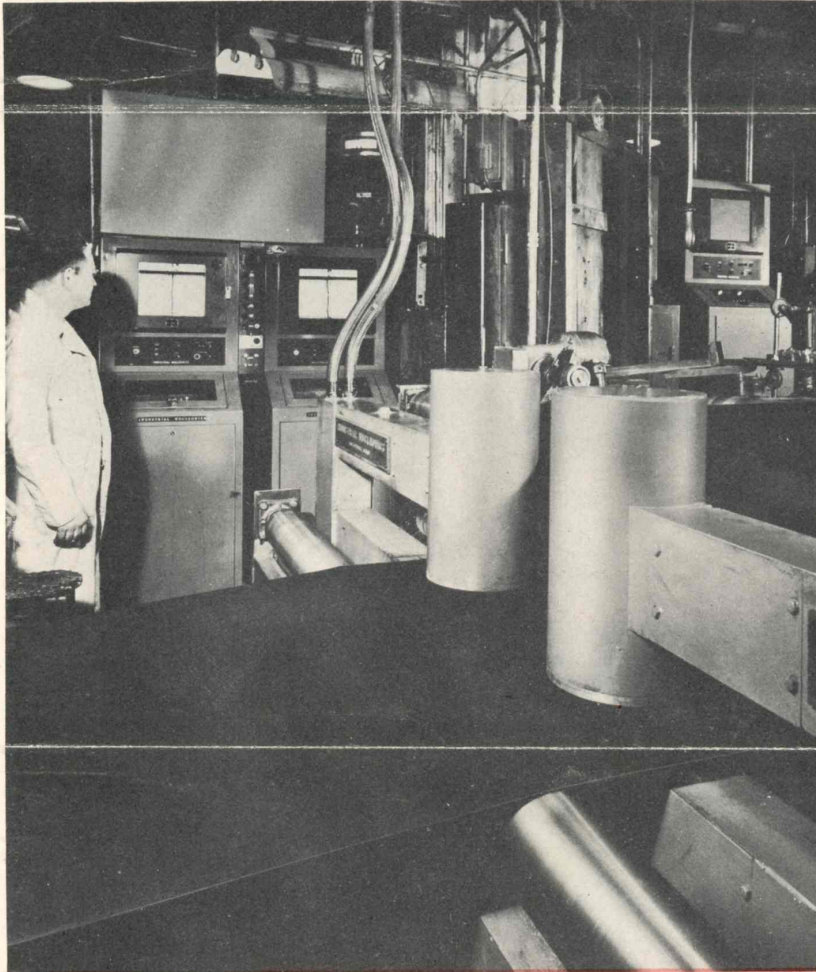


## Automatic Control of Tire Production Accomplished with Nuclear Gauging



### CONTROL STATION

Automatic controls are located near AccuRay installation measuring second pass on three-roll calender in tandem. Flashing lights inform operator when automatic controls are making a calender adjustment.

### LABOR'S REACTION

Labor is firmly behind control system after operators were shown that new system gave them time to concentrate on other details.

### Successful System Of Automatic Controls Installed By Gates

Industry's fond dream of successfully regulating continuous sheet production with automatic controls has now been realized with the announcement by Gates Rubber Company, Denver, Colorado, of a new control system being used on tire and belt making lines to actuate machine adjustments and eliminate human error in production measurements and controls.

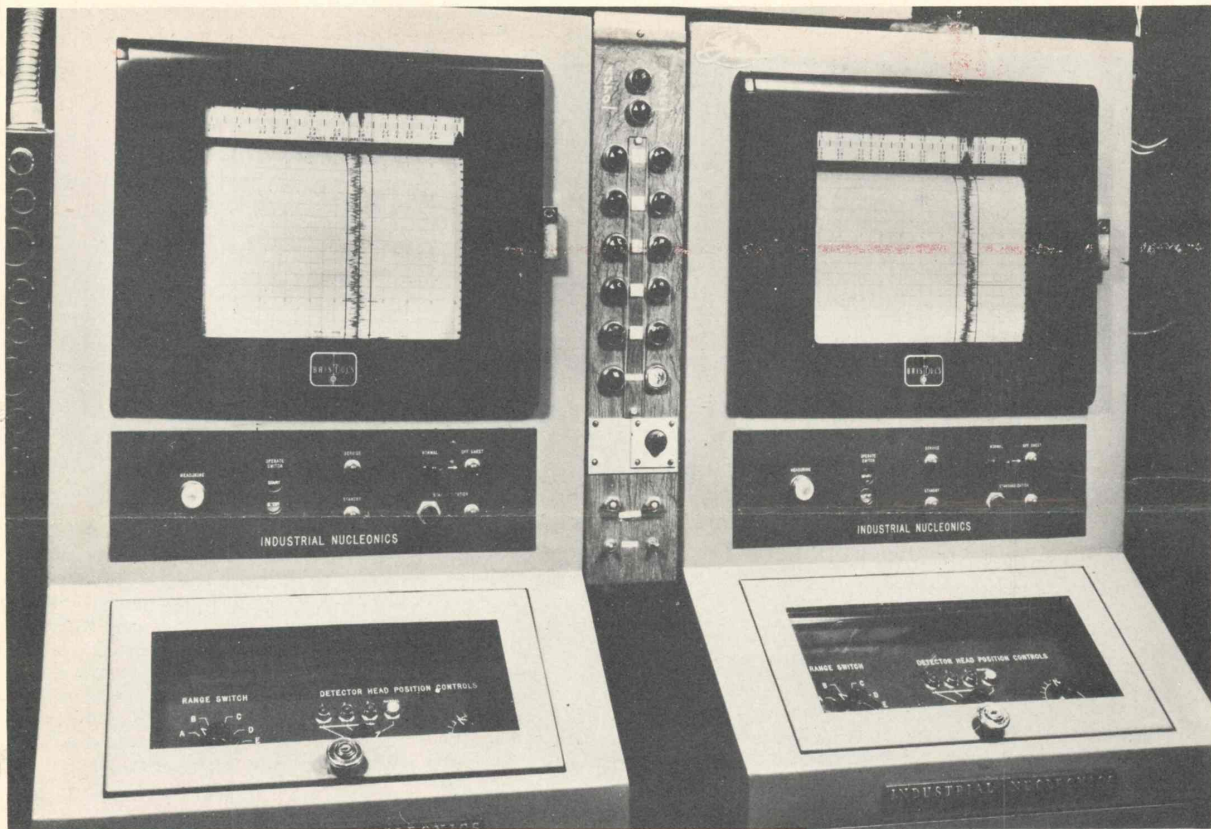
Utilizing nuclear equipment developed by Industrial Nucleonics Corporation, Columbus, Ohio, the new device detects variations in the weight of the rubber coating given cord and fabric before these variations have a chance to affect quality. Powered by a radioactive particle no larger than a grain of

For announcement of a complete program of automatic controls now being offered by Industrial Nucleonics, see insert page in this issue.

sand, it detects any variation, calculates the proper correction, makes the adjustment, and charts a continuous record of the whole process at the same time.

The installation marks the first successful effort so far to control automatically, the uniformity of the rubber-coated cord or fabric going into tires, V-Belts and other products made at the Gates plant. Gates officials point out that the system provides closer adherence to specifications and promises better quality and longer wearing products. The announcement of the new control system, made jointly by engineers of Gates and Indus-

(Continued on next page)



### CONTROL SYSTEM

Control panel is located between two consoles. High and low limit switches initiate controlling action when pen traces on recorders move out of spec. Controls actuate top rolls of the three-roll calender, correction time being set by dials beneath lights.

### AUTOMATIC CONTROLS

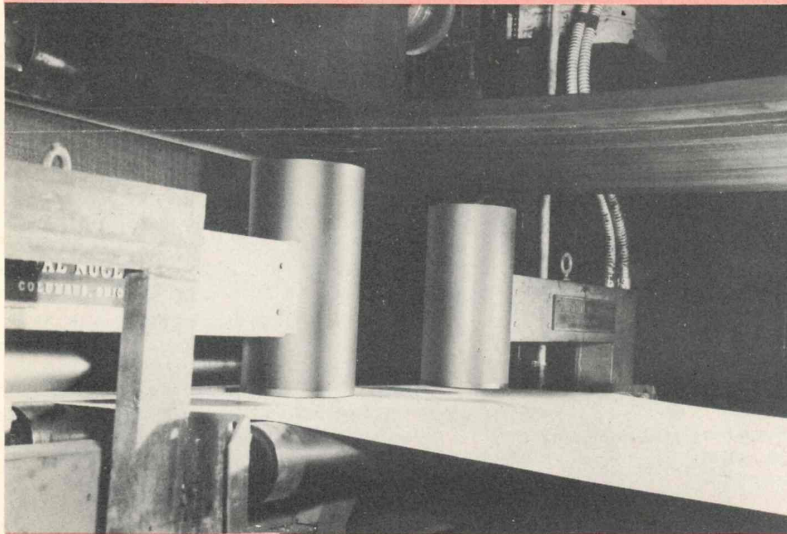
(Continued from page 1)

Industrial Nucleonics, followed a successful trial operation of the system during recent months.

Although Gates, like many other companies, has had plans for applying automatic controls to its processing equipment for a period of time, lack of a reliable and accurate sensing element to actuate the controls prevented a complete mechanization. This obstacle was overcome with the development of the AccuRay beta gauge by Industrial Nucleonics Corporation.

"Trigger" of the Gates electronic control system, the AccuRay uses beta ray beams from a small capsule of Strontium 90, an atomic by-product, to measure within one per cent the amount of rubber coating being applied to each square yard of fabric. Mounted on opposite sides of the sheet in pairs, the gauges provide simultaneous readings of both sheet edges.

The readings are indicated by continuous lines on recorder charts in the recording console units of the gauges. Each chart has lines indicating narrow tolerance limits. When the indicator approaches

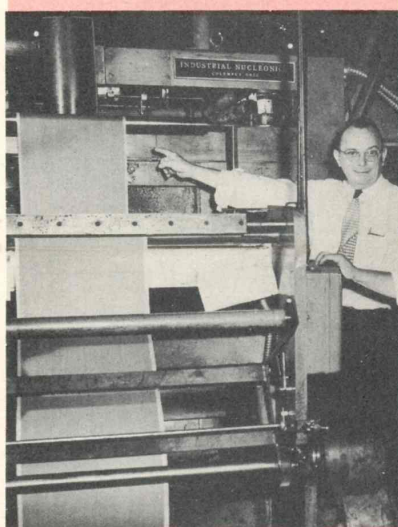


### ACCURAY ARRANGEMENT

This dual installation measures first pass of fabric and rubber. Measurement readings are sent to recorder in automatic control system.

either limit line, it actuates the electronic control system, which adjusts the huge calendering machine, keeping the rubber coating weight within ideal limits.

Gates engineers say rigid control of this vital step in the manufacture of automobile and truck tires will mean near-perfect balance and will result in longer mileage.



#### CARBON COPY

The problem of maintaining absolute quality of the thousands of miles of carbon paper produced annually has been solved with the installation of AccuRay beta gauge equipment on their production line of one time carbon, say officials of Standard Register Company, Dayton, Ohio. Standard Register is the first company to utilize this method of controlling carbon paper and is now providing customers with a more uniform carbon.

#### Nucleonics Conducts School to Train Customer Personnel

The first of a series of training sessions for customer personnel has been announced by Industrial Nucleonics Corporation.

The sessions, which are being held at plant headquarters, in Columbus, are designed to teach customer instrument men preventative maintenance and servicing of the AccuRay beta gauge. Under the supervision of Service Manager, F. W. Truxall, the classes are scheduled to provide necessary background in one week's time.

There is no charge for this schooling and AccuRay users are requested to contact Mr. Truxall to make necessary arrangements for their representatives to enroll. Plans are being readied to repeat the course in November.



#### FINAL INSPECTION

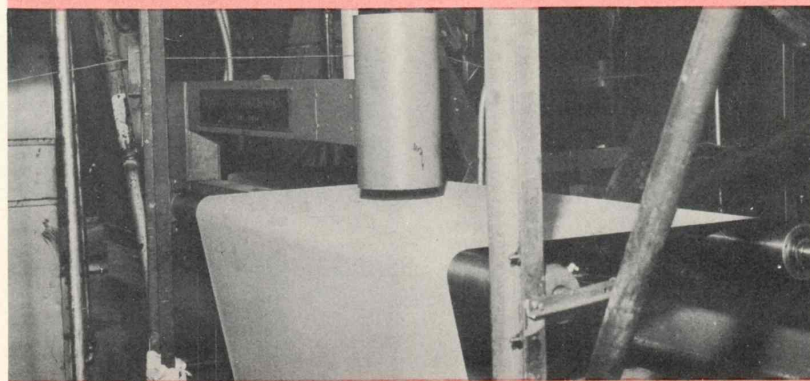
Before shipment to customers, AccuRay gauges are given a thorough check by inspection personnel. "Break in" time on the majority of models averages 30 days.

#### Field Engineers Conveniently Located To Serve Nation's Industrial Areas

Because of the increasing demand by industry for Industrial Nucleonics nuclear measuring equipment and controls, the company has strengthened its field representation and established new regional offices to better serve important industrial areas.

The names of the field representatives, their territories and office locations are:

