

**1967-68
ANNUAL REPORT**

Industrial
Nucleonics / *AccuRay*
CORPORATION



FINANCIAL HIGHLIGHTS

Year Ending April 30,	1968*	1967	1966	1965	1964
Total Revenues from Sales & Rentals	\$16,287,053	\$12,753,981	\$10,455,771	\$9,474,501	\$7,977,471
Net Income	1,317,844	839,377	754,218	622,338	436,482
Cash Flow	2,304,028	1,384,187	1,299,885	1,042,969	632,509
Net Working Capital	6,834,648	2,620,321	2,668,621	2,369,946	1,968,063
Net Income Per Share**	\$13.67	\$8.70	\$7.81	\$6.42	\$4.50

*Includes changes in leasing program as explained in notes 2 and 3 to Consolidated Financial Statements

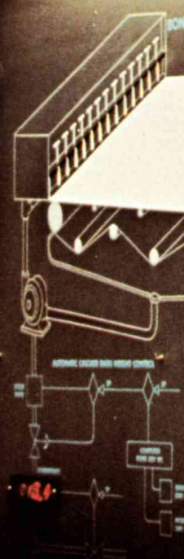
**Does not give effect to a stock split contemplated in 1969.

Industrial
Electronics

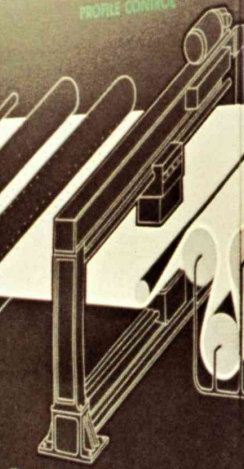
AccuRay

COMPUTERIZED PROCESS MANAGEMENT

MANUAL / AUTOMATIC
BONE DRY WEIGHT PROFILE CONTROL



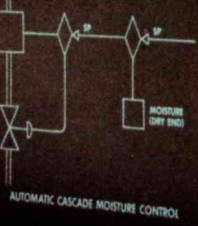
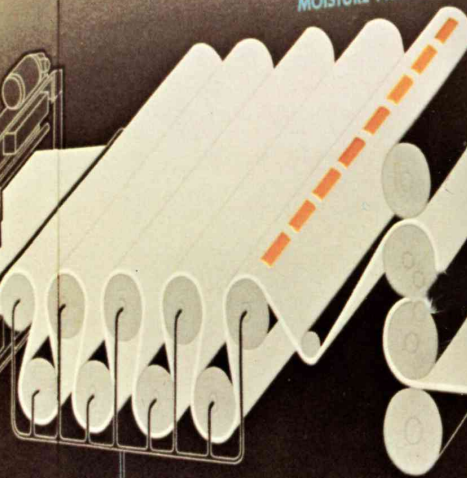
FIBER MOISTURE
PROFILE CONTROL



Water Balance SYSTEM



MANUAL / AUTOMATIC
MOISTURE PROFILE CONTROL



AUTOMATIC CASCADE MOISTURE CONTROL

Informational panels at the bottom of the display, including:

- PROFITING REVENUES** (Red panel)
- PROCESS ANALYSIS AND TUNING** (White panel)
- Water Balance SYSTEMS** (Blue panel)
- PROCESSES MANAGE** (Green panel)

SYSTEMS

BASIS WEIGHT AND
MOISTURE MEASUREMENT

BASIS WEIGHT AND
MOISTURE MEASUREMENT

BONE DRY

063.

MOISTURE

003.3

Additional potential profit opportunities... Acquiring
SYSTEM EXPANSION PACKAGES

September 30, 1968

DEAR SHAREHOLDERS

The fiscal year ending April 30, 1968, was one of substantial growth and progress for Industrial Nucleonics Corporation and our wholly-owned subsidiary, AccuRay Leasing Corporation. It was the eighteenth year in business for the parent Company and the sixth year of operation for AccuRay Leasing Corporation.

Consolidated revenues for the year totaled \$16.3 million and profits after taxes reached \$1.3 million, equal to \$13.67 per share.

Expanding Our Technology Base

The geometric symbols shown on the cover of our Annual Report are part of the programming language used to designate functions performed by computers. We have used them to introduce highlights of our operations:

- Providing "real time" information and data from analytical instrumentation.
- Developing mathematical models by computer simulation of the customer's business.
- Interfacing sophisticated measurement, data transmission, and control equipment with general-purpose digital computers.
- Supplying complete systems including both equipment and related services through a creative leasing program.

In expanding our corporate capabilities we draw upon the technologies of many industries including instrumentation, process control, data processing, aerospace and electronics. In basic electronics we have progressed from vacuum tube circuits, to transistors, and now to integrated circuits and hybrid assemblies. Our continuing research in many fields including radio-frequency, microwave, infrared, fluidics, and nucleonics, insures that our engineers and scientists are using the best technology for each application.

