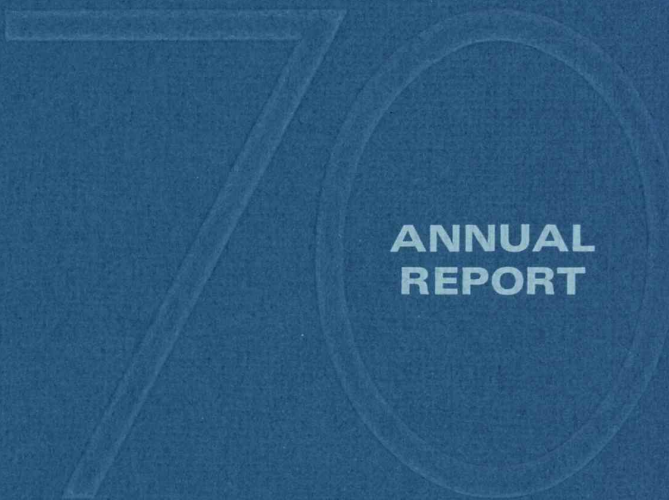


INDUSTRIAL

NUCLEONICS

CORPORATION



**ANNUAL
REPORT**

Year Ended December 31, 1970

Financial Highlights

Year Ended December 31	1970	1969	% Increase
Total Operating Revenues	\$27,599,763	\$20,002,379	+38.0%
Net Income Before Taxes	\$ 4,429,119	\$ 3,366,158	+31.6%
Net Income	\$ 2,402,119	\$ 1,916,158	+25.4%
Net Working Capital	\$11,047,948	\$ 8,717,253	+26.7%
Primary Net Income Per Share	\$0.74	\$0.60	+23.3%

To Our Stockholders and Employees :

Industrial Nucleonics completed the fiscal year ended December 31, 1970, with the best record in its corporate history. Growth was established in every category of our operation with total revenues exceeding \$27 million. From a marketing standpoint, the acceptance of new AccuRay systems and services introduced during 1969 and 1970 exceeded our expectations and resulted in the largest backlog in our history. To meet increased shipments required significant expansion in facilities as well as personnel. We begin 1971 in a strong position based upon a healthy backlog for our new systems, a record of profit growth, and an exceptional team of qualified personnel.

Financial Summary

Total revenues from sales, rentals, and services increased to \$27.6 million in 1970, up from \$20.0 million for the previous year. Before-tax profits on this business were \$4.4 million, up from \$3.4 million in 1969, an increase of 32 percent. After-tax profits were \$2.4 million compared with \$1.9 million for 1969, an increase of 25 percent. Corresponding primary earnings per share were 74 cents compared with 60 cents per share in 1969. All figures represent the consolidated performance of Industrial Nucleonics and its subsidiaries.

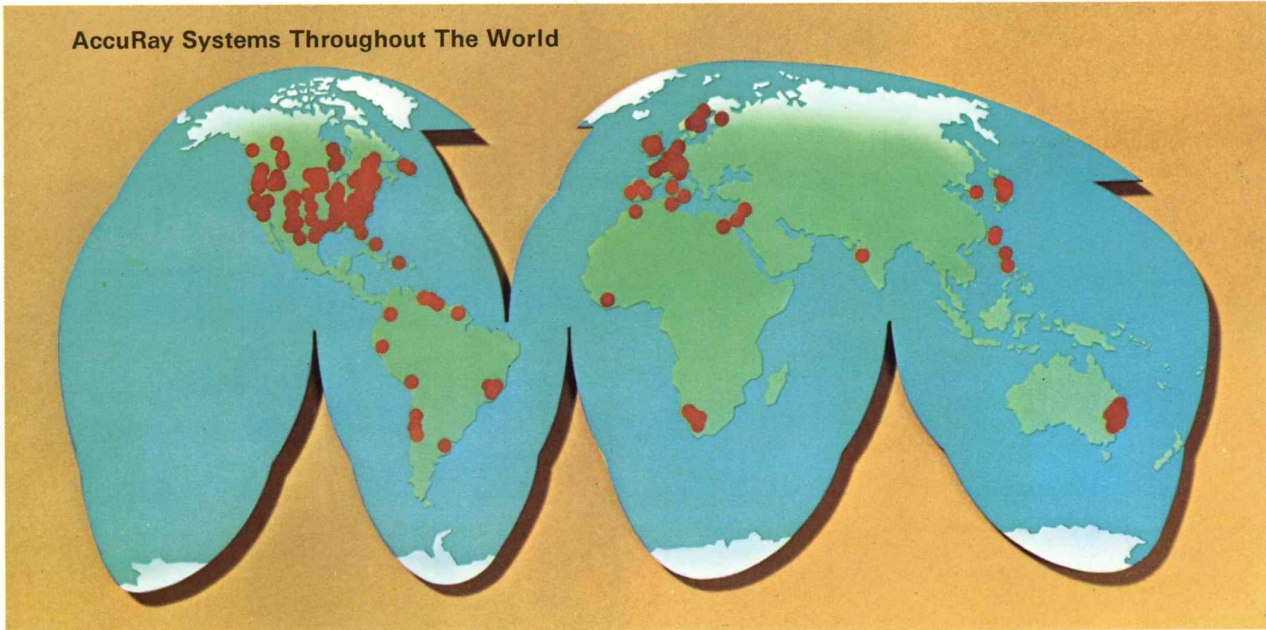
Our interim reports for 1970 reflected additional

revenues from the sale of land and a building. During the last half of 1970, we also elected to decrease our investment in corporate aircraft in order to gain the advantage of reduced future operating expenses. The composite effect of these transactions was that we realized in 1970 a gain of \$344,000 on the sale of 10 acres of land and a building to the State of Ohio and a loss of \$226,000 on the disposition of transportation equipment. In a similar manner, we realized in 1969 a gain of \$183,000 on the sale of real estate and a loss of \$139,000 on the disposition of transportation equipment. The net effect on income in both years was not considered material, and all transactions are included under Miscellaneous Income in our Consolidated Financial Statements.

Acceptance of New AccuRay Systems

We enter the fiscal year 1971 with a record backlog, 50 percent higher than at the beginning of the prior year. Included are orders for equipment and related commitments for systems engineering and customer engineering services to be performed during 1971. Orders include systems falling within five new major product lines introduced during the last 18 months. These are:

- 1. AccuRay Process Management (APM) 900—computer-based system operating with a "user-shared" digital computer.
- 2. AccuRay Process Management (APM) 800—computer-based automation-management infor-



Markets for AccuRay systems throughout the world have expanded with 10,000 installations now located in over 30 countries.

mation processing system with a digital computer as an integral part.

3. AccuRay 700 — measurement, control, and data system of modular design for operation as a single system or with a separate general purpose computer for expanded control and data functions.
4. AccuRay C-700—special configuration automation system with inspect and reject functions, designed specifically for the tobacco industry.
5. AccuRay 600—basic measurement, control, and data system packaged in a single console with a given design applicable to each of a wide variety of manufacturing processes.

With these five systems, Industrial Nucleonics can supply each customer with the best "economic match" for his particular manufacturing operation. In each application, we investigate both the technology and economics of the customer's manufacturing operations. The basic manufacturing processes are then computer-simulated and analyzed prior to the design of the specific automation-information system. Once the AccuRay system is designed and installed, we give assurance that the customer will profit from the use of the system. The full spectrum of services offered further ensures that the system will continue to benefit the customer.

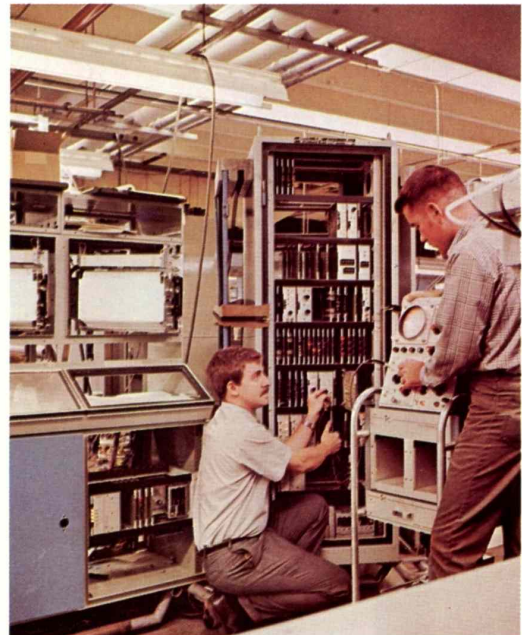
Planned New Product Development

Industrial Nucleonics' growth has been to a large

extent a function of its continued development of new and unique products, systems, and services. The creation of new automation systems has been based on yearly, planned investment in research and development. The new product lines introduced during the past 18 months resulted from development programs begun in 1965. The total investment in these programs will reach approximately \$11 million by mid-1972.

Each year we examine those development programs which will result in successful new product introductions. The required research and development effort behind each such product is capitalized and amortized over the following three years after product introduction. Other research and development is expensed during the year of its performance. The unamortized investment in development effort behind all major new product lines is carried on the asset side of our balance sheet at \$4.2 million at the end of 1970. This continuing, well-planned investment is as vital to our growth as other investments in capital equipment and physical facilities.

In connection with the introduction of our computer-based AccuRay Process Management (APM) systems, we adopted during the year the cost accounting technique of associating the learning costs on initial system applications with anticipated orders for similar applications in the future. The effect on costs in 1970 was not material, but this method will aid in our expansion of the basic APM development to new applications and industries in 1971.



4 New 71,000-square-foot facility was quickly transformed into a busy manufacturing and systems test area to meet 1970 shipment goals.

Potential in New Markets

The basic corporate purpose of Industrial Nucleonics is to design, manufacture, and market computer-based automation and management information systems. These systems provide value by increasing productivity, lowering costs, and improving the customer's product. We intend to maintain primary emphasis on internal development of systems and services related to the process automation field. At the same time, however, we examine other opportunities in related new markets that are created by our broad research and development activities and keep attuned to possible outside situations which might in time provide compatible sources of expansion. Two major areas pursued during 1970 were:

International Markets—Considerable expansion possibilities exist in applying the basic systems, techniques, and services of the company in new geographical areas. For example, during the last several years, the most rapidly expanding part of our business has been our international operations which have grown from approximately 4 percent of our shipments in 1965 to approximately 18 percent in 1970.

Management Information Services—During 1970, we established a new Information Services Division as a separate marketing and technical organization. The mission of the new organization is to provide customer management consulting services to bridge the gap between present automation programs and corporate-wide management information systems. This approach provides the customer with information from a single "data base" for overall management of his business. In this manner, the information generated by present AccuRay systems will be of even greater value to the customer.