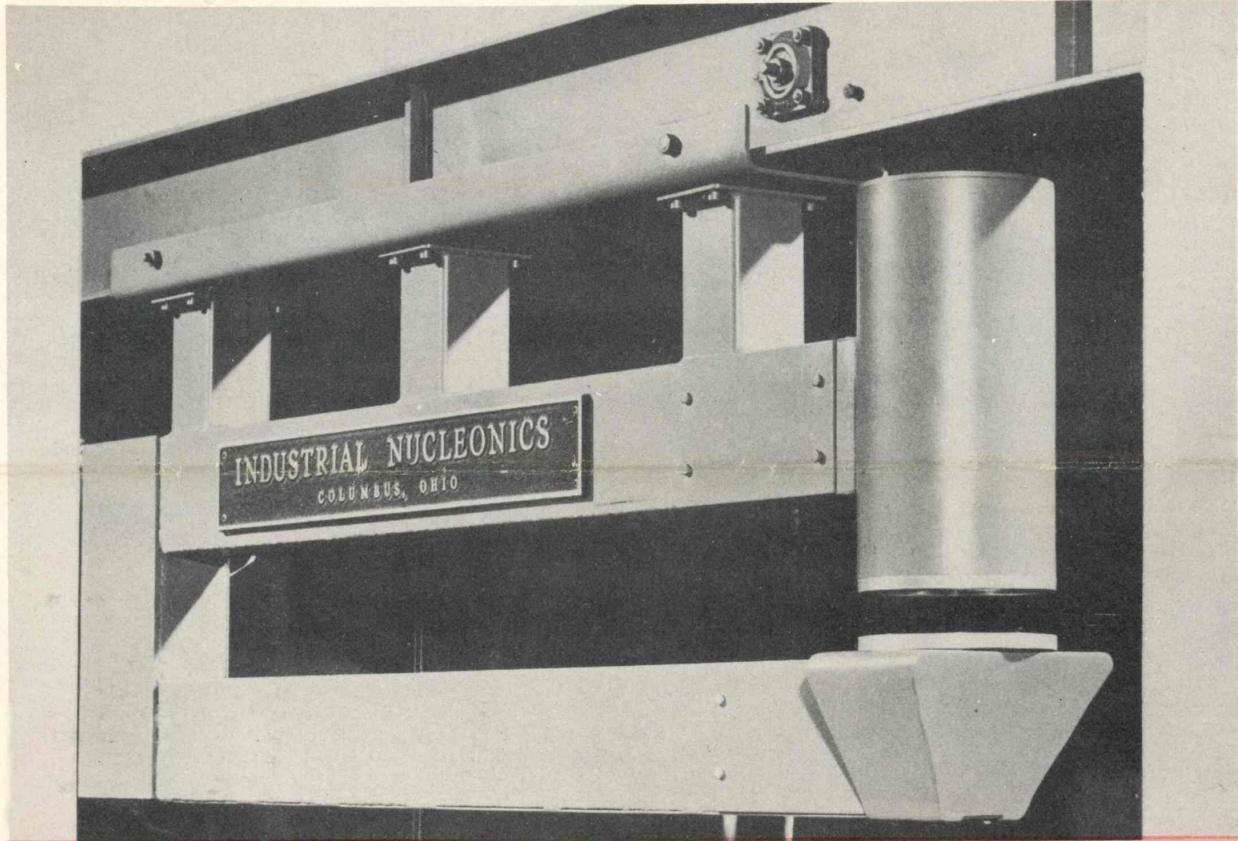
Fred Rauskolb, New England, P.O. Box 171, New Canaan, Conn.; Paul August, New England, P.O. Box 171, New Canaan, Conn.; Paul Yale, Northern New Jersey, Metropolitan New York, 750 Woodland Avenue, Plainfield, N. J.; Tom Lee, Northern New Jersey, Metropolitan New York, 94B Wabeno Avenue, Springfield, N. J.; John Yaklevich, Southern New Jersey, Delaware, Maryland, Eastern Pennsylvania, 180 N. Broad, Doylestown, Pa.; George Bearer, Western Pennsylvania, Upper New York State, 229-4 Princeton Court, Buffalo, N. Y.; James Orr, Northern Ohio, Southern Michigan, 1205 Chesapeake Ave., Columbus, O.; James Rhodes, Northern Ohio, Southern Michigan, University Club, Akron, O.; David Bossen, Southern Ohio, Southern Indiana, 1205 Chesapeake Ave., Columbus, O.; Wm. Van Horne, Southern Wisconsin, Northern Illinois and Southwest Michigan, (Temporarily) 1205 Chesapeake Ave., Columbus, O.; Joseph Conrad, Southern Wisconsin, Northern Illinois, Southwest Michigan, 1205 Chesapeake Ave., Columbus, O. (Temporarily). In addition, Walter Canter, Norman Walters, and David Knox work out of the Columbus office on special assignment.



#### NEW APPLICATION

An AccuRay beta gauge is shown measuring the amount of plastic material being coated on fabric with a doctor blade. The gauge is located between the ovens and the windup.

# New Overhead Traversing Design Saves Floor Space for Paper Company



## SOLVES "CROWDED EQUIPMENT" PROBLEM

Specially designed for use in the paper and box board industry, a new mounting for the AccuRay beta gauge has been developed by Industrial Nucleonics Corporation, Columbus, Ohio. The new mounting is of the overhead

type which permits the gauge to be installed on paper machines without the necessity of supporting base members, allowing customers full use of premium floor space for re-threading and handling broke.

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Announcing

*AccuRay*

## AUTOMATIC CONTROLS

### **Industrial Nucleonics Now Makes Possible Long-awaited Automatic Controls For Continuous Sheet Processes**

The world's most reliable and accurate industrial measuring system—the AccuRay beta gauge—has given industry the sensing element required to successfully operate automatic controls and provide your production lines with control elements specifically required.

