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SINCRO TRIBLOC

Integrated solution
for blowing, labelling, filling and capping

SIPA



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Integrated solution for blowing, labelling, filling and capping

Sincro TriBloc is an innovative system that incorporates the production, labelling and filling/capping of PET containers in an integrated system. Sincro TriBloc production output ranges from 12,000 to 48,000 b/h.

Advantages

Space saving:

Sincro TriBloc -55% space vs. standard line
Sincro TriBloc is the ideal solution for operations where reduced square footage is a primary requirement thanks to its extreme compactness and small overall dimensions.

Costs reduction:

- Elimination of bottle rinser.
- Elimination of bottle air conveyors between blowmoulder and filler.
- Elimination of bottle belt conveyors between filler and labeller.
- Less space, operators, maintenance, wear, stops, energy.
- Operative costs = -15%.

Sustainability: label 100% recyclable, together with the bottle and the cap, absence of hot melt fumes, no solvents for cleaning.

Efficiency: the blow moulding machine and the filler are electronically coupled and special transferring systems are foreseen to reduce the stumblings. The integrated design of the system ensures a high efficiency of the overall platform.

Lightweight: Sincro TriBloc is the most suitable solution for the treatment of extreme lightweight bottles.

Hygiene: a preform treatment system, the direct connection between blowing, labelling and filling, the over-pressured environment are guaranty of high hygiene level.

Extreme operating flexibility: it can handle a wide range of bottles, necks and caps sizes (both flat and sport). Several technical innovations installed allow for a short change-over times.



Non-carbonated water



Carbonated water



CSD



Clear juice



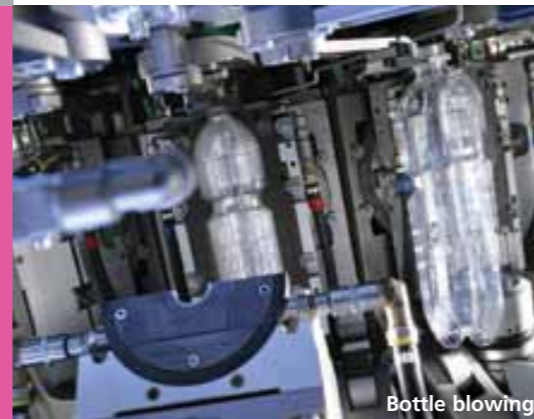
Isotonic and sport drinks



Tea



Hot filled products



Bottle blowing



Labelling



Filling/Capping machine



Bottle Blowing

SFR: features and advantages

SIPA rotary SFR blow moulding machines incorporate a series of unique innovative solutions and allow the fastest production rates while guaranteeing optimum container quality, simple and flexible operation, high utilization rates and low running costs.

Preform transport system

- Preforms are loaded onto the spindle (and not viceversa) by means of cam track-driven grippers. No chain axial movement.
- Simple chain in special plastic material (SIPA patent).
- No rotation of chain around its axis and no movement up and down to collect the preform.
- Dry operation (no grease).
- Pitch = 45 mm: better efficiency of heating, shorter oven and possibility to blow up to 43 mm neck finish.
- Extremely quick tool-free spindle changeover when handling different preform neck.
- Very low maintenance cost.

Heating Oven

- Fresh air is blown through the preforms perpendicularly and uniformly.

- Innovative ventilations through the lamps to maximize heat transfer by radiation (convection minimization).
- Neck ventilation inside heating over for light-weight effective neck cooling.
- Low thermal inertia: heat process consistency and quick cold start-up.
- Laminar ventilation: better process stability (SIPA patent).
- Heating process less sensitive to frequent starts & stops of filling lines or environment temperature variations.

Preforms transfer

- Tangential movement, only one degree of freedom.
- Only one cam needed.
- Simplified transfer wheels with small diameters and lower peripheral speeds.

Bottle Blowing

- Vertical blowing mould opening (typical of all SIPA rotary blowmoulders).
- Reduced pitch between two moulds.
- Relevant space saving (20% to 30%) for the blowing wheel compared to equivalent machines: preforms & bottles centrifugal forces are very low.

- Bottle transfer with only one degree of freedom (tangential movement).
- Centrifugal forces are very low.
- Big advantage specially in case of light-weight necks.
- Effective cooling system for bottle neck and aluminium mould base.

Flexibility

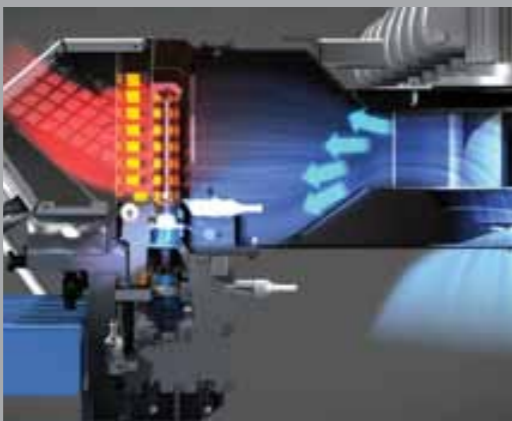
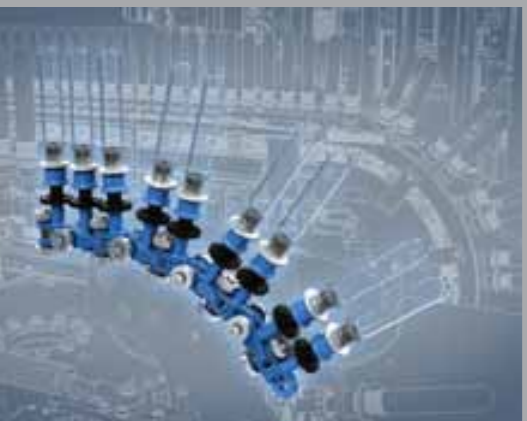
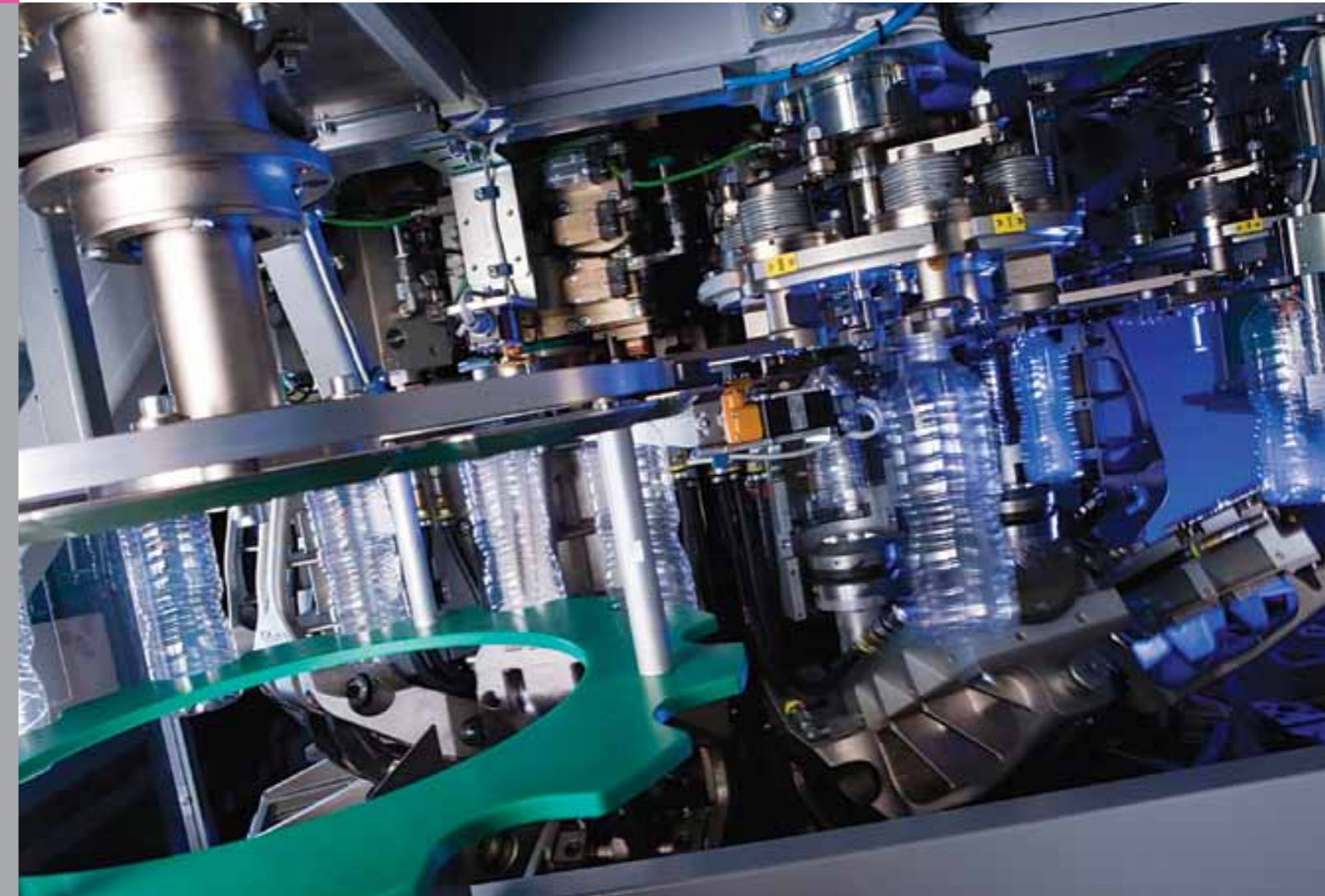
- High process flexibility and wide process window.
- Fast process adaptation to a large variety of preforms and resins.
- Easy managing of ambient temperature and humidity variations.
- Possibility to produce standard and hot fill bottles in the same system thanks to electrical molds heating.
- Quick changeover without need of tools. Simultaneous access to more than one station.

Energy and compressed air savings

- With ARS Plus, an exclusive SIPA patented system for the recovery of compressed air, air recovered is used as primary air and part of high pressure air (blowing air) is used as service air for machine.
- Compressed air total savings up to 50%.
- Possibility of reducing the size of the compressor up to 45%.

All SIPA rotary blowmoulders SFR range, are suitable to be part of Sincro TriBloc system. SFR models vary between 6 to 27 blowing cavities.

SIPA rotary blowmoulders represent today the cutting edge in blowing technology thanks to high performance in terms of output, flexibility and reliability.



The SFR blowmoulder combines high outputs with maximum container flexibility. The same machine, in fact, with a simple conversion, can produce standard and hot fill containers. The system allows for very light neck finishes handling and neck diameters up to 43 mm.



Connection between blowmoulder, labeller and filling/capping machine

Transfer module

The blowmoulder, labeller and filler are electronically synchronized and physically connected by transfer modules.

The latter are composed of transfer starwheels which transport the bottles by the neck to the labelling machine and then to the filling monoblock. This solution offers the following main advantages:

- Extreme reliability: no hitches.
- Great flexibility: it can handle bottles of all shapes.

Bottles are easily transferred from the blowing machine by means of a special "flexible" gripper first starwheel to avoid bottles jam: the starwheel was designed with flexible pockets, which adjust any misalignment in the release of the blown bottles. Again in this area, the bottle release is controlled in the event of a filler stop.

In order to keep bottle hygiene, the transfer module is surrounded by guards and, fitted with an overpressure system, the separation between the dry zone air (blowmoulder) and wet zone air (filler) is assured.

Optional elements

For particular production needs, the module can be completed with a number of additional solutions, including:

Quick changeover

The starwheels can be equipped with a precise and rapid size change which works with different diameter necks without the need for any tools: e.g. 28 - 38 mm. The same philosophy is applied in the event of body guides replacement.

Bottle base cooling

In case of petaloid bottle base or special filling requirements of the product, a spray nozzle system can be installed to cool the bottom of the bottle. In order to reduce the costs of this application, the solution is fitted with a collection channel and water recirculation system.

"Lightweight" bottles

Sincro TriBloc, thanks to its direct connection between bottle blowing, labelling and filling, is the perfect solution in case of lightweight necks and bottles.

The lack of air conveyors, in fact, eliminates any potential risk of bottle jams.





Bottle labelling

ADHESLEEVE technology,
a real revolution in the field of Roll-Fed labelling!

Adhesleeve is a labelling machine which uses preglued transparent or white Roll-Fed film with thicknesses lower than the films that are normally used on classic Roll-Fed labellers with less weight as a result. It is an eco-friendly solution: the absence of hot melt makes the label free from any contamination, so 100% recyclable, together with the bottle and the cap. The machine features one cylinder only for label cutting and dispensing - no more critical passage between cutting and dispensing as is the case with classical Roll-Fed labellers. The Adhesleeve technology achieves notable savings in terms of applied label costs, and contributes to enhancing the performance of both the labeller and the entire production line. Adhesleeve high efficiency makes this solution perfectly suitable for fully integrated configurations.

