ELECTRONIC SYSTEMS

THE POWER OF CONTROL

Product Catalogue

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

INDEX

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

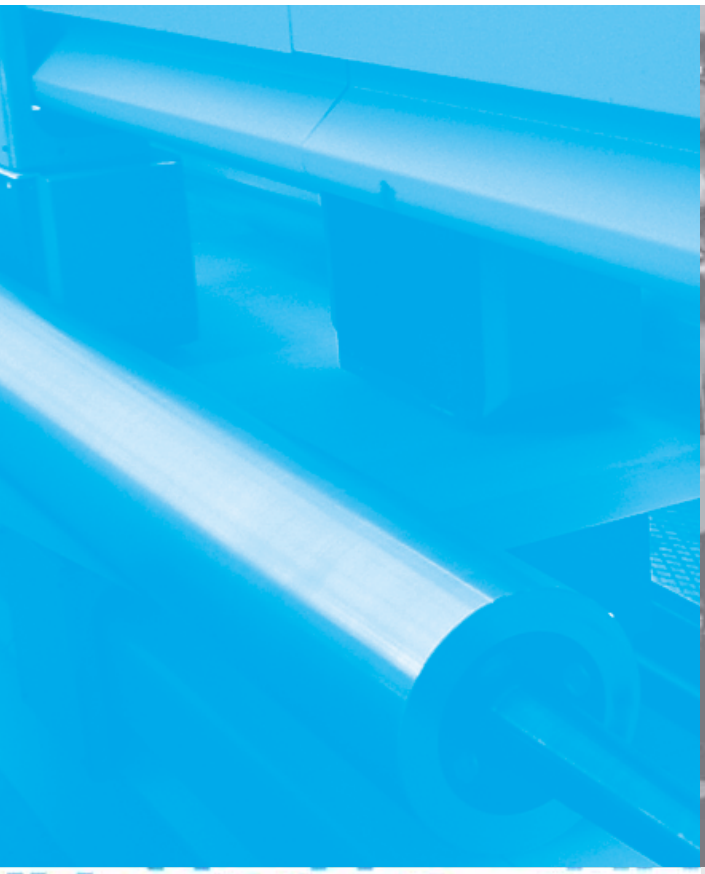
The Company

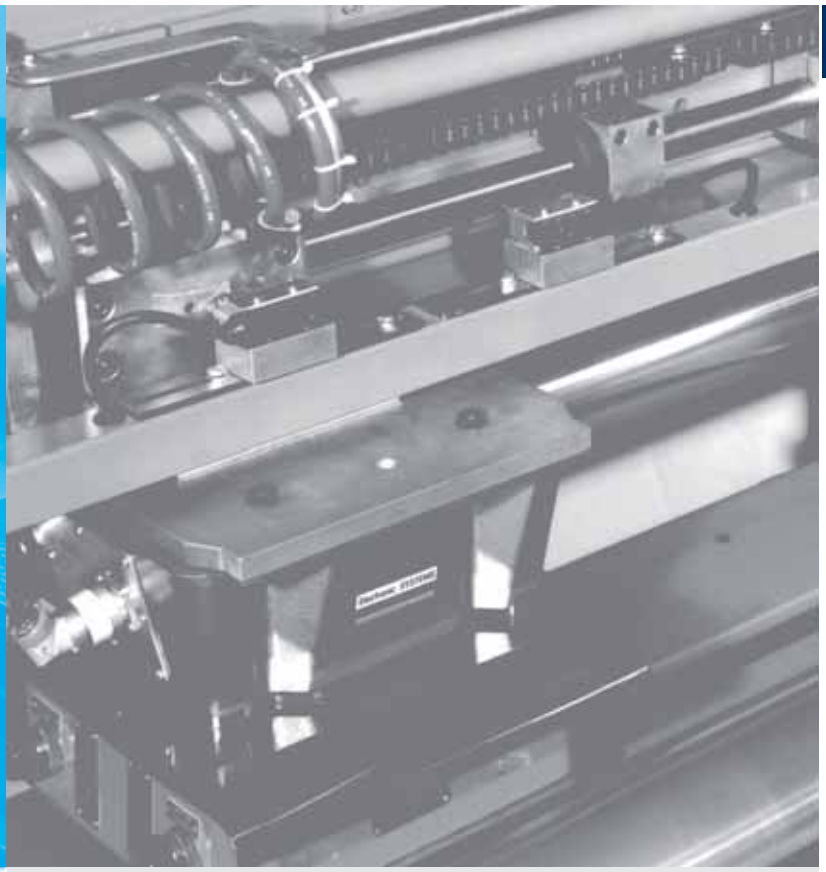
30 since 1979

Nowadays the safe and efficient management of all production cycles in the rubber and plastic material industries requires to always use the most advanced monitoring and control systems.

The action of Electronic Systems, as well as its commitment to technology, aim to develop advanced solutions in the field of electronics and computer aided process planning applied to any measurement, control and automation systems. The deep process knowledge, along with the continuous research, allow Electronic Systems to operate on both simple applications and extremely complex plants.

Electronic Systems operates in a high-technology sector, fast and continuously developing, and it employs several resources in the research & development area, as well as for the development of new technologies and for the improvement of existing ones. Thanks to its important references in Italy and abroad, today Electronic Systems is one of the world's leaders in the sector of production cycle measurement, control and automation.



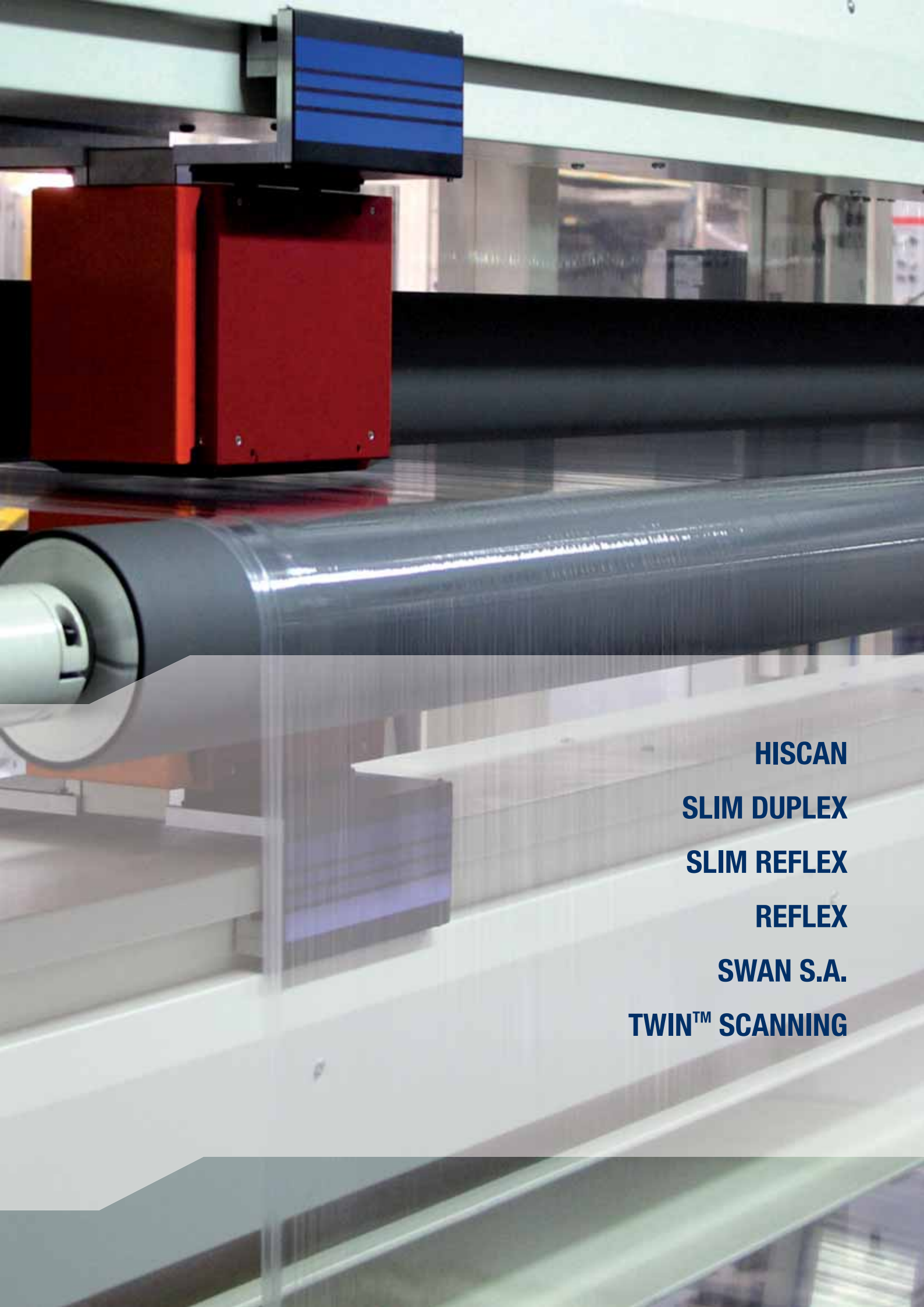


Mission

Electronic Systems is making continuous efforts to deepen its knowledge and increase its competitiveness on the automation market, as well as to develop new modern gauges and sensors, so to boost its own ability to meet the requirements of the global market. The Group deeply trusts the new generation of shareholders, believing that they will be able to follow the path taken by its President, maintaining the leadership of the sector that has always been characterizing the company's history. It is very important to underline that, unlike what happened to other companies, Electronic Systems has never experienced any downturn over the years. We wish to reward and thank our President, who showed not only great expertise and market insights, but also a significant and remarkable administrative capacity allowing Electronic Systems to be counted by right among the Italian companies with the most important tradition.

History

The thirty-year history of Electronic Systems goes hand in hand with the brilliant career of our President, Mr Alessandro Masotti. In the 70's he was already working as Technical Manager in a company manufacturing static controllers for direct current motors and, subsequently worked in an Italian leading company for inverter manufacture and operation. Then, driven by his strong passion, Mr Masotti dedicated to the development of a new business, and in a very short time acquired great expertise in the industrial equipment. On March 8th, 1979 he founded "Electronic Systems" in Dormelletto, province of Novara, Italy. First of all he specialised in the sector of automation and, more specifically, in the manufacturing of inverters for the Italian market. However, the company's core business was the production of sorting systems for Poste Italiane (Italian postal services). The company, consisting of a reduced number of individuals, started developing its engineering potential not only in the field of automation, but also in the field of meters, where it expanded thanks to Masotti's clever intuition: in a few time, this field experienced a great increase not only in the quality of products, but also in the quality of the company itself.



HISCAN

SLIM DUPLEX

SLIM REFLEX

REFLEX

SWAN S.A.

TWIN™ SCANNING

SCANNERS

Scanners can easily be integrated in existing units without any alteration of the structure. In case of installation with reduced space availability, extremely lightweight and small-size scanners are available.

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

HISCAN

HISCAN is an automatic scanning unit with "O frame" mechanical structure to measure in transmission mode.

MAIN FEATURES

- Light supporting structure with stainless steel beams
- Protection covers easy to remove during the mechanical maintenance
- Sensor sliding system with high mechanical and long lasting stability
- Easy to assemble: adjustable inclination

HISCAN is an automatic scanner with reduced depth and optimized mechanical configuration.
For this reason it is particularly developed for a long range of industrial applications and even for wide production lines.
The frame with its particular "O" shape is composed of two solid IPE beams, fastened to the stainless-steel terminals.
The solid sliding carriage device, which can house up to two measurement sensors, is driven by linear guides with relative supporting elements and sliding sleeves. The scanning speed is adjustable and the sensor is positioned with high accuracy.

HISCAN can be easily integrated on existing structures without any substantial modification.

