

Lonati is sixty years among the leading world manufacturer of sock-knitting machines. Lonati produces approximately 10,000 hosiery machines each year, 85% for the foreign market.

**LEADING WORLD MANUFACTURER OF SOCK-KNITTING MACHINES, LONATI CHOSE AR FILTRAZIONI AS PARTNER TO INSTALL AIR CLEANERS OF FUME AND OIL MIST ON THEIR MACHINING CENTERS, IMPROVING THE PRODUCTION EFFICIENCY, THE QUALITY OF THE AIR IN THE WORKSHOP AND DECREASING THE RISKS OF DOWNTIME.**



[ **PRODUCTION** ]

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# New air in the workshop

10,000/12,000 hosiery machines each year, 600 employers, an area of 80,000 square meters of which 24,500 are occupied by buildings and the control of 65% of the world market of sock-knitting machines. These facts are enough to explain the industrial importance of Lonati SpA, historical company founded sixty years ago by the knight Francesco Lonati and now rooted in industrial foundations, LONATI GROUP benefits from absolute world leadership in the textile machinery sector, a position supported by reliability and efficiency, the best know-how, ongoing innovation and unsurpassed standards of quality for products and services. With an extensive sales network that reaches more than 70 countries, Lonati Group is a true point of reference, accessible and open to every market, from emerging to European, Asiatic and American. Concrete management principles, skilled worker, team work and family tradition are the basis and reason for a commercial operating success that has lasted more than 60 years. Incorporating several independent companies with different characteristics and functions from industry to agriculture, from real estate to education - the Group expresses a single will and a single way of operating that is summarized by the three words that identify Lonati style: reliability, efficiency and organization with an export quote of 85%.

To guarantee the best quality and protect his know-how, Lonati realizes internally almost all the mechanical parts of his machines, availing themselves of some external cooperation to manage the picks of workload and to realize some parts as the basements and pneumatic components.

tested for 8 hours, before shipment." We take a look to the mechanic dept. where Lonati produces all the components for production line work. "The production dept. includes the CNC division with 47 machining

On the right: the CNC machine tools Dept. before the AR FILTRAZIONI intervention.

Below the Dept. now, with the filtration at the source; without pipes, brighter and cleaner.



centers multi-axis, the grinding division with 30 grinding machines and a test and quality control area, with air conditioning at 20°, where the machines are tested by three-dimensional machines. A strategic division oversees the tools with the just in time; since every machining

center is organized with presetting and spare set ." The machine tools dept., core of mechanical production in Lonati, has been the subject of an important modernization with the dismantlement of the centralization system for suction of oil mist and smoke produced during the machining processing of machine tools. Each machine tool now is equipped with a single plant for suction and purification of oil mist and smoke.

## NEW AIR IN THE WORKSHOP

### A modular approach

In the past the plant for suction of oil mist and smoke produced during machining processing of machine tools was centralized. The centralization worried about the possibility of an arrest.

“As maintenance responsible – Pasotti explains – I needed to avoid that a problem on the vacuum system involves a production standstill of 47 machine tools, with very heavy effects for our company. Furthermore, the large dimension of the vacuum system needs several days in the event of a repair of it.

But not only the production continuity Lonati needed to guarantee; they wanted to overtake another criticalities regarding their fume vacuum system.

“An important subject is the recycling of the oil (Lonati machines work with straight oil): the centralized system we had in the past mixed different oils coming from several machines. The different characteristics of each oil impeded the recycling of that oil, particularly for more delicate machining processing.” Canalization and pipes of the

A model of Lonati machine in action



## TO GUARANTEE THE BEST QUALITY AND DEFEND THEIR KNOW-HOW, LONATI GROUP REALIZE BY THEMSELVES ALMOST ALL THE MECHANICAL PARTS OF **THEIR MACHINES**

To guarantee the best quality and defend their know-how, Lonati Group realize by themselves almost all the mechanical parts of.



Over: in this Dept. was been installed 47 air cleaners with an optimized combined system.

On the right: Goal, the mono-cylinder sock knitting machine.



centralized system, in addition to the visual impact, made difficult any modernization or modification of their workshop. “We move frequently our lay-out and every time we had to modify the pipes. Further all these pipes reduced a lot the luminosity and the comfort of the workshop.” Last but not least the implications about the fire safety. “If a machine kindles and the fire arrives to the pipes of the centralized system, it may propagate to all warehouse, causing serious damages.” After this analysis, Lonati decided to find a new solution regarding the filtration of oil mist and fume in their workshop.

The new solution was to install single units to such and hold at source the pollutant on each machine. “We needed – summarizes Pasotti – a plant which made independent each machine tool, under the production, recycling of the oil and fire-safety profiles.”



AR FILTRAZIONI air cleaners have reduced by 15% the oil consumption



In Lonati the first maintenance intervention has done 18 months after the installation

## AIR CLEANERS AT ZERO EXHAUST EMISSIONS

ARNO series stands out from the other ones . A line of air cleaners for oil mist, fume, dust complies with TECHNICAL ENCLOSURE N. 32 ISSUED ON THE OFFICIAL JOURNAL OF THE LOMBARDY N.2 OF 10TH January 2012.

These plants allow the suction and purification of every type of atmospheric pollutant emits during machining processing of lathes, machining centers, grinders, laser machines and so on. Characterized by a modular architecture, the ARNO SERIES was born for high duty production machine tools: compact, robust, efficient requires of few and speed maintenance interventions.

A high and very high efficiency filtration up to **99,95%** for particles  $\geq 0,15 \mu$  guarantee the complete accordance with the strictest rules and safety regulations. All the series protect vulnerable machine component, guaranteeing precision and extending operating life. Moreover, the Arno Series allows a high energy saving on heating and air-conditioning costs: thanks to the analysis of AR FILTRAZIONI' engineers, a plant of 1700 cm/h, working 8 hours every day, 5 days a week can save money by reducing the energy costs up to 415,00 euro per unit in the winter months and 249,25 euro during the summer months.

The AR FILTRAZIONI plants can decrease of CO<sub>2</sub> emissions: 14,136 kg daily, on each plant installed of 1700 cm/h.

### From centralization to the hold at source of the fume

The cooperation starts with AR FILTRAZIONI, with the installation of a pilot plant on a more recently machining center. "After a yearly test – underlines Angelo Riceputi of AR Filtrazioni – with Lonati we decided to equip every machine tool with an air cleaner, taking care to optimize them on the basis of the characteristics of the single machine and the metal working (for example the aluminium metal working emits more fume.) We utilized a modular combined filtration system for a longer life of the last stage of EPA filter.

Some machines are equipped with a high performances pre-filtration system, with the centrifugal condensed technology, applied by AR Filtrazioni." With the installation of the first 47 AR Filtrazioni air cleaners, the machine work shop was disconnected from the centralized plant, avoiding the worry of downtime in case of dysfunction of the centralized



ARNO SERIES for suction and purification of oil mist, fume, dust emit during machining processing of lathes, machining centers, grinders, laser machines...

## NEW AIR IN THE WORKSHOP

On the right: before shipping, Lonati tests every machine per 8 hours.

Below: The technical Dept. designs their sock knitting machines.

system. “Now if there is a problem on a filtration system it’s enough to sign off the involved machine – underlines Pasotti -, but the production can go ahead. Furthermore, the maintenance of the AR Filtrazioni plants is very easy and speedy. Significant quantity and quality of the recovered oil; “Every single air cleaner recovers the oil, conveying it immediately to the machine tool, avoiding contamination with another types of oil. In this way we reduced of 15% our oil consumption and increased the efficiency and quality of our metal working.”



### LONATI NEEDED A PLANT TO HOLD THE FUME, WHO MADE ANY MACHINE TOOL COMPLETELY **INDIPENDENT**



Big vantages in the work environment; without all the pipes of the centralization system the workshop is lighter, thanks to the pace to install a new led lighting, with the compliments of the labor union.

“ The smell of oil is vanished – explains the environment responsible of Lonati - I didn’t image to reach this result.”

Furthermore, without a centralized system connecting air outside, we made a considerable contribution in reducing energy consumption. “ With the installation of air cleaners at the source on single machine we avoid the risk of fire propagation. Moreover we are utilizing rubber pipes between the machining centers and the filtration unit; in this way, in case of fire, the flame cannot arrive to the air cleaner.” Concerning the maintenance, very satisfy result achieved. AR Filtrazioni is responsible for maintenance and installation and “ As mutually agreed with Lonati – explain AR Filtrazioni engineers – we agreed to control the spare parts condition every 6 months

Because their duration depends of the metal working and we change them only when necessary. We issue a certificate with the detail of each plant and maintenance date, as the rules of Lombardy Region impose. Thanks to our analysis, in Lonati we replace the spare parts of the ordinary maintenance every eighteen months, excluded some very heavy metal working.” A gauge to monitor filter condition installed on the air cleaner signals to the operator the saturation level of the spare parts.

“The needle on the green side means “Optimal function”, the needle on the yellow side signals the necessity to stock the spare parts and the needle on the red side “Obstruction”. “This gauge to monitor filter conditions – explains Pasotti – leads an unexpected advantage: the operator can control directly the plant and feels involved and motivated to take care to monitoring”.

The production Dept. includes CNC and grinding machines, a test and quality control area.

Below the headquarter Lonati in Brescia Italy in purpose-built 24 thousand s. meter building.