“Adhesleeve” technology obviates two major problems that contributed to the ineffectiveness of Roll-Fed labellers:

HOT MELT: gluing the label edges by means of a glue roller is known to present some disadvantages:

- glue spray and relevant cleaning of the application cylinder with use of solvents.
- Deposit of residual films or labels in the glue regulator (production stops due to cleaning operations).
- Periodic cleaning of the pads during the working shifts.
- Oily fumes produced by the glue heating (150 °C).

LABEL CUT: on all Roll-Fed machines, the label cut is performed by interaction of rotary cutting blades and one or two fixed ones. The difficulties in the adjustment of the blades during their replacement (4 to 6 hours) are well-known, as well as the production stops due to imperfect label cut.

The elimination of fixed cutting blades brings the following advantages:

- higher efficiency of both the labeller and the entire production line (5 to 10% higher line performances).
- 100% elimination of production stops, potentially due to imperfect label cut, film stretching with consequent reduction of its thickness, different film thicknesses due to an excessive quantity of paint on a reel, etc.
- No need to adjust the cutting unit for various film thicknesses: it takes only 10 minutes (at most) to replace the cutting devices without tools or adjustments!
- The life of the new cutting devices is much longer than the classical cutting system.

One cylinder only for label cutting and dispensing - no more critical passage between cutting and dispensing as is the case with classical Roll-Fed labellers.

The film is cut with as many blades as the divisions in drum - “Adhesleeve” labellers are the only machines with more than two cutting blades!



The film is held by vacuum and the blade projects 2 mm, from the inside to the outside of the drum, cutting the film without interaction of fixed and rotary blades. That is why this latest technology is not affected by differences in film thickness.

The surface of the film with the registered adhesive is not in contact with the drum. For this reason the cut is performed without glue contamination of the blade. The registered adhesive does not leave residue, hence no cleaning requirements during the working shift.



Filling

Sincro TriBloc is extremely versatile in this process phase: the choice of filler, in fact, simply depends on the type of product to be filled. The complete range of fillers can be matched with the rotary blowmoulder: isobaric fillers, gravity fillers and hot fillers, both mechanical level and electronic volumetric versions.

Filler to be matched with the SFR rotary blowmoulder depends on product to be filled:

ISOFill P, isobaric level filler: for carbonated products such as CSD and CMW, it can also handle SMW, clear juices, functional beverages and beer.

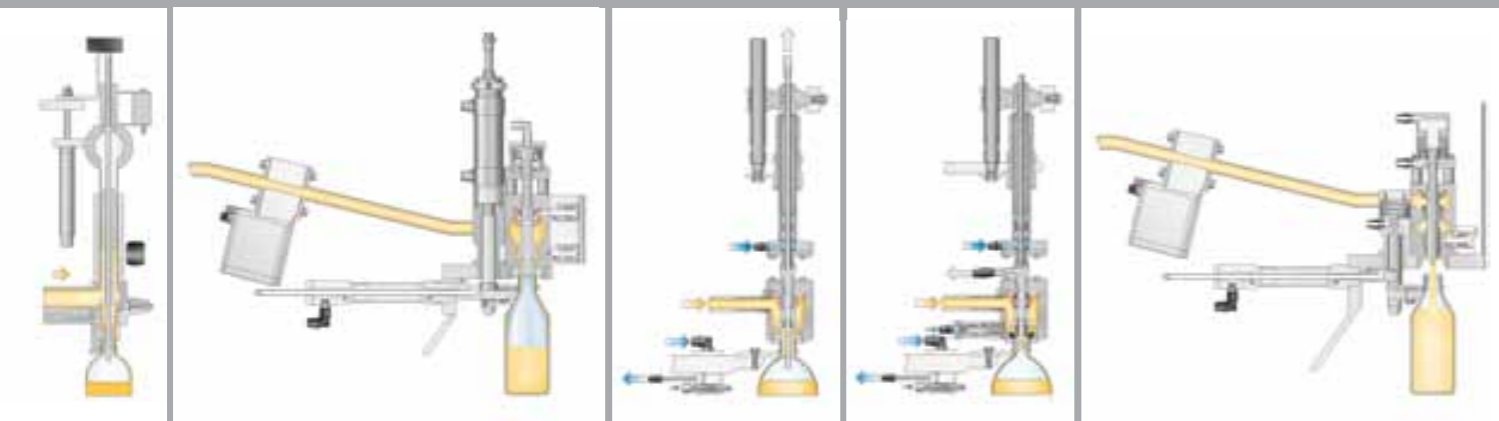
ISOTRONIC SC, isobaric volumetric filler: for carbonated products such as CSD and CMW, it can also handle SMW, clear juices, functional beverages, tea and beer. Special release for hot fill product.