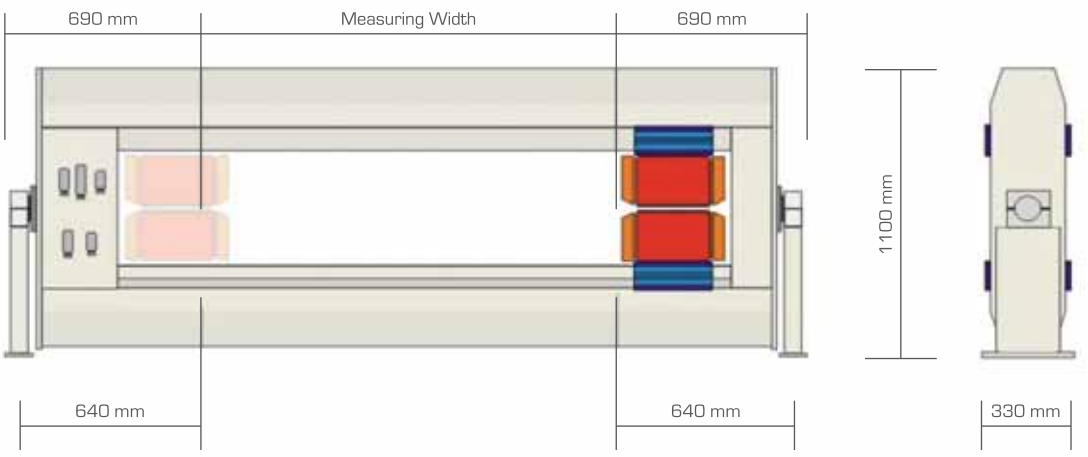
FIELD OF APPLICATION:

ADHESIVE TAPES
BIAX EXTRUSION
BLOWN FILM
CAST FILM
COATING & LAMINATING
COMPOSITES
EXTRUSION COATING
NONWOVENS
PAPER
PVC CALENDERING
RUBBER
SHEETS & FOILS

HISCAN automatic scanner can be equipped with the following measurement sensors included in the range of Electronic Systems products:

- ISOSINT K
- ISOSINT H
- PREXISION
- DIGILAYER

LAY-OUT OF THE SCANNER AND APPROXIMATIVES DIMENSIONS

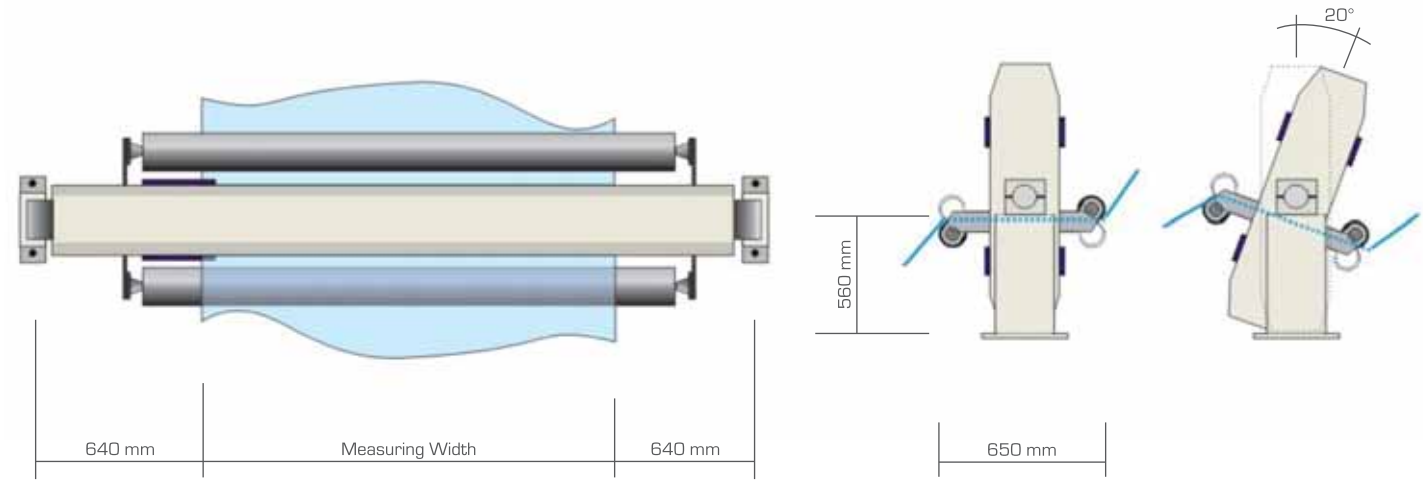


Measuring Field (mm)	Weight (Kg)
1.450	495
1.650	525
1.850	555
2.050	585
2.250	615
2.450	645
2.650	675
2.850	705
3.050	735
3.250	765
3.450	795
3.650	825
3.850	855
4.050	885

TECHNICAL FEATURES

Scanner inclination angle	max 20°
Operating scanning speed	max 200 mm/s
Standard paint	RAL 7035
Operating temperature	10 ÷ 50°C [1]
Options	- material guiding rolls (standard diameter 148 mm, winding angle material ± 10°) [2] - ex proof construction (atmosphere explosive - zone 2)

(1) : different range of temperature are available on request
(2) : to be evaluated accordingto the tension performedby the production line onthe material



ELECTRONIC SYSTEMS
THE POWER OF CONTROL

SLIM DUPLEX

SLIM DUPLEX is an automatic scanning unit with "O frame" mechanical structure to measure in transmission mode.

MAIN FEATURES

- Light supporting structure with steel tubular beams
- Protection covers easy to remove during the mechanical maintenance
- Sensor sliding system with high mechanical and long lasting stability
- Easy to assemble: adjustable inclination

SLIM DUPLEX has an harmonious and innovative structure using a particular combination of stainless-steel tubular panels and terminals. Nevertheless the structure keeps unchanged all the solid and compact characteristics proving great accuracy and reliability, typical of the measurement systems with beams.
The sliding carriage device is solid and compact and allows the housing of a measurement sensor.
During the scanning phase, the sensor is driven by linear guides with relative supporting elements and sliding sleeves. The scanning speed is adjustable and the sensor is positioned with high accuracy.

SLIM DUPLEX is particular light and with reduced dimensions. For this reasons, it represents an ideal device suitable designed for any industrial applications in limited space and weight.

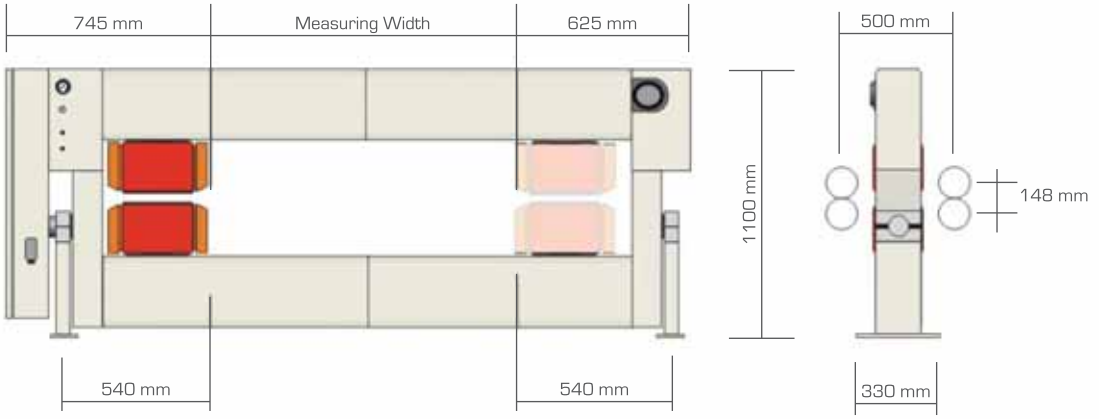
FIELD OF APPLICATION:

BLOWN FILM
CAST FILM
COATING & LAMINATING
COMPOSITES
EXTRUSION COATING
PVC CALENDERING
RUBBER
SHEETS & FOILS

SLIM DUPLEX automatic scanner can be equipped with the following measurement sensors included in the range of Electronic Systems products:

- ISOSINT K
- ISOSINT H
- ESSAIR™ DUPLEX
- PREXISION
- DIGILAYER

LAY-OUT OF THE SCANNER AND APPROXIMATIVES DIMENSIONS

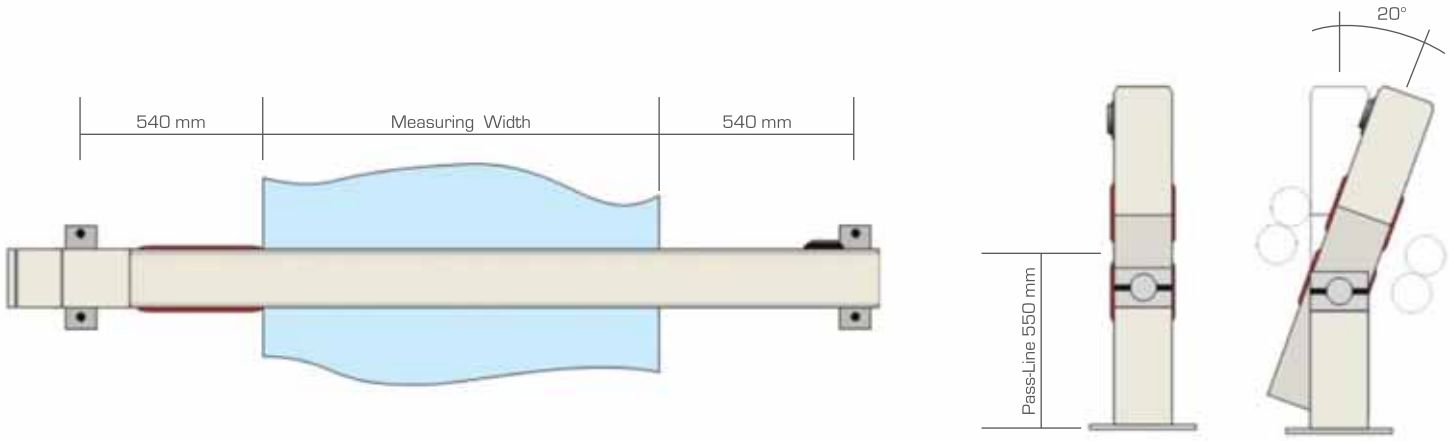


Measuring Field (mm)	Weight (Kg)
900	420
1.100	440
1.300	460
1.500	480
1.700	500
1.900	520
2.100	540
2.300	560
2.500	580
2.700	600

TECHNICAL FEATURES

Scanner inclination angle	max 20°
Operating scanning speed	max 200 mm/s
Standard paint	RAL 7035
Operating temperature	10 ÷ 50°C [1]
Options	- material guiding rolls (standard diameter 148 mm, winding angle material ± 10°) [2] - ex proof construction (atmosphere explosive - zone 2)

(1) : different range of temperature are available on request
(2) : to be evaluated according to the tension performed by the production line on the material



ELECTRONIC SYSTEMS
THE POWER OF CONTROL

SLIM REFLEX

SLIM REFLEX is an automatic scanning unit with "O frame" mechanical structure to measure in reflection mode. A reference-roll, on which the material is leaning, is part of the structure.

MAIN FEATURES

- Light supporting structure with steel tubular beams
- Protection covers easy to remove during the mechanical maintenance
- Rectified and balanced measurement roll, equipped with low friction bearings
- Easy to assemble: adjustable inclination

SLIM REFLEX has an harmonious and innovative structure using a particular combination of stainless-steel tubular panels and terminals.
Thanks to the particular reduced dimensions and weight, it can be easily integrated on existing structures. During the scanning phase, the sensor is driven by linear guides with relative supporting elements and sliding sleeves. The scanning speed is adjustable and the sensor is positioned with high accuracy.

SLIM REFLEX is particular light and with reduced dimensions. For this reasons, it represents an ideal device suitable designed for any industrial applications in limited space and weight.
Moreover in case of particular requirements (for example, low material tensions or minimum winding angle) the reference roll can be motorized or synchronized with the production line speed.