The new AccuRay control systems include high-low controls, proportional time controls, adjustable time controls, and a suitable line of accessories to adapt these controls to the particular requirements of your process.

#### **RUBBER AND PLASTICS INDUSTRIES . . .**

In the rubber and plastics industries, AccuRay systems are designed to actuate machine adjuster motors for three-roll and four-roll inverted L calenders. Using the AccuRay beta gauge as a sensing element, the controls perform the same function as an experienced, conscientious and attentive machine operator. They correct weight variations in machine-produced sheet as rapidly as they occur, guaranteeing uniformity of product.

Actual installation figures show as much as a 25% increase in product uniformity after installation of an AccuRay control system. In addition to controlling calender rolls, AccuRay controls can provide the same advantages to coating and adjustable-die extrusion processes.

#### **PAPER AND BOXBOARD INDUSTRIES . . .**

AccuRay Controls also serve the paper and boxboard industries. For many types of paper machines, AccuRay beta gauge installations on the dry end directly control the headbox gate to keep basis weight and sheet levelness uniform. For heavy papers and boxboard lines, Industrial Nucleonics provides a dry end—wet end cascade arrangement to give an accurate, continuous measurement of sheet weight as close to the headbox as possible. AccuRay control reduces the amount of off-spec material and cuts production costs. When the machine tender is released from the responsibility of controlling the headbox gate, he can devote much more attention to other duties.

#### **SAFETY CONTROLS . . .**

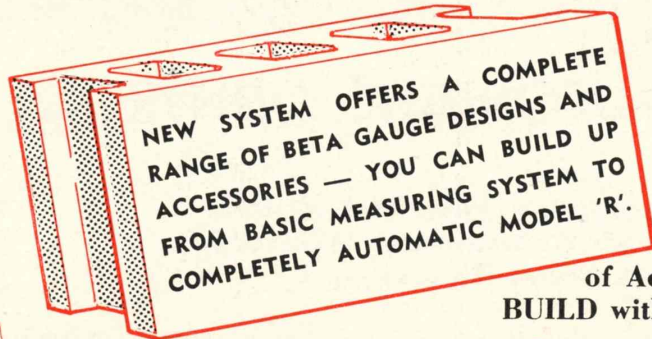
To insure complete safety to your processing equipment, Industrial Nucleonics has perfected numerous safety mechanisms. These include excessive correction time safeties, excessive error signal systems, minimum process speed safeties, and raw material depletion safeties.

No matter what your sheet production problems are, Industrial Nucleonics Applications Engineers will be glad to discuss them with you without cost or obligation.

**INSTALL ACCURAY AUTOMATIC CONTROLS NOW!**

***Mail Return Card Today For Complete Information***

# Now - INDUSTRIAL NUCLEONICS' NEW "BUILDING BLOCK" SYSTEM GIVES YOU AN ACCURAY TO FIT YOUR SPECIFIC NEEDS



NEW SYSTEM OFFERS A COMPLETE RANGE OF BETA GAUGE DESIGNS AND ACCESSORIES — YOU CAN BUILD UP FROM BASIC MEASURING SYSTEM TO COMPLETELY AUTOMATIC MODEL 'R'.

*Flexible designs permit field installation of additional features as future needs develop*

Over 25 different combinations of AccuRay features are now available — BUILD with AccuRay and BUILD your profits!



## 1 BASIC ACCURAY MEASURING SYSTEM

World's most accurate beta gauge circuitry provides continuous, non-contacting measurement of sheet material. Basic unit consists of standard recording console, AccuRay measuring system with manual standardization, rugged industrial electronic components, steel fabricated source-detector unit, and dial adjustments for variable ranges. A wide selection of source-detector throat depths is provided to fit most all sheet widths.



## 4 PRE-SET MEASURING STATIONS

System permits the ultimate in flexible operation of the source-detector unit. Position switch on console control panel allows three or more positions to be pre-set and selected instantaneously with a throw of the switch.



## 2 AUTOMATIC STANDARDIZATION WITH BUILT-IN CIRCUITRY MONITOR

Industrial Nucleonics' renowned automatic standardization insures accurate calibration of the gauge by compensating for all error-producing variables, eliminating possibility of human error inherent in manual standardization. This automatic cycle is initiated by a push button on the control panel. System includes another outstanding AccuRay feature—built in circuitry monitor—check lights which point out any section of circuitry should it require service.



## 5 VARIABLE RANGE SETTER

Positive-selecting range setter located on control panel provides quick setting of operational ranges. Settings are indicated on three-digit mechanical counter.



## 3 SHEET TRAVERSING SYSTEM

Traversing system makes possible valuable profile checks, spot position programing, and automatic scanning. The system, featuring a motor driven carriage for the source-detector unit, also provides the step necessary for complete automatic standardization by moving the source-detector off sheet periodically to permit standardization. A "memory circuit" in the system automatically returns the source-detector unit to its sheet position after the gauge standardizes.