STILLFILL S, gravity level filler: designed for filling of cold products such as SMW and clear juices.

STILLFILL R\HR, gravity level filler with recirculation: designed for filling of hot products such as juices and nectars (even with pulps and fibers), tea and functional beverages.

UNITRONIC SC, gravity volumetric filler: for still beverages and SMW, sensitive products in ULTRA CLEAN conditions. Special release for hot fill product.

The filling/capping area, whatever the type of filler used, it is configured with laminar flow cabins. Depending on the level of hygiene required by customer, we can provide solutions up to ISO 5.



Isofill P

Isotronic SC

Stillfill S

Stillfill R\HR

Unitronic SC



The possibility to keep the bottle clean after blowing is an extremely important element. The transfer module and filler are pre-set for CIP/COP/SIP operations: a guarantee of the highest hygiene standards.

All fillers can also be equipped with an innovative quick-change system to handle bottles with different neck diameters.



Capping machine

The last element in the process is the capping machine, which, synchronized with the filler, closes the bottles prior to outfeed. The management and correct feed of caps in the pick and place area is one of the most sensitive phases in the whole process in terms of risk of blockage on the descent channel. Since the whole process is fully synchronized we have designed several solutions to avoid stoppages on the Sincro TriBloc caused by cap feed problems. In the event of a cap blockage, a signal blocks the preform feed and a special buffer empties the whole system without wasting even one bottle.

Depending on the different operating conditions, we have designed three different solutions:

Capstream

It is a gravitational cap feeding system designed to guarantee the highest efficiency of the Sincro TriBloc versions, according to the most advanced state-of-the-art, being also a caps buffer able to feed the capper without interruption.

The caps arrives already oriented to the top of the feeder and descent by simple gravity to the caps chutes, without compressed air (clean feeding). The specific design of the Sincro version allows to feed the capper trough two buffer chutes in order to empty the whole system in case of caps jam. Completely manufactured in SS Aisi 304 could be arranged to handle different caps with an easy change over.

Twin Hopper

This system is composed of two cap hoppers and relative descent channel to the pick and place.

In the event of a blockage on the first, the system passes automatically to the second, allowing the operator to remove the blockage without stopping the capping operations until the machine is empty.

During normal operations, at preset intervals the system passes from one hopper to the other to allow the caps stored inside to be replenished.

Dynamic Chute

This is a dynamic drum buffer, positioned between the hopper and the pick and place, and is composed of several vertical channels placed around the perimeter. The number of channels is set in order to hold a sufficient number of caps to guarantee an accumulation that allows the operator to clear the blockage and completely empty the system.

During normal operation the caps transit along the channel which at that moment is aligned with the descent channel. In the event of a blockage, the system starts to rotate, moving to the next channels and allowing the caps to be fed with no interruption.



Capstream



Twin Hopper



Dynamic Chute

The above systems can be completed with solutions to integrate the quality selection capacity or to increase the cleanliness of the caps. In the first case, an optical control tool (Capvision) is required, a video camera which selects the caps according to different parameters (colour, deformation, ovalization, presence of safety ring etc.).

As far as the cap cleaning systems along the descent channel are concerned, different elements can be positioned such as the UV lamp system, dust suction and washing tunnels using disinfectants.



Sincro TriBloc

Efficiency and flexibility

High efficiency

Sincro TriBloc guarantees high efficiency rate of the single machines but above all of the whole system. However, every single unit in the Sincro TriBloc system can be decoupled from the bloc so that bottles and/or preforms can be evacuated if there is a micro-stop in the system, whether it be in the blowing station, the labelling station or the filling and capping station.

Great flexibility

Sincro TriBloc offers the unique advantage of filling mineral water, carbonated soft drinks and juices in hot fill in the same system, if required. The SFR rotary blower can produce standard bottles or heat set bottles without major modifications thanks to its unique electrically heated molds. At filling stage, if Sincro TriBloc is equipped with the Isotronic SC isobaric "multiproduct" valve, is suitable for filling CSD, CMW, MW, but also cold and hot juices with recirculation and offers maximum filling flexibility according to the product to be handled.

