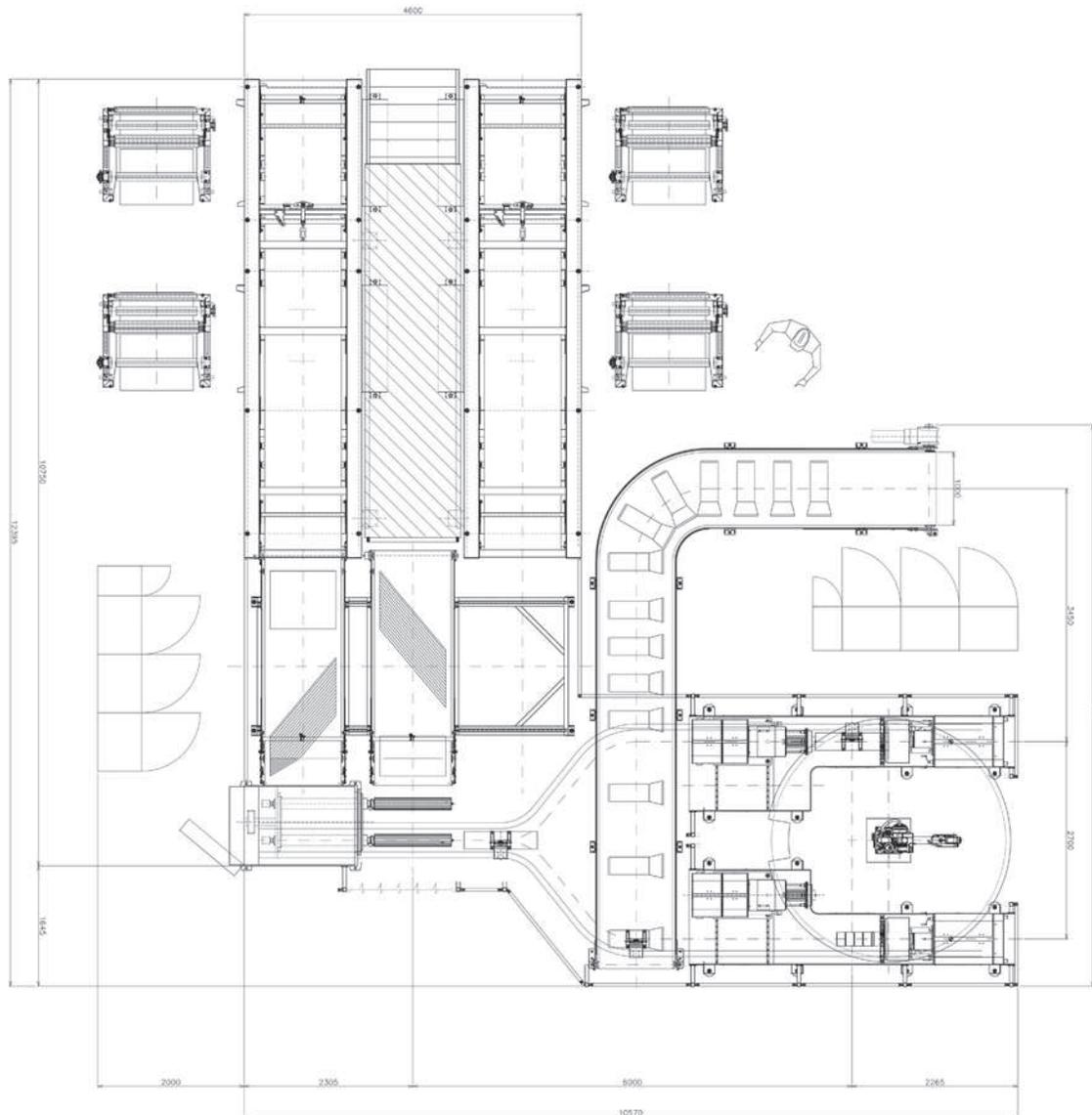


# Air-spring manufacture

The latest product from tire and rubber machinery expert Intereuropean is a fully automatic uni-stage building system for air springs



With experience in the design and manufacture of machinery for the rubber industry and, in particular, in the production of automatic tire building machines and air-spring building machines, Intereuropean has developed a new, fully automatic Intertech uni-stage building system for manufacturing air springs, used in the air suspension systems of all modern trucks and buses.

