



**ADVANCED
POLYURETHANE
EQUIPMENT**



Since 1978 in the polyurethane technology



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Organizzazione con sistema di gestione certificato
ISO 9001:2008



**ADVANCED
POLYURETHANE
EQUIPMENT**



Company

A trustable, ever growing organization.

Automotive industry, refrigeration, interior decoration, buildings and much more: a wide range of applications for a versatile, durable and reliable product.

Since 1978 Saip has been studying and improving the polyurethane processing technologies. A long experienced company able to develop, as time passed, a large and deep know how. A solid bridge thrown towards the future which highlights Saip as a lead in the international market thanks to the original solutions proposed in each specific context.

Continuously checked, analyzed and improved solutions in order to offer higher quality of products and services, from project to manufacture, from sale to after sale service.



Products

Ambitious technological aims.

Going with the stream, anticipating the trends, increasing the performance: these are the fundamentals of Saip activity, carried out through the support to the production needs, the attention to the relation between quality and price, the full respect of the environment according to the current regulations.

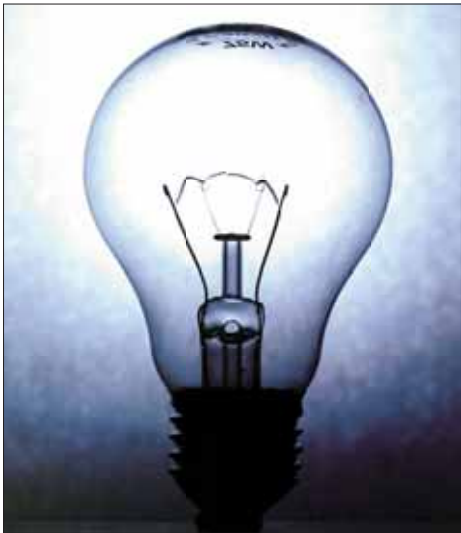
Experience and competence gave origin to a wide range of products, including continuous and discontinuous production lines, high and low pressure foaming machines for expanded, compact, thixotropic, filled, elastomers, flexible and rigid polyurethanes together with unique and customized turn-key plants.



Services

A great care for details.

Saip purposes go further than a simple after sale service. Attention, invention, support to project and production are particularly important in the business process and improve the standard services of technical assistance and spare parts supply. Any aspect, more or less specific, involved in the development of a technology is analyzed and directed to the best possible issue. Any need turns into an opportunity, any difficulty into a resource.



Research

We give life to new ideas.

While increasing its knowledge, Saip develops its experience towards originals solutions, so as to comply with more and more competitive market. Saip employs specific resources in research and implements new technologies thanks to updated laboratories equipped with suitable instruments to test new chemical materials, new equipment and create prototypes of new machines. Choosing Saip means choosing a professional, reliable, helpful partner. This means choosing people and their ideas.

CONTITECH-RF

Complete solutions for the continuous production of insulating panels

Applications

The insulated panels with polyurethane foam core are used for the construction of civil and industrial prefabricated buildings, cold storage rooms, refrigerated or non refrigerated containers and trucks, shopping malls, trade centres, airports, sport centres, schools, air conditioning ducts, industrial doors, garage doors, etc.

Products

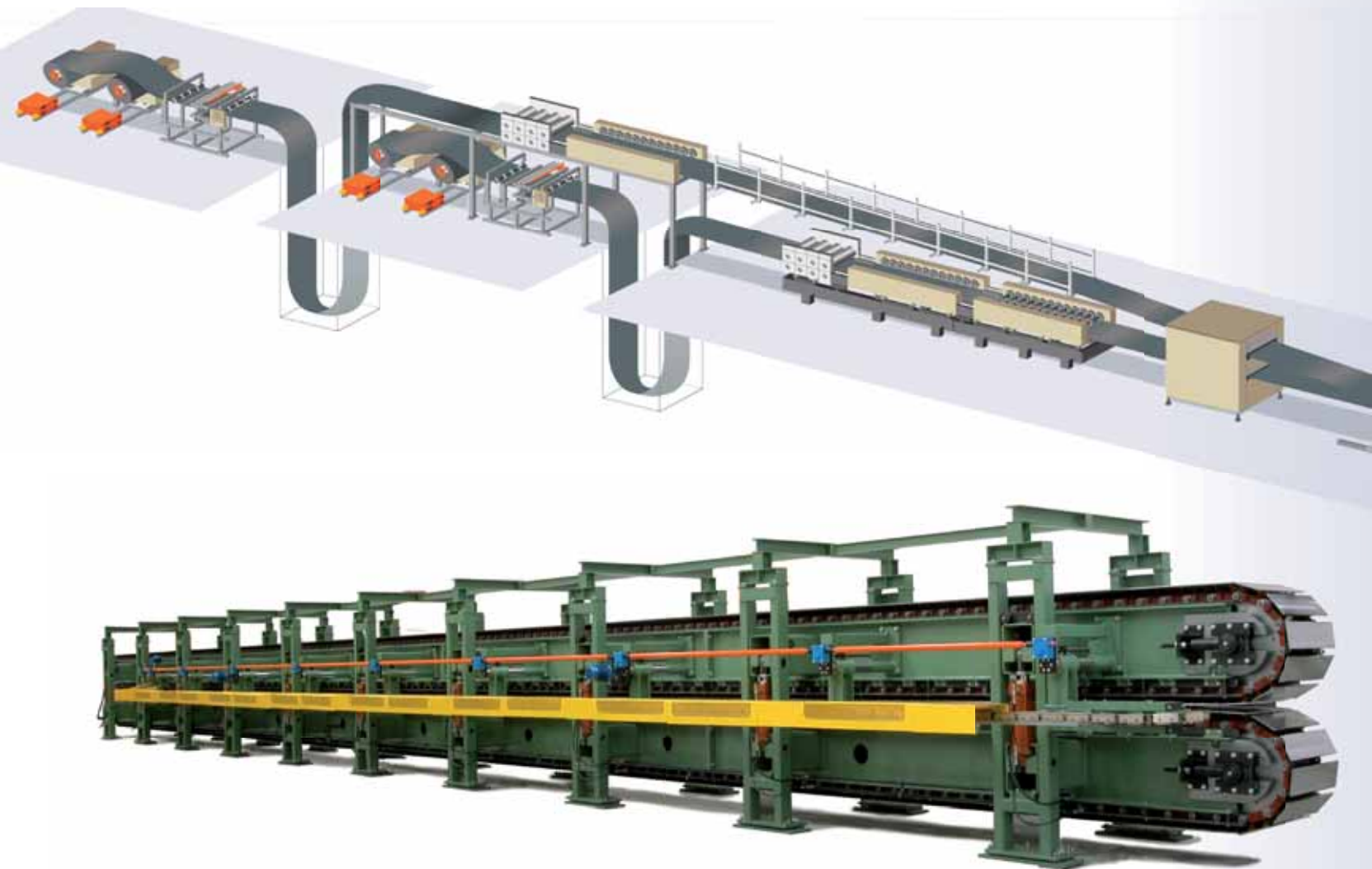
The panels are a composite structure consisting of two external facings and an insulating core. The external facings can be either rigid facings such as galvanized steel, pre-painted steel, aluminium and copper, or flexible facings such as bituminous paper and aluminium foils, or composite facings that is a combination of rigid and flexible facings. The insulating core can be made of polyurethane foam, phenolic resin, mineral or rock wool and polystyrene.

