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FROM THE P.E.I. GROUP

1 PROTECTIVE SHIELDS WITH THE NEW STEEL BAND COVER

2 J & JL ROLL-UP COVER

3 BIPLASTIC WIPER

4 ROUND AND SHAPED HEAT-WELDED BELLOWS

P.E.I. Protezioni Elaborazioni Industriali S.r.l.

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AT THE 26th BI-MU 2008

1) PROTECTIVE SHIELDS WITH STEEL BAND COVER

A HIGH-PERFORMANCE ROLL-UP COVER

In the field of machine tool protective covers there is always a need to protect the working area of the machine from risks caused by chips, heat and abrasion.

THE PROBLEM
The 'lightweight' solutions in plastic textile are not adequate so in-sight metal has to be used. Until today, the aluminium cover has been the most widely used solution, but it has its limits: it is quite heavy, too heavy for certain applications, with hinges and joints which can weaken and come loose.
Even the flat bellows can be used but it is a solution which inevitably has gaps which, especially after a certain period of use, let dirt, shavings or coolant/lubricant pass through; furthermore a thickness of at least 30 mm must be calculated in the upper part which again leads to unwanted leak-spots.
A simple steel band would in itself be a perfect solution but unfortunately, due to intrinsic production limits, the raw material is only available in 900 mm high sheets. Furthermore, the band is quite delicate along the edges and once cut, is subject to tearing, so to be able to use it effectively it is essential that it is mounted on a support, but sooner or later the traditional solvent-based glues will lose their holding power.

THE SOLUTION
After years of studies and intensive tests, PEI Srl, one of the leaders in the field of protective device for machine tools in Italy and Europe, has patented a special product which offers the most efficient protection in the machine tools operation area.
Steel Band is the name of the new product, a roll-up cover consisting of steel sheet, a polyester textile support and an intermediate polymer. This product is assembled using an irreversible union between steel and canvas in which it is possible to place side-by-side metal strips to obtain a protection with a height of up to 2400 mm. Once installed, Steel Band is a continuous steel sheet, without gaps, extremely thin (just one millimetre in total, including all the layers), while special marks cut into the surfaces give an excellent rigidity.

ADVANTAGES
Thanks to this mechanical fixing, without glue or adhesives, Steel Band can even work when it is completely immersed in coolant/lubricant. It can also be used in an overhanging installation, a very useful feature because it is not always possible to insert a support guide in machine tools.

This solution is completely interchangeable with plastic covers; this means that Steel Band can replace plastic covers in existing installations without any additional mechanical interventions. This product, which has met with an immediate success, is produced with a completely automatic production cycle which means a constant, repetitive level of perfect quality because there is no human intervention in the assembly. Steel Band uses Sure Spring for its unrolling and rolling up, a well-tested, high-powered mechanism and a safe spring motor built by PEI and which has proved to be one of the best available on the European market, capable of developing 2G of acceleration.

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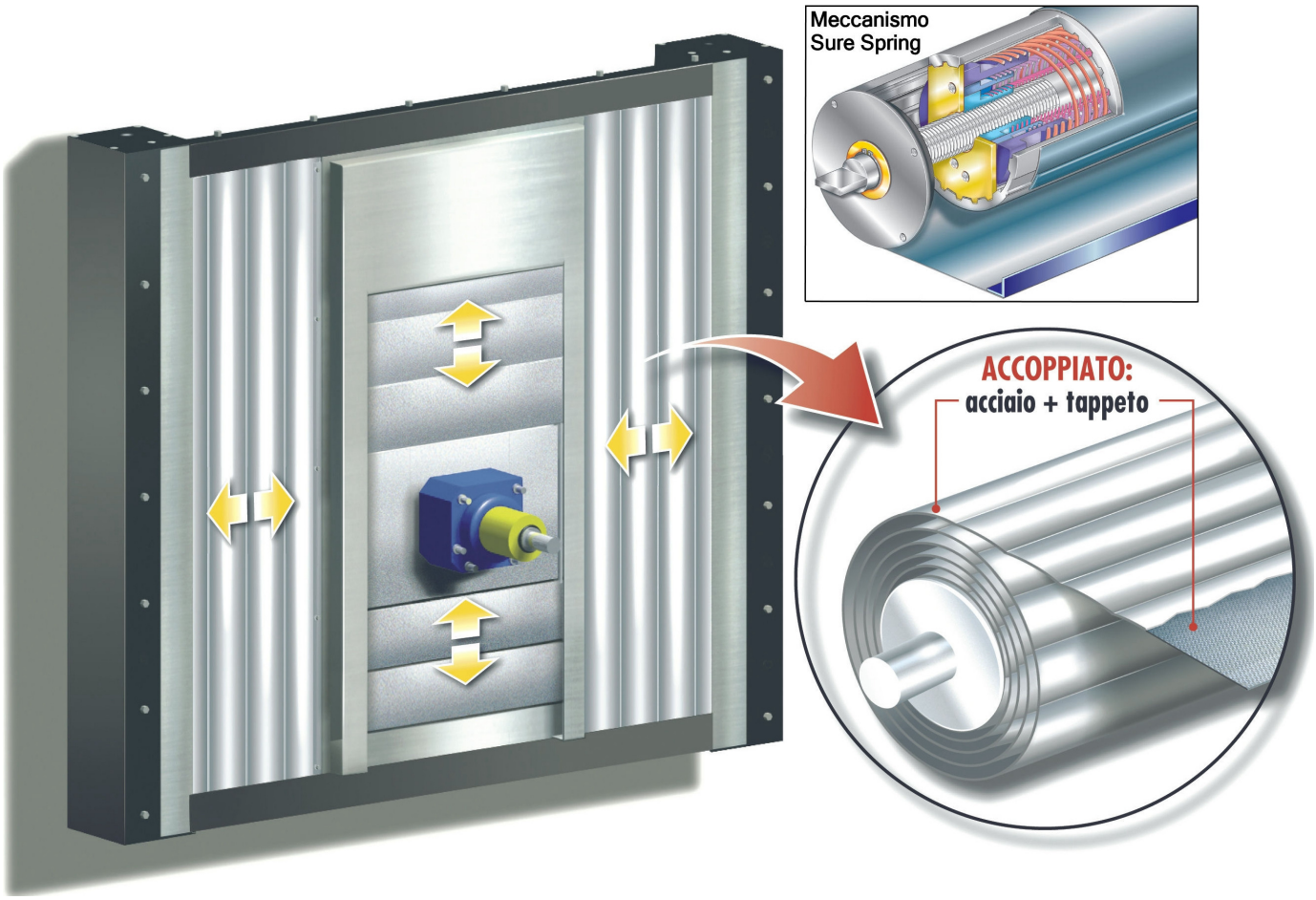
A typical Steel Band application is its installation into a built-in protection, a single unit supplied already assembled with a special frame in our factory in Bologna. This protection, called "Shield", has the protections for the vertical Y axis and the front X axis already inside; it is driven directly by the machine chuck without any additional setting up or special alignments to be made or motors to synchronise.
In conclusion, Steel Band offer a continual surface against processing residues, protecting the precious mechanical organs of a machine tool with a virtually hermetic sealing.



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2) J & JL ALUMINIUM ROLL-UP COVERS

THE EVERLASTING JOINT
Roll-up covers are one of PEI's historical products, a real "winner for one of the leaders in Italy and Europe in the field of protective devices for machine tools with a wide range of products, many of which covered by international patents.

