

# E.S.C. Resources, Inc.

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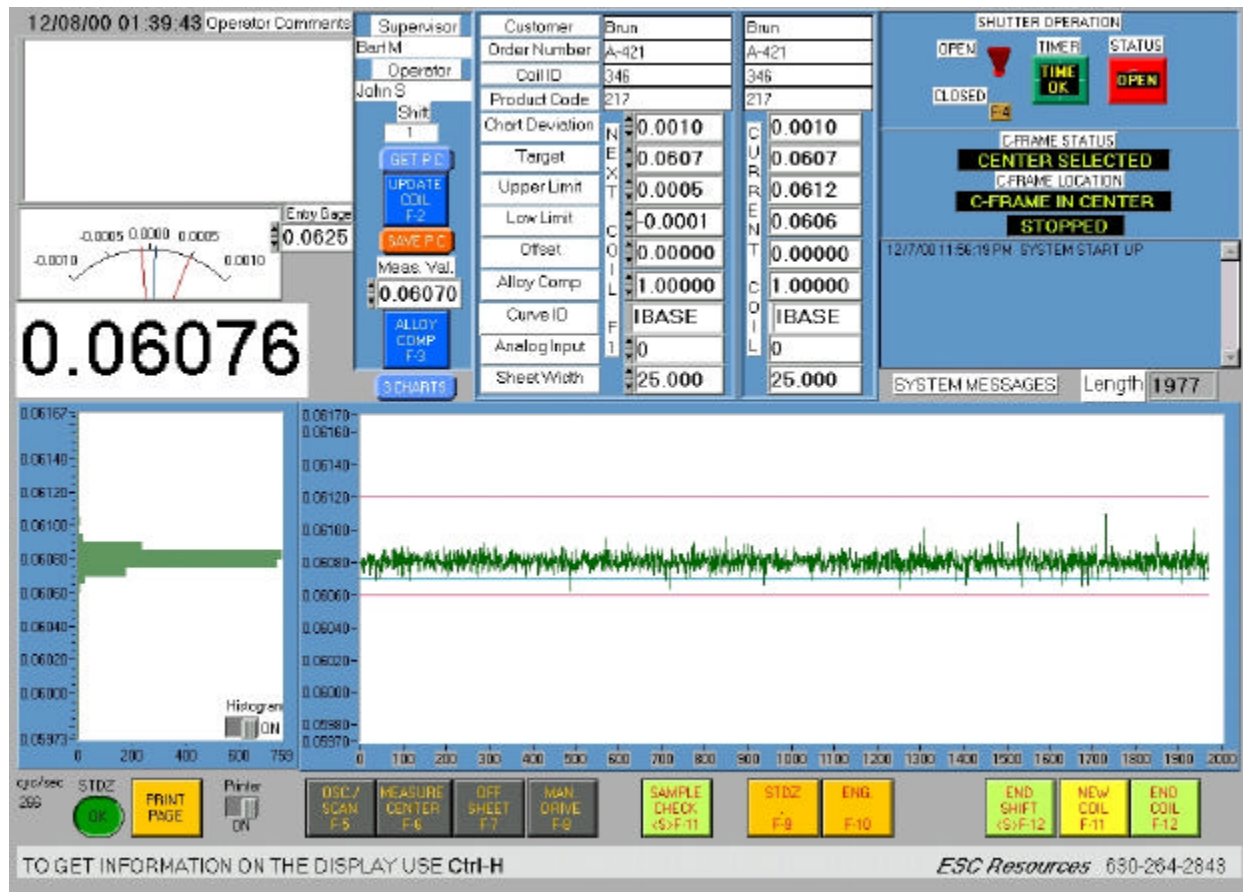
## Non-Contact Thickness Gauging System

### TGS-9000

**Introduction** - The E.S.C. non-contact thickness gauge provides fast and reliable on line total thickness measurements and SPC reporting for strip and sheet material. The direct benefits provided by this measurement are documented compliance with quality specifications, improved process control, and a reduction in scrap. The standard system provides disk storage for the SPC information to eliminate the need to maintain large files of printer paper for long term record-keeping purposes.