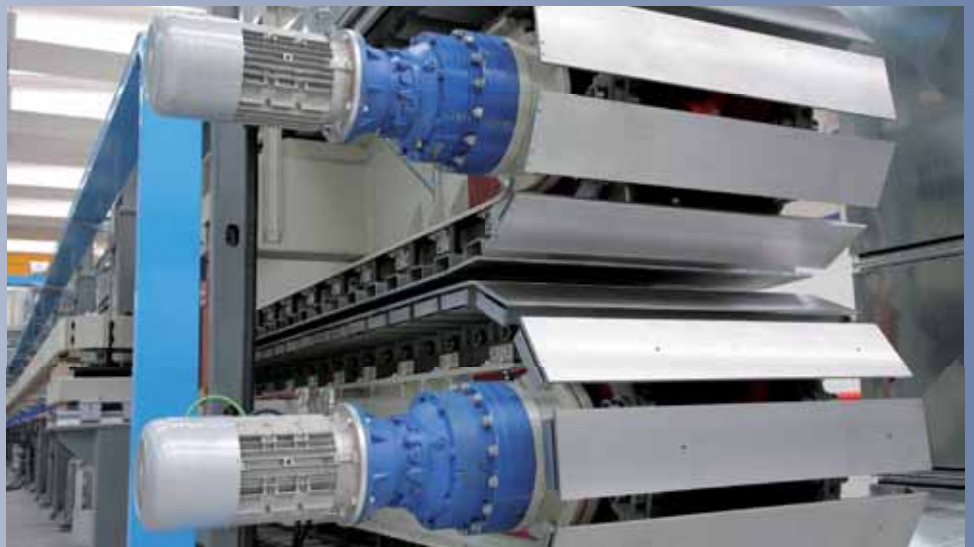
Process

The continuous panels production method consists in the laying down of the polyurethane reactive mixture between two continuously moving facings, either rigid or flexible. The reaction and the hardening of the polyurethane mixture takes place inside a continuously moving press or double press conveyor, according to times depending on the mixture type, the panels thickness, the production speed, etc..

Supplies

The chemicals storage farms and chemicals handling system
The metal sheet roll forming section
High pressure foam dispensing machines from 2 up to 8 components and more
Continuously moving press conveyor from 12 up to 42 meters length.
On-line cutting group , band saw and disc system.
Panels handling section which includes the panels stacking , curing and the panels bundle packing equipment
Mineral and rock wool boards processing and gluing sections





Complete solutions for the discontinuous production of insulating panels

The discontinuous method consists in the polyurethane foam mixture pouring or injection into the cavity between two facings within the platens of a standing press by a low or high pressure two components foam dispensing machines, which are either especially designed according to the used foaming method or supplied as standard equipment.

In the discontinuous process different foaming methods are used in order to achieve the best results in terms of foam distribution within the two facings. The foaming methods are the multi-shots pouring at close press, the single shot pouring at close press, the lance withdrawal at close press and the open pouring at open press.

The choice of the suitable system is mainly related to the product design and to the required technological results. In order to have a good final product, the foam distribution and the pouring method are very important so as to avoid air traps or overlaps of foam and to obtain homogeneous density on the whole surface.

- Low and high pressure two components foam dispensing machines with output up to 300 Kg/min.
- Foaming presses 1+1 and 2+2 system, with platens dimensions of 6500 x 1500 mm, 9500x1500 mm, 12500 x1500 mm and various models of foaming presses designed and manufactured according to customers' requirement.





REFTECH

Complete solutions for the insulation with polyurethane foam of industrial and domestic refrigerator

Complete solutions and custom made equipment for the domestic and industrial refrigerators insulations with polyurethane foam which include:

- Complete lines for refrigerators cabinets foaming with fixed and movable fixtures
- Complete lines for refrigerators doors foaming such as manual systems, drum unit, paternoster unit and various carousel systems
- Cabinets foaming fixtures, hydraulic types, automatically adjustable, face-up and face-down foaming method

- Cabinets foaming fixtures, pneumatic types, automatically adjustable, face-down and face-up foaming method
- Manual and automatic adjustable cabinets foaming plugs
- Adjustable doors foaming moulds
- Foaming process automation
- Polyurethane components storage and blending system for polyols with new generation of foam blowing agents
- Completes lines for pre-assembling of cabinets and plastic inner liner

- Complete lines for final assembling of refrigerators cabinets including the assembling line for various components (compressor, doors, etc)
- Compressor charging and vacuum system, electric and functional test systems
- Design and product engineering and automation of the manufacturing process





S Low pressure machine

Designed and developed to dispense all kinds of polyurethane foams in environment friendly conditions, S series low pressure machines easily meet any production requirement thanks to their sturdy construction and their simplicity of use.