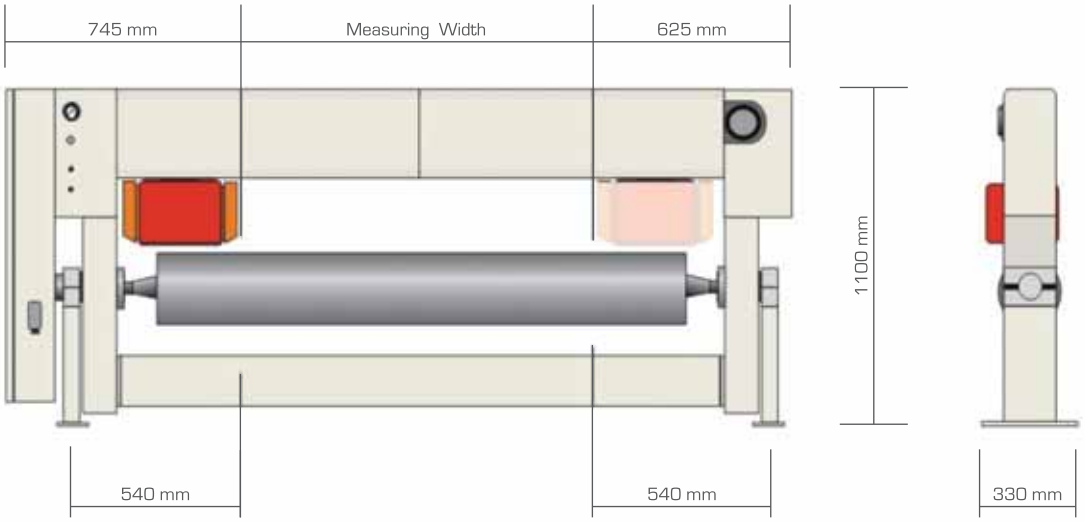
FIELD OF APPLICATION:

COMPOSITES
RUBBER
SHEETS & FOILS

SLIM REFLEX automatic scanner can be equipped with the following measurement sensors included in the range of Electronic Systems products:

- ESSAIR™ REFLEX

LAY-OUT OF THE SCANNER AND APPROXIMATIVES DIMENSIONS

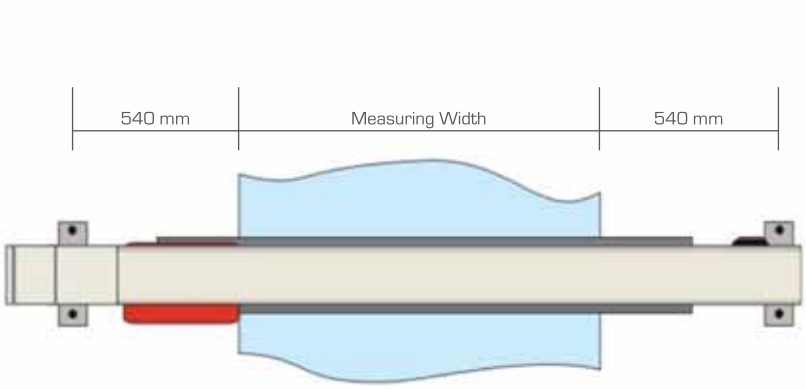


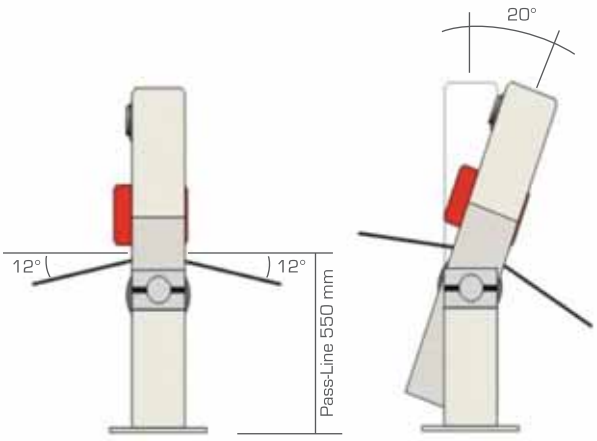
Measuring Field (mm)	Weight (Kg)
900	330
1.100	355
1.300	380
1.500	405
1700	430
1.900	455
2.100	480
2.300	505

TECHNICAL FEATURES

Winding angle material	min. 12° [2] (typical)
Scanner inclination angle	max 20°
Operating scanning speed	max 150 mm/s
Standard diameter of the reference	220 mm
Standard material of the reference roll	aluminium
Standard paint	RAL 7035
Operating temperature	10 ÷ 50°C [1]
Options	- material guiding rolls - "lump-detector" safety system - driven or indipendent motorization of the reference roll - reference roll with anti-adhesion treatment

(1) : different range of temperature are available on request
(2) : to be evaluated according to the tension performed by the production line on the material





ELECTRONIC SYSTEMS
THE POWER OF CONTROL

REFLEX

REFLEX is an automatic scanning unit with "O frame" mechanical structure to measure in reflection mode. A reference-roll, on which the material is leaning, is part of the structure.

MAIN FEATURES

- Easy and compact structure with high resistance to mechanical vibrating stress
- Protection covers easy to remove during the mechanical maintenance
- Sensor sliding system with high mechanical and long lasting stability
- Rectified and balanced measurement roll, equipped with low friction bearings
- Easy to assemble: adjustable inclination

REFLEX is a scanner designed to stand extreme working conditions; thanks to the easy and compact stainless steel structure it is reliable and efficient.
During the scanning phase, the sensor is driven by linear guides with relative supporting elements and sliding sleeves. The scanning speed is adjustable and the sensor is positioned with high accuracy.

REFLEX can be easily integrated on existing structures without any substantial modification. Moreover in case of particular requirements (for example, low material tensions or minimum winding angle) the reference roll can be motorized or synchronized with the production line speed.

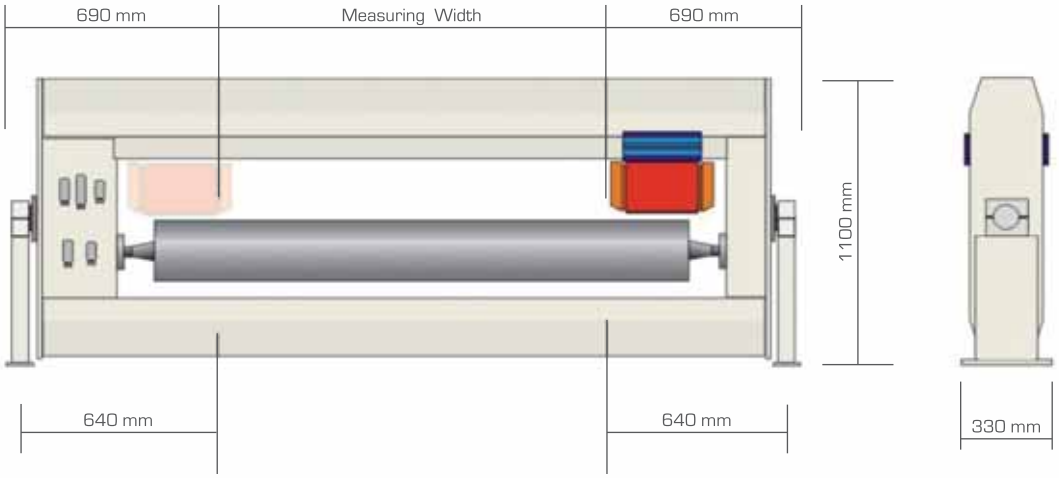
FIELD OF APPLICATION:

COATING & LAMINATING
COMPOSITES
PAPER
PVC CALENDERING
RUBBER
SHEETS & FOILS

REFLEX automatic scanner can be equipped with the following measurement sensors included in the range of Electronic Systems products:

- ESSAIR™ REFLEX

LAY-OUT OF THE SCANNER AND APPROXIMATIVES DIMENSIONS

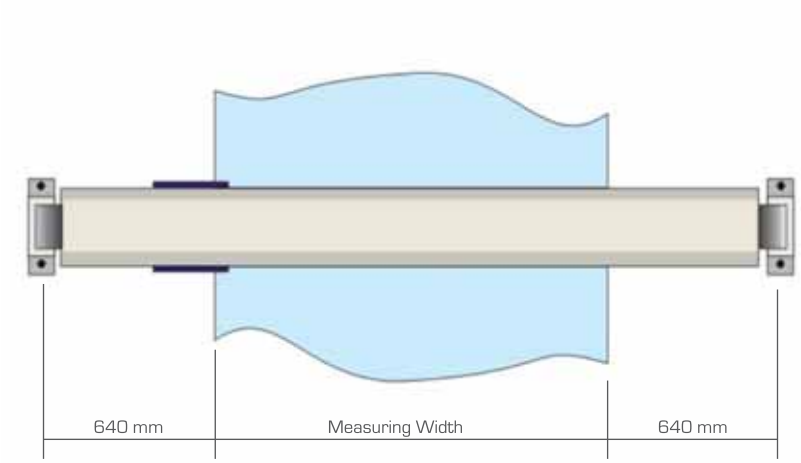


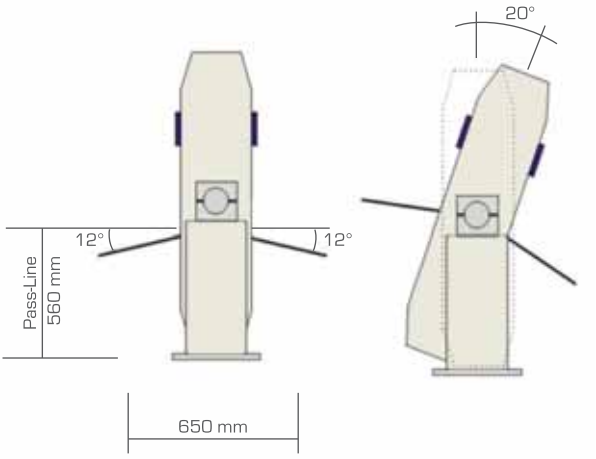
Measuring Field (mm)	Weight (Kg)
1.450	540
1.650	570
1.850	600
2.050	630
2.250	660
2.450	690
2.650	720
2.850	750

TECHNICAL FEATURES

Winding angle material	min. 12° [2] (typical)
Scanner inclination angle	max 20°
Operating scanning speed	max 180 mm/s
Standard diameter of the reference roll	220 mm
Standard material of the reference roll	aluminium
Standard paint	RAL 7035
Operating temperature	10 ÷ 50°C [1]
Options	- material guiding rolls - "lump-detector" safety system - driven or indipendent motorization of the reference roll - reference roll with anti-adhesion

(1) : different range of temperature are available on request
(2) : to be evaluated according to the tension performed by the production line on the material





ELECTRONIC SYSTEMS
THE POWER OF CONTROL

SWAN S.A.

