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STRETCH

elav
EXTRUSION PLANT AUTOMATION

WELDING MACHINERY

Improvements

n.06 year 2012

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COLINES®

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Whenever. Wherever.



A UNIQUE ASSISTANCE SERVICE:

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- ✓ Mechanical
- ✓ Processing



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Plast exhibition in Milan is taking place while a period of persistent crisis in the demand in our field (and not only) in several traditionally important markets is still raging.

Whereas, especially in Europe, the investments are stagnant, other parts of the world such as India, China, Turkey, Brazil, KSA and UAE offer better opportunities.

In such context the generalized financial crisis has played and is still playing a very negative role.

Nowadays in fact the credit system is very selective in supporting the investments in new development projects, without considering the prohibitive costs that are applied.

All in all, only few customers are able to invest in new lines, thus making competition between manufacturers difficult as never before.

The competition concentrates thus on the technological level of the proposals, on energetic saving, on excessive automation and on performances, whereas the price level has been and still is unsatisfactory if compared with the required commitment.

In such situation, some manufacturers, also well-known, found some serious difficulties causing heavy reorganization and even shutdown.

The approach of most customers is today much more rational and selective than in the past. Customers consider and survey with attention the technological details, performances, references and after-sales assistance already in the phase which is prior to the contract; they want to see the lines in operation and analyze with great interest the balance sheets and the operational/managing structure of the supplier of the line.

As for us we can proudly say that we have already set, since a long time, the size of our activity by considering what above. We have even made something more which makes us unique against our competitors: in fact we have verticalised our activity with the production sites belonging to B-PACK® Holding SpA. This allowed and allows us to have the best know-how in cast lines for PP and barrier film. It permits us to be the only one, thanks to the patent, who offers the lines for Bubble Guard® Board from granule and to be really proactive in stretch film lines. With particular reference to stretch film, I wish to highlight the challenging but constant development of patented light MY CORE® cores, based on PP, that shall represent soon in our plans a big novelty for the market.

Come one, come all at our stand A01 B02, Hall 15! Wishing you a pleasant exhibition,

Eraldo Peccetti

CEO & Partner



The latest generation of multi-layer stretch films is thinner than before, yet have increased performance. COLINES® explains some of the techniques that can be used to achieve this.

Stretch

STRETCH FILMS GET THINNER AND STRONGER

The most recent studies in the market of stretch film for industrial use are focusing in particular on the possibility of operating in the field of stretch the so-called 'downgauging', namely the use of lower and lower thicknesses, keeping however unchanged or even increasing the mechanical characteristics in terms of tensile strength, elongation, spring back, resistance to puncture, etc.

Technology

These results can be obtained by combining between them numerous variables ranging from the use of proper raw materials to the use of production lines that allow the processing of these products and that, above all, permit to drastically 'modify' the mechanical and physical characteristics of the film by convenient process parameters. It is known that there are some process parameters that influence significantly the film characteristics, such as the cooling process speed, the 'frost line' position, the die gap, the relative position between die and chill-roll, the vacuum-box conditions, etc.

COLINES® extrusion lines, expressly designed for stretch film, take into consideration of course all these parameters acquired through the experienced achieved on field, but even with engineering studies on rheology and thermodynamics with the purpose of optimizing all line components. In particular we can identify:

- 1). a particular configuration of the chill-roll unit, with one or two cylinders according to the film to be produced, with very high performances in terms of thermal exchange thanks to the outstanding water capacity guaranteed by the thermoregulation unit and to the reduced wall thickness; all this allows a ΔT between inlet and outlet lower than $0,5^{\circ}\text{C}$.
- 2). The positioning of the main chill-roll has been optimised

so to check at best the cooling process (competitors prefer to use a compromise position, in which the melt is not cast on the top of the chill-roll, to avoid the vertical movement of the chill-roll group; however according to COLINES® this limitation is too binding in terms of productivity).

3). The geometry of the vacuum box, expressly designed for the production of thin films, with front and back chambers purposely dimensioned to guarantee a laminar air flow, which can ensure the lowest disturbances to the film.

In this way it is possible to keep at the minimum level possible the suction under the die, in order to determine at will the film cooling process speed, while keeping at the same time an optimal control of the edges without using complicated and expensive encapsulation techniques.

4). The management of the line haul-offs has been refined in a particular way, so to have the possibility to wind very thin films with a perfect tensioning, avoiding the risk of collapsing of the cores or excessive stress on the film.