S series low pressure polyurethane foam dispensing machines are available in a wide range of models with an output from 7 to 100 Kg/min. and components ratio variation from 1:5 to 5:1.

S series is powered by a PLC control and a Saip TS operator process control to set and display the working parameters.

S series output and ratio variation is powered by an electronic system with automatic components flow adjustment.

The advantages:

- user friendly
- high quality construction materials
- easy maintenance
- precise metering, accuracy and repeatability
- calibration directly on the mixing head
- high mixing precision, repeatability and uniformity
- accurate components temperature conditioning
- automatic mixer cleaning



| Model | Ratio A:B | Ratio variation A:B | Output A+B Kg./min. | | Output A+B gr./sec. | | Tanks capacity A+B litres | Cleaning tank capacity (litres) | Installed power Kw | Weight Kg. |
|-------|-----------|---------------------|---------------------|-----|---------------------|------|---------------------------|---------------------------------|--------------------|------------|
| | | | min. | max | min. | max | | | | |
| S7 | 1:1 / 2:1 | 1:5 / 5:1 | 1,5 | 7 | 25 | 120 | 100 | 20 | 5 | 500 |
| S15 | 1:1 / 2:1 | 1:5 / 5:1 | 3 | 15 | 50 | 250 | 100 | 20 | 5 | 500 |
| S25 | 2:1 | 1:5 / 5:1 | 5 | 25 | 80 | 420 | 100 | 20 | 10 | 600 |
| S30 | 1:1 | 1:5 / 5:1 | 6 | 30 | 100 | 500 | 100 | 20 | 10 | 600 |
| S60 | 1:1 / 2:1 | 1:5 / 5:1 | 15 | 60 | 250 | 1000 | 200 | 20 | 10 | 700 |
| S80 | 1:1 / 2:1 | 1:5 / 5:1 | 20 | 80 | 330 | 1350 | 200 | 20 | 15 | 700 |
| S100 | 1:1 / 2:1 | 1:5 / 5:1 | 22 | 100 | 370 | 1670 | 200 | 20 | 15 | 700 |

The machines outputs refer to materials with a viscosity not exceeding 2000 cps and an average specific weight of 1,1 gr/cc. at 20 °C.

Output values valid for a main frequency of 50 cycles (for a main freq. of 60 cycles output increase by 20%)

SE Low pressure machine

Designed and developed to dispense all kinds of polyurethane foams in environment friendly conditions, SE series low pressure machines easily meet any production requirement thanks to their sturdy construction and their simplicity of use.

SE series low pressure polyurethane foam dispensing machines are available in a wide range of models with an output from 7 to 300 Kg/min. and components ratio variation from 1:5 to 5:1.

SE series is powered by a PLC control and a Saip TS operator process control to set and display the working parameters. SE series output and ratio variation is powered by a mechanical system with manual components flow adjustment.

- The advantages:
- user friendly
 - high quality construction materials
 - easy maintenance
 - precise metering, accuracy and repeatability
 - calibration directly on the mixing head
 - high mixing precision, repeatability and uniformity
 - accurate components temperature conditioning
 - automatic mixer cleaning



