

Industrial Gauging & Control System

APPLICATION

- Cast or extruded films & sheet
- Bi-oriented films stretching
- PVC and Rubber Calenders
- Paper and Card Board Machines
- Coatings
- Textiles & Non woven
- Lamination
- Aluminum Foils
- Steel Rolling Machine
- Zinc & Plant Coating on Metals
- Float Glass

BENEFITS :

- Consistent product
- Reduced scrap
- Minimum tolerance
- Savings in raw material
- Continuous recording & display of important
- Process data



INDUSTRIAL GUAGING & CONTROLS SYSTEMS

Jasch develops and manufactures measurement and control systems to improve the quality of fast running webs and bring cost reduction and productivity increase to your sheet, film, foil, textile or coating operations.

Jasch Control Systems continuously monitor and control the quality parameters such as Basis weight, Caliper, Coating thickness, Moisture, Ash contents etc. The deviations from preset target values are instantly detected allowing immediate corrections to the production process to maintain constant product quality. All relevant measuring results are evaluated and displayed graphically on a monitor and documented by hard copy.

More than 60 systems installed worldwide are impressive evidence of the market acceptance and capability of our products and services.

As quality becomes more important in ensuring your competitive positions, we encourage you to evaluate our ability to support you and include us in the process of translating your concepts into practice. We will be pleased to help you with a comprehensive solution.

JASCH CONTROL SYSTEMS MEASURES CONTACTLESSLY FOR DIFFERENT APPLICATIONS THE MOST SUITABLE SENSORS IS CHOSEN IN EACH CASE SUCH AS :

- Isotope sensor for weight per unit area/ thickness / density
- Infrared sensor for moisture/thickness especially on compounds.
- X-ray sensors for very high speeds and accurate profiles.
- X-ray fluorescence for metal coatings.
- Laser sensors for thickness.

FEATURES

Non-contact measurement of product Thickness or Basis Weight.

Large size color TFT display suitable for harsh industrial environment.

High speed scanning upto 250 mm per second

Air gap temperature compensation for measurement on Hot webs

Automatic calibration after pre-defined interval for measurement stability.

Automatic edge-detection of the web for accurate profile mapping.

Touch Screen Controls for ease of use

Precision manufactured O-frame free from deflection and misalignment

Serial two wire link between scanner and operator station makes installation easier.

Comprehensive Roll Reports

MEASUREMENT PRINCIPLE

The measuring principle is based on the attenuation of Beta radiation emitted by a nuclear source as it passes through a material. The thickness/basis weight is determined by sensing variations in the energy radiated by the source of known intensity. The measurement is continuous On-line and therefore useful as feedback for automatic control.

DESIGN AND CONSTRUCTION

The nuclear sensor is designed on a large volume pressurized ionization chamber coupled with a highly stable electrometer amplifier. The sensor performs automatic calibration after pre-defined intervals to guarantee stable measurements. For measurement on hot webs where basis weight of air in the measuring gap changes with temperature, fast temperature sensors are provided for compensation. The scanner is built on rugged steel structure free from deflection and misalignment to ensure precise sensor positioning. All linear motion system components are CNC machined to precise

Alignment for long service life. The frame is an enclosed construction to shield all mechanical and electronic components from ingress of dust and corrosion. Where ever possible standard parts have been used which are available off the shelf in most locations.

The scanner is linked with the operator station through a high speed serial link. The single two wire link saves on cabling costs and also makes the installation easier. The operator station has a PC (Personal Computer) architecture with industry-standard hardware and software which allows for easy upgrades and local support throughout the world. The operation is through touch screen for easy and efficient operator interaction. The operator station is available either in a NEMA 4/12 enclosure for harsh out door operation or as a desktop workstation for control room installation.