5). The latest evolution of the 'multilayer' EDI die, coupled with the 'counterdie', has been recently tested on a 2000 mm line destined to the East-European market. With this configuration it is possible to extrude film up to 50 layers with 4 extruders. The ensemble of such technologies permits to minimize the neck-in in the extrusion phase, besides guaranteeing a perfect homogeneity of the film features in transversal direction (i.e. there is constancy of the mechanical characteristics from the first to the last reel in transversal directions).

6). The energetic saving, with the introduction of new special-design screws ensuring the best performance-consumption ratio, is another parameter that has been kept in great consideration by COLINES®. Even if it does not influence directly the film qualities, this aspect is of primary

importance, especially in case of products with a low added value such as stretch film.

In view of the above it comes up that not only adequate raw materials contribute to the production of a stretch film of very high quality, but also at the same time it is necessary to have an extrusion line suitable for the aim and used in an effective way.

Case Studies

In the last months some high-performance 'power stretch' and 'superpower stretch' products have been developed with the cooperation of well-known European producers. This allows a considerable 'downgauging' process, thus obtaining films with thickness of $10\div 12\text{ }\mu\text{m}$ and lower, which can be used for the same applications as films from 17 to 23 microns, with consequent saving in terms of packaging weight up to 40%.

It goes without saying that said products cannot disregard the use of top quality raw materials, in conjunction with a setting of the production line which follows the guidelines listed in the above points.

As an alternative, for those film producers who do not want to engage in such 'technical' fields, we have developed - together with a East-European producer, who bought two COLINES® HANDROLLEX®-2000 and JUMBOROLLEX®-2000 extrusion lines – a $17\div 20\text{ }\mu\text{m}$ film produced with 'multilayer' technology.

In this case, by using ordinary raw materials (LLDPE C 4 and even some regenerated material) we have reached performances in terms of pre-stretch and resistance to puncture, comparable with films that use at least 40% of LLDPE C 6.





Stretch

INNOVATION IN THE STRETCH FILM FIELD

Cling Film produced on Cast Lines

The stretch 'cling' film market (i.e. for applications in the food industry), characterized by specific features of spring back in transversal and longitudinal direction, has been so far dominated by PVC or linear PE produced on blown lines that, thanks to biorientation, are indeed able to give the product the required properties.

COLINES® have developed a particular formulation able to reach the same performances in terms of mechanical characteristics on cast lines, with obvious advantages from the point of view of productivity, as well as of the spaces employed.

In particular, recent tests on HANDROLLEX®-1000 lines have allowed to reach an excellent quality with film ranging from $10 \div 14 \mu\text{m}$ at speeds up to 600 m/min, with outputs over 400 kg/h.

The 'secret' of such film, of course, lies not only in the raw materials, that are anyway indispensable for the characterization of the product, but also in the utilization of the latest COLINES® technologies in the field of stretch film: the BIGMOUTH® trims recovery systems with very high energy efficiency and without material degradation, allowing to process any raw material without any problem; the HANDspeedy® winder for the production of hand and machine reels; the extruders with latest generation "barrier profile" screws; the cooling system with chill-roll and vacuum box optimized for high speeds.

COLINES® will present at PLAST 2012 the new version of the winder, HANDspeedy®-plus for the production of tail-less reels wound up on MYCORE® patented eco-friendly plastic cores.

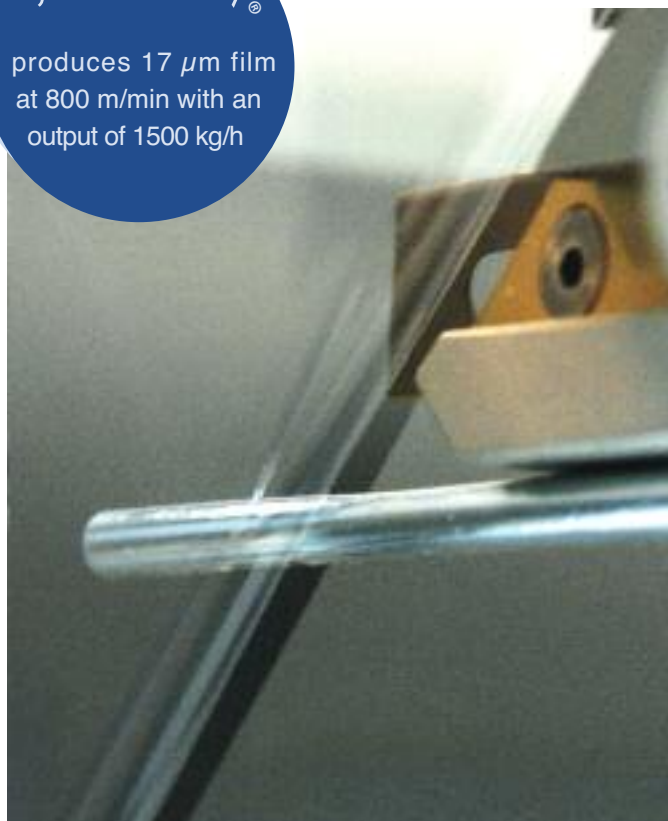
Side Extruder? No, Thanks!