The semi-finished components used for the production of air springs are very similar to those used in the manufacturing of tires (rubber innerliner, textile piles, beads, etc.), so it was relatively easy for the company to adapt the existing automatic servicers' designs for tire building machines for use in the high-performance air springs building system.

**Above:** Intereuropean's fully automatic air-spring building system

The new machine is designed to produce one finished green air spring every 20 seconds in fully automatic mode.

All the components are centered by the active guiding systems, pre-cut to length and automatically applied on the carcass drums according to the pre-set splice offset distance and recipe settings.

Twin revolving carcass drums provide for optimum cycle time



**Left:** Two views of the Intereuropean Intertech system

**Below:** The company also produces tire building machines

distribution between the application of components on one drum and the dynamic stitching and unloading by the manipulator on the other drum. Two dedicated bead setting and turn-up stations are connected to the carcass building station by means of automatic manipulators, traveling via high-speed guides. The specially designed transfer devices pick up the air-spring carcass from the carcass drum and transfer it to one of the two turn-up stations, ready to receive it.

The positioning of the carcass inside the turn-up station is executed automatically by the manipulator, while a special center-lock device keeps it in position during the bead setting and turn-up operations.

The same manipulator removes the finished green air spring from the turn-up station after the bead-setting and mechanical turn-up operations and brings it to the unloading station on its way back to the carcass drum to pick up a new carcass.

The finished green air springs from both turn-up stations are automatically unloaded from manipulators in the unloading station for further storage or transportation to the curing presses.

The system requires two operators (or one robot) for the two turn-up stations and one operator for the carcass building-station supervision and spool changing.

Intereuropean's Intertech air-spring building system can be used to manufacture conical or cylindrical air springs (or both, with optional additional turn-up drum units) with an output of more than 3,000 air springs per day, or more than 1 million air springs per year from a single automatic system.

The overall footprint of the Intertech system is 12 x 12m.

Various configuration options and size ranges are available upon request, including complete integration of the Intertech system into the main plant supervision system for online remote monitoring and receipts-uploading.

Advanced control components and software enable Intereuropean engineers to connect via internet to the machine for diagnostics and real-time troubleshooting, if required.

Each material let-off station is provided with two sets of let-off carriages, allowing for off-line bobbin changing and quick carriage replacement, reducing machine downtime to a minimum.

The estimated complete size change time is around 30 minutes with three operators.

An alternative solution for a maximum-flexibility and lower-volume fully automatic air-spring building system is Intereuropean's Flextech technology, designed as a modular air-spring building system with integrated, direct extrusion of components in the machine. The system uses multiple drums, online rubberizing and strip application of the textile cord,

strip winding of the innerliner, and 'alderfer' beads.

The Flextech system is perfect for new factories, because it does not require installation of expensive textile and innerliner calendar lines and bias cutters, bobbins, and carriages.

It allows for on-the-fly receipt changes and extremely quick size changes, limited only by the drum replacement time. The overall footprint of the Flextech system is 6 x 10m.

The strip application of components was successfully tested in manual mode for the assembly of air springs, with quality results exceeding all expectations. Now Intereuropean is ready to develop the first fully automatic prototype Flextech system.

Intereuropean Srl is located in Milan, Italy, and is a specialist in the design and manufacture of machinery and equipment for the tire and rubber industry. The machinery range offered by the company includes tire building machines for PCR/LT tires; a full range of machinery for the production of air springs; servicers, drums, bladders, and tooling for TBMs; apex extrusion and automatic application lines; bead-winding lines; cutter and splicer lines for fabric and steel-cord ply; extrusion lines for sidewalls and tread; innerliner calender lines; green tire painting machines; standalone let-off and wind-up stations; testing equipment; and an upgrade and modernization service for existing machinery. **tire**

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