| Model | Ratio A:B | Ratio variation A:B | Output A+B Kg./min. | | Output A+B gr./sec. | | Tanks capacity A+B litres | Cleaning tank capacity (litres) | Installed power Kw | Weight Kg. |
|-------|-----------|---------------------|---------------------|-----|---------------------|------|---------------------------|---------------------------------|--------------------|------------|
| | | | min. | max | min. | max | | | | |
| SE7 | 1:1 / 2:1 | 1:5 / 5:1 | 1,5 | 7 | 25 | 120 | 100 | 20 | 5 | 500 |
| SE15 | 1:1 / 2:1 | 1:5 / 5:1 | 3 | 15 | 50 | 250 | 100 | 20 | 5 | 500 |
| SE25 | 2:1 | 1:5 / 5:1 | 5 | 25 | 80 | 420 | 100 | 20 | 10 | 600 |
| SE30 | 1:1 | 1:5 / 5:1 | 6 | 30 | 100 | 500 | 100 | 20 | 10 | 600 |
| SE60 | 1:1 / 2:1 | 1:5 / 5:1 | 15 | 60 | 250 | 1000 | 200 | 20 | 10 | 700 |
| SE80 | 1:1 / 2:1 | 1:5 / 5:1 | 20 | 80 | 330 | 1350 | 200 | 20 | 15 | 700 |
| SE100 | 1:1 / 2:1 | 1:5 / 5:1 | 22 | 100 | 370 | 1670 | 200 | 20 | 15 | 700 |
| SE180 | 1:1 | 1:5 / 5:1 | 36 | 180 | 600 | 3000 | 560 | 20 | 28 | 900 |
| SE300 | 1:1 | 1:5 / 5:1 | 60 | 300 | 1000 | 5000 | 560 | 20 | 28 | 900 |

The machines outputs refer to materials with a viscosity not exceeding 2000 cps and an average specific weight of 1,1 gr/cc. at 20 °C.

Output values valid for a main frequency of 50 cycles (for a main freq. of 60 cycles output increase by 20%)

* Water cleaning tank capacity.

SP2 SMART High pressure machine

Designed and developed to dispense all kinds of polyurethane foams in environment friendly conditions, the SP2 SMART high pressure machines easily meet any production requirement thanks to their sturdy construction and their simplicity of use.

The SP2 SMART series high pressure polyurethane foaming machines are available in a wide range of models with an output from 10 to 60 kg/min. and a components ratio variation from 1:3 to 3:1. The SP2 SMART machines are equipped with a PLC and touch screen operator control board to set and display the working parameters.

The SP2 SMART series machines allow the output variation of each component in closed loop circuit and consequently the total output and the working ratio variation by simply setting the required output value on the touch screen operator control board.

The advantages:

- user friendly
- high quality construction materials
- easy maintenance
- precise metering, accuracy and repeatability
- calibration directly on the mixing head
- high mixing precision, repeatability and uniformity
- accurate components temperature conditioning



| Model | Ratio A:B | Ratio variation A:B | Output A+B Kg./min. | | Tanks capacity A+B litres | Installed power Kw | Weight Kg. |
|--------------|-----------|---------------------|---------------------|-----|---------------------------|--------------------|------------|
| | | | min. | max | | | |
| SP2 smart 10 | 1:1 | 1:3 / 3:1 | 3,5 | 10 | 100 | 11 | 1000 |
| SP2 smart 20 | 1:1 | 1:3 / 3:1 | 6,5 | 20 | 100 | 16 | 1000 |
| SP2 smart 40 | 1:1 | 1:3 / 3:1 | 13 | 40 | 100 | 27 | 1050 |
| SP2 smart 60 | 1:1 | 1:3 / 3:1 | 20 | 60 | 100 | 34 | 1100 |
| SP2 smart 30 | 2:1 | 1:3 / 3:1 | 10 | 30 | 100 | 21 | 1050 |
| SP2 smart 60 | 2:1 | 1:3 / 3:1 | 20 | 60 | 100 | 35 | 1100 |

The machines outputs refer to materials with a viscosity not exceeding 2000 cps and an average specific weight of 1,1 gr/cc. at 20 °C.

Output values valid for a main frequency of 50 cycles (for a main freq. of 60 cycles output increase by 20%)

SPB High pressure machine

SPB series high pressure foam dispensing machines are equipped with a full range of technical features to maximize control and to guarantee a correct operation.