Quick changeovers

The entire system has been conceived in order to offer quick and easy changeovers. It takes less than one minute per blowing station to change the blowing molds from one size to another, without the need of tools. It takes only 10 minutes (at most) to replace the cutting devices of the labeller without tools or adjustments. In the connecting units between blower, labeller and filler, Sincro TriBloc can be equipped with special devices in order to reduce change-over down-time for different neck and shapes handling. The star wheels connecting the different units can be equipped with a precise and rapid size changeover to be performed without the need of any tool. Also the filling and capping machines are equipped with extremely fast and simple quick changeover solutions for bottle and neck size.





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SIPA S.p.A.

Via Caduti del Lavoro, 3
31029 Vittorio Veneto (TV) ITALY
Tel: +39 0438 911511
Fax: +39 0438 912273
E-mail: sipa@zoppas.com
Website: www.sipa.it

SIPA FILLING & PACKAGING DIVISION

Via Provinciale, 36
43038 Sala Baganza (PR) ITALY
Tel: +39 0521 548111
Fax: +39 0521 548112
E-mail: sipaberchi@zoppas.com
Website: www.sipa.it

SIPA RUSSIA

Ul. Ordzhonikidze, 11 Str. 1/2
115419 Moscow - RUSSIA
Tel: +7 495 2324191
Fax: +7 495 2324190
E-mail: sipa_russia@co.ru

SIPA UKRAINE

Office 37, 9 Turovs'ka St., Kyiv
254655 Kiev - UKRAINE
Tel: +38 044 4636817
Fax: +38 044 4257275
E-mail: sipa.ukraine@zoppas.com

SIPA ENGINEERING S.r.l.

Str. Mangalia, 61
300186 Timisoara - ROMANIA
Tel: +40 356 434200
Fax: +40 356 434280
E-mail: sipa.romania@zoppas.com

SIPA TURKEY

SIPET
Kisikli Caddesi No: 2. A Blok Kat: 3
34662 Altunizade - Uskudar - Istanbul
TURKEY
Tel: +90 216 4749780
Fax: +90 216 4749779
E-mail: sipet@sipet.com.tr

SIPA NORTH AMERICA

3800 Camp Creek Parkway
Building 2400, Suite 106
Atlanta, Georgia 30331 - U.S.A.
Tel: +1 404 3493966
Fax: +1 404 3493858
E-mail: sales.northamerica@zoppas.com

SIPA SUL AMERICA Ltda

Wt Empresarial Parque
Av. Gupê, 10.767 - Galpão 08 Bloco II
Jardim Belval
06422-120 Barueri - SP - BRAZIL
Tel: +55 11 47728300
Fax: +55 11 47728301
E-mail: sipa@sipa.com.br

SIPAMERICAN INDUSTRIES

ZOPPAS TOOLS & MACHINERY S.A. DE C.V.
Circuito Mexico 120
Parque Industrial Tres Naciones
San Luis Potosi S.L.P. CP 78395 - MEXICO
Tel: +52 444 8047400
Fax: +52 444 8047499
E-mail: sipamerican.industries@zoppas.com

SIPA ANDINA Ltda

Avenida El Dorado 68 C 61
Oficina 628, Piso 6
Bogota, Colombia
Tel: +571 479 5252
Fax: +571 4763444
E-mail: Sipa_Andina@zoppas.com

SIPA JAPAN Ltd.

Komai Bldg. 2F, 3-2-9 Nihombashi Muromachi,
Chuo-ku, Tokyo 103-0022, JAPAN
Tel: +81 352554848
Fax: +81 352554849
E-mail: tanigaki@sipajapan.com

SIPA CHINA

19/F, unit 1905, Zhong Yu Plaza,
No. jia-6 Gongtibi Road,
Chaoyang District
100027 Beijing - CHINA
Tel: +86 10 65120447 - 48
Fax: +86 10 65120449
E-mail: sipachina@sipacina.com.cn

SIPA MACHINERY HANGZHOU

3 Road 14, Economic & Technology Development Zone
310018 Hang Zhou, Zhejiang province - CHINA
Tel: +86 571 86913106
Fax: +86 571 86913548

SIPA THAILAND

3rd Floor, MSC Building, 571, Sukhumvit 71 Rd.,
Klongton - Nua, Vadhana,
Bangkok 10110 - THAILAND
Tel: + 66 27130973-5
Fax: + 66 27130976

SIPA INDIA

B 101, Mangalya
Off Marol Maroshi Road
Marol, Andheri (East)
Mumbai - INDIA 400 059
Tel: +91 22 29201785
Fax: +91 22 29201795
E-mail: sipa.india@zoppas.com