Lower energetic consumption, thanks to our unique BIGMOUTH® cold trims refeeding system which is rated 9 kW but draws normally $4 \div 5$ kW while our competitors use a side extruder or a regenerator rated 50 kW and over. This exclusive recovery system allows the use of extruders with a size proportioned to the real production.

Side extruder structurally implies the use of a bigger main extruder, whose size must be larger than the side extruder. This leads to high energetic inefficiency and to a degradation of the plastic material because of the additional extrusion process, defects that can be avoided using our technology.



Cold Refeeding





Your core matters



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Further information and sampling at
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*The right way through
each converting activity.*



High performances with COLINES® CPP Lines

In May COLINES® will testrun in the Nibbia factory a line for CPP film with a useful web width of 2800 mm and destined to the North European market. This line, belonging to the POLYCAST® series, has been designed to reach high performances (up to 400 m/min for thicknesses lower than 25 µm) and the best production quality.

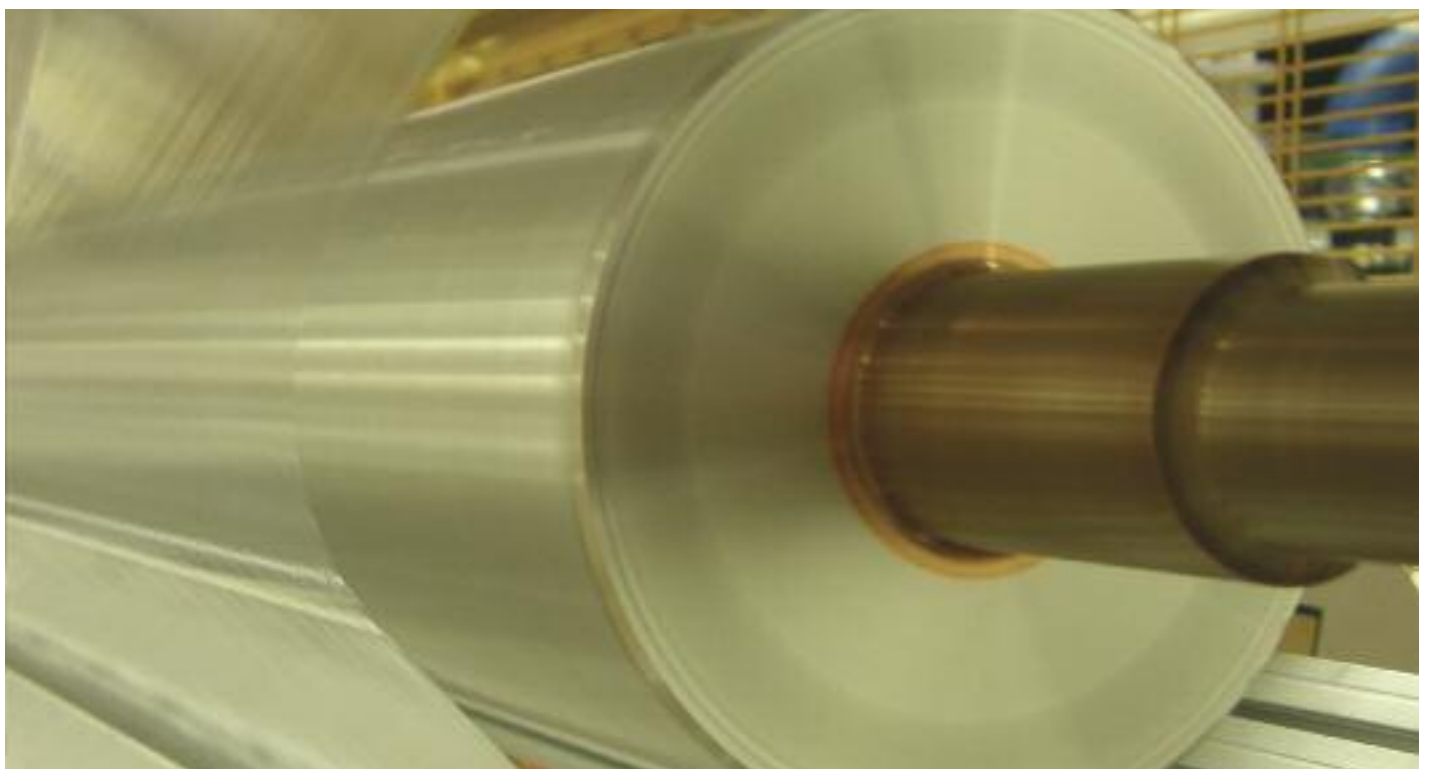
On an equivalent line, 3000 mm wide, COLINES® can guarantee a production of 1315 kg/h of 20 µm film at a speed of 400 m/min.