ALUMINIUM VS STEEL
In addition to canvas, belts, rubber and plastic, a high-powered and reliable mechanism called Sure Spring, entirely developed in-house by PEI Srl, ideal for rolling-up **ALUMINIUM COVERS.** This is a particularly efficient solution; it is robust, very resistant to break-out and ideal for the protection of horizontal bases, especially really long ones, 15 metre or more, where there is the need to support the operator's weight. The classic solution has always been the telescopic cover with a steel box. But, in addition to the difficulty in maintaining the balance, an intrinsic limit of this system is the typical taping; therefore the covered area is less and even when only half-extended, the protected area is significantly reduced.
The company from Bologna has perfected special aluminium covers capable of resisting an operator's weight, adjustable depending on the width, that is, the distance between the supports. The main feature of these covers is the patented solution invented by PEI for a reliable joint of the aluminium slats. In fact, the traditional joint mechanisms are made with a wedge-shape so the coupling is not perfectly reliable, with a 'bottle-opener' effect which causes the joint to widen and eventually break. In the PEI patent, the traction is discharged onto a surface, or rather, a profile joined to itself and does not act as a wedge which sooner or later forces the joint open. In addition to this articulated joint, a lateral joint is also envisaged offering additional safety for the operator standing on the cover and even if a breakage occurs, the cover will not open.
There are three types of cover available, three new additions to the already wide range of protective devices that the company from Bologna produces. The J version with a thickness of 18 mm is suitable for more difficult uses; the JL version has the same safe-coupling features but with a thickness of 10 mm per metre of width. In addition to the aluminium on aluminium joint, another version of the cover is also available as a lighter and more economic alternative (it uses a plastic gasket) where such a solution is possible.

ADVANTAGES
The traditional telescopic steel covers are heavy and expensive, not to mention the maintenance: to replace a damaged module, the system is out of action for as many days as necessary for the repair, which is usually performed at the manufacturer's plant. Unlike the new PEI aluminium cover, where, should an object fall and damage the cover, thanks to its modularity, the damaged module can be removed and replaced by just loosening a few screws; just a couple of hours instead of many days!

Two other important features: as the cover forms a single surface without any steps, all traces of shavings when rolling up can be eliminated quickly and easily with just a simple wiper. The second feature is the high operating speed; the cover is guaranteed up to 120 m/sec, even though this speed is usually limited to 50 m/sec due to the noise. The weight of the entire cover, about 500 kg for ten metres, is considerably lower than the 10 quintals of the traditional steel telescopic solution.
Furthermore, the springs keep the cover pre-tensioned so the force opposing the machine movement is virtually non-existent. Thanks to the joint used, PEI can guarantee the working efficiency of its covers while there are no other similar covers on the market which offer similar guarantees.

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3) BIPLASTIC LINEAR WIPER

A new type of wiper, made out of plastic; it is light, resistant and free from problems of oxidisation and is aimed not only at machine manufacturers but also at the end user. A new proposal from PEI, leader in Italy and Europe in machine tool protective covers.

Cleaning the various parts of the machine tools is a necessary operation in every factory; the guides on the carriage, the sheet metal bodywork and the many mechanisms that could transport foreign bodies inside the machine. Traditionally a scraper blade is used, usually consisting of a rigid part which acts as a support body and a flexible blade, usually a stamped metallic profile with vulcanised rubber. This solution is quite expensive and the rubber does not give optimum resistance to oil or wear.

PEI, with its usual attention to product evolution and technological innovation, first thought of using a polyurethane base instead of rubber but more important was the development of the oil-scraper using extrusion techniques; the blade is in polyurethane and the support body is in reinforced plastic. Like many other technological solutions developed by PEI, this solution has a patent application pending; it eliminates the problem of oxidisation while the latest manufacturing technology not only allows the production of shaped products but also simplifies the construction. The new wiper is also aimed at end users who can use it to completely replace previous wiper models without needing any mechanical intervention.

To compensate the misalignment which often occurs between the fixed part and the moving part in machine tools, the FB40 Flex has been designed; a "long" version of the wiper which, with its 5 mm of tolerance gives great results when the housing is not completely flat or when there are gaps that cannot be closed with the standard model. The other features like the excellent mechanical resistance and resistance to lubricants and coolants remain unchanged.