SPB series high pressure machines are available for output from 40 to 200 Kg/ min. and variable ratio between 1:5 to 5:1.

SPB series machines features components flow rate manual adjustment and are powered by a PLC and Saip TS operator process control board to set and display the working process parameters.

This machines are suitable to process polyurethane foams based on HCFC's, HFC's, and water blown with or without co - blowing agent.

SPB series high pressure machines easily meet any production requirement thanks to their sturdy modular construction and their simplicity of use.

The advantages:

- Easy maintenance and user- friendly
- Efficiency in any production conditions
- Quality and price perfect balance
- High quality construction components
- High metering precision, accuracy and repeatability
- Components calibration directly on the mixing head
- High mixing precision, repeatability and uniformity
- Components high conditioning control and accuracy



| Model | Ratio A:B | Ratio variation A:B | Output A+B Kg./min. | | Output A+B gr./sec. | | Tanks capacity A+B litres | Chiller unit Kw | Installed power Kw | Weight Kg. |
|---------|-----------|---------------------|---------------------|-----|---------------------|------|---------------------------|-----------------|--------------------|------------|
| | | | min. | max | min. | max | | | | |
| SPB 40 | 1:1 | 1:5 / 5:1 | 7 | 36 | 120 | 600 | 100 | 3,5 | 37 | 2200 |
| SPB 40 | 2:1 | 1:5 / 5:1 | 6 | 27 | 100 | 450 | 100 | 3,5 | 37 | 2200 |
| SPB 60 | 2:1 | 1:5 / 5:1 | 12 | 60 | 200 | 1000 | 100 | 3,5 | 37 | 2400 |
| SPB 100 | 1:1 | 1:5 / 5:1 | 18 | 90 | 300 | 1500 | 100 | 3,5 | 47 | 2400 |
| SPB 200 | 1:1 | 1:5 / 5:1 | 35 | 175 | 580 | 2920 | 250 | 7,5 | 70 | 2600 |

| Model | Ratio A:B | Ratio variation A:B | Output 1 st motor's speed A+B Kg./min. | | Output 2 nd motor's speed A+B Kg./min. | | Output 1 st motor's speed A+B gr./sec. | | Output 2 nd motor's speed A+B gr./sec. | | Tanks capacity A+B litres | Chiller unit Kw | Installed power Kw | Weight Kg. |
|-------------|-----------|---------------------|---|------|---|-----|---|------|---|------|---------------------------|-----------------|--------------------|------------|
| | | | min. | max | min. | max | min. | max | min. | max | | | | |
| SPB 40/20 | 1:1 | 1:5 / 5:1 | 3,6 | 18 | 7 | 36 | 60 | 300 | 120 | 600 | 100 | 3,5 | 37 | 2200 |
| SPB 60/30 | 2:1 | 1:5 / 5:1 | 6 | 30 | 12 | 60 | 100 | 500 | 200 | 1000 | 100 | 3,5 | 47 | 2400 |
| SPB 100/50 | 1:1 | 1:5 / 5:1 | 9 | 45 | 18 | 90 | 150 | 750 | 300 | 1500 | 100 | 3,5 | 47 | 2400 |
| SPB 200/100 | 1:1 | 1:5 / 5:1 | 17,5 | 87,5 | 35 | 175 | 290 | 1460 | 580 | 2920 | 250 | 7,5 | 70 | 2600 |

ELASTOTECH

Low pressure machine for elastomer casting

Designed and developed to dispense prepolymers base elastomers MDI, EL series low pressure machines easily meet any production requirement thanks to their sturdy construction and their simplicity of use. EL series low pressure machines are available in a wide range of models with an outputs from 8 to 20 kg/min., with adjustable components ratio and working temperatures up to 80°C. EL series is powered by a PLC control and a Saip TS operator process control to set and display the working parameters. EL series output and ratio variation is powered by an electronic system for the automatic components flow adjustment

The advantages:

- user friendly
- high quality construction materials
- easy maintenance
- precise metering, accuracy and repeatability
- calibration directly on the mixing head
- high mixing precision, repeatability and uniformity
- accurate components temperature conditioning
- automatic mixer cleaning





HIGH PRESSURE MIXING HEADS

Saip designs and manufactures high pressure mixing and pouring heads in different models and sizes covering all polyurethane foams applications in open and close mould pouring.

The mixing head is the core of the high pressure foam dispensing machine and must be well engineered and it must be reliable, accurate and durable.

Saip high pressure mixing heads, thanks to their reduced weight and size can be easily used for manual operation or can be adapted for the use with robots and manipulators in case of an automated operation.

Saip high pressure mixing heads, mixes the components by impingement at dampened flow in a mixing chamber then mechanically cleaned by a hydraulically operated self - cleaning piston.

Saip guarantees high performance and quality together with an excellent engineering and the best balance between technology and price.

High pressure mixing head calibration

The Saip mixing head design allows the direct calibration of the components without the use of any additional devices for calibration operations.

- POLYOL
- ISOCYANATE

Operating principle for components calibration

Selecting from machine control panel the polyol calibration mode automatically the polyol component switch over valve close from short recycle to high pressure recycle while the isocyanate sectioning valve open to short recycle so that only the polyol component flow to the mixing head through the polyol nozzle.

Now the isocyanate nozzle into the mixing head is closed.

The operation for polyol calibration directly on the mixing head is done with a pouring shot timed controlled having the result of shot weight of the poured polyol quantity in a certain time.

The isocyanate calibration follows the same procedure.

The sum of the polyol and isocyanate calibration correspond to the machine selected output.

This system gives the following advantages:

1. the calibration values are the real components delivery
2. the calibration pressure values are the real component pressures

Operating principle

Low pressure recycle

The low pressure recycle, essential to keep the components at the optimum working temperature, is done through switch over valves mounted on the components feeding lines. The switch over valves are opened and switch the components flow through the components tanks, the recycle time is controlled and powered by the machine PLC. When the pouring cycle starts the switch over valves close and switch the components flow through the mixing head nozzles.

High pressure recycle

The components flow through the mixing head nozzles and the mixing piston grows and goes back to the components tanks, so that, prior to the pouring cycle, pressures are stabilized.

Pouring cycle

At the end of the high pressure recycle, the components are mixed by impingement in a small size mixing chamber.

The mixing chamber special design reduces the turbulence and allows laminar flow pouring. The pouring time is set and powered by the machine PLC.

End on the cycle

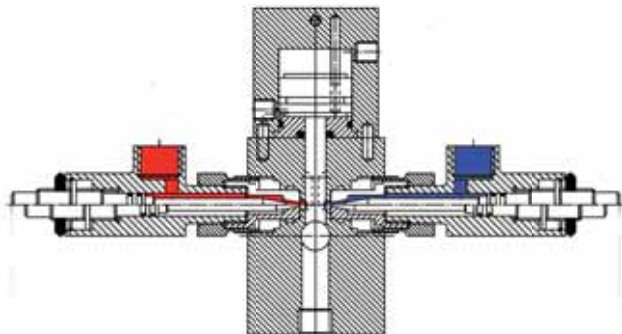
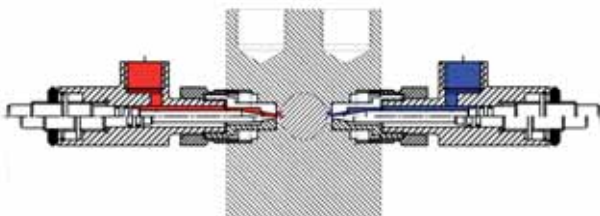
At the end of the pouring cycle the self cleaning piston removes the PU mixture in the mixing chamber, so that a new cycle starts.