Personnel and Facilities

The demand for new AccuRay systems and services required a substantial increase in employment level which by year end reached 1223, a 41 percent increase over 1969. Extremely competent professional personnel were obtained with backgrounds in such specialty fields as systems design, control engineering, and computer programming. These personnel have completed company training programs and are now working effectively to meet the increased equipment shipments planned in 1971.

In October, 1970, our manufacturing facilities were increased by the addition of a 71,000-square-foot building to handle the increased volume of systems in production. An additional 89,000 square feet of space was leased nearby to allow for the consolidation of marketing activities at one location and

all divisions of AccuRay Leasing Corporation at another.

Leasing Business

The total value of AccuRay automation systems currently under lease and rental exceeds \$33 million. During 1970, we noted a continuing trend toward the full payout, or long-term, leases. The full payout leases written during this period were for terms of five, eight, or ten years. On September 1, 1970, a new agreement was reached with First National City Leasing, Inc., a subsidiary of the First National City Corporation, New York, under which they will purchase a certain portion of our long-term leased systems.

When our customers desire shorter term leases for terms of one or three years, we are able to provide financing from a three-year, \$9-million extension of our joint-venture agreement with the St. Paul Leasing Company, a subsidiary of St. Paul Companies, Inc., of St. Paul, Minnesota.

During 1970, the company entered into new contracts with some of its existing customers, converting prior rental agreements to long-term financing leases. Consistent with the company's practice in all prior periods of accounting, the gain on sales of this equipment sold or converted to long-term financing leases is included in current year income.

The Future

During this past year we have observed throughout industry a significant increase in management attention toward improving return on invested capital. Increased productivity, reduction in costs, and improved product quality—the underlying objectives of our business—offer to customer industries a means of achieving their profit goals. The result has been increased demand and stronger markets for our new systems and services both in this country and abroad.

The challenges that face us are of a positive nature. These involve our ability to organize and manage our total resources, facilities, and personnel in order to take advantage of the growing automation fields. At the same time, through managed innovation and sound business practices, we shall strive to enhance the profitability of our own business.



David L. Nelson
President

The AccuRay Objective

AccuRay systems operate in basic manufacturing industries such as steel, rubber, paper, and plastics. These industries have the objective of producing maximum amounts of salable products per unit of raw material, labor, and operating cost. The processing of raw materials into a final salable product requires different process machines and operations in various industries.

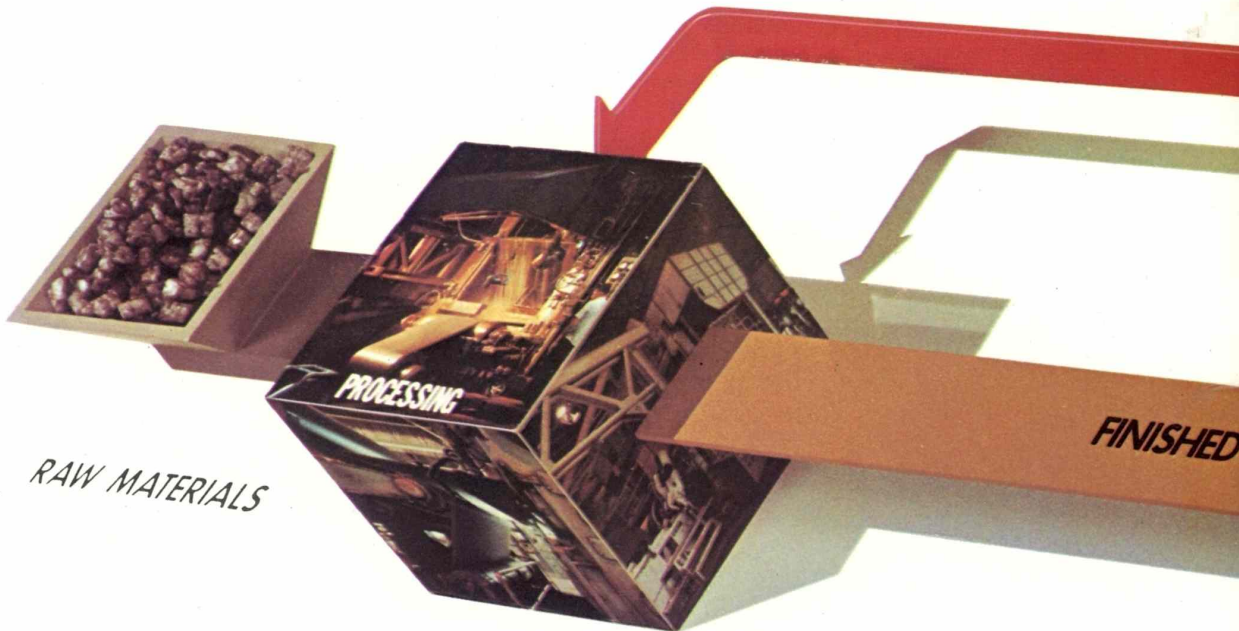
AccuRay systems perform two broad functions: (1) they automate the manufacturing operation, and (2) they provide management personnel with information on costs, performance, and product quality. The starting point for control by AccuRay systems is the accurate measurement of such product and process characteristics as weight, density, thickness, moisture, and composition. Real-time, continuous measurements of the important characteristics are then fed back to adjust automatically the manufacturing process.

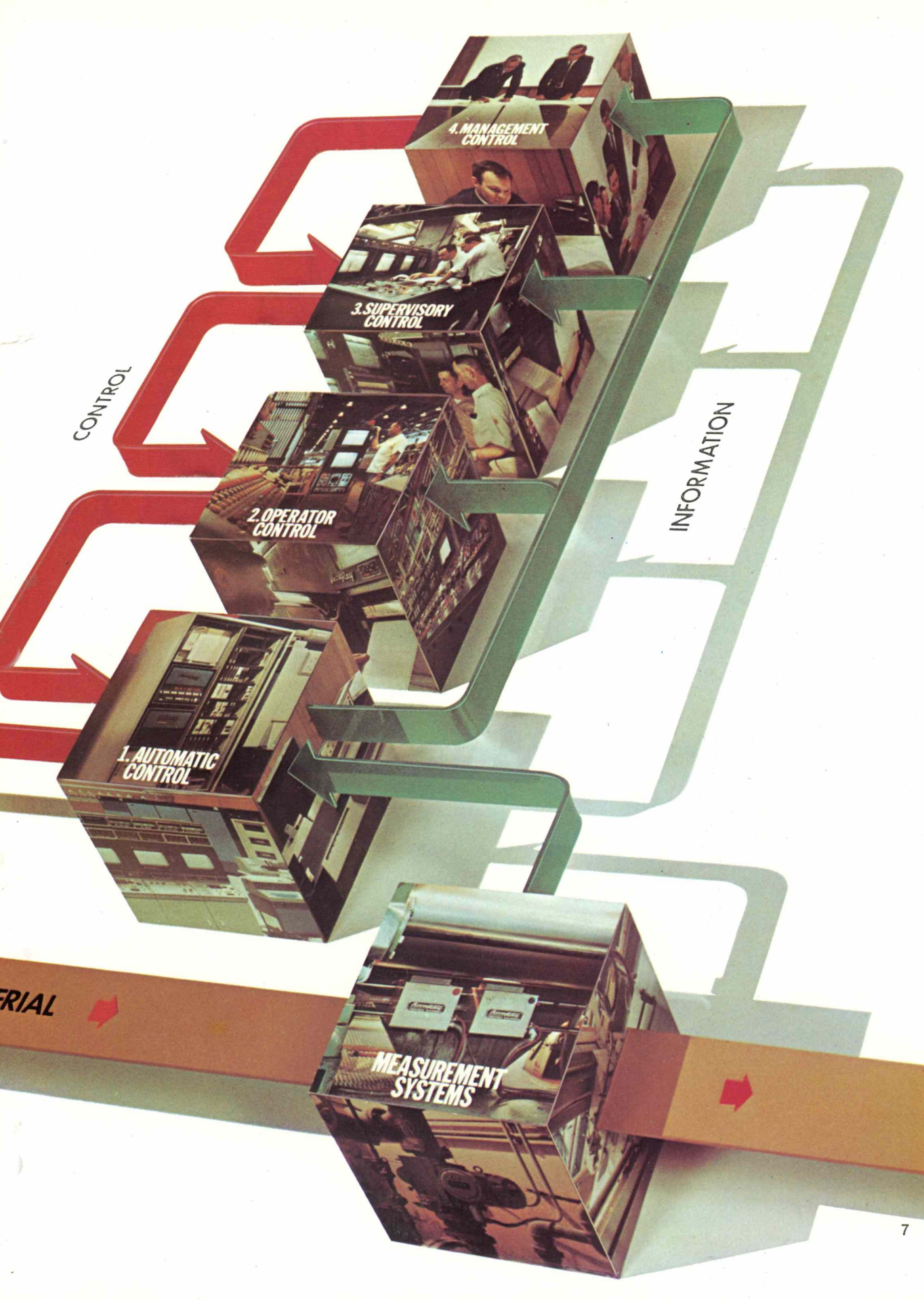
Various levels of management and supervision are provided with important process and product

information according to a unified, corporate-wide data base. This permits each level of management to select the particular information needed for most effective control.

At Level 1, adjustments of the process machinery are made automatically on the basis of critical measurements and computer control strategies. At Level 2, the machine operator is able to make major process changes when required with the aid of considerable visual readout at his control station. At Level 3, key information on process performance, production rates, and product quality is summarized for supervisory personnel at a typewriter terminal. At Level 4, higher management levels receive additional printed information with regard to cost, efficiency, and profits.

Thus each level of management is able to assess the pertinent information supplied and, in turn, to feed down the most advantageous control instructions. With AccuRay systems, a business operation truly becomes an integrated entity with all parts working toward common goals.





