type, content and desired production rates.

**TABULAR CHARACTERISTICS**

- Standard packaging station
- Manual drum and bucket hanging and positioning
- Suitable for all container types

**PALDRUM AUTOMATIC STATION**

**Operating sequence**: PalDrum is completely automated drum and bucket packaging station, it allows a high performance level as there is no need of operator’s intervention. From the positioning of the containers on the conveyor to their evacuation and storage, the process is carried out and controlled by machines.

The most efficient version of the PalDrum product range, this packaging station offers high filling rates and a minimum of human intervention. The automation of the process ensures the drum/bucket manipulation to quickly set them on the roller conveyor.

**TABULAR CHARACTERISTICS**

- Motorized conveying
- Automatic drum/bucket positioning at the packaging station
- Automatic hanging and dosing to the palletizing station

**PALDRUM SEMI-AUTOMATIC STATION**

**Operating sequence**: Gravity semi-automatic filling station. The operator puts a drum or a bucket on the roller conveyor. By means of an isolating device the drum/bucket is transported to the weighing platform. A position sensor allows managing a precise drum/bucket positioning. First, it is blocked on the platform, and then weighed. The operator manually connects the drum/bucket with the filling outlet. The filling process is carried out seamlessly, a vibration system is activated at the same time in order to ensure an optimal product compacting. The storage and evacuation of the drums/buckets are carried out automatically.

**TABULAR CHARACTERISTICS**

- Semi-automatic packaging stations
- Storage, evacuation, automatic product dosing
- Manual drum/bucket hanging and positioning

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### PalBox Filling Station

**Rates:** 4 000 L/hr.
**Capacity:** 50 kg
**Objectives:** Target weight product conditioning to cardboards

ENSURE PACKAGING OF THE FRAGILE PRODUCTS TO CARD-BOARDS

Semi-automatic or automatic weight cardboard filling station ensures conditioning of the fragile products. The filling head adjusts to the cardboard height and guarantees the highest level of performance.

#### OPERATING SEQUENCE
1. The cardboard is manually positioned on the roller conveyor
2. The table, where the cardboard is positioned, automatically lifts to the filling sleeve
3. The product is poured to the cardboard in a controlled manner due to the load cell system
4. The table descends and the cardboard is moved to the abutment point
5. The operator takes the cardboard from the filling station with the help of a suction cup manipulator

#### MODULE DETAILS CONSTITUTING CARDBOARD PACKAGING LINES

**MAGNETIC SEPARATOR**

The detectors-ejectors are very effective and help to remove ferrous particles from the product flow, even those slightly magnetized and of a very small size. Metal detectors are designed for extremely accurate metal detection, they remove all the ferrous particles, magnetized or non-magnetized (iron, steel, stainless steel, aluminum) that can be mixed with powder products in gravity chute. This is the ideal equipment that guarantees both, protection of your installation and production; it particularly suitable for chemical and food industries.

**LIFTING VIBRATING TRAY**

The lifting vibrating trays are designed for the product compaction in such containers as cardboards, drums, buckets etc., that are moved by means of roller conveyors. This equipment is used for product densification in the containers in order to increase the apparent product density or only for the slope that is formed after filling process. The height of the lifting tray is adjustable by means of the proximity sensors.

After the table is down, the charge and the roller conveyor are weighed together. This is an ideal solution for the filling installations.
CONVEYING LINE STOPPERS

The stopper represents a fixed final mechanical element of the conveying line; the aim of which is to allow stopping or accumulating of the arriving transferred product. This stopper protects the production line.

For the proper functioning of the conveying line, retractable intermediate stoppers (controlled by pneumatic cylinders) can be positioned.

COMMERCIAL WEIGHING

The commercial weighing stands for a final stage of the raw material packaging to cardboards. At the end of the conveying line the cardboard is positioned on the scale, also called a non-automatic weighing instrument (NAWI). The operator performs such operations as: the control of the sack weight, withdrawal of the weighed loads.

The cardboards are ready for palletizing and storage.

20 KG-CARDBOARD FILLING INSTALLATION IN A CONFINED ENVIRONMENT
Our test center is made up of the latest machinery of the powder handling sector. Specialist engineers are there to advise you on the industrial processes best suited to your requirements and to guide you at every stage of the decision to design the most efficient installation.

- Confirmation of the appropriate machines to conduct a test with your product
- Tests at various operating conditions to define the most efficient process according to your industrial requirements
- Analysis of machine test data and samples
- Write a summary report
- Collaborate on the optimal solution for your requirements
- Submit a quotation

THE BENEFITS OF MECHANICAL TESTING
- An individual consultation with and on-going support by our R&D engineers
- Confirmation of the appropriate machines to conduct a test with your product
- Tests at various operating conditions to define the most efficient process according to your industrial requirements
- Evaluation of the profitability of equipment configuration
- Possibility to test additional options using PALAMATIC PROCESS’ range of products
- Maximize the return on your investment
- Maximize the optimum selection of the proper machine
- Capitalize on the wide experience of our experts

- + than 300 process configurations
- 2,400 sq. feet of surface dedicated to the test
- 35 industrial machines
- 35 feet of ceiling
- Test with all types of products
- + 2 support engineers
- ATEX configurations

Automation

SERVO CONTROL SYSTEM, CONTROL, TRACKING

Our engineering office designs and performs the whole set of control cabinet in order to offer you maximum of functionalities and ergonomics.

Programmable Logic Controllers are the result of the partnership with the biggest market players: Schneider Electric, Siemens, OMRON, Allen Bradley.

Our installation connectivity ensures:
- Continuous service and evolution
- Perfect integration to your existing process
- Flexibility and continuous operating due to our remote maintenance service

PALAMATIC PROCESS powder laboratory was designed for the needs of our industrial clients wishing to determine the best suitable machines for their process.

Our test center is made up of the latest machinery of the powder handling sector. Specialist engineers are there to advise you on the industrial processes best suited to your requirements and to guide you at every stage of the decision to design the most efficient installation.

3 STEPS TO VALIDATE YOUR PROCESS

Step 1 - Before Test
- Select the likely optimal machine configuration based on your technical requirements (powders, flow rate, dosing)
- Draft test proposal by our sales-engineers representatives

Step 2 - During Test
- Process validation for product testing
- Perform testing and sample collection
- Discussion on results after the test with machines (phase diagram, degradation tests, fines content)

Step 3 - After Test
- Analysis of machine test data and samples
- Write a summary report
- Collaborate on the optimal solution for your requirements
- Submit a quotation

Come with your materials
Participate in selecting the test machines
Maximize your productivity

300 + than 300 configurations
WHAT ARE THE NOTIONS WORTH KNOWING REGARDING COMMERCIAL WEIGHING?

LEGAL METROLOGY

The legal metrology is an activity by means of which the State using regulatory means regulates the measuring instruments. The objective of this intervention is to guarantee the measuring instruments or operations affecting public interests: public security, environment and health protection, fair trade loyalty etc.

OBLIGATIONS REGARDING WEIGHING AND MEASURING

The delivered product quantity has to correspond to the declared quantity. The weight has to be announced to customers if the product is weighed at the moment of purchase (bulk sales); in case of prepackaging the weight information has to be indicated on the package. The use of measurement units other than the legal ones (kilogram, litre, centimeter etc.) is prohibited.

Weighing tools

When selling bulk products by weight, the weighed quantity has to correspond to the weight displayed on the weighing scale. Merchants have to use measuring tools and methods that comply with the required standards intended to protect customers and fair trade loyalty (legal metrology). A merchant, having a non-automatic weighing instrument, (NAWI) has to possess a certified scale. He has to monitor the conformity and a proper maintenance of his instruments, specially by holding a metrological logbook (it has to be obtained not later than one month after the scale installation) and by performing a constant control and service stipulated by the legislation norms, particularly the periodical certification. A periodical certification has to be carried out:

- Every 2 years for the instruments used for direct sales and the capacity of which is not more than 30 kg.
- Once every year for all the other instruments.

The periodical instrument verification is certified by a green vignette affixed on the scale and visible for customers (a non-confirmation is attested by a red vignette).

PREPACKAGES

Regarding prepackaged products of constant nominal quantity, for the quantities equal or above 5 g or 5 ml, the actual content has to be measured and controlled by a certified instrument and be to date with its controls.

The products have to contain on average the quantity indicated on the package: the package can contain a little bit more or less than indicated. However, a minimal quantity has to be guaranteed.