## 6 RANGE SELECTOR CONTROL

Where range of product varies widely, multi-range calibration can be provided with a selector switch to set each range. The selector switch is located on the control panel and permits the change from one range to another by a flick of the switch.

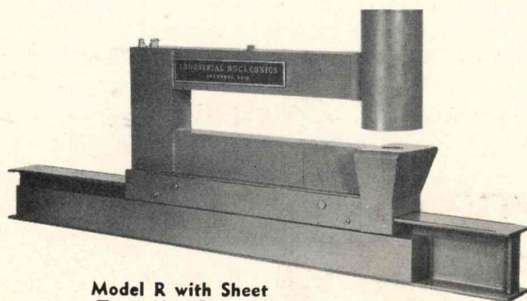


AccuRay Console with Presentation Accessories



## 7 PRESENTATION ACCESSORIES

To provide utmost utilization of AccuRay information, Industrial Nucleonics offers a well-designed line of presentation accessories including target and tolerance marking pens with central ink reservoir, and high-low mechanical limit switches. The console model with this group has a recessed control panel under protective door with lock and shatterproof glass and fluorescent illumination in recorder and control panel.



Model R with Sheet Traversing System

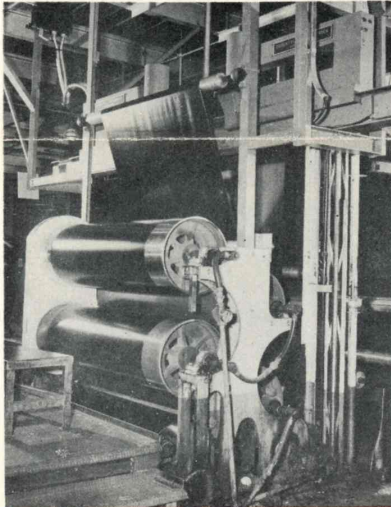


## 8 OPERATING ACCESSORIES

To complement the basic measuring system, Industrial Nucleonics provides a number of useful accessories. These include chart reviewer, sample holder, working tools, parts kits and extra charts.

Mail Return Card for Complete Information

## Nuclear Gauging Reduces Scrappage In Calendering Plastic Materials



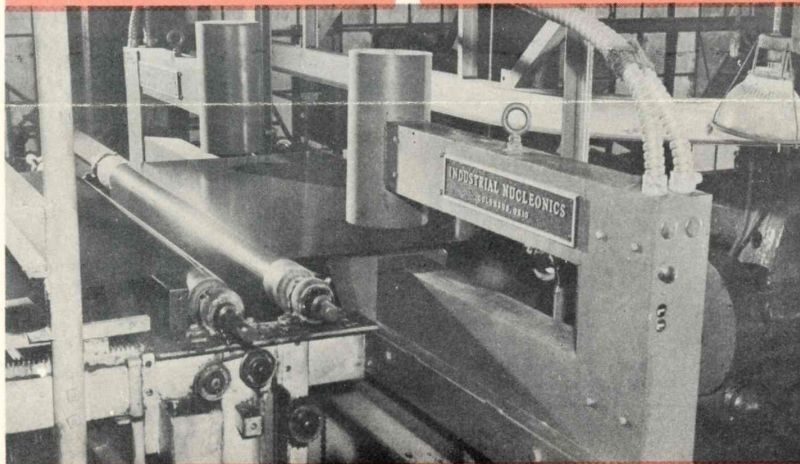
### GAUGE LOCATION

Installed in pairs, the gauges are mounted high in the calender train, after the cooling drums and before the tension rolls.



### OPERATOR'S PART

Calender operator, with hand on control buttons, watches AccuRay recorder to guide him in making roll adjustments.



### MATERIAL DATA

This dual AccuRay installation measures both vinyl plastic sheet and coated fabric. Location of gauges enables AccuRay to give reading of finished product and keeps floor working area free.

### Improved Quality Control Of Coated Fabric And Sheet Achieved By Textileather

Every yard of the richly-colored, fine textured fabrics being produced on the calendering lines of Textileather Corporation, Toledo, Ohio, is being "read" atomically to insure uniform quality throughout each run.

One of the nation's largest producers of plastic-coated fabrics and vinyl sheet, Textileather Corporation secures a most accurate and continuous check of the amount of plastic being formed in sheets or applied to fabric, through use of AccuRay beta gauges. Along with achieving improved quality control, the firm also has reduced scrappage on its calendering lines, according to production officials.