SWAN S.A. is a reflection system engineered for direct thickness measurement.
The system is composed of the following elements:

- **Single-beam scanner with bearing structure**
- **Reference roll**
- **SWAN air-blow measure sensor**

MAIN FEATURES

Automatic reference roll tracking system

Extremely durable and mechanically stable sensor shift system

Protection against accidental contact with the material being measured

Simple and compact structure with high shock resistance

Suitable for industrial applications with maximum machine width of 3000 mm

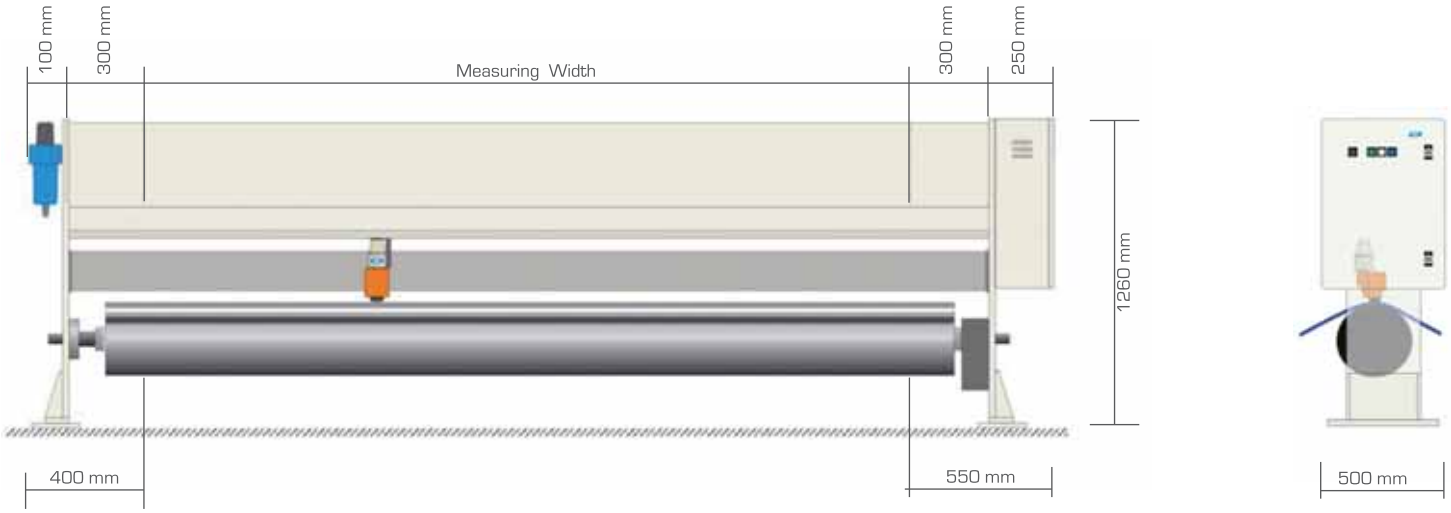
The bearing structure is equipped with a steel tubular beam secured to two supports. The supports can be fitted onto machine structure in the most suitable configuration for the installation, without any alteration of the structure. The main beam features special sliding rails and couplings where the measuring element is fitted, which, in turn, is equipped with the sensor holder, perpendicular to the reference roll. Scanner automation enables calibrated movement of the sensor towards the roll until the most suitable position for measuring is reached. When it reaches the set position, the sensor starts shifting to measure the cross profile.

FIELDS OF APPLICATION:

COATING & LAMINATING
PVC CALENDERING
RUBBER
SHEETS & FOILS

The SWAN S.A. measuring system uses sensors with the exclusive Electronic Systems patent ESSAIR™ technology which is ideal for direct, contactless thickness measuring. Designed over 10 years ago and used in thousands of installations all over the world, such measure modules have been tested in several industrial applications, even for heavy duty, proving highly reliable and safe.

LAY-OUT OF THE SCANNER AND APPROXIMATIVES DIMENSIONS



TECHNICAL FEATURES

Useful width measuring range	900 ÷ 1.600 mm with 100 mm steps 1.600 ÷ 3.000 mm with 200 mm steps
Winding angle material	min 12° [1] (typical)
Operating scanning speed	max 150 mm/s
Standard diameter of the reference roll	300 mm
Standard material of the reference roll	aluminium
Standard painting	RAL 7035
Operating temperature	10 ÷ 50°C [2]

(1) : to be confirmed depending on how much the production line pulls the material
(2) : different range of temperature are available on request

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

TWIN™ SCANNING

TWIN™ SCANNING is an automatic scanner with "O frame" type mechanical structure to measure in trasmission mode.
More than a standard traditional scanner, the one patented by Electronic Systems is an exclusive measurement method. A couple of sensors equipped with independent drive is fitted onto the scanner. Beyond ensuring operation even in case of malfunction of one sensor, this guarantees a number of advantages for system calibration and quality and speed of the production line response.

MAIN FEATURES

- Double read rate during scanning
- System designed to obtain accurate and fast automatic controls
- Self-calibration during production without interruption of reading
- Extremely stable sensor shift systems with high mechanical life
- Completely fail-safe system: operating even with one sensor only

TWIN™ SCANNING is an exclusive and fast method for cross-sections evaluation, particularly suited to reduce material waste, mainly when the production process requires fast and precise adjustments.

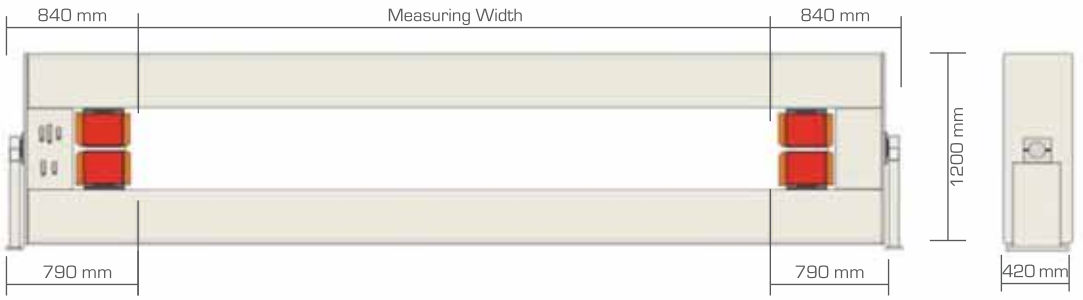
FIELDS OF APPLICATION:

ADHESIVE TAPES
BIAX EXTRUSION
BLOWN FILM
CAST FILM
COATING & LAMINATING
COMPOSITES
EXTRUSION COATING
NONWOVENS
PAPER
PVC CALENDERING
RUBBER
SHEETS & FOILS

The TWIN™ SCANNING automatic scanner is equipped with the following measure sensors belonging to the product range of Electronic Systems:

- ISOSINT K
- ISOSINT H
- PREXISION
- DIGILAYER

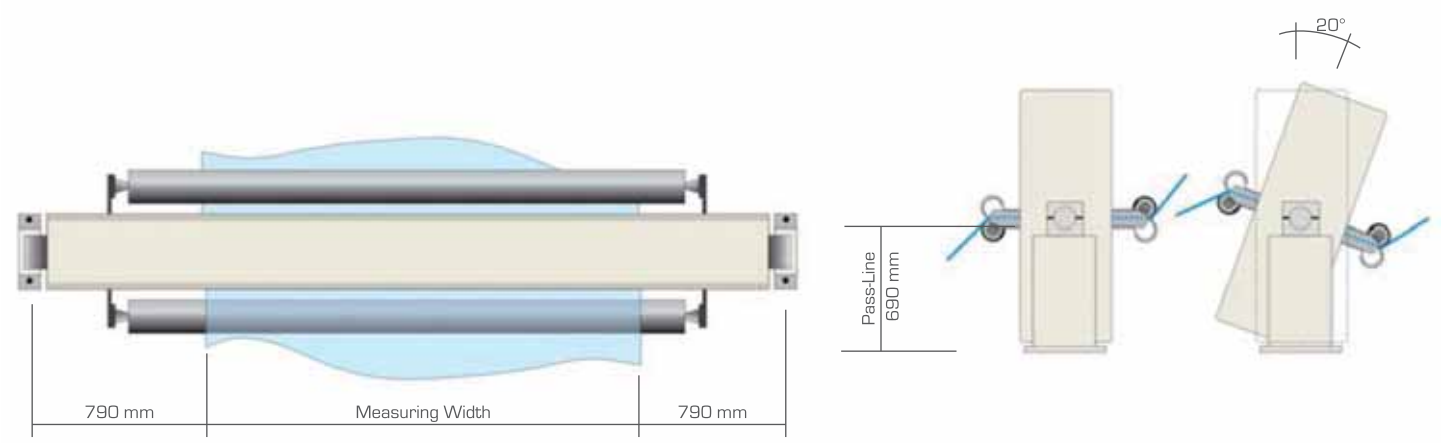
LAY-OUT OF THE SCANNER AND APPROXIMATIVES DIMENSIONS



TECHNICAL FEATURES

Useful width measuring range	1.600 ÷ 4.000 mm with 200 mm steps 4.000 ÷ 7.000 mm with 500 mm steps
Scanner inclination angle	max 20°
Scanning speed (for each sensor)	adjustable from 20 to 250 mm/s
Standard painting	RAL 7035
Operating temperature	10 ÷ 50°C [1]
Options	guide rollers (standard diameter 148 mm, angle of wrap ± 5°) [2]

(1) : different temperature range available on request
(2) : to be evaluated depending on how much the production line draws the material
NOTE: available only for version with measurement width max. 4.000 mm



ISOSINT K/H

ESSAIR™ REFLEX

SWAN REFLEX

SWAN FIXED POINT

ESSAIR™ DUPLEX

PREXISION

DIGILAYER

SENSORS

Electronic Systems can supply several types of sensors for different applications: the Beta rays measure sensor represents the most widespread and effective control method for materials produced in sheets and foils, while the measuring modules equipped with ESSAIR™ technology and designed by Electronic Systems more than 10 years ago are used in thousands of installations all over the world and have been tested in several industrial applications, even for heavy duty, proving highly reliable and accurate.
The range is complemented by the low emission X-ray sensor (X-Soft) - one of the most widespread and effective method to control films and foils - and by the DIGILAYER series IR measure sensors for on line, contactless thickness measurement of barrier layers inside multi-layer films.

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

ISOSINT K/H

FIELD OF APPLICATION:

ADHESIVE TAPES
BIAX EXTRUSION
BLOWN FILM
CAST FILM
COATING & LAMINATING
COMPOSITES
EXTRUSION COATING
NONWOVENS
PAPER
PVC CALENDERING
RUBBER
SHEETS & FOILS

ISOSINT K and H represents the most popular and effective method for the control of materials made of sheets or foils.

MAIN FEATURES

High protection container, solid and compact, for any type of industrial application, even in dangerous environments

High accuracy standards,reliable and simple to use

Equipped with microprocessor: measurement treatment and conversion and support during data transmission through Profibus

ISOSINT series measurement sensors widely respond to all the requirements and regulations for both the operators and environment safety.
Therefore, thanks to the consolidated knowledge and experience of Electronic Systems in planning and using devices which contain radioactive sources, it can be considered totally safe.
The structure of the container, the quality of nuclides, the radiation shielding and geometry, limited by obturators, and all the other details, have been studied with extreme care and attention to ensure the highest level of safety while operating.

The sensor can be personalised depending on specific needs required by the application:

- Edges detector
- Modification of the Gap through material passage and measurement Spot
- Temperature probes for air compensation

ISOSINT K and H sensor can be assembled on board of any scanning device that works for transmission between the ones included in the range of Electronic Systems products:

- SLIM DUPLEX
- HISCAN
- TWIN™ SCANNING
- TWIN™ BIAX

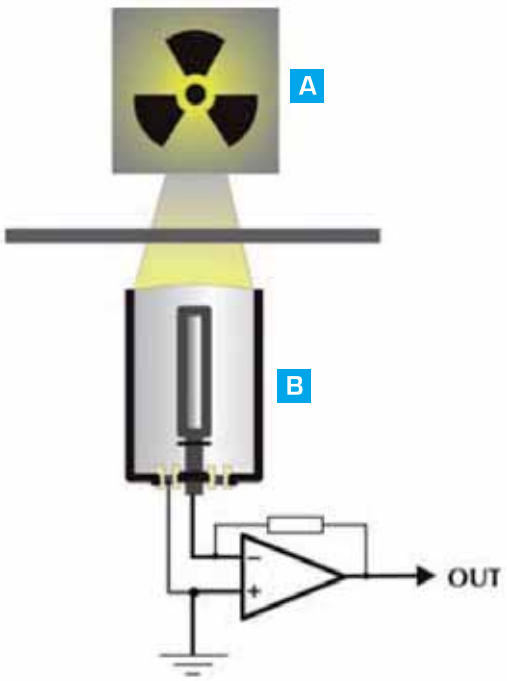
MEASUREMENT METHOD:

The sensor is composed of two parts:

A Source holder properly shielded, containing a source of beta particles (high speed electron emission)

B Receiver, containing a Beta particle detecting device (ionizing chamber) and the electronic parts necessary for its functioning

The particles emitted by the source are partly absorbed by the material interposed to the receiver. A dedicated microprocessor provides a pre-elaboration of the measurements detected by the sensor. The adjustment of the system and the calibration are carried out automatically.
However, the operators can activate with simple settings any control sequence as provided in the program.