MATERIAL

INFORMATION

Demand for AccuRay Systems

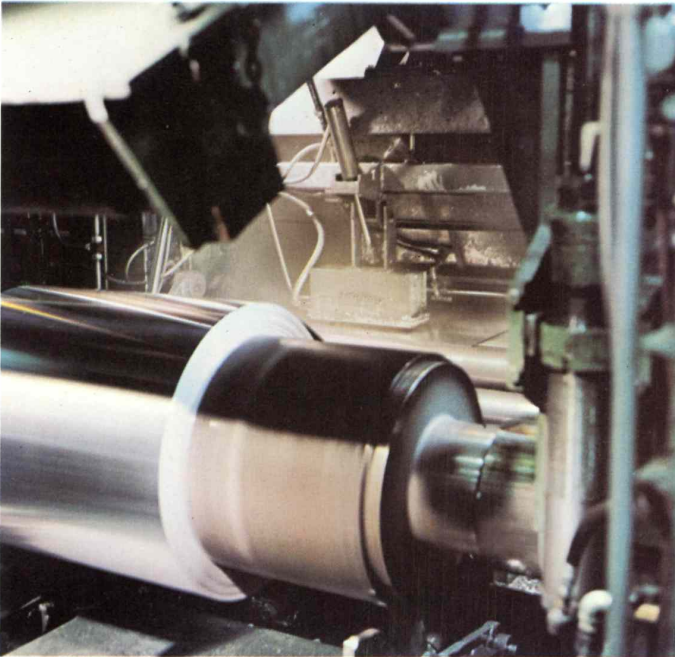
Industrial Nucleonics was perhaps ahead of its time when it recommended as early as the 1950's that management in basic industries give as much attention to production increases and efficiencies

as they give to labor and machinery. Today when productivity is declining and when financing is not available for sizable capital expenditures in machinery and facilities, these same industries are looking toward productivity measures, cost controls, quality assurances, and real-time information systems as major requirements for business success.

AccuRay systems with their respective cost benefits and production efficiencies are available to a broad range of industry including manufacturing operations in metals, rubber, plastics, paper, building materials, paperboard, food, tobacco, and beverages. Other systems are employed in operations in which materials are processed in a liquid, slurry, or gaseous state. Applications of the latter include chemical processing, mining, petroleum refining, and water pollution control.

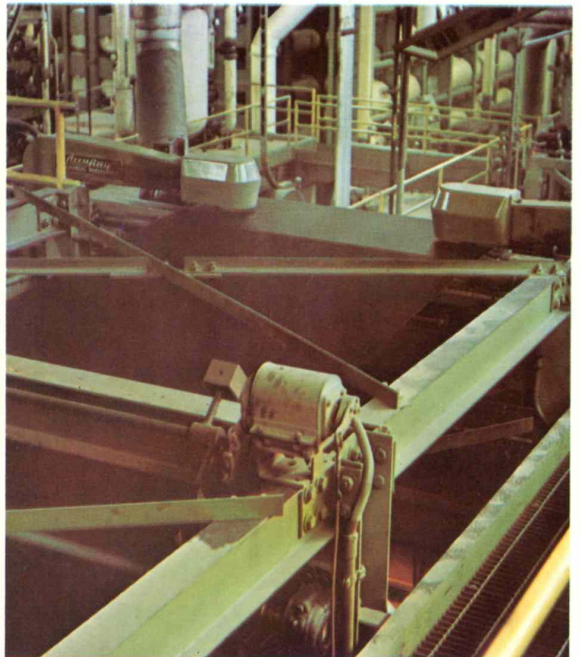
Manufacturing operations in most of the industries served by Industrial Nucleonics are characterized by high-speed, continuous production and large dollar value of finished products. Raw materials in such continuous manufacturing operations are usually the dominant cost factor—and can represent 40 to 70 percent of total product costs. For example, typical annual throughput material costs for tandem steel rolling are \$50 million; for papermaking, \$20 million; and for rubber tire calendering, \$8 million.

Further, large capital investments are usually made in plant and manufacturing machinery before a mill ever starts into operation. As a result, fixed, nonproduction costs are high for each unit of out-



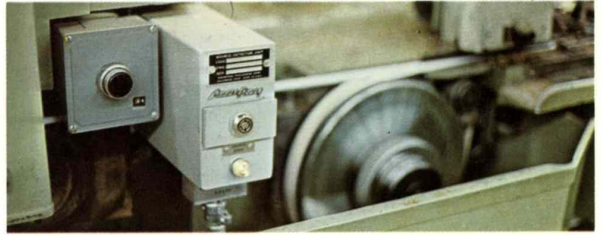
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Aluminum rolling mills rely on AccuRay systems to produce a uniform and quality sheet.



In the tire industry, AccuRay systems assure that desired weight of rubber is coated onto fabric to produce high quality tires at lowest cost.

New AccuRay C-700 control system inspects density of tobacco in cigarettes at production rates of 4 000 per minute.

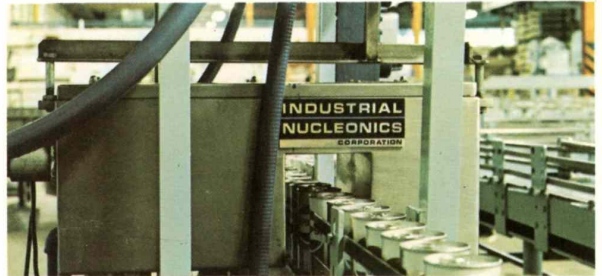


put. The most straightforward way to lower the proportion of fixed costs—depreciation and interest charges—is to increase productivity.

AccuRay automation systems enhance customer profits by both conserving raw materials and increasing machine productivity. Results achieved on typical processes are illustrated by three examples:

1. An AccuRay automation system increased speed of a linerboard machine and, hence, productivity by over \$500,000 per year.
2. An AccuRay system applied to a polystyrene extruder produced typical savings in raw materials of over \$50,000 per year.
3. A computerized APM system controlling thickness of zinc coating on a continuous galvanizing line produced a savings of \$200,000 per year.

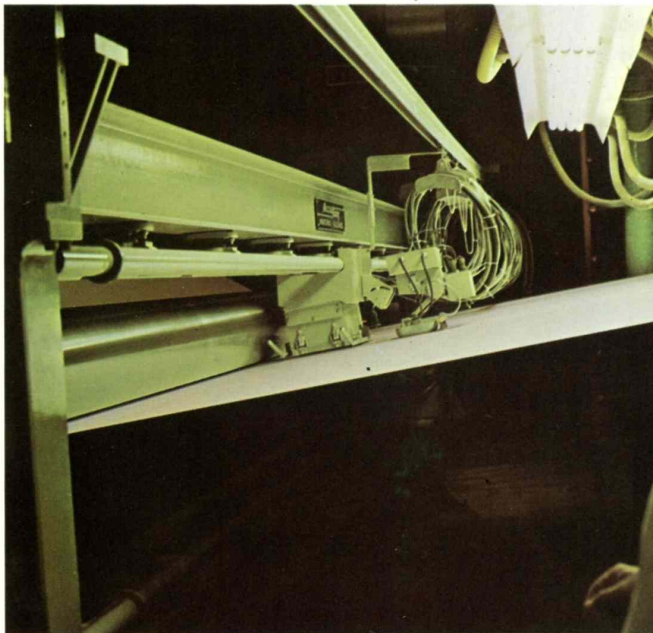
The broad acceptance of AccuRay systems is indicated by the number of users. Approximately 70 percent of the top 100 companies listed in the FORTUNE Directory as well as hundreds of smaller producers employ these systems. Installations throughout the free world are approaching 10,000. The many materials made better by AccuRay systems are routinely used in the home and the office or become parts of fabricated products such as automobiles, refrigerators, and television sets. AccuRay systems thus play a vital role in resisting inflation by providing greater quantities of high-quality products at a lower cost to the consumer.



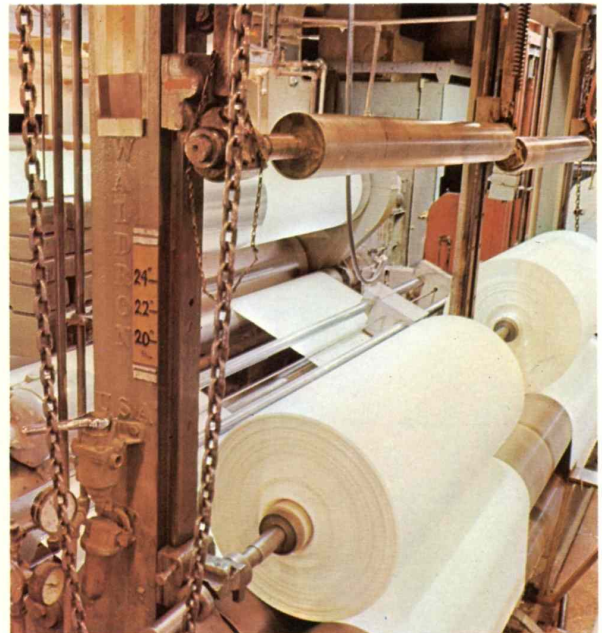
AccuRay FLIR checks content level of canned goods in the food and beverage industry at rates of 2 000 per minute.



Density and level applications of AccuRay systems are common in the power industry.

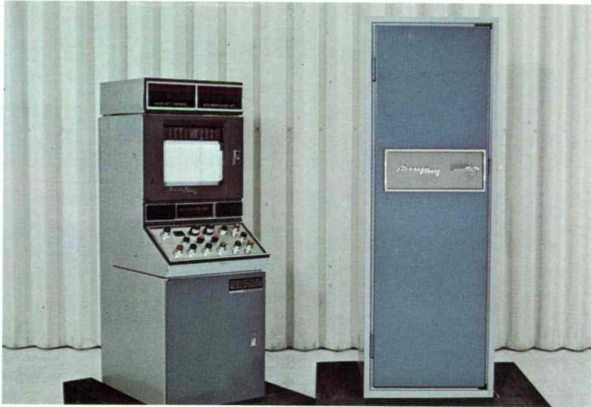


Paper systems measure and control sheet weight, moisture, and thickness.

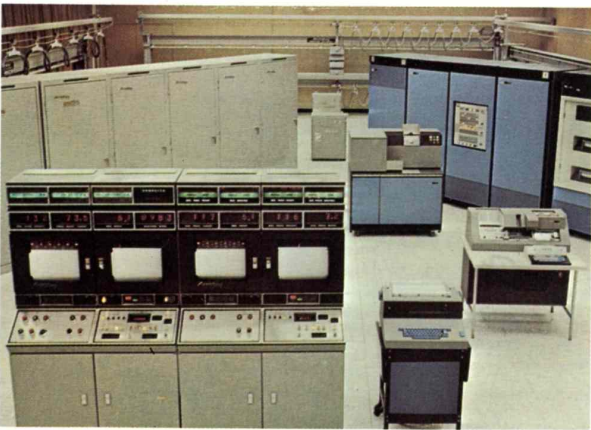


Plastic coating process utilizes AccuRay system to increase productivity and profits.

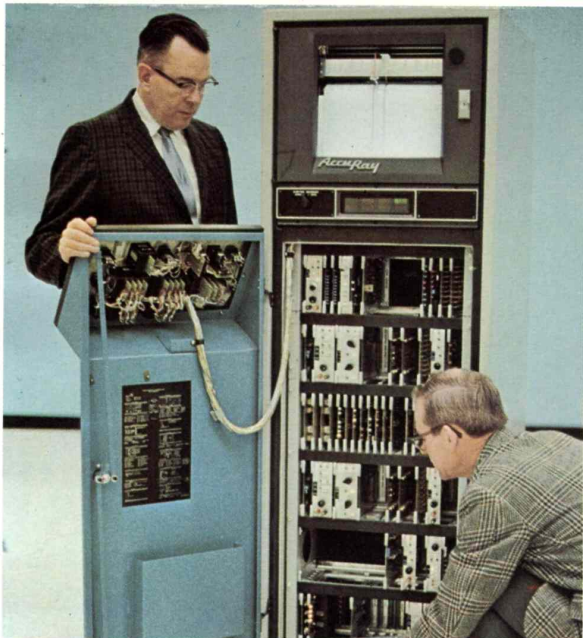
New System Designs



AccuRay 700 systems may be expanded for use with a separate computer.



APM 900 system utilizes a time-shared digital computer.

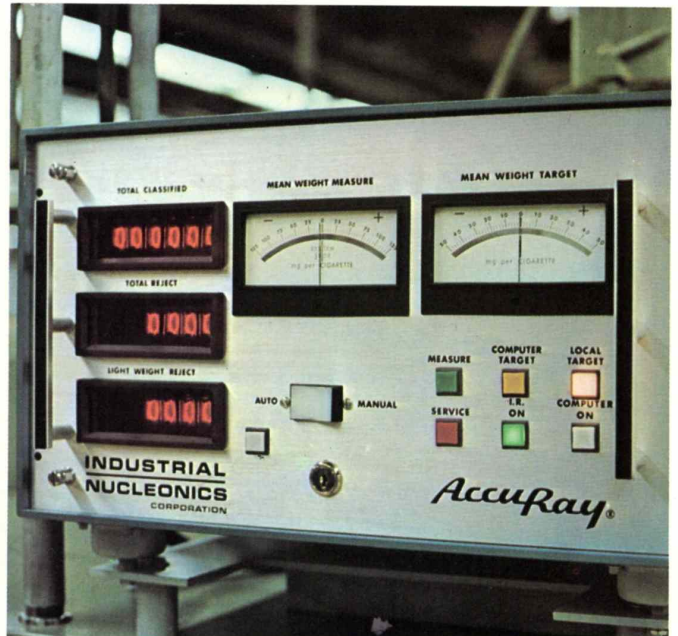


10 AccuRay 600 system incorporates basic measurement, control, and data functions in a single console.

Five new major AccuRay systems were introduced during the last 18 months. These automate customers' manufacturing processes and supply supervisory and management personnel with information on operating efficiency and product quality. Each takes into account the fact that different customers' processes vary as to complexity, operating costs, and products manufactured. With this approach, Industrial Nucleonics is able to supply the best "economic match" for manufacturing operations across a broad range of industry.

The development programs for the five new AccuRay systems were initiated in 1965 and incorporate the latest technical advances in electronics, control theory, and computer sciences. By mid-1972, over \$11 million will have been invested in the new systems.

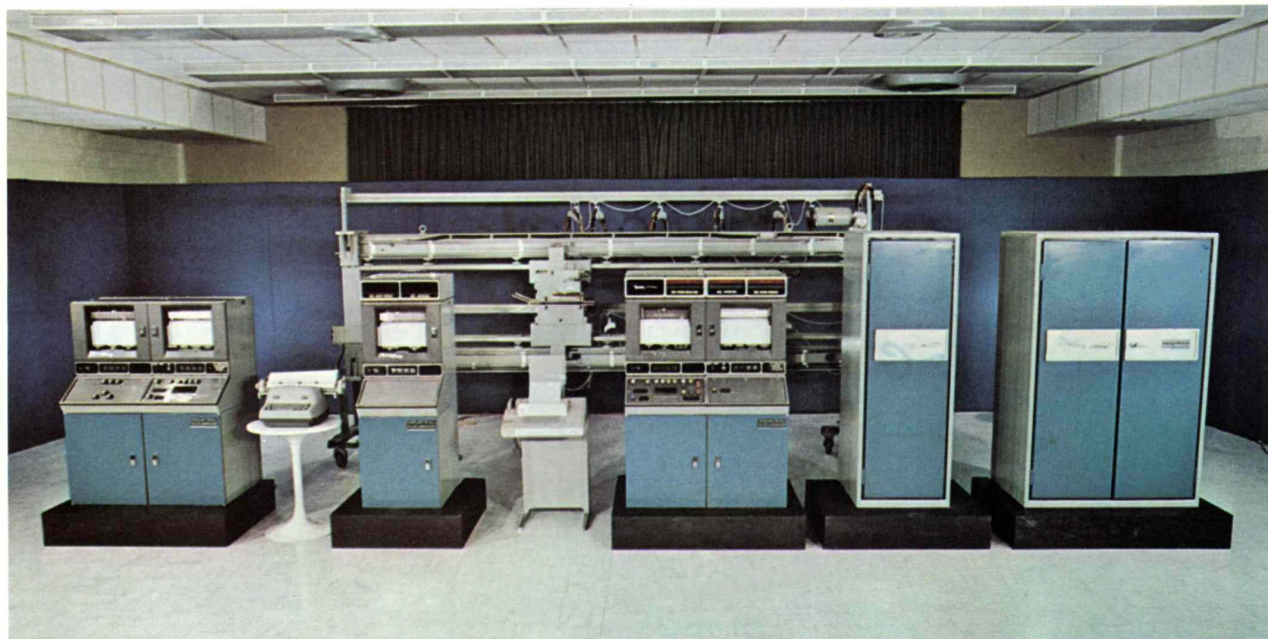
The five new systems provide for Industrial Nucleonics a family of alternative approaches in balance with customer needs. Specific descriptions of these new AccuRay systems lines follow:



AccuRay C-700 was designed specifically for the tobacco industry.

1. **AccuRay APM 900**—This system works in conjunction with a shared digital computer in situations in which the customer wishes to use the computer for other functions. The APM 900 system was developed and programmed to be compatible with other digital computers. Industrial Nucleonics performs systems analysis and programming for that part of the computer system relating to process automation and its resulting management information readout. In the typical case, the digital computer is first delivered to Industrial Nucleonics, programmed, checked out as part of the total system, and then installed in the customer's facility.
2. **AccuRay APM 800**—This system incorporates a digital computer as a basic and integral part of the measurement, automation, and information processing system. Full system analysis, computer programming, and system design are completed before APM 800 systems are readied for shipment. Once installed, the customer is able to utilize his new APM system immediately. The APM 800 system automates basic manufacturing processes based upon input information supplied from AccuRay measurement devices. At the "output" side, the APM 800 system supplies operators, supervisors, and managers with production information on costs, efficiency, and product quality.
3. **AccuRay 700**—The 700 system is a measurement, control, and data readout system of modular design. The basic version supplies continuous and digital readout of key process variables. The 700 can be expanded to provide more complex control and data functions and can be operated or "interfaced" with separate digital computers.
4. **AccuRay C-700**—The C-700 system is a high-speed measurement, control, and inspection system developed specifically for the tobacco industry. Individual production units are inspected, and those not within preset tolerances are automatically rejected at rates up to 4000 units per minute. Multiple C-700 systems may be tied into a central computer-based APM system to provide management with information on total plant production, product quality, and operating costs.
5. **AccuRay 600**—The 600 system is a measurement, control, and data system in which the basic electronics, automatic control, and computer elements are mounted, or housed, in a single console. A new output plotter presents information on multiple process and product characteristics. Designed in packages specific to given industries, these systems allow Industrial Nucleonics to offer many functions to customers at a lower cost.

Substantial orders during the past year were distributed among the APM 800, the AccuRay 700, C-700, and 600 systems. These orders, received from the majority of industries served by Industrial Nucleonics, provided the company good diversification with regard to product lines, industries, and geographical locations of customers.



APM 800 system provides full-scale automation and information capability with a digital computer as an integral part.

The Results Team

To make possible a policy of guaranteed economic results for its customers, Industrial Nucleonics realized early the necessity of a strong field organization and internal support team. Today the field organization numbers over 400 account managers, systems engineers, service engineers, and installation engineers. Internal support from industry managers, applications engineers, project managers, and computer and information science specialists nearly doubles the number of Industrial Nucleonics personnel who are directly involved with providing results for the customer.

Account Managers represent the main contact with present and potential customers and carry ultimate responsibility for the continued success of programs in customers' plants. Some are assigned to a given territory by industry while others are assigned to specific accounts. All must be well versed in both the technology and economics of the customers' operations.

Systems Engineers assist the customer in realizing maximum benefits from the installation. Training of customer personnel, certification of system performance, in-depth analyses of the process, and implementation of changes to improve process efficiency and product quality are among his functions. Again it is highly important that this person have both a technical and business orientation plus considerable knowledge of the customer's process.

Project Managers are home office personnel with systems engineering backgrounds who are assigned to a specific system and follow through its completion from time of design, manufacture, programming, testing, and installation. Their efforts help ensure continuity and expedience of production, giving the field force a head start on the results program.

Systems installation and maintenance are handled by the AccuRay Services Division of AccuRay Leasing Corporation. The installation and service engineers serve as a major support effort to the marketing force.

With the backup of industry, applications, computer, and management information specialists in the home office, the field marketing force has ready sources to gain the greatest benefits from each AccuRay system. These various support teams have been expanded greatly over the past year. They will continue to do so in line with corporate objectives for offering a total systems approach and results package for each customer.



12 Account Managers maintain close liaison with home-office design and manufacturing personnel.



Field personnel serve as consultants to customer supervisory personnel.