The standard displays provided are cross-web, machine direction profiles, trends, product recipe and roll reports. SPC charts are available as an option

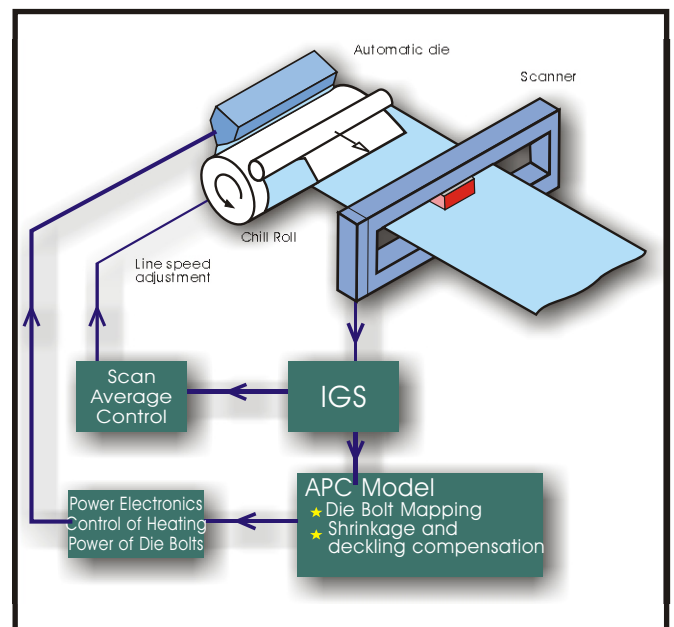
APPLICATIONS

Cast or extruded film and sheet

IGS ensures uniformity in machine and cross-web directions of the extruded webs.

The machine direction uniformity is achieved by controlling the line or extruder screw speed through average thickness in every scan.

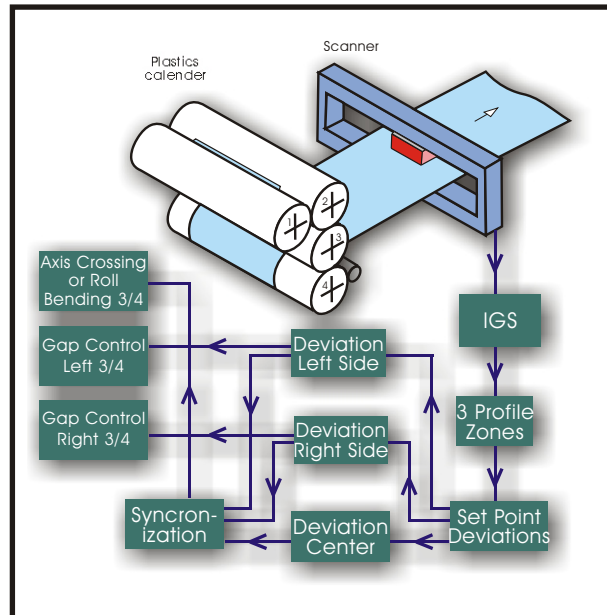
For cross-web direction control the scanned profile is divided into zones equal to number of die bolts as per APC (Automatic Profile Control algorithm) The set point deviation for each zone is determined based on which corrective signals are applied to the corresponding die bolts by adjusting their heating power. The set point for each zone is taken equal to the last scan average thickness. This decouples the control in the two directions and avoids interference in die bolt control loop from machine direction control. Both the control loops have PID characteristics and equipped to detect sheet breakage to avoid excess line/screw speed in that event. The effect of adjacent bolts interaction can also be incorporated in control loop.



To ensure that each die bolt adjustment affects the right zone on the film the measured profile is precisely mapped to the die bolts. For this purpose IGS uses the primary sensor to find the sheet edges automatically every scan to within 2mm. This means that dynamic changes of film shrinkage and die deckling are exactly accounted for in every scan.

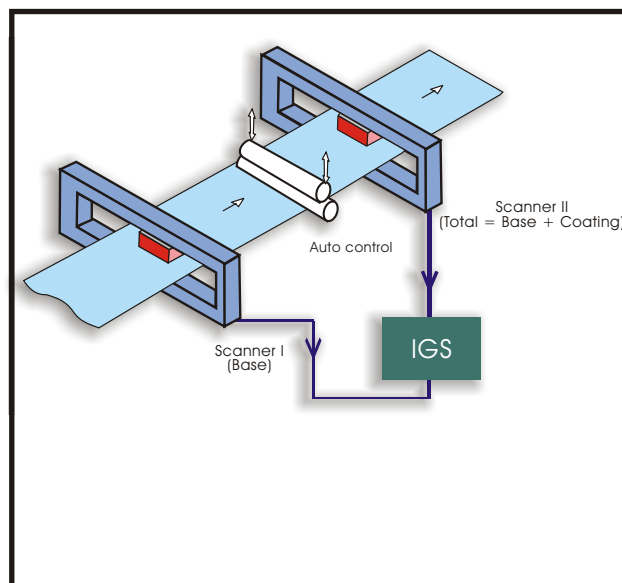
Plastics Calender

The thickness and profile control of calendered plastic films is achieved by dividing the scanned profile into the three zones. The averages of the zones at the edges are used to control right/left nip adjustment of the last roll. The average of the centre zone in synchronism with those at the edges is used to influence either roll bending of the last roll or the cross axis adjustment of the penultimate calender roll.



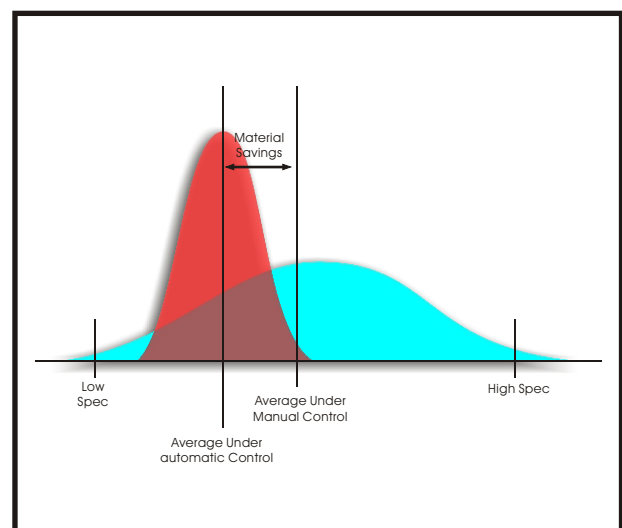
Plastic Coatings

IGS can be used in production lines like spread coating lines impregnation lines, extrusion coating lines where a base material is coated with one or more layers, by addition of one extra scanning or fixed gauge. The additional gauge is required to measure the base material before the coating is applied. The differential measurement is then used to control coating profile and the total final coated product thickness. The advantage of nuclear gauge is that it can measure the coating in wet state i.e. just after the coating is applied and therefore corrections can be immediately applied.



AUTO CONTROL BENEFIT

The raw material is the single largest manufacturing cost in any production set. up. The automatic process control through IGS reduces the spread in thickness/basis weight variation and consequently the safety margins are lowered. A resulting set point reduction of even a few percent point can save a lot of precious raw material. Therefore the system repays quickly. Normal repayment is less than a year.



SPECIFICATIONS-BTG 3000

Nuclear Sensor

- ★ Radioactive Source : Krypton 85, 200mCi
Half Life 10.7 years
- ★ Accuracy & : 0.5% or 0.5 GSM (the greater)
- ★ Repeatability : greater)
- ★ Measurement Range : 0-1000 GSM
- ★ Air Gap : 10 - 20 mm
- ★ Sampling Time : 10msec
- ★ Large Volume Ionization Chamber
- ★ Air Gap Temperature Compensation
- ★ Automatic Calibration
- ★ Digital Filter to remove electrical noise

Scanner

- ★ Operating width : Min. 1000 mm, Max 8000 mm (increments of 500 mm)
- ★ Traverse Speed : Max. 250 mm/sec (Variable)
- ★ 6" I-beam weldment, precision machined
- ★ Enclosed frame construction to shield all electronic and mechanical components.
- ★ Signal Power Transmission : Cable drag chain system
- ★ Mechanical Misalignment Compensation
- ★ All linear slide components CNC machined
- ★ Aluminium Extruded Profiled Rails.
- ★ Steel Reinforced Timing Belt Drive
- ★ No-maintenance AC motor
- Serial RS485 interface to Operator Station.

Operator Station

- ★ Industrial Computer (PC architecture) configured according to requirements
- ★ NEMA 4/12 water/dust proof front panel
- 15.1" TFT color LCD

- ★ Touch Screen Controls
- ★ Ambient Temperature : upto 50°C

Application Software

- ★ High resolution display of
 - Last scan Profile (Actual or zone mapped)
 - Composite profile of N Scans
 - Machine direction Profile
- ★ Trend display
- ★ Roll report
- ★ Recipe Storage
- ★ Data Archiving
- ★ Optional SPC
- ★ Line screw or pump speed control with scan average thickness/weight
- ★ Profile Control
 - Die bolts control
 - Roll Gap control
 - Cross -axis control
 - Roll bending control

Process I/O

- ★ Inputs : Line speed/web break/roll change
- ★ Outputs : Line speed/screw speed control, roll movement control



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