TECHNICAL FEATURES

Isotope	**krypton (Kr85) - enriched**	**strontium (Sr90)**
Working life (activity halving)	10 ½ years	28 ½ years
Measurement range	**5 ÷ 1.000 g/m²**	**100 ÷ 5.000 g/m²**
Accuracy	0,15 % ≥ 0,15 g/m²	0,15 % ≥ 1,5 g/m²
Scale/Display Resolution	0,1 g/m²	1 g/m²
Reading Spot	20 mm	25 mm
Gap	12 mm (typical)	25 mm (typical)
Pass-line position	½ gap	½ gap
Operating temperature [1]	10 ÷ 50°C	10 ÷ 50°C

(1) : in case of higher temperature it is possible to use cooling unit

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

ESSAIR™ REFLEX

ESSAIR™ REFLEX is a measurement technology, patented by Electronic Systems, ideal for direct thickness measurement without contact.

MAIN FEATURES

- It does not employ radioactive sources
- Direct thickness measurement expressed in micron or mm
- No contact with the material
- Automatic calibration system

ESSAIR™ REFLEX is installed on scanners equipped with reference roll for measurement in reflection mode, where the same roll represents the zero reference to determine the measurement values.
Is used for flexible materials guaranteeing a good adherence to the reference roll.

The sensor can be personalised depending on specific needs required by the application:

- Edges detector
- Security system to detect lumps and/or extra thickness (**lump-detector**), external to the measurement system

FIELD OF APPLICATION:

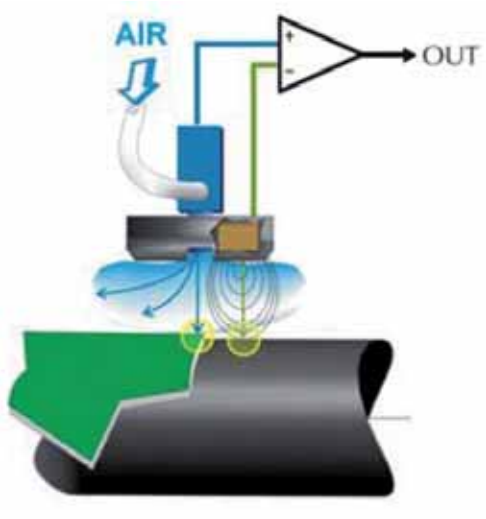
COATING & LAMINATING
COMPOSITES
PAPER
PVC CALENDERING
SHEETS & FOILS

ESSAIR™ REFLEX sensor is assembled on board of the following screening devices with its own reference roll between the ones included in the range of Electronic Systems products:

- SLIM REFLEX
- REFLEX

MEASUREMENT METHOD:

It employs a pneumatic sensor measuring the distance in comparison to the surface of the material, and an inductive sensor measuring the distance in comparison to the surface on which the material is leaning.
The two sensors, pneumatic and magnetic, are mechanically matched.
The thickness of the material is determined as the difference between the two values.
This type of measurement automatically compensates possible measurement errors due to mechanical mechanisms, temperature variations and pressure differences of the air supply.
A dedicated microprocessor provides a pre-elaboration of the measurements detected by the sensor.
The adjustment of the system and the calibration are performed automatically; therefore sample materials or operator intervention are not required.



TECHNICAL FEATURES

Model	ESSAIR™ REFLEX 1000	ESSAIR™ REFLEX 4000	ESSAIR™ REFLEX 8000
Energy utilized	**compressed air/magnetic**	**compressed air/magnetic**	**compressed air/magnetic**
Supply	4 atm	4 atm	4 atm
Standard reference	aluminum roll	aluminum roll	aluminum roll
Measurement range [1]	**up to 1 mm**	**up to 4 mm**	**up to 8 mm**
Repeatability	± 1 µm	± 2 µm	± 3 µm
Accuracy	± 0,5 % ≥ 2 µm	± 0,5 % ≥ 5 µm	± 0,5 % ≥ 8 µm
Scale/Display Resolution	0,1 µm	1 µm	1 µm
Response time	5 ms	10 ms	10 ms
Reading Spot	5 mm	5 mm	5 mm
Operating temperature	10 ÷ 50°C	10 ÷ 50°C	10 ÷ 50°C

(1) : versions are available for thickness range up to 20 mm

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

SWAN REFLEX

FIELDS OF APPLICATION:

COATING & LAMINATING
PVC CALENDERING
RUBBER
SHEETS & FOILS

SWAN REFLEX is a reflection system engineered for direct thickness measurement.
The system is composed of the following elements:

- Single-beam scanner with bearing structure
- Reference roll
- SWAN air-blow measure sensor

MAIN FEATURES

Automatic reference roll tracking system

Extremely durable and mechanically stable sensor shift system

Protection against accidental contact with the material being measured

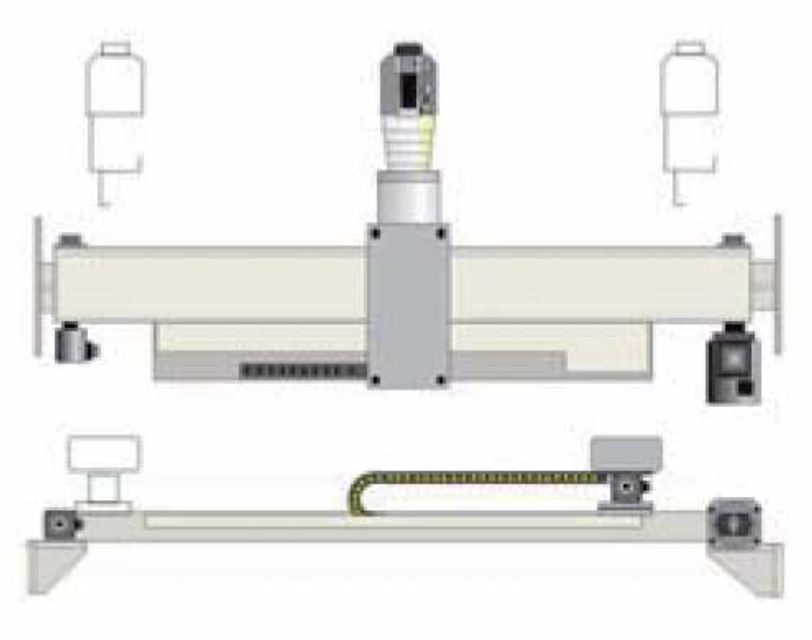
Simple and compact structure with high shock resistance

Suitable for industrial applications with maximum machine width of 3.000 mm

The bearing structure is equipped with a steel tubular beam secured to two supports. The supports can be fitted onto machine structure in the most suitable configuration for the installation, without any alteration of the structure. The main beam features special sliding rails and couplings where the measuring element is fitted, is equipped with the sensor holder, perpendicular to the reference roll. Scanner automation enables the calibrated movement of the sensor towards the roll until the most suitable position for measuring is reached. When it reaches the set position, the sensor starts shifting to measure the cross profile.

The SWAN REFLEX measuring system uses sensors with the exclusive Electronic Systems patent ESSAIR™ technology which is ideal for direct, contactless thickness measuring. Designed over 10 years ago and used in thousands of installations all over the world, such measure modules have been tested in several industrial applications, even for heavy duty, proving highly reliable and safe.

DIAGRAM OF SENSOR



SENSOR PERFORMANCE

Energy utilized	**compressed air/magnetic**	**compressed air/magnetic**
Supply	4 atm	4 atm
Measurement range	**up to 4 mm**	**up to 15 mm**
Repeatability	± 8 µm	± 15 µm
Accuracy	± 0,5 % ≥ 10 µm	± 0,5 % ≥ 20 µm
Scale/display resolution	1 µm	1 µm
Response time	10 ms	10 ms
Reading spot	5 mm	5 mm
Operating temperature	10 ÷ 80°C	10 ÷ 80°C
Useful width measuring range	900 ÷ 1.600 mm with 100 mm steps 1.600 ÷ 3.000 mm with 200 mm steps	

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

SWAN FIXED POINT

SWAN FIXED POINT is a measuring technology patented by Electronic Systems which is ideal for direct, contactless thickness measuring.

MAIN FEATURES

- Automatic calibration with reference target
- Compact protective case designed for heavy duty industrial environments
- Automatic positioning on the measurement point
- Protection of sensor in case of lumps or extra thickness
- Fast sensor replacement

Thickness is measured by using the reflection of a compressed air jet that is directly calibrated against the material as follows:

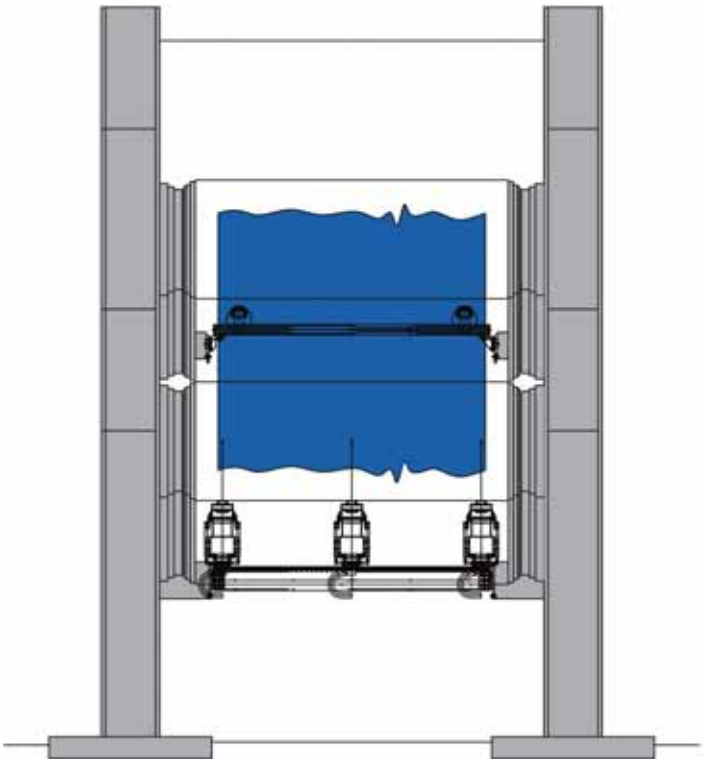
- The distance between the air nozzle and the surface of the material to be measured is calculated with a special pneumatic transducer.
- The distance from the measuring head to the reference roll is measured by a high precision system with inductive sensor.
- In this way the thickness of the material is calculated as the difference between the reference roll detected by the inductive sensor and the distance from the reflection point measured by the air-blow sensor.

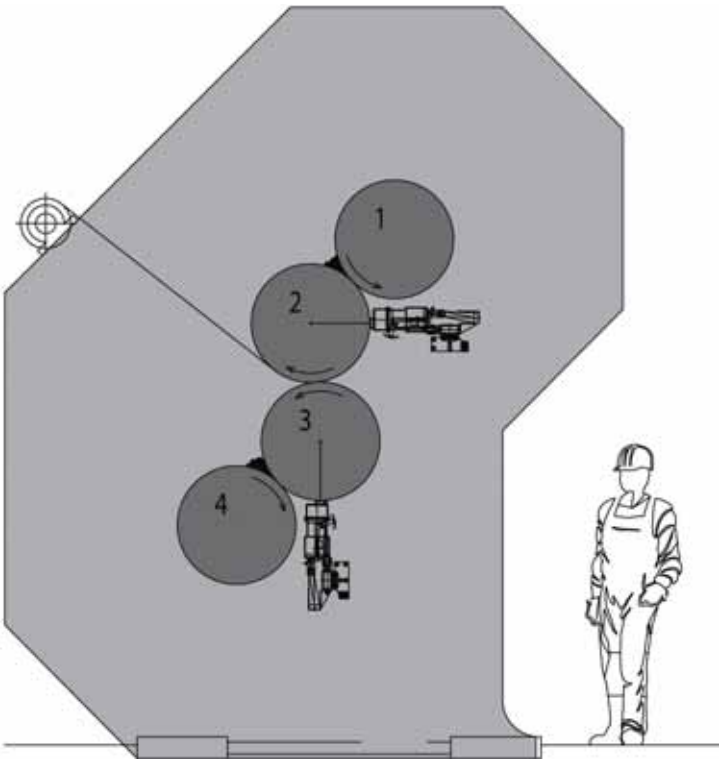
FIELDS OF APPLICATION:

RUBBER
COATING & LAMINATING
CALENDERING LINES
SHEETS

TECHNICAL FEATURES

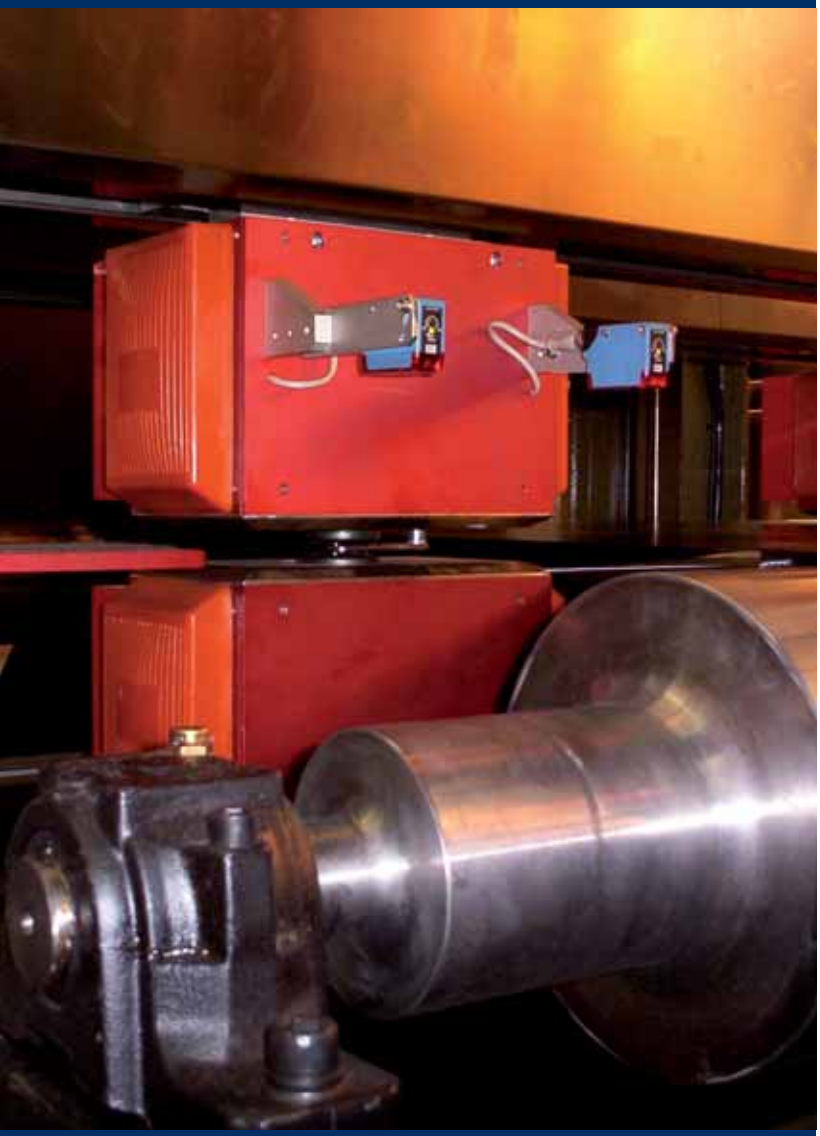
SENSOR AIR CALIPER	SWAN FIXED POINT air caliper sensor for rubber & flexible foils
Measurement range	up to 8 mm
Compressed air supply	4 atm
Standard reference	steel/aluminium roll
Repeatability	± 5 µm
Accuracy	± 0,5 % ≥ 8 µm
Scale/display resolution	1 µm
Response time	10 ms
Reading spot	5 mm
Operating temperature	10 ÷ 80°C





ELECTRONIC SYSTEMS
THE POWER OF CONTROL

ESSAIR™ DUPLEX



ESSAIR™ DUPLEX is a measurement technology, patented by Electronic Systems, ideal for direct thickness measurement without contact.

MAIN FEATURES

- It does not employ radioactive sources
- Direct thickness measurement expressed in micron or mm
- No contact with the material
- Automatic calibration system

ESSAIR™ DUPLEX is installed on standard scanners for measurement in transmission mode, and is particularly suitable for rigid materials or for materials with a very high winding tension measurement.

The sensor can be personalised depending on specific needs required by the application:

- Edges detector
- Security system to detect lumps and/or extra thickness (**lump-detector**), external to the measurement system

FIELD OF APPLICATION:

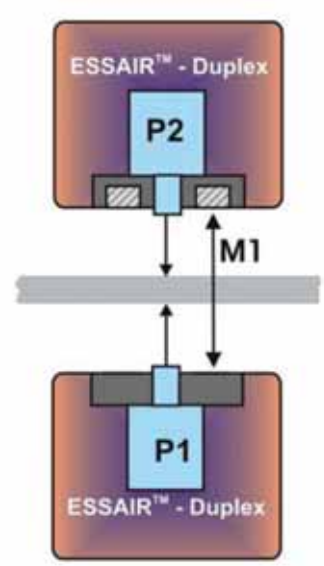
COMPOSITES
PVC CALENDERING
RUBBER
SHEETS & FOILS

ESSAIR™ DUPLEX sensor is assembled on board of the following screening devices with its own reference roll between the ones included in the range of Electronic Systems products:

- SLIM DUPLEX

MEASUREMENT METHOD:

The material is measured using two opposite air blowing sensors, which detect the respective superior and inferior foil surface, and a magnetic sensor, which detect constantly the distance between the two measurement heads.
The thickness of the material is determined correlating such values, taking the distances P1 and P2 from the value of the distance M1.
A dedicated microprocessor provides a pre-elaboration of the measurements detected by the sensor.
The adjustment of the system and the calibration are performed automatically; therefore sample materials or operator intervention are not required.



SENSOR PERFORMANCE

Energy utilized	**compressed air**
Supply	4 atm
Measurement range	**up to 5 mm**
Repeatability	± 8 µm
Accuracy	± 0,5 % ≥ 15 µm
Scale/Display Resolution	1 µm
Response time	50 ms
Reading Spot	5 mm
Operating temperature	10 ÷ 50°C

NOTE : the ESSAIR™ DUPLEX sensor is also available in a version able to measure the metallic cord and the rubber ply.

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

PREXISION

PREXISION is a measurement sensor (X-Soft), X rays low emission, one of the most popular and effective methods for film and sheet control.

MAIN FEATURES

- High protection container, solid and compact, for any type of industrial application, even in dangerous environments
- Use of low emission radiations
- High accuracy standards, reliable and simple to use
- Equipped with microprocessor: measurement treatment and conversion and support during data transmission through "Profibus"

PREXISION series measurement sensors can be used without the standard authorizations required for detention and use of radiation sources.
The properties of the radiation generator and its electronic check up allow both artificial emitted energy modulation and numerous functions of measurement optimization.
The structure of the container, the quality of generators, the radiation shielding and geometry and all the other details, have been studied with extreme care and attention to ensure the highest level of safety while operating.

The sensor can be personalised depending on specific needs required by the application:

- Edges detector
- Modification of the Gap through material passage and measurement Spot
- Temperature probes for air compensation

FIELD OF APPLICATION:

BIAX EXTRUSION
BLOW FILM
CAST FILM
NONWOVENS
SHEETS & FOILS

PREXISION sensor is assembled on board of the following screening devices with its own reference roll between the ones included in the range of Electronic Systems products:

- SLIM DUPLEX
- HISCAN
- TWIN™ SCANNING

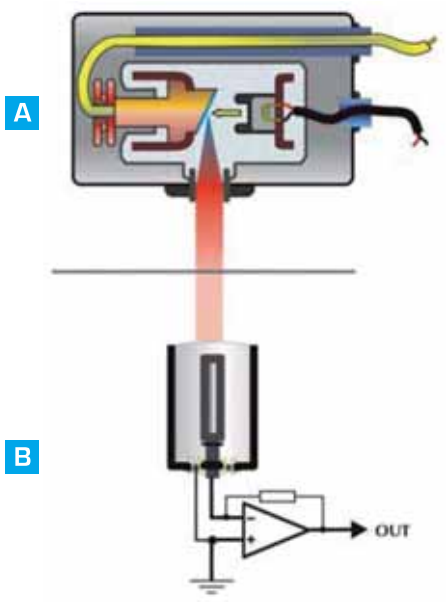
MEASUREMENT METHOD:

The sensor is composed of two parts:

A Source-holder properly shielded containing an emitter emitting X type ionizing radiations and electronic control and cooling equipment

B Receiver, containing an X-rays detecting device (ionizing chamber) and the electronic parts necessary for its functioning

The basis weight or thickness is calculated on the reduction of the signal due to the material interposed between the emitter and the receiver. A dedicated microprocessor provides a pre-elaboration of the measurements detected by the sensor.

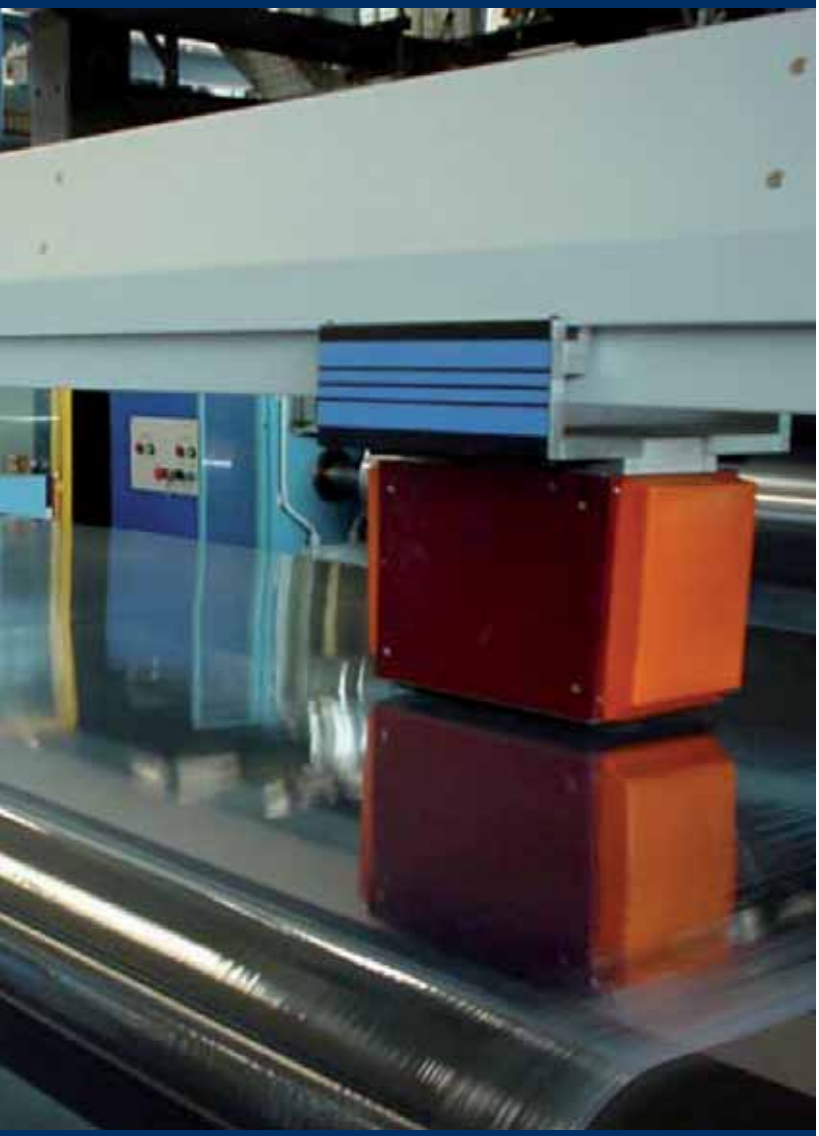


SENSOR PERFORMANCE

Energy utilized	low emission artificial X Radiations (X – Soft)		
Measurement range	**10 ÷ 200 g/m²**	**50 ÷ 1.000 g/m²**	**250 ÷ 5.000 g/m²**
Accuracy	0,10 % ≥ 0,10 g/m²	0,15 % ≥ 0,15 g/m²	0,20 % ≥ 0,80 g/m²
Scale/Display Resolution	0,1 g/m²	0,1 g/m²	0,1 g/m²
Reading Spot	20 mm	20 mm	20 mm
Gap	≤ 12 mm	≤ 12 mm	≤ 25 mm
Pass-line position	½ gap	½ gap	½ gap
Operating temperature	10 ÷ 50°C	10 ÷ 50°C	10 ÷ 50°C

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

DIGILAYER



The IR measurement sensor of the DIGILAYER series measure on line and without contact the thickness of the barrier layers present inside multi-layer films.