**Principle of Operation** - This gauge uses the scientific principle that matter will absorb a low power radiation beam in proportion to it's composition and thickness. As the material passes between the x-ray source and detector, variations in thickness cause measurable variations in the amount of x-ray reaching the detector head. The gauge is calibrated based on these variations, and provides a continuous, high speed, non-contact, accurate, and reliable measurement of thickness.

**System Display** - in it's normal mode of operation, the 17" full color monitor displays actual thickness, deviation, upper and lower tolerance limits, shutter status, coil footage, and a graphic display of thickness for the complete coil. The thickness display changes to red if the thickness goes out of tolerance. Additional display screens are provided for I/O status, and trouble shooting assistance.



SERVICE - QUALITY - VALUE

**Features -----**

1. **Easy installation** - no requirement for air or water. "C" frames typically mount on two pedestals and require a minimum of cabling.
2. **Accuracy** - state of the art high speed electronics and logarithmic linearization performed by the software assures highly accurate measurements of various materials while minimizing the hardware requirements. A 4" ion chamber is used in the detector head, resulting in a surface area 77% greater than gauges with 3" chambers. This translates to more accurate and stable thickness measurements.
3. **Reliability** - this system uses a modern personal computer, providing a software based measurement system that reduces the requirement for peripheral hardware. This arrangement provides a very reliable "platform" for thickness measurement and SPC reporting.
4. **I/O Capabilities** - hardware is provided to enable communication with a host computer or process control unit.
5. **Automatic Standardization** - this provides a fast, accurate standardization cycle. Up to 100 calibration curves are available to permit measurement of a wide variety of material types.
6. **Diagnostics** - system faults are stored and displayed upon demand.
7. **Upgradeable** - this system is software-based, which enables future upgrades to be performed in the field, via software changes.
8. **Dual Beam Systems** - enable the measurement of a wider variety and range of products.
9. **Automatic Alloy Compensation** - the system automatically calculates the curve compensation for different alloys.

**SPC Reports -----**

1. **Thickness Deviation Plot** - presents a graphic representation of strip thickness over the coil length, in a strip chart fashion. Also indicates location of out of tolerance material.
2. **Coil Report** - presents a histogram of thickness distribution, a graphic representation of strip thickness over the coil length, footage, average thickness, UCL, LCL, X Double Bar, R Bar, and Cpk.
3. **Shift Summary Report** - presents a shift summary of production. This summary can be saved in spread sheet format for additional calculations and reports.

**Note:** No optional equipment is required for disk storage of the Coil report and Shift Summary Report.

**Options -----**

1. **Manual "C" Frame** - operator manually positions "C" frame on sheet.
2. **Electric "C" Frame** - an electric drive motor allows the operator to position the "C" frame from the operator's station.
3. **Scanning "C" Frame** - an electric drive configuration equipped with additional logic and control circuits to enable the gauge to automatically scan from one edge of the strip to the other.
4. **Other Options** - other options are available depending on your specific needs.

**Specifications -----**

<b>Range</b>	0 - .250" steel, 0 - .200 copper, brass, and nickel, 0 - 2.50" aluminum
<b>Air Gap</b>	2 - 8" ( 6" normal)
<b>Response Time</b>	10 - 999 milliseconds (variable software)
<b>Calibration Accuracy</b>	plus or minus .20% or 90u" (2.3um) over 0 - .250"
<b>Radiation Source</b>	Am241 - 1 or 2 Curies & SR90 - 100 mCi.
<b>Radiation Detector</b>	Ion Chamber - 4" diameter - 4 ATM

**Modernization of Existing Equipment** - if you have an existing measuring system that is outdated and difficult to service, you may want to consider an E.S.C. system modernization, which provides all the features of the TG-6001 Thickness Gauge.