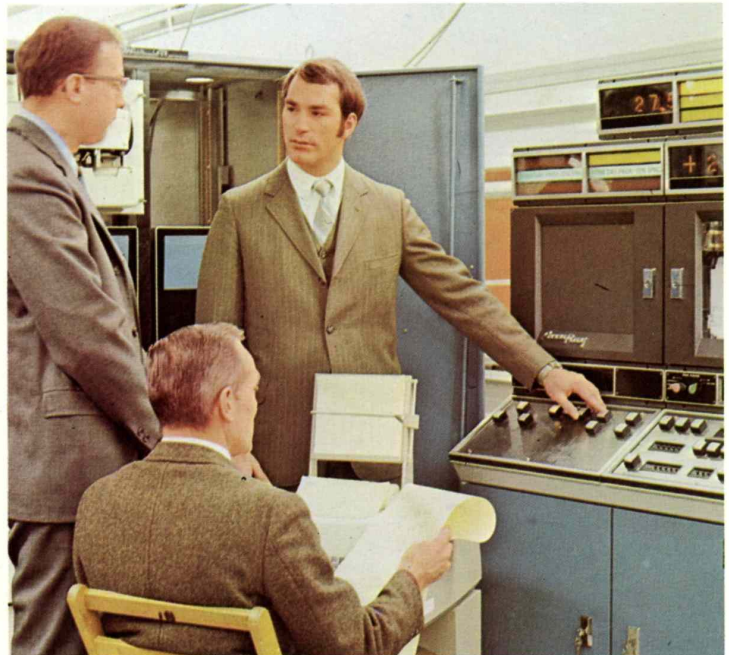
AccuRay personnel work with customers in interpreting current operating information at central data location.



Computer and management information specialists in the home office provide major support to field personnel in obtaining maximum results for customer.



Systems engineers are trained in computer technology and systems analysis.



Systems engineer familiarizes customer personnel with new APM system prior to shipment and installation.

AccuRay Leasing Corporation

Leasing of systems has been an important part of Industrial Nucleonics' business dating back to 1955. Today, the total value of AccuRay systems under lease and rental exceeds \$33 million.

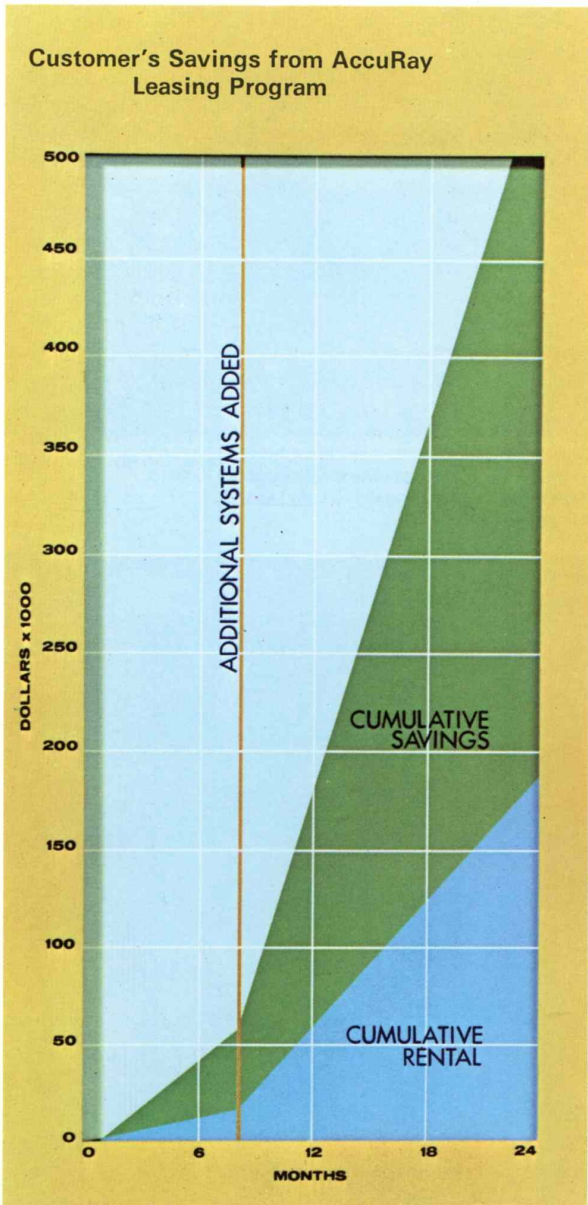
AccuRay Leasing Corporation, formed in 1962, is a wholly-owned subsidiary which manages and performs the company's leasing, customer services, and management information functions. Its activities are directed primarily toward providing customers with a broad spectrum of services to ensure that each AccuRay system will provide maximum performance and benefits. AccuRay Leasing Corporation is organizationally subdivided into three divisions: (1) AccuRay Leasing Division, (2) AccuRay Services Division, and (3) AccuRay Information Services Division. Approximately 265 personnel are employed in these three divisions and profit centers.

Advantages of Leasing

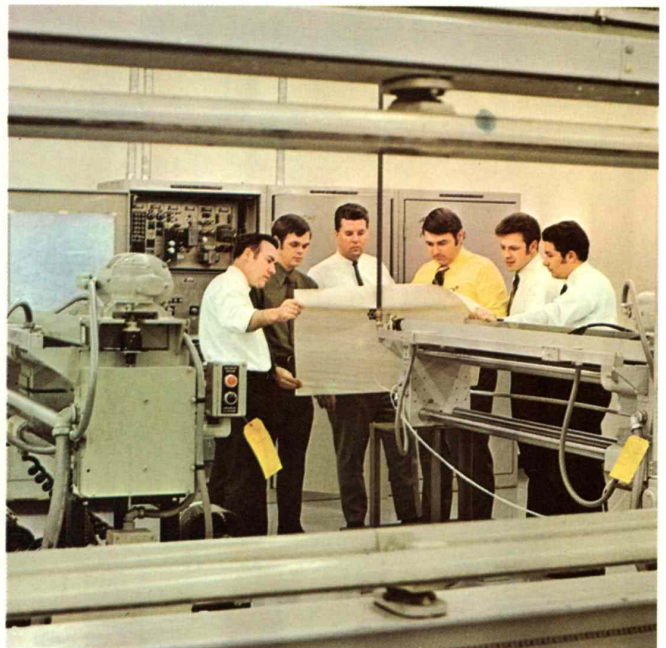
AccuRay Leasing offers leasing plans designed to meet the specific needs of each customer. Programs subdivide into two classifications: (1) short-term leases for terms of one or three years requiring a one-year notice of cancellation and (2) long-term leases for terms of five, eight, or ten years.

Leasing provides definite benefits to customers, among which are:

- The user can pay for the system out of savings from its use while conserving his capital and



In this plastics application, proven results from first installation were dramatically multiplied when customer installed AccuRay systems on five additional lines.



AccuRay service engineers receive training on equipment representative of each basic type ever manufactured by Industrial Nucleonics.

borrowing power for other expenditures.

- The customer receives a single source of supply for both equipment and supporting services.
- Leasing protects against obsolescence and allows the customer to be assured of having the latest and most flexible equipment.

Leasing Programs

AccuRay automation-information systems once installed become an integral part of the customer's total operating process. The majority of AccuRay systems leased stay in place for many years beyond the normal term of the lease. In recent years, there has been a continuing trend toward full payout, or long-term, leases. This, to a considerable extent, is taken as recognition of the long and continuing success of the Industrial Nucleonics' systems and leasing programs.

A certain portion of long-term leases are sold to provide capital for the overall company continued growth. In September 1970, a new agreement was reached with First National City Leasing, Inc., a subsidiary of the First National City Corporation of New York, to purchase a certain portion of long-term leases.

When customers desire to lease systems for terms of one or three years, financing for these short-term programs is accomplished through joint ventures in which AccuRay Leasing Corporation is a 40 percent owner. During the year 1970, a \$9-million extension of a joint venture agreement was made with the St. Paul Leasing Company, a sub-

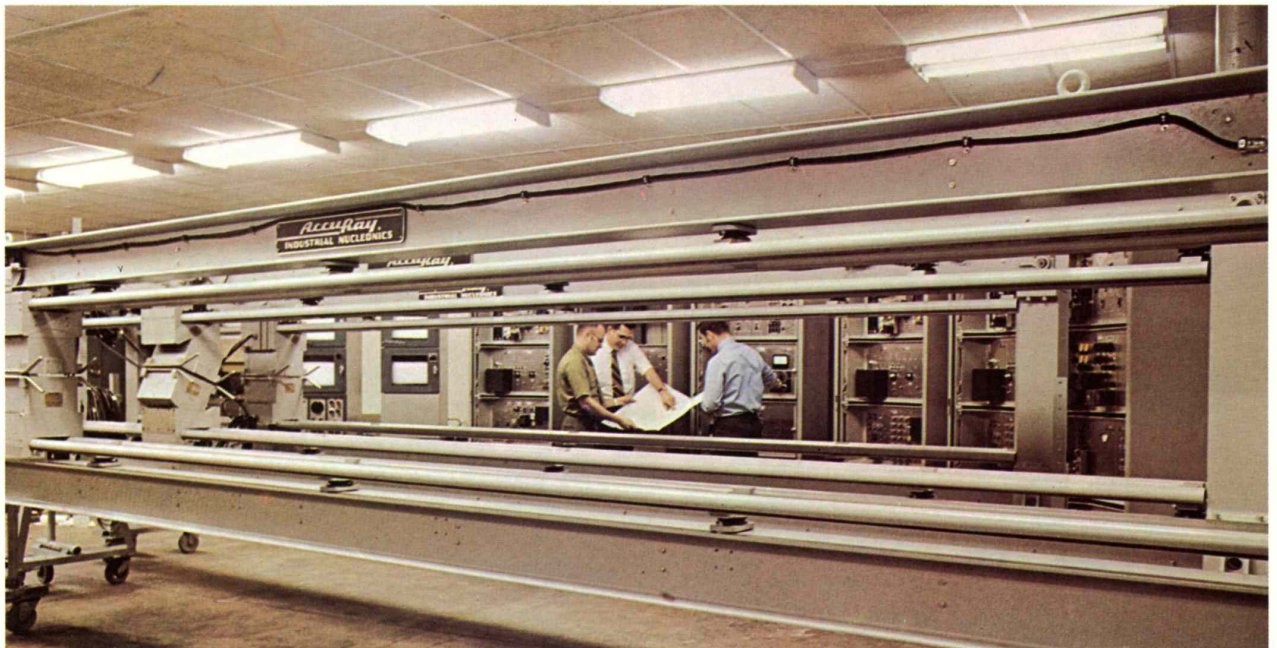
siary of the St. Paul Companies, Inc., of St. Paul, Minnesota.

AccuRay Services Division

The highest performance of automation-information systems is obtained when such systems are backed up by competent and readily available specialists. There is a growing trend to rely on the supplier of systems to perform the full range of supporting services. These services have been an important part of Industrial Nucleonics' business since the mid-1950's.