The amended decree from 31 January 1978 describes the required conditions of the prepackages when gathered in batch (with or without “E”)

Prepackages and batches have to contain on average a nominal quantity indicated on the etiquette:

- Batches have to contain a sufficiently small amount of defective prepackages in order to pass statistic tests of the official control.
- The conditioner or importer have to respect these two conditions by auto-control

Defective prepackage stands for a prepackage the actual content of which is less than the indicated nominal quantity minus a negative error (or a maximum permissible error, marked E)

**Example:** for 1 000 g a negative error is 15 g

\[ Q - E = 1\,000 - 15 = 985 \] 

Every prepackage containing less than 985 g is defective.

DEFINITION OF THE DEFECTIVE

The table is taken from the article 4 of the decree 78-166; it displays a maximum permissible errors “E” based on the nominal quantity QN.

<table>
<thead>
<tr>
<th>Nominal quantity QN in g or in ml</th>
<th>Negative error “E” in g or in ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 to 50</td>
<td>In % of QN</td>
</tr>
<tr>
<td>50 to 100</td>
<td>9</td>
</tr>
<tr>
<td>100 to 200</td>
<td>4.5 %</td>
</tr>
<tr>
<td>200 to 300</td>
<td>3 %</td>
</tr>
<tr>
<td>300 to 500</td>
<td>1.5 %</td>
</tr>
<tr>
<td>500 to 1 000</td>
<td>1 %</td>
</tr>
<tr>
<td>1 000 to 10 000</td>
<td>1.5 %</td>
</tr>
<tr>
<td>10 000 to 15 000</td>
<td>1.5 %</td>
</tr>
<tr>
<td>More than 15 000</td>
<td>1 %</td>
</tr>
</tbody>
</table>

In a batch of prepackages the average measured nominal quantity has to be at least equal to the indicated nominal quantity.

REFERENCE TEXTS

Consumer code: article L213-1
Decree n°91 330 from 27 March 1991 concerning the non-automatic weighing instruments
Decree from 26 May 2004 concerning the non-automatic weighing instruments, in operation

WHAT IS NAWI?

A non-automatic weighing instrument (NAWI) is an instrument which determines the weight of a product using the gravity effect on this product and that requires the intervention of an operator during the weighing process (e.g. scale, weighing machine, weighing hopper etc.)

WHAT IS AWI?

An automatic weighing instrument (AWI) determines the mass of a product without the intervention of an operator and follows a predetermined program of automatic processes characteristic of such an instrument (e.g. weight feeder, circuit scale, wheel loader etc.)
Our expertise:

- **FILLING SOLUTIONS FOR BIG BAG AND OCTABIN**
  To fill

- **EMPTYING SOLUTIONS FOR BIG BAG AND OCTABIN**
  To empty, compact and massage

- **SACK, DRUM AND CARDBOARD FILLING SOLUTIONS**
  To fill, package, handle

- **SACK AND DRUM EMPTYING SOLUTIONS**
  To empty, compact, handle, discharge

- **SOLUTIONS FOR PNEUMATIC CONVEYING**
  Vacuum, pressure

- **SOLUTIONS FOR MECHANICAL CONVEYING**
  To transfer with screw, belt conveyor, bucket elevator, aeromechanical or vibratory conveyor, truck loading spout

- **CRUMBLING AND GRINDING EQUIPMENT**
  To granulate, crumble, grind, pound, micronise, disagglomerate

- **SIFTING EQUIPMENT**
  To sift, segregate, sieve, protect

- **CONTAINERS AND STORAGE SOLUTIONS**
  To fill, charge, empty, contain

- **DOsing EQUIPMENT**
  To control, regulate, empty, extract

- **MIXING EQUIPMENT**
  To homogenise, incorporate, fluidify, stir, mix

- **FLOW AND CONNECTION**
  To vibrate, fluidise, unclog, drain, facilitate extraction, control the descent, prevent stacks and vaults, connect

- **INDUSTRIAL DUST COLLECTING EQUIPMENT**
  To filter, clean, confine, secure

Contact: contact@palamatic.fr
Sales Department: +33 (0)2 22 93 63 08
ZA La Croix Rouge • 35530 Brécé • France
Tel: +33 (0)2 99 86 06 22 • Fax: +33 (0)2 99 86 08 10
SAS au capital de 331 822 euros • R.C.S. Rennes B 384 894 093 • APE 4669B • N° T.V.A. : FR 14 384 894 093

The know-how of our teams  the energy of a group