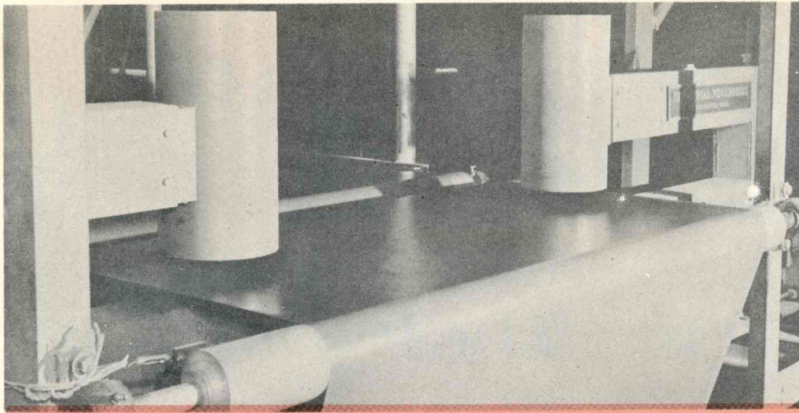
### PRESENTS TARGET

The Industrial Nucleonics AccuRay gauges weigh the moving material with invisible beta rays and instantly present the information in ounces per square yard on a chart recorder for operating personnel to observe and guide by.

To give simultaneous readings of each side of the sheet, pairs of the AccuRay gauges are mounted opposite each other, high on the calendering train before the wind-up rolls. The weight of both edges of the sheet is pinned on a single chart recorder. Blue ink is used for the right side gauge and red ink is used for the left gauge. Object of the calender operator is to see that the traces overlap on the chart, indicating that the sheet is uniform in weight and that the calender rolls are even.

Cocking of calender rolls—and consequent unevenness of sheet—formerly was an industry problem, but the AccuRay gauges now de-

(Continued on next page)



#### ROLL BALANCE CONDITION

Positioning the AccuRay gauges opposite each other permits a continuous comparison of sheet edge weights.

### Quality Control

(Continued from page 1)

tect this condition immediately and make it a simple matter to make corrective "hairline" adjustments.

In addition to presenting information accurate to less than 1%, the gauges think for themselves electronically and every 30 minutes make adjustments within themselves for changes in plant conditions such as temperature, humidity, dust, etc.

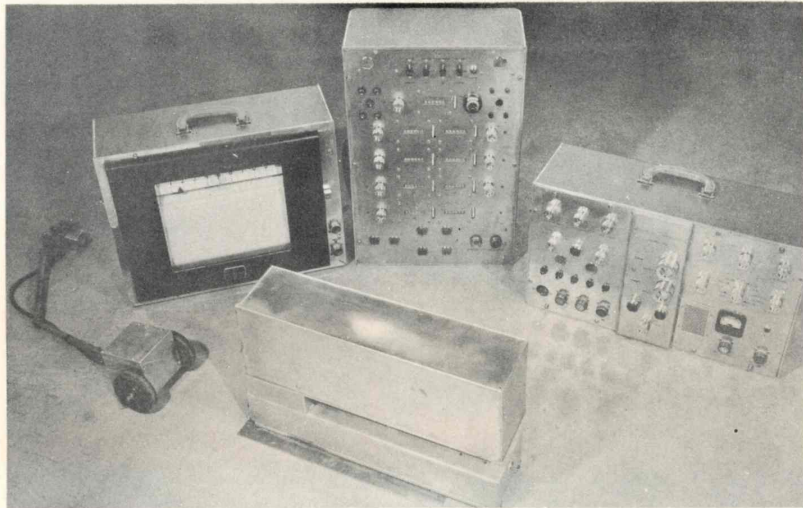
Textile leather officials point out that the gauges besides showing scrappage savings and insuring constant uniformity, are reducing the number of quality checks involving the cutting of material uniform quality, chart recorders to the laboratory.

### New AccuRay Industrial Survey Kit Provides Quick Process Analysis

In keeping with their policy of providing complete measurement service, Industrial Nucleonics has developed an industrial survey kit (right) to assure proper engineering recommendations for each customer's specific requirements.

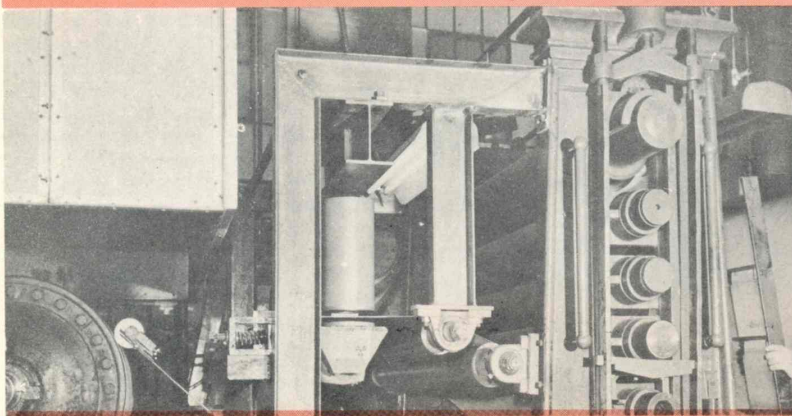
Made in handy, luggage-size components, the kit permits fast, accurate and efficient tests of actual production runs without disturbing operations. A feature of the kit is the totalizer unit which automatically tabulates percentages of material being run both within and outside of tolerances.