AP



DD





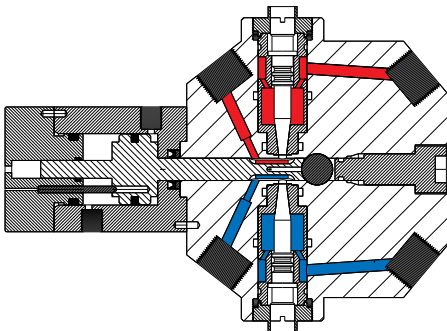
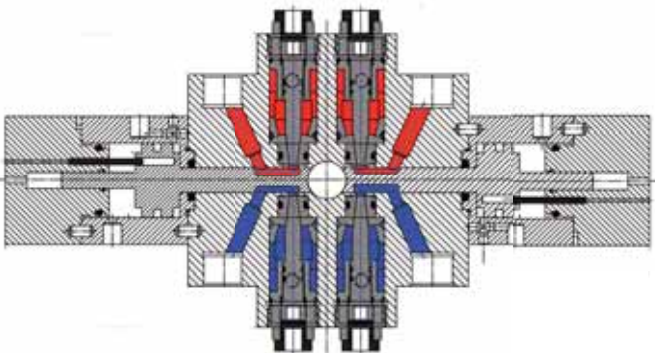
| Model | Flow rate gr./sec. Min. and max. recommended |
|-------------|---|
| DD 10 | 50 - 250 |
| DD 14 | 90 - 600 |
| DD 18 | 180 - 1.100 |
| DD 24 | 500 - 2.000 |
| DP 18 | 180 - 1.100 |
| DP 24 | 500 - 2.000 |
| A - AP 16 | 90 - 600 |
| A - AP 18 | 180 - 1.100 |
| A - AP 24 | 500 - 2.000 |
| DD 14 - 2DD | 90 - 600 |



2DD



DP



GASKTECH

The production of industrial gaskets in expanded polyurethane or silicone is expanding into more applications in various industrial fields such as lighting, electronics, packaging, filters, refrigeration and automotive sectors.

The production of gaskets in expanded, compact or thixotropic polyurethane and in expanded silicone is obtained with low pressure machines, specially designed for this kind of application

The SD series low pressure machines are available in a wide range of outputs from 0,5 to 40 gr/sec and, thanks to their versatility, are able to work with different types of polyurethane systems and expanded silicone with various working ratios and viscosities.

The SD series low pressure machines are equipped with a double group of volumetric pumps which guarantee a high precision in the components temperature control and a high precision and repeatability in the components metering.

The output and the components ratio are automatically adjustable in an electronic closed loop system in order to allow the application of different sizes of gaskets during the same production process.

The dynamic mixing head is equipped with a specially designed mixer to guarantee a perfect mixing of the components along with an environment friendly purging system. The mixer speed is electronically adjustable according to the kind of products in use and their characteristics.

The small mixing head easily fits any robot or cartesian manipulator so that it can be used on plant solution, either automatic or semi-automatic.

SAIP offers several solutions and turn-key production lines, designed and manufactured for different application fields of industrial gaskets.

Several equipment types are available, having high, medium or low productivity, all of them with a high level of flexibility and composed of two separated parts: the wet part including the foaming machine and the dry part including the handling of the products on which the gaskets should be applied.

The type of available plants are:

- oval carousels
- turn tables
- alternating or rotary tables
- drum systems
- belt conveyors

The choice of the suitable type of plant is made according to the kind of product on which the gasket should be applied and to the required productivity.





SAIPTECH

The polyurethane rotational moulding technology is used for rigid and elastomer polyurethane not expanded foam , for the production of hollow elements of small and medium sizes , junction line-less and surface continuity.



Complete lines and custom made equipment such as mould carriers , oval and round tables carousels for polyurethane foam moulding application.



High output low pressure foam dispensing machines from 200 up to 500 kg/min.



Low pressure foam dispensing machines for polyurethane foam with fillers



Robots and manipulators for automated operations





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