Each new installation is planned and carried out to cause a minimum of interruption to the customer's production processes. The number of installation specialists and variety of skills assigned to each installation depend upon the complexity of the system and the customer's requirements. Some installation engineers are field based; others are based at the home office and accompany shipments of AccuRay automation systems. The goal of installation services is to assure prompt and satisfactory installation and performance of systems.

The maintenance services provided by customer service engineers are tailored to fit individual customer requirements. Services range from full maintenance responsibilities—including customer training and preventive maintenance—to providing service on request. The wide geographical coverage and quality of services provided by this continually growing customer engineering organization ensures Industrial Nucleonics' customers that their systems



Updating of pre-owned AccuRay systems by the Services Division provides great resale potential for those leased systems replaced by newer models.

will operate accurately and reliably on the process year after year.

Resident customer engineers are provided for large or multiple installations. In addition to maintenance, the resident provides technical and operator training as well as the process application assistance needed to ensure maximum production utilization of the system.

Training of the customer-service and installation engineers is a vital and continuing task. Both theoretical and practical aspects of maintaining complex electronic, computer, and automation systems are stressed. There is now available in a new laboratory actual equipment representative of every basic type ever manufactured by Industrial Nucleonics. New service trainees can thus receive experience on all AccuRay devices and circuits prior to their assignment to service territories.

AccuRay Information Services Division

The automation systems of Industrial Nucleonics yield information to supervisory and management personnel in addition to automatically controlling process machinery. There is thus a duality of purpose: automation and management information. The AccuRay Information Services Division, managed as a separate marketing and technical operation, is a relatively new division of AccuRay Leasing which performs consulting and design services to establish company-wide information systems for the custom-

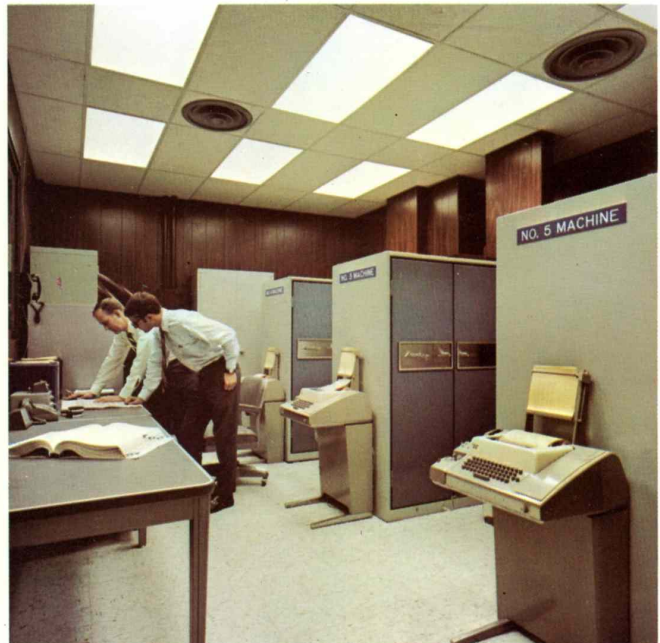
er's total operation. Included are information and data activities associated with functions such as accounting, inventory control, and general administration.

Contracts for services usually involve an overall analysis of the customer's business prior to the design of a corporate-wide information system. Activities are being concentrated in those industries such as plastics, paper, rubber, tobacco, and mining with which Industrial Nucleonics has gained considerable process knowledge over the past twenty years. Typical applications within these industries are concerned with developing systems that produce faster, more comprehensive information on (1) manufacturing operations, (2) inventory control, and (3) cost control. Extensions of this division's activities include facilities management where Information Services personnel actually set up and manage the data processing activities for the customer.

Presently there are 50 personnel in the AccuRay Information Services Division. Thirty-four are professional graduates with backgrounds in accounting, computer sciences, systems analysis, business administration, and industrial engineering. Both revenues and backlogs for this profit center showed dramatic increases in 1970. In addition to profitable business, the activities of this division allow the company to further develop skills in the general field of computer data processing and to purchase advanced data equipment for future corporate activities.



16 This optical scanner is one of the many additions to the capability and efficiency of the company's data processing facility.



Information systems design and facilities management are two major functions provided customers by the AccuRay Information Services Division.

Expanded International Operation

This team of Finnish nationals exemplifies the qualified international personnel serving Industrial Nucleonics' world-wide markets.



Growth

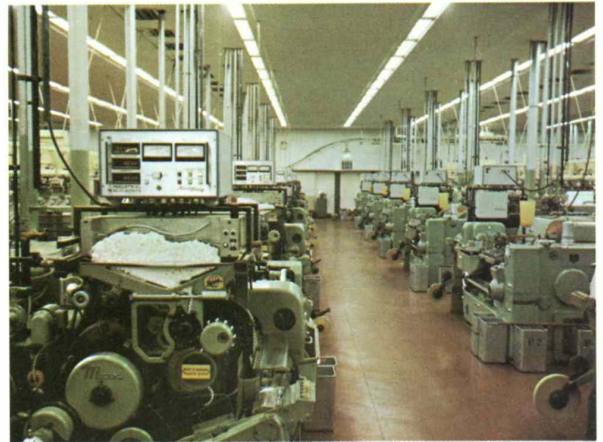
The International Division of Industrial Nucleonics has experienced rapid expansion of new business during the last four years. AccuRay systems are now at work in more than 30 different countries outside the continental United States. Concentration of activities has been in the Western European countries and Canada.

As in the United States, customers abroad find AccuRay systems beneficial in improving product quality, lowering costs, and increasing productivity. Likewise, applications are represented in a broad cross-section of industry—paper, chemical, rubber, food, tobacco, metals, mining, and plastics. Particularly gratifying has been the widespread interest in the international marketplace for the new series of AccuRay systems.

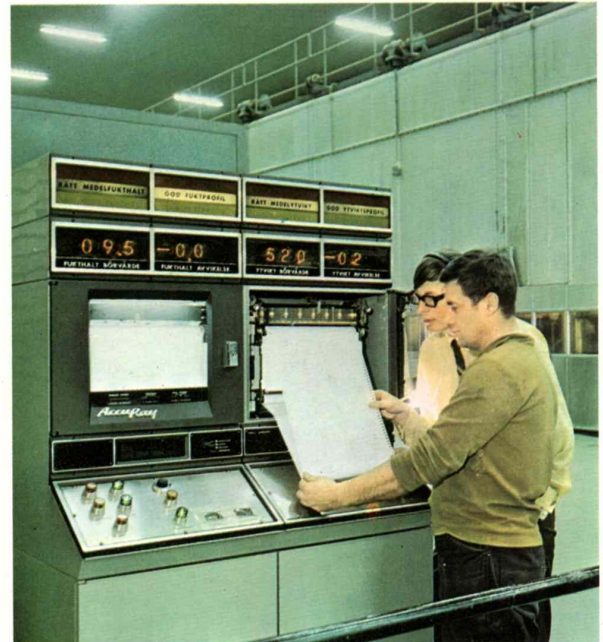
Personnel

The vigorous growth of Industrial Nucleonics' world trade has been reflected in the increased number of international personnel who now total over 50 sales, systems, and service engineers. Virtually all are college graduates and nationals of the country in which they work. This provides an all-important familiarity with local language, technical terminology, and customs necessary for good rapport with customers.

Extensive training programs are conducted in the U. S. and Europe to ensure a high level of professional service for world-wide clients. This competent international team has given Industrial Nucleonics the capability of supplying total systems results throughout the free world.



During 1970 this German tobacco manufacturer outfitted all machines with new AccuRay C-700 systems.



One of the first APM 800 systems to be shipped abroad was to this paper mill in Sweden.

Personnel and Facilities Growth

Accompanying Industrial Nucleonics' earnings growth in 1970 has been a substantial investment in the future with a large part of this directed toward the acquisition of new people and facilities.

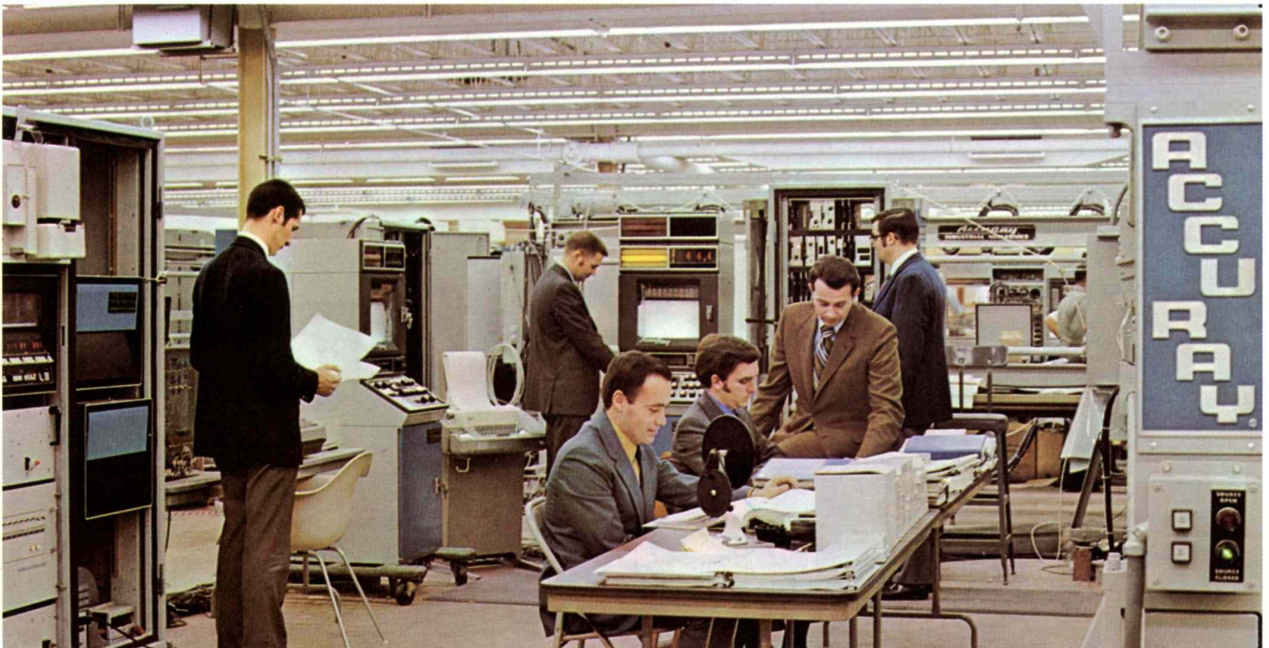
Investment in Personnel

During 1970, Industrial Nucleonics' total employment increased 41 percent from 868 on December 31, 1969, to 1223 on December 31, 1970. This was the largest increase in the company's history and took place primarily in the manufacturing and engineering departments.