COLINES® will supply also a system for shortening the aging time and for speeding-up the logistics of the final product. This will have thus the optimal features for being used by converters on their new processing machines (printing, lamination, etc) which require a perfect film to reach very high working speeds.

EASYCAST®, the easiest way to enter the CPP Market

EASYCAST® is a coextrusion cast line to produce 3-layer CPP film representing the entry-level of our lines: it offers good performances with a productivity of over 450 kg/h and, being very compact, requires a limited space for installation. The EASYCAST® line shown during a recent Open House at COLINES® Azzate has a useful web width of 1250 mm and is destined to the production of metallizable and food lamination film.

During the testrun, the line reached an output of 500 kg/h at a speed of 300 m/min.



*The latest alternative in rigid
sheet applications*

BubbleGuard

THE FIBERLESS SOLUTION BY IMBALLAGGI PROTETTIVI

Our associated company IMBALLAGGI PROTETTIVI is currently working on the operation "Fibreless" which aims to diminish or eliminate all types of fibre that – according to current communitarian norms - cannot enter in direct contact during the packing-up process of products commercialized in the EEC for food, cosmetic, and medical market segments. A new fibre-free concept has been developed: it delivers modularity, steadiness, convenience and simplicity at the same time by considering a standard EURO-pallet as a base, on the top of it the "rail-board" first and then the flanges, both made in BUBBLE GUARD® BOARD.

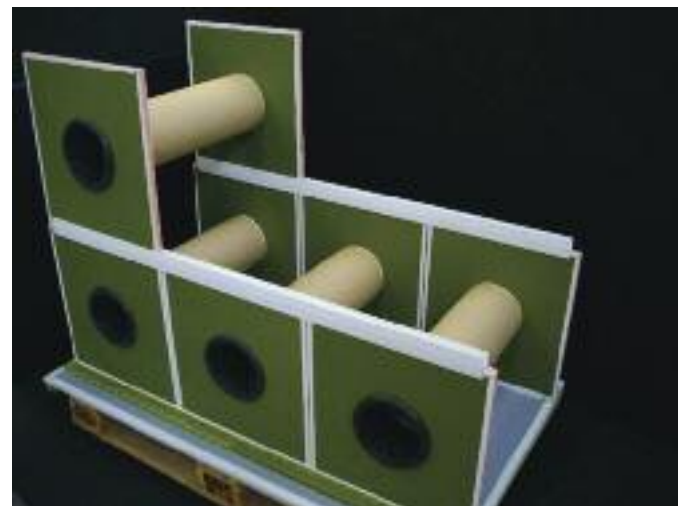
This alternative concepts features considerable advantages:

- they are fibre-free (are made of 100% PolyPropylene)
- they are very resistant, despite the light weight when transported: this lightness facilitates also the handling by the operators
- they can be delivered already assembled
- they can be washed / sanitized (sealed edges)
- they are fully recyclable, they fear no humidity, detergents, nor chemical agents
- they cannot become receptacles of infesting agents (sealed edges).

Flanges produced by IMBALLAGGI PROTETTIVI are basically equivalent to the other ones in terms of dimensions; the real advantage lays in the weight and in all aspects connected to it – directly or indirectly - (transport costs, CO2 released in the environment, benefits for the operators, etc.)