MAIN FEATURES

Ideal for the simultaneous measurement of more barrier layers in laminated and/or multi-layer materials

Designed for installation in industrial environments also characterized by the presence of dust, fumes, etc...

Infrared radiations are the measurement method employed to determine the thickness of the materials usually used as a barrier, for example EVOH and PA.
The module of measurement, composed by an emitter and a receiver, is installed on a standard scanner for the measurement in transmission mode, individually or matching other devices, for example ß or X sensors, in order to make a transversal reading of a barrier layer simultaneous to the one of total weight/thickness.
The sensor management and the profiles display on the operator console of the measurement system is completely integrated with that of the total measurement.

The sensor can be personalised depending on specific needs required by the application:

- Edges detector of encapsulated films (beginning of barrier layer)
- Automatic correction of the profile of total thickness (detected by X or ß ray sensors, depending on the specific weight of each layer), in case of no uniform

FIELD OF APPLICATION:

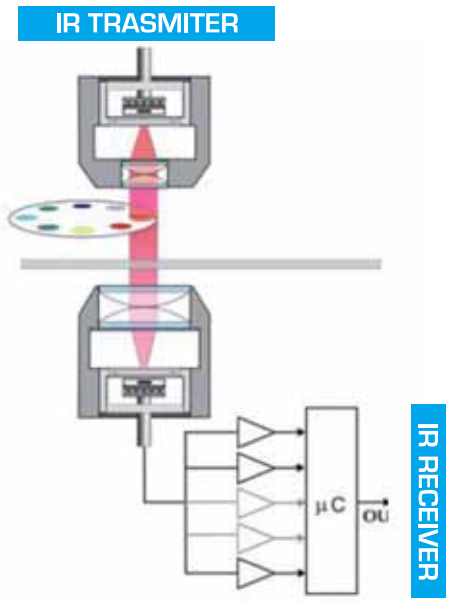
BIAX EXTRUSION
BLOW FILM
CAST FILM
SHEETS & FOILS

DIGILAYER sensor can be assembled on board of any scanning device that works for transmission between the ones included in the range of Electronic Systems products:

- SLIM DUPLEX
- HISCAN
- TWIN™ SCANNING

MEASUREMENT METHOD:

The thickness of the individual layers is determined on the base of the different absorption of examined materials at different IR spectrum frequencies.
The technology in use consents the simultaneous measurement of various barrier materials present in the same structure, even with the absence of univocal absorptions.
The sensor can analyze a maximum number of 10 wavelengths, chosen on the base of material characteristics and range of the thickness to measure.
A dedicated microprocessor provides a pre-elaboration of the measurements detected by the sensor.



SENSOR PERFORMANCE

Energy utilized	**infrared rays**		
Measurable barrier materials	EVOH -PA		LDPE tranparent stretch film
Measurement range	**20 ÷ 350 µm (total)**	**2,5 ÷ 100 µm (single barrier layer)**	**5 ÷ 50 µm**
Repeatability	1% ≥ 0,1 µm	1% ≥ 0,25 µm	0,025% ≥ 0,025 µm
Accuracy	1% ≥ 0,3 µm	1% ≥ 0,50 µm	0,1% ≥ 0,05 µm
Reading Spot	10 mm	10 mm	10 mm
Gap	15 mm	15 mm	15 mm
Operating temperature	10 ÷ 50° C	10 ÷ 50° C	10 ÷ 50° C

SINTEL™ WIX

CONTROLS & IGUARD

CABINETS

SINTEL™ WIX allows managing and controlling Electronic Systems measuring systems and the related automatic controls.

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

SINTEL™ WIX

The control and management of Electronic Systems gauges are performed by the SINTEL™ operator console.

MAIN FEATURES

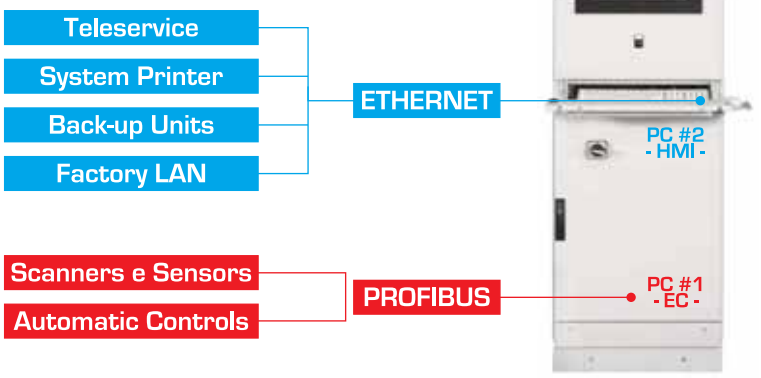
- Universal configuration for all Electronic Systems control and measurement gauges
- Operator interface developed with Windows® operating system
- Double level data transmission
- Reduced dimensions and high versatility
- Designed for the continuous operating in industrial application

SINTEL™ WIX operator console is composed of a metal panel containing system electronics for the measurement gauge.
Inside the cabinet, the hardware and software control and manage the machine processing cycle during the production.
It is also composed of two personal computers working together: a PC with Windows® operating system, used as graphic interface (HMI), and an industrial PC with embedded "real-time" operating system, used as system control processor (EC).
Interconnections to measurement and control instruments and to plant devices are performed by decentralized peripheral units connected through the network. This solution allows a very high flexibility on system integration and installation, reducing overall dimensions and plant costs, so to generally simplify the whole installation.

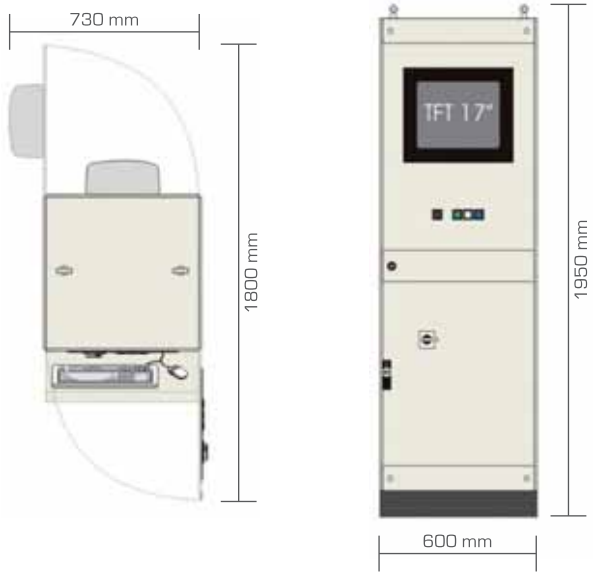
FIELD OF APPLICATION:

ADHESIVE TAPES
BIAX EXTRUSION
BLOWN FILM
CAST FILM
COATING & LAMINATING
COMPOSITES
EXTRUSION COATING
NONWOVENS
PAPER
PVC CALENDERING
RUBBER
SHEETS & FOILS

MAIN COMPOSITION



MAX OVERALL DIMENSIONS



PERFORMANCE AND TECHNICAL FEATURES

Measurement system control CPU	Embedded Real time operating system
Field network	Profibus - 12Mb/s
Informatics network	Fast Ethernet - 100 Mb/s
Graphic interface (HMI - Human Machine Interface)	PC with CPU Intel® Windows® operating systems keyboard with mouse TFT 17" colour monitor Ethernet network card
External standard connections	4 digitali I/O
Power absorption	2KVA (typical)
Standard power	supply 230 Volts mono-phase - 50 Hz
Standard painting	gray RAL 7035
Standard working temperature	10 ÷ 45°C
Inside panels	galvanized
Protection grade	IP54
Weight	300 kg ± 50 kg
Cooling unit	air to air exchanger or conditioner
Standard accessories	switch/ethernet analogical or ISDN modem
Optional accessories	printer A4 colour ink-jet or b/w laser

SPECIAL VERSIONS ON REQUEST

pulpit execution

pendant push-button execution

table execution

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

CONTROLS & IGUARD

CONTROLS

Electronic Systems can supply several automatic controls packages for different application types.
The main ones are:

CALENDER

- **Auto Roll** is used to control right and left gaps in calendering lines
- **Fast start** permits simultaneous adjustment of left and right profiles
- **Cross axis** adjusts roll position
- **Roll Bending**
- **Take off**

CAST

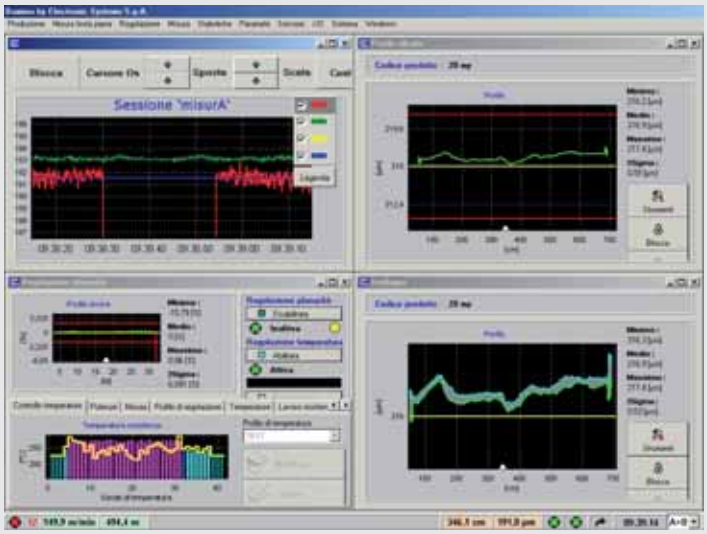
- Automatic control of thickness profile to adjust material flatness
- Average thickness control

BLOWN FILM

- **Ring evolution** allows material flatness control in blown film lines
- **Bolt tracking system** measures thickness in blown film lines measuring the profile directly on the double film

IGUARD

IGUARD is the specific software package for the operators and their managers to control, manage and display data.



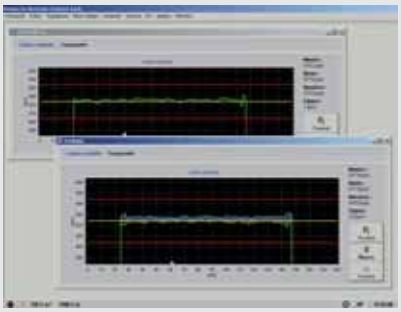
MAIN FEATURES

- Universal configuration for all Electronic Systems control and measuring systems
- User interface developed in Windows® environment
- Great data management capacity
- Possibility of network management
- Easy coordination of data management areas
- Easy and fast consultation with symbols and colours

The set of measurements is automatically organized and represented by diagrams and numbers. All graphic processing has been studied to be immediately understood thanks to specific symbols and colours. Moreover, specific buttons on the touch screen allow fast browsing through data areas. Authorized users are always able to intervene and set a customised configuration, change scale and unit of measurement, display details with cursor, zooms and tracking systems.

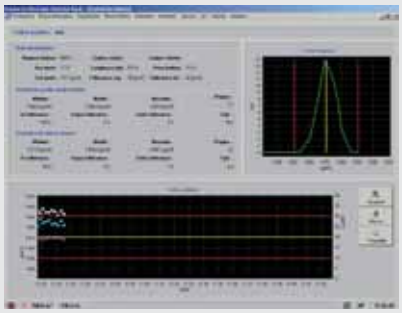
Cross section

The representations are dedicated to the measurements and trends of the values associated to the width of the measured product. It is possible to display the last measured profile and the last recorded profiles. The diagram is fundamental to detect short-term production changes and to let the operator reset ideal production conditions or optimize the production process.
Each out-of-tolerance condition is highlighted and the relevant remote local reports are made available thanks to specific interfaces.



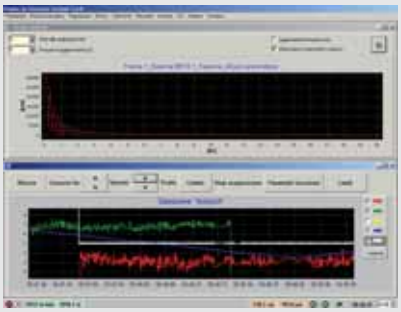
Historical and Statistical trends

On these screens histograms show the trends of statistical values for a specific period. Minimum, average and maximum values are traced together with the standard deviation of each scanning. In the same page, together with the diagrams, further statistical data are displayed: percentages of products within tolerance; percentages under or over tolerance with respect to the production set point; values of overall statistics (average and standard deviation); Cpk, etc.



Data Logger

The operator can open several multitrack recording sessions for each event or signal available. Each scanning session can be configured by combining several tracks at the same time. For each track, the average values, standard deviation and the analysis of characteristic frequencies (FFT) are calculated.



Process and System Alarms

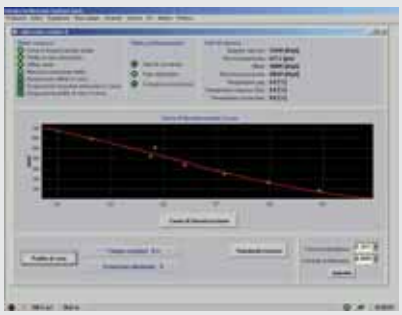
Every alarm event is stored for later consultations. The operator can recognize and evaluate any event through the appropriate table containing all the needed information like date, time and alarm description. The supervision system records the alarms triggered by the measuring and control system in a sequential order. Also in this case on screen consultation and print are available.

Control and coding

The operator can edit work lists in order to simplify the product replacement procedure. Tables can be changed and/or updated through access codes. Each product to be measured is codified and linked to the production conditions and quality required so as to obtain a reliable and repetitive scanning of the material being measured. IGUARD WIX can among other things record an archive of processes.

Control and maintenance

In order to keep measurements system performance unaltered, some graphic/numeric pages are provided to allow checking possible electrical or mechanical problems. Sensor automatic calibration procedures are also featured. By using appropriate passwords, the operators in charge can access specific analysis pages, check the efficiency of each component, detect possible non conformities and programme the measuring mode more suitable for the specific work conditions.



FLEXIN

FLEXIN

The technological evolution of the production process and the quality requirements in the market has strongly increased the needs for in line control of final products like nonwoven, plastic covering, transparent and coating materials, abrasives, paper and rubber. In order to meet these Customers' requirements, Electronic Systems proposes Flexin, the in line web inspection system, ables to control the 100% of the produced material detecting and showing the quality defects.

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

FLEXIN

SYSTEM ARCHITECTURE

The system is composed by a certain number of CCD cameras, with associated PC and Frame Grabber, one or more light units placed on the line and one operator console for visualization and quality control.
The defects are detected in real-time and showed on a map according to the relevant class and types; it is also possible to some alarms, display trends and/or counters.
The FLEXIN's architecture is designed for Windows, it is very adaptable to any industrial requirement and user friendly.

FLEXIN SOFTWARE PACKAGE

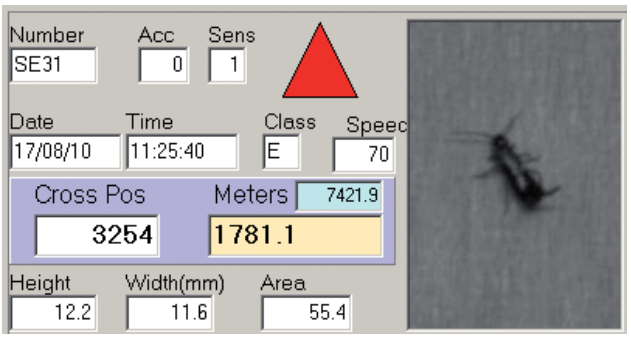
The Flexin entry level software assure the following real time performance:

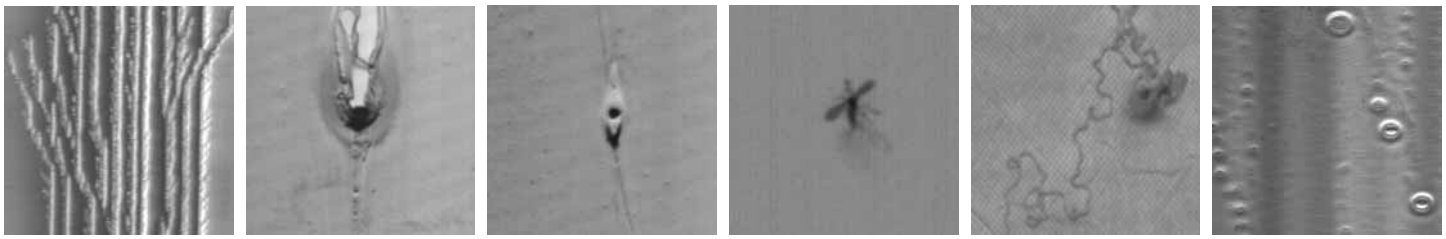
- On-line defects detection
- List of defects images
- Defects reel-map
- Defects counters devided by dimensions and type
- Trends

The system is able to detect and classify the defects according to parameters set-up. It is possible to enable/disable the visualization by different typologies of defects and/or their dimensional class.
The map of the bobbin can be printed out automatically and the relevant data can be sent to the production management system of the factory.

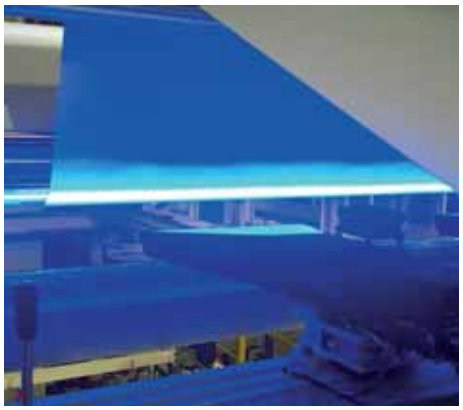
FIELD OF APPLICATION:

NONWOVENS
NON TRANSPARENT PLASTIC MATERIAL
TRANSPARENT PLASTIC MATERIAL
COATING PLASTIC MATERIAL
ABRASIVE
PAPER
RUBBER





The map of the defects can be reversed in order to visualize the defects in the opposite direction for the slitting machines; the reversed map can be stored and copied for the following production steps. It is also possible to enable a real time analysis to detect the presence of repeated defects; this software function informs about the period of this particular type of defects with the possibility to mask/delete them in real time or permit to the operator to make the proper actions on the machine to solve the problem. A trained operator with his personal password can set the defects classification and the detection sensitivity, as well as other working parameters; the choices are stored by recipes name in the specific data base. The system works automatically with the parameters set-up at the production change; this action can be done by the operator simply selecting from a list the relevant product recipe, or automatically, in case a link with a production management system is provided.



Advantages

- **Quality assurance of the production**
- **Easy Set up procedures and User Friendly approach**
- **Direct link to production management systems**
- **Access to the system controlled by specific password**

Database of the Production

DBView is a specialised software able to manage the historical data and to visualize off-line the produced reels.
While the Flexin™ system detect defects on the material in production, DBView permits the analysis of all the previous produced reels.
Using this strategy, acquisition, visualization and analysis are completely independent each others. This specialized software, to manage the historical data, can run on any PC link to the factory network.
As an available option, Active-dBView software module, is the proper solution to suggest, from the main-reel/jumbo, the best slitting strategy to match the quality standards of the end-user. It is also possible to organize the collected data as statistical information sort by lot, day, square meters, or even to visualize and count general production event like the machine stops. The defects can be showed using Machine and Cross Direction trends with programmable integration time.

Web Uniformity Control

Fibers distribution in nonwovens shows different uniformity levels depending on plant features and end product requirements.
An uneven distribution can affect the product quality and can influence the mechanical properties.
Therefore, it is very important to be constantly aware of this visual aspect trend and monitoring it during the production.
This function can be carried out by the operator on request or automatically with a recipe, which supplies information about out-of-tolerance areas.
Flexin can be integrated into the basis weight and (humidity) moisture control systems manufactured by Electronic Systems.

AUTOMATION

AUTOMATION

Electronic Systems has been working in the automation industry from the very beginning and offers a complete range of products and services suitable for any issue connected to production processes.

ELECTRONIC SYSTEMS
THE POWER OF CONTROL

AUTOMATION

FIELDS OF APPLICATION:

RUBBER
PVC
PLASTIC EXTRUSION LINES

Electronic Systems has been working in the automation industry since the very beginning and offers a complete range of products and services suitable for any issue connected to production processes.

We mainly realize the following process typologies:

- Production plants for plastic materials (calendering lines, Cast film, Blown film, Breathable, Coating, and Biax films)
- Production lines for rubber (calendering lines, extrusion lines, RollerHead, Innerliner, mixers)
- Coating and lamination plants
- Plants for fabric treatment
- Cable production lines

Electric engineering, software development and equipment manufacturing are totally carried out in our company. All the equipment is tested in compliance with current regulations in force. Special attention is given to safety circuits whose components and circuits belong to the safety class declared by the machine producer. (Electronic Systems has already enforced the new ISO 13849-1 standard and is at your disposal for supplying documents about its own "performance level").

ELECTRICAL ENGINEERING

Electrical engineering is carried out with CAD systems:

- Spac
- Eplan P8

Documents can be supplied in .PDF, .DXF and .DWG format. They consist of:

- Single-wire electrical diagram
- Functional diagram
- Cable lists
- Parts list
- Equipment layout
- Certificates of conformity
- Test certificates
- User manual
- Data sheet of components

With the purpose of offering a "turn key" solution, our company also supplies the plan of the systems on board the machine and offers a work supervision service on site.



SOFTWARE

Electronic Systems uses control systems based on PLCs produced by world leading manufacturers among whom:

- Siemens
- Rockwell (of whom we are "Recognized Systems Integrator")
- General Electric
- Schneider
- Omron

Signal shift and acquisition use the most widespread field buses such as:

- Profibus
- Profinet
- ControlNet
- DeviceNet
- Modbus
- Ethernet/IP

The machine user interface is built using local operator panels and SCADA systems based on market leading packages:

- Siemens WinCC
- Intouch
- RSView 32
- GE Cimplicity

All process variables can be used for data collection and tracking systems. Electronic Systems also provides a teleservice system and maintenance staff training courses.

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Your preference is our success

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