The success of Industrial Nucleonics depends upon the capabilities of its people. Management is confident that an outstanding business and technical team has been assembled and trained in line with corporate need. Nearly half of the total personnel have received advanced education: 131 have completed associate degrees, 242 have received bachelor's degrees, 134 possess master's degrees, and 13 have received their doctorates. The company continues to obtain the most competent and dedicated person available for each job. It is this resource in people that leads Industrial Nucleonics to approach the future with confidence.

Investment in Facilities

During 1970, physical facilities were expanded to a total of 300,000 square feet to accommodate



growth in personnel and shipments. In March the marketing headquarters was moved to a building two miles northwest of the Ackerman Road site. All AccuRay Leasing Corporation personnel and activities were consolidated in late June in another facility about one mile south of the main plant. These new facilities which total 89,000 square feet were leased and remodeled to meet office requirements.

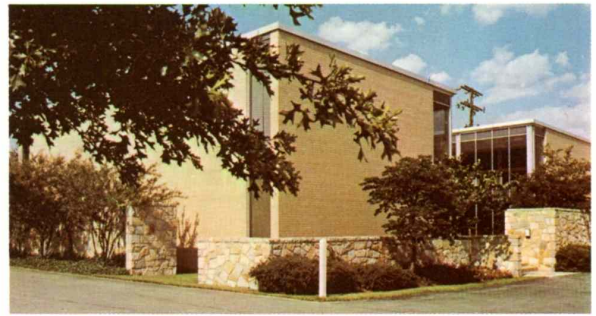
During the third quarter, a 71,000-square-foot, two-story addition for the manufacturing and engineering departments was designed and constructed in record time at the headquarters location. This permitted the move of the systems test and tobacco manufacturing sections into their expanded facilities on the first floor in time to meet fourth quarter shipment goals. The second floor will be occupied during the first quarter of 1971 by engineering and computer personnel.

As a part of a longer site development plan, Industrial Nucleonics purchased in November the land and buildings which had been previously leased. This purchase and construction of the new addition were made possible by mortgage financing secured from Metropolitan Life Insurance Company.

These investments in facilities and very competent personnel, coupled with continuing investments in advanced manufacturing equipment and techniques, are part of a concentrated program to provide customers with the most reliable products and Industrial Nucleonics with the greatest production efficiency.



Marketing headquarters moved to this new 23,000-square-foot facility in northwest Columbus in March 1970.



In late June, all AccuRay Leasing functions were consolidated at this location one mile south of the corporate offices.



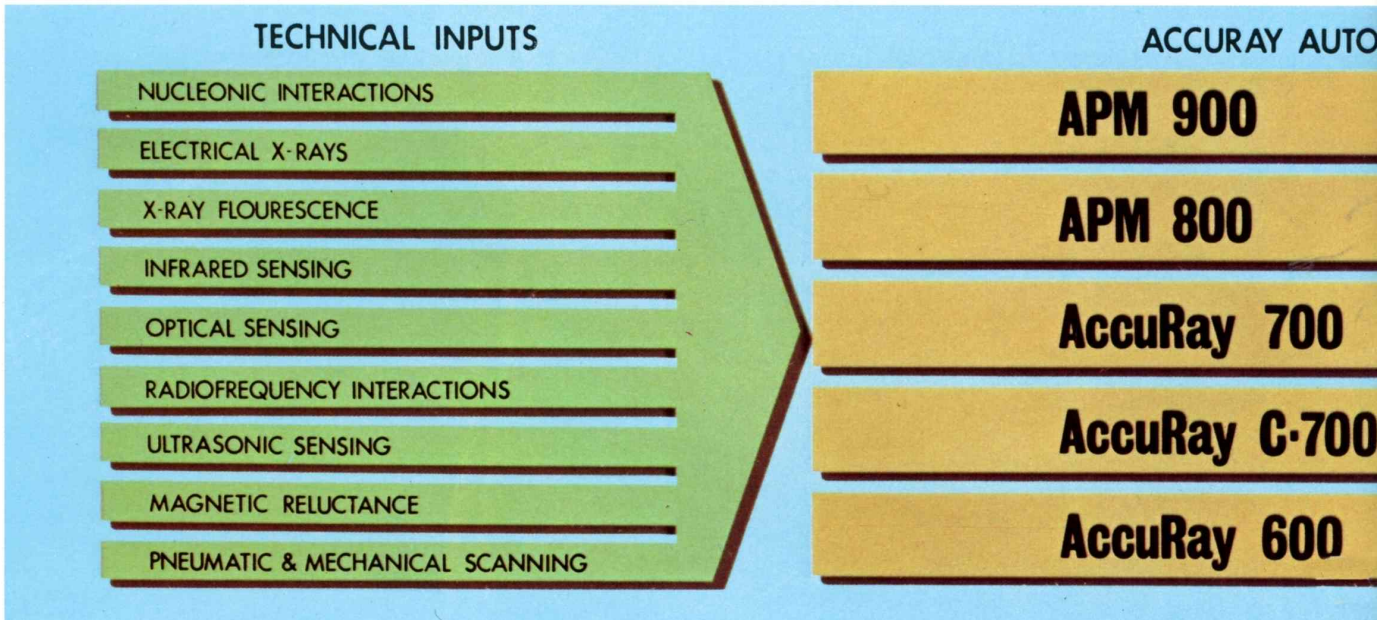
During the third quarter, a 71,000-square-foot, two-story addition for manufacturing and engineering enlarged the Ackerman Road headquarters to over 200,000 square feet.

Continuing Research Programs

Research is an activity vital to Industrial Nucleonics' steady growth in revenues and profits. Currently the company invests annually approximately \$3.3 million in planned research and related technical programs.

Technological Concentration

Research and development activities at Industrial



Nucleonics are generally subdivided to parallel the basic functions performed by AccuRay systems: measurement, automation, and information processing. The three technological areas receiving major emphasis are:

- **Measurement Systems**—Information is the basic ingredient for all control—both business and process. AccuRay measurement devices now provide information on variables such as weight, thickness, density, product dimensions, composition, moisture, and surface conditions. In addition, various physical measurements on the process are made, including temperature, level, and flow. Each year research is devoted to new measurement principles that provide promise as "information inputs" for automation and data systems. Current AccuRay measurement devices employ a diversity of principles:

- | | |
|---------------------------|--------------------------------------|
| 1. nucleonic interactions | 6. radio-frequency interactions |
| 2. electrical X-rays | 7. ultrasonic sensing |
| 3. X-ray fluorescence | 8. magnetic reluctance |
| 4. infrared sensing | 9. pneumatic and mechanical scanning |
| 5. optical scanning | |

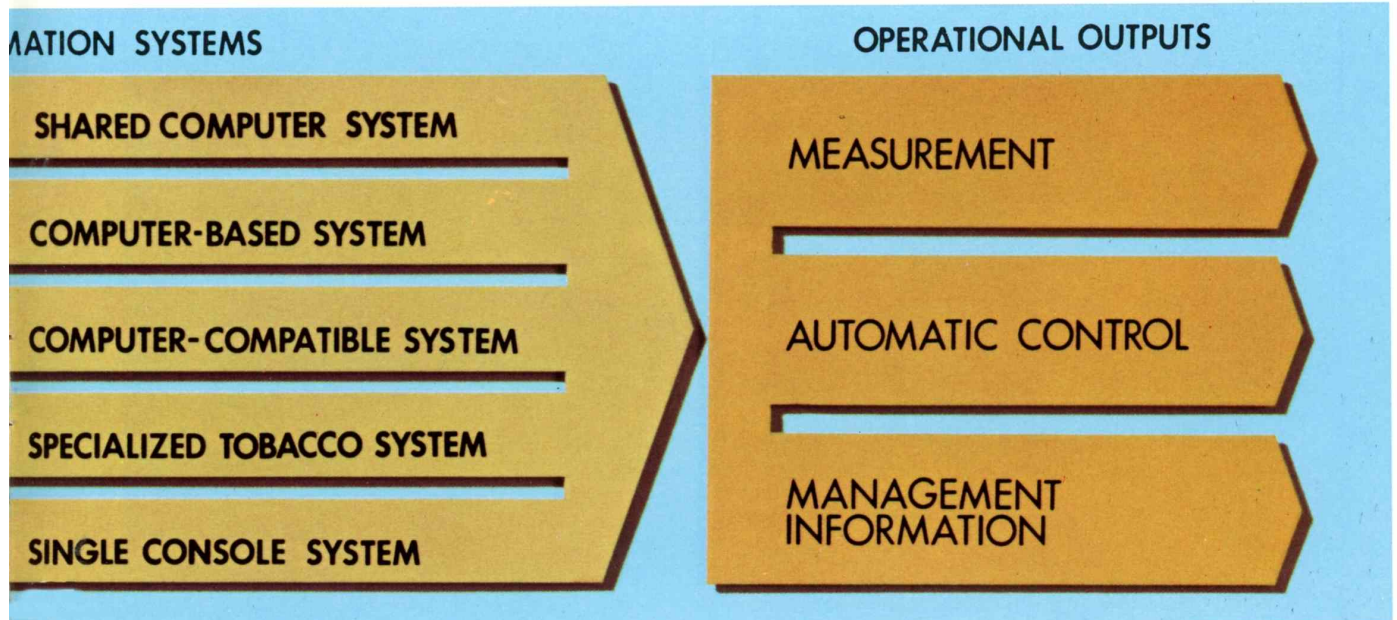
- **Automation**—Once on-line, real-time measurements are made by the above techniques, they can be used to control manufacturing processes. Industrial Nucleonics was the first to put automatic control on many continuous processes such as those found in the paper, rubber, plastics, metals, tobacco, and food processing industries. In fact,

the first known computer control system was installed on a laminate process by Industrial Nucleonics as early as 1952. Since that time, the company's automation systems have increased in function, versatility, and value to the customer.

Today work proceeds on many advanced control systems. For example, the company's "Target Optimization Control" is a control system which adapts to changes in machinery, raw materials, and general operating conditions. Such automatic adaptation is so oriented as to maximize the economic performance of each individual process machine.

Another example of advanced control is the "Model Reference Control" system which uses an on-line computer to simulate a model of the process. This model reference system provides highly precise control action under changing conditions.