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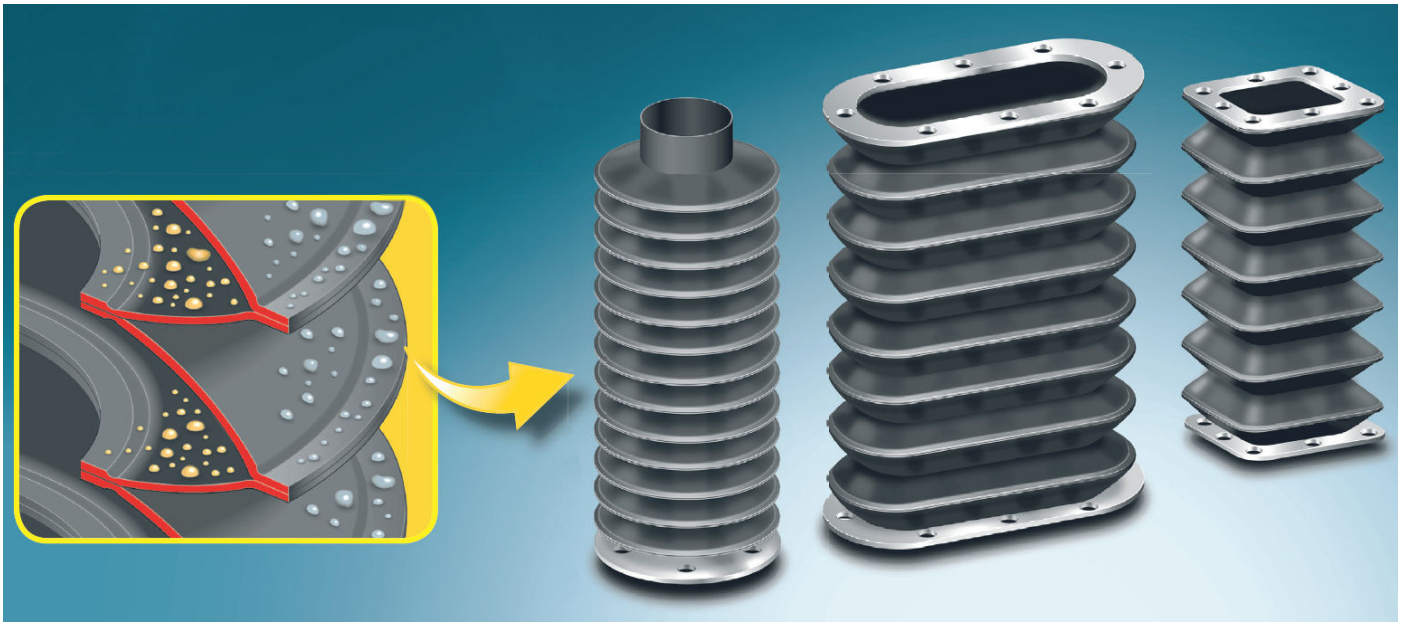
4) ROUND AND SHAPED HEAT-WELDED BELLOWS

The traditional PEI heat-welded circular bellows can in reality be of any shape, not just the classic circular one. All models offer considerable resistance to stress and are perfectly water-tight.

When strong resistance to rotation is required, for example, covers for recirculating ball screws, the heat-welded circular bellow is the ideal protection, also considering its other great feature, the water-tight seal. The heat welding of the single die-cut elements guarantees total impermeability, a great quality/price ratio and excellent reliability.
In addition to the circular model presented by PEI some time ago, the company from Bologna, leader both in Italy and Europe in machine tool protections has widened its product offer with bellows of varying geometry, for example, square, oval, with rounded corners or even special tailor-made shapes. The manufacturing technology does not require expensive dies but a simple shaped blank knife which can cut the opportune sections of polyurethane (or polyester depending on the models); this also allows the production of small batches or special dedicated, customised products for machine manufacturers and even for the end user who might need to protect an uncovered screw or bracket. The user does not have to pay any tooling cost.
The bellows, characterised by a high resistance to mechanical and dynamic stress, are available with guide bushings and reinforcement rings and have a minimum diameter of 20 mm and a maximum diameter of 380 mm, although much larger models can be built on request.



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