If you consider for example a lorry, completely loaded with pallets 1200 x 800, with BUBBLE GUARD® BOARD you can load about 930 kg less of sheer packing material on a complete truck (which is about 60/65% of the total packaging weight).

By using returnable packages or by lightening vehicles by replacing heavy wooden-particle components with BUBBLE GUARD® BOARD, IMBALLAGGI PROTETTIVI helps you to reduce the impact on the environment.



The company Poligof SpA based in Pieve Fissiraga (Lodi) has chosen to invest in COLINES® technology for the production of breathable and embossed film with cast as well as blown process.

Hygienic/Tech film

AIRCAST® and DIAPERBLOWN®: COLINES® AT THE SERVICE OF POLIGOF

Born from the cooperation with undisputed experts in the hygienic film field, the AIR CAST® line represents the most innovative technology for cast breathable film thanks to the following equipment:

- new MDO unit for a total control of film breathability;
- chill-roll unit for a constant and uniform cooling of the material for unrivalled film characteristics;
- multiple rolls winding and slitting with glue-less changeover;
- double-scan thickness measuring unit with automatic adjustment (before and after the material monostretching).

The DIAPERBLOWN® line for the production of embossed film is the first model of the series produced by COLINES® and ensures maximum freedom in customer's production choice thanks to 5-layer coextrusion.

Among the main technical characteristics we have:

- in-line embossing;
- inductive thickness measuring unit with air-system for the automatic adjustment of the film profile;
- double winding unit each one featuring its individual embossing unit, an individual corona treatment and glue-less changeover with multi rolls winding and slitting.

Poligof has been working in polyethylene film extrusion since 1967; it is managed by Barbara and Cesare Gatti, sales manager and technical manager respectively. Since many years Poligof has specialized in the production of breathable film for sanitary applications (back-sheet for diapers for adults and babies).



The new 7-Layer Barrierfilm running now at B-PACK®

A new BARRIERBLOWN® line for the production of reclosable film is running at our associated company B-PACK®.

Thanks to the characteristics of this line B-PACK® has studied a 7-layer film for barrier packaging, with a thickness varying from 45 to 80 microns, featuring a very good transparency and, unlike products already existing on the market, free from smells that could weaken food organoleptic properties.

This kind of product is used in the food sector, mainly for cheese and processed meat (salami) and it is destined to a niche market which is rapidly growing above all in Europe and in the US.

Besides reclosable film, the BARRIERBLOWN® line is able to produce a wide range of products for food applications ranging from film for lamination to film for thermoforming.

Latest developments in refrigerators' technology

The extrusion line of soft PVC profiles to be used for the gaskets of the refrigerators has been recently renewed. With the elongation of the cooling tanks to 9 meters we have achieved 16 m/min of extrusion speed (depending on the design of the profile and on the formulation).

This operation has been facilitated also by the insertion of the controls on the touch screen, available in multilingual for the control of the extrusion line as well as for the automatic cut at 45°, and adopted, for uniformity, also on welding machines and inserting units.

Success of extrusion, on the same line, even for TPE profiles without changing screw and the cutting blades, but only by changing the extrusion parameter.



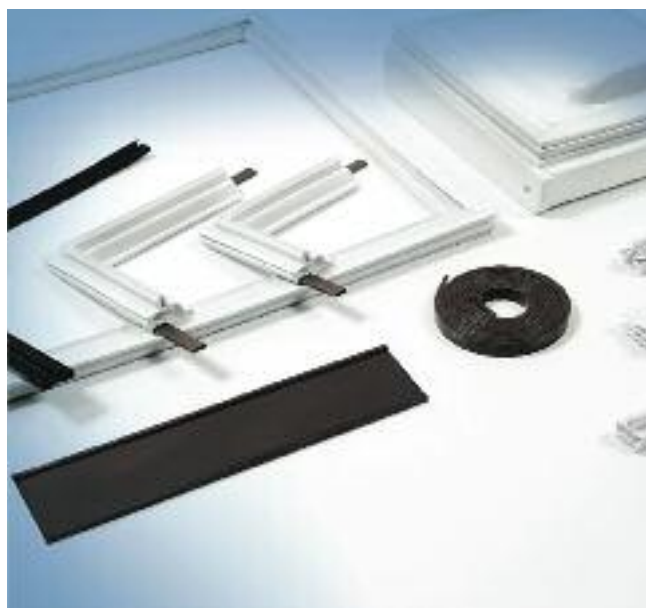
The MyCore® Concept

COLINES® presents the new hi-tech equipment for the production of patented MYCORE®, cores based on PP resins conceived for the various sectors of the plastic film production industry, converters, couplers and all those companies that now use cardboard cores though knowing their limits.