For a free demonstration on your own lines, ask your Industrial Nucleonics Representative to place your firm on his schedule. All facts in regard to process, costs, and savings are kept confidential.



Basic components of the kit are shown in a semi-circle around the detector unit in the foreground.

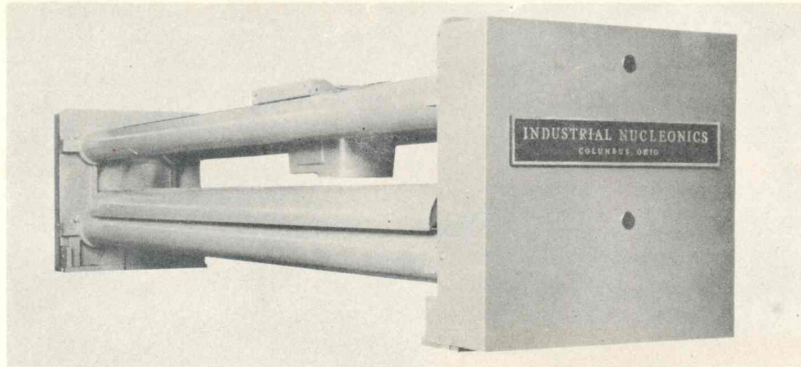
### Paper Company Installation Features Automatic Scanning of Sheet



#### MORE PAPER WORK

Picture at left is a head-on view of an AccuRay beta gauge measuring paper at Knowlton Brothers, Watertown, New York. The gauge rides in an overhead traversing mounting and is located between the last dryer roll and the calender stack. Measuring paper in weights of 25-425 pounds per 3000 square feet, the AccuRay with its five-foot throat depth is capable of measuring the entire sheet width and presenting valuable profile checks. An automatic unit positions the gauge across sheet at regular intervals.

## Another New AccuRay Mounting Introduced To Industry



A new enclosed-bracket mounting for economically bringing the advantages of beta gauge measurement to industries producing wide sheet material has been announced by Industrial Nucleonics Corporation, Columbus, Ohio.

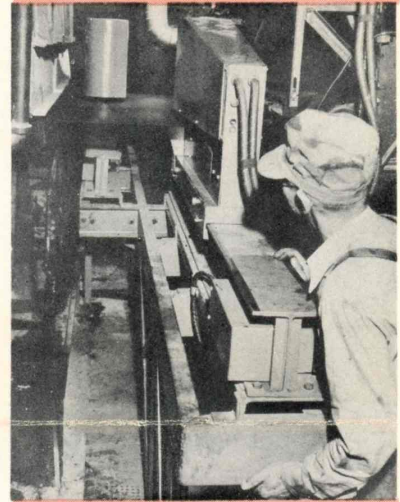
Another addition to the versatile line of AccuRay beta gauge mountings, the new model is designed for use in such industries as paper, plastics, and floor tile where large sheet widths are not uncommon and "crowded" production lines are the rule.

A basic feature of the mounting is the design which permits the

source of radiation and detector unit to travel back and forth across sheet on separate arms and never vary their alignment, permitting the same high degree of accuracy provided by other AccuRay models.

Fabricated of centerless ground tubing and cast end plates, this standard mounting has been built to handle sheet widths up to 100 inches. An outstanding advantage of the AccuRay unit is its compactness which permits it to be installed without costly alterations in "jammed" production lines. Gauge can be installed at various angles to fit slanting pass lines of material.

## AccuRay Beta Gauges Measure Goodrich Tires



### GOOD FOR GOODRICH

This twin AccuRay installation is shown measuring tire fabric on a 4-roll calender in the B. F. Goodrich Company's Akron, Ohio, plant. Gauge heads and staggered mounting were designed to Goodrich specifications.



Pictured above is the November class which attended the Industrial Nucleonics maintenance school in Columbus, Ohio. The school, which is designed to teach instrument men preventative maintenance and servicing of the AccuRay beta gauge, is offered free of charge to all customer personnel. Shown are: (left to right) Ralph Peterson, Arnold Engineer-

ing; E. Price, Columbia Boxboard; Cloyce King, Cooper Tire & Rubber Company; H. Raby and S. Kueyk, Firestone Tire & Rubber; Paul Joy, Carborundum Corporation; K. E. Wilhelm, Rhee Elastic Thread; William Garlough, Knowlton Brothers; Sigmund Denzer, Federal Leather; and Walter Snow, U. S. Rubber Company.

## Careful Fabrication Readies AccuRay Consoles For Industrial Bumps



### RUGGED BUT RIGHT

Many of the compliments that Industrial Nucleonics receives come from production workers who are amazed that a gauge so sensitive as the AccuRay can withstand the con-

stant abuse of the production lines and still maintain its accuracy. There's no trick involved—just careful fabrication and tested design.

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