- **Information Processing**—Data handling and readout functions have always been part of AccuRay systems. Although initial AccuRay systems provided a pen tracing and numerical information plotted on a chart, Industrial Nucleonics was an early leader in digital data systems as well. For example, the AccuRay Production Control Center (PCC) which was introduced in 1956 provided full digital readout of selected production and quality information. As such, it was a forerunner to present-day digital APM systems. Today the company's AccuRay Information Services Division and Computer Sciences Laboratory are concen-



trating heavily on digital systems so as to offer the newest technologies and greatest benefits of these systems to the customer.

Other New Developments

In keeping with the objective to investigate and expand the company's capability in the area of "information inputs," several new measurement principles and products were introduced during the year. Notable among these were:

- A new X-ray fluorescence system to measure zinc coatings on steel.
- A caliper gauge employing magnetic reluctance measurements and pneumatic positioning to measure thickness of paper or board moving at high speed.
- A high-speed fill level inspection system to measure various shapes of bottles and cans moving at rates up to 2000 per minute.
- A ruggedized nucleonics level sensor for ship-board measurements of fuel and liquid levels — a vital element for further automation of ship operations.
- An ultrasonic level monitor to measure solid and liquid levels in bins, tanks, silos, and other storage containers.

A new inspection and readout device for the AccuRay KET* program was developed during the year which provides real-time, or instantaneous, indications of defects or flaws in materials. The de-

*KET is a service mark of Industrial Nucleonics Corporation

vice consists of an optical and electronic unit which presents a television image of any defects in the object under inspection. The KET system detects these cracks, flaws, or other imperfections with a sensitivity 500 times greater than any other method available.

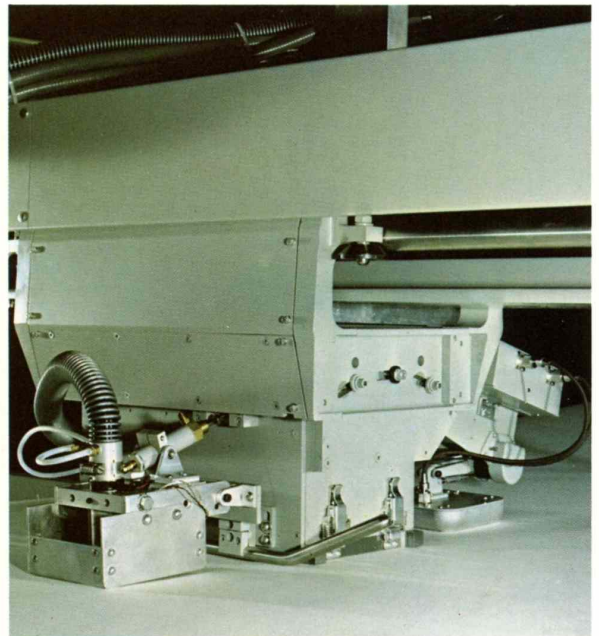
Many of these new measuring devices and systems provide us with multiple inputs to complex automation systems. Others have applications in fields such as water and air pollution control, metallurgical inspection, and food processing. All increase the total technological capability and market potential of Industrial Nucleonics.

Patents

Creativity is critical to the company's continued technological leadership and corporate growth. The company maintains a vigorous patent program to protect its intellectual property. During the year 73 new patents were granted, bringing the total to 518 U. S. and foreign patents. The patents issued or applied for are broadly divided among pertinent areas of technology including automation systems, computers, information data devices, measurement instruments, and other sensitive detecting devices. Creativity directed toward well-planned and executed technical programs continues to be encouraged and recognized as one of the major strongholds for Industrial Nucleonics' leadership position in the automation-information industry.



22 AccuRay KET system was further developed to provide instantaneous visual readout of defects or flaws in materials.

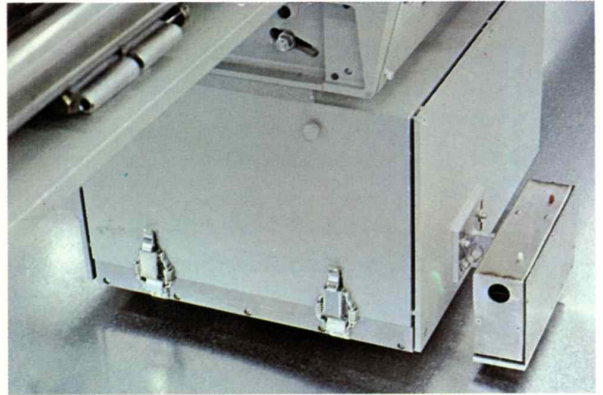


Another information input device introduced in 1970 was the AccuRay caliper gauge to measure thickness of sheet products.

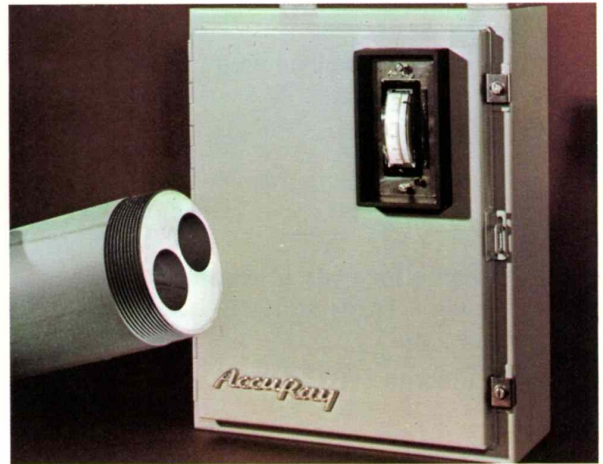


Publications, patents, and awards of employees each year document creativity and leadership of Industrial Nucleonics in the automation and information fields.

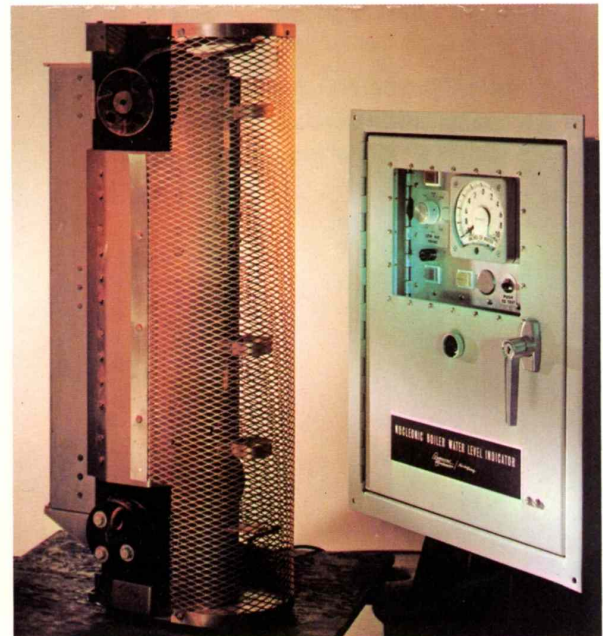
New AccuRay system utilizes X-ray fluorescence to measure zinc coating on steel in galvanizing process.



An ultrasonic principle is employed in this level monitoring system for the food and chemical industries.



A new infrared measuring principle is employed to determine moisture in tobacco.



Development of new system for shipboard control of fuel and liquid levels extends the company's automation capabilities into new areas.

Consolidated Financial Statements

	Year Ended	
Statement of Income	<u>December 31, 1970</u>	<u>December 31, 1969</u>
Operating Revenues (notes 1, 2, 3 and 6)		
Sales	\$ 16,850,780	\$ 9,574,363
Rental, Service and Other	<u>10,748,983</u>	<u>10,428,016</u>
Total Operating Revenues	<u>\$27,599,763</u>	<u>\$20,002,379</u>
Deductions		
Cost of Goods Sold		
Sales	\$ 8,850,821	\$ 4,968,013
Rental, Service and Other	5,922,982	4,621,267
Selling, Administrative, and Research and Development Expenses	7,733,377	6,432,388
Interest Expense	1,069,174	819,871
Miscellaneous Income (note 16)	<u>(405,710)</u>	<u>(205,318)</u>
	<u>\$23,170,644</u>	<u>\$16,636,221</u>
 Income before Provision for Federal and Foreign Income Taxes	 \$ 4,429,119	 \$ 3,366,158
 Provision for Federal and Foreign Income Taxes (note 13)	 <u>2,027,000</u>	 <u>1,450,000</u>
 Net Income	 <u>\$ 2,402,119</u>	 <u>\$ 1,916,158</u>
 Primary Net Income per Share, (note 17)	 <u>\$.74</u>	 <u>\$.60</u>
 Fully Diluted Net Income per Share— Assuming Exercise of Employees' Stock Options (note 17)	 <u>\$.70</u>	 <u>\$.56</u>

Directors and Officers

Industrial Nucleonics Corporation

The parent company incorporated in Delaware

Edward McC. Blair
Managing Partner of William Blair &
Company

Gordon B. Carson
Vice President of Business and Finance
The Ohio State University

H. Roy Chope
Executive Vice President of Industrial
Nucleonics
Director of the U. S. Chamber of Commerce

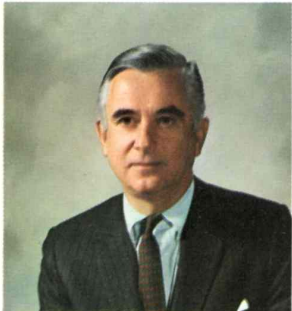
John Eckler
Partner in law firm of Bricker, Evatt,
Barton & Eckler

David L. Nelson
President of Industrial Nucleonics

Robert E. Swenson
Vice President and Treasurer of
Industrial Nucleonics

George B. Young
Director of Chrysler Corporation

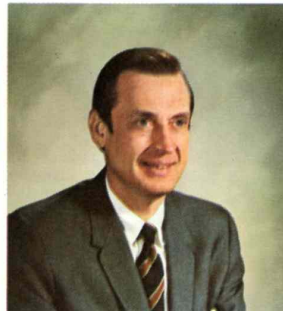
Edward McC. Blair



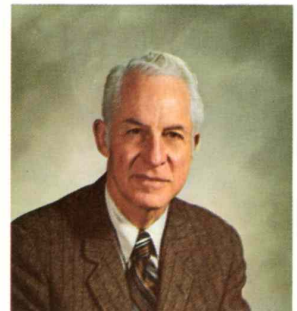
Gordon B. Carson



H. Roy Chope



John Eckler



David L. Nelson



Robert E. Swenson



George B. Young