MYCORE® cores present great advantages, high flexibility but above all economy and environmental compatibility: once used, these cores can be further recycled, with consequent notable savings in terms of raw material and storing space.

Resistance to atmospheric elements improves their use in all exterior environments such as agriculture.

The choice to install a MYCORE® producing the cores in house nullifies transportation costs and minimizes storage needs, with regard to both the space dedicated to the product and the immediate recovery of waste.





ELAV will show at PLAST 2012
the latest innovations in the
field of automation for extrusion
lines:

inb Container

Compact solution for the control and automation of large lines: a single conditioned container houses all the power, control and supervision equipments; it is easy to maintain, guarantees a saving in terms of space and a better cooling for a longer components' life.



Cc Control Cabinet

This is the traditional solution for the control of medium and small lines, strictly dimensioned, designed and manufactured considering:

- easy and cheap connection
- efficient cabinet cooling
- maintenance ergonomics

Remote Supervisor

An extrusion end line station for:

- Production management with LIVECONTROL
- Reports print in real-time
- Label print

It is available also in the version OFFICE STATION, a wi-fi "all in one" remote control station for:

- monitoring of one or more lines at the same time
- check of the production data
- storing production data and alarms
- reports' print

HMI HMI - Human Machine Interface

Synergy among ELAV experience, the latest design and Siemens Technology have developed into a high level of supervision, easy operation and with advanced functions allowing:

- Tailor-made solutions. Custom-made supervision with possibility to do changes and upgrading.
- Storing of thousands of recipes, production data, advanced diagnostics graphics.
- Human-friendliness: line graphics display at different detail levels.

Safe and fast parameters setting by FAST ADJUST solution.



LC Live Control

This multitasks handling system enables full line monitoring by storing files into a permanent data base and by analysing sensible data on real time. It definitely helps production planning as well as waste reduction.

- Preset back-up and access levels by passwords
 - Availability of additional modules for:
 - a). Production quality control with storing defects (out of tolerance, thickness, temperatures, melt pressure, etc.) on single order/roll
 - b). Power consumption and costs check
 - c). Production parameters storing
- The production report can be printed by shifts day/month, orders, customers items, etc.

LIVE CONTROL is installed on both ENDLINE and OFFICE station.

VS Webcam

It is possible to keep under control the 'critical' points of the line with several webcams. In this way the line can be monitored by exploiting the web connection wherever in the world you may be.

SW Line Control Software

The use of modulus combined with the handling of a wide range of extrusion lines have developed through the years safe and flexible software coming from our Software Engineering Team's competence with latest market technologies.

- ELAV huge files storage system enables a wide range of control solutions tested and guaranteed.
- Modular programming allows a high system set-up and large room for custom made solutions.
- Multiple experiences on FIELDBUS with possibility to integrate PROFIBUS DP or PROFINET. Integration with several communication partners in MODBUS, TCP/IP or directly on FIELDBUS.
 - Latest close-loop control methods, gravimetric set-up, fast change-over, ready for installation of quality control and handling applications.
 - ELAV consider the extrusion lines as an engineering tool, able to create a product simply by entering the dimensional data and also guarantees top quality level by taking feedback from measurement instrument.

EK Easy key, the quick and safe access

ELAV has developed a new system for extrusion line management access: Easy Key.

This system is composed by a magnetic badge containing the operator data access codes. This guarantee safety, thanks to the univocal code and fast access to the line control and supervisioning.

TS Teleservice (modem service) internet teleassistance - the new frontier of teleassistance

This system exploits at its best the possibilities offered by Internet and makes of your line a window on the web by cutting down the costs and increasing the speed and the connection performances. The efficacy of tele-assistance is widened by our project technology concentrating the system intelligence in a few points (all reachable in remote) and by the use of selected components for this scope. Wide evolution in this way has been achieved by cooperating with Siemens, for which ELAV is system integrator.

RS Tablet or smartphone, the control of your line "in your hands"

The remote monitoring of the line is now possible also using your tablet or smartphone, thus widening the means and possibilities of control

E-mail

You can receive e-mails about your lines status directly on your Smartphone. Quick assistance in case of any trouble on your line.



WORLDWIDE SALES NETWORK



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