Background in Computers

Your Company has a unique background in the use of computers for process control. During the 1950's we pioneered in the application of complete systems involving sensors, data collection equipment, computers and control devices. We designed and installed our first on-line computer in 1954 for resin-content control on a paper saturating process. This special-purpose computer inputs signals from several sensors and calculates the percentage resin impregnation — a variable which cannot be measured directly. The

impregnation percent is transmitted to a second computer which determines the automatic control signal.

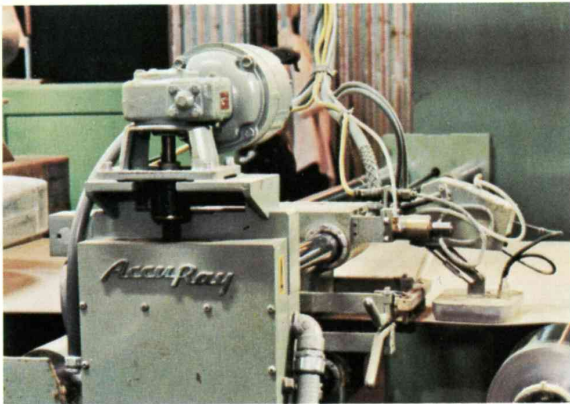
During the intervening years we have gained experience in computer systems both for specialized calculations and for on-line regulation of processes. Such computer-based systems have been applied to coated abrasives, zinc coating on steel, extrusion-laminators, gum tape coaters, and similar processing lines. We have thus acquired new interface and communication capabilities, such as digital and analog display, short- and long-term data presentation, time-sharing, and operator-machine problem solving.

Systems Management

During the past year we broadened our horizons with the introduction of AccuRay Process Management Systems for industrial applications. This means we supply an integrated instrumentation, control, and management information system utilizing a general-purpose digital computer. We accept the complete systems responsibility to analyze a customer's business and then to design and produce a process man-



Basis weight and moisture measurement provide inputs to an Industrial Nucleonics Computer for control of Paper Saturating Process.



agement system to improve his profitability.

Successful Leasing Record

The leasing of systems through AccuRay Leasing Corporation continues to be an important factor in our overall program for growth. Lease income is derived from both equipment and continuing customer services. The value of process control systems currently under lease exceeds \$22,000,000 at their original equivalent sales price. Annual rent from these systems provides a base of recurring income to support future growth programs.

New Leasing Program — Joint Ventures

In order to meet the needs of our expanding rental business, we introduced a new method of leasing during 1968. Under this program AccuRay Leasing Corporation entered into agreements with two unaffiliated corporations to form Joint Ventures. Separate contracts were completed with Fostoria-Leasco, Inc., a subsidiary of the Fostoria Corporation of Fostoria, Ohio, and with the St. Paul Leasing Company, a subsidiary of the St. Paul Companies, Inc., of St. Paul,

Minnesota. The purpose of each Joint Venture is to purchase process control systems manufactured by Industrial Nucleonics. The Joint Venture both owns and leases these systems to AccuRay Leasing Corporation for subsequent rental to our customers. We recognize the manufacturing income from each system at the time of the sale to the Joint Venture. In addition, since AccuRay Leasing Corporation is a partner, we receive 40% of the Joint Venture profits and share in the future residual equipment values. We also receive income for the maintenance, systems engineering, and applications engineering services so important to long-term customer satisfaction.

Framework for Growth

Our Annual Report will acquaint you with our broad systems management concepts and our plans for expansion of corporate capabilities. We feel that both Industrial Nucleonics and AccuRay Leasing have available the technologies, innovative management, and financial resources to accomplish the tasks ahead and to assure healthy growth.



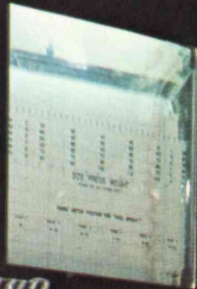
W. E. Chope
Wilbert E. Chope
Chairman of the Board



David L. Nelson
David L. Nelson
President

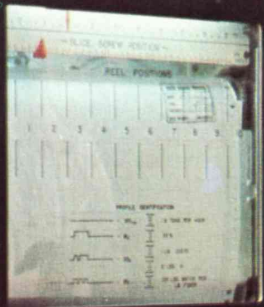


Mosby



AccuRay

AccuRay



WATER BALANCE

INDUSTRIAL ELECTRONICS

SYSTEMS MANAGEMENT

Under our free enterprise system, a company survives and prospers only to the extent that it can show consistent profits. Yet, profits come only after customers are served. It has been a goal of Industrial Nucleonics since its very inception to "do all things necessary" to obtain economic and quality benefits for our customers from the use of our AccuRay Systems. Throughout our history we have specialized in marshalling people, methods, and equipment to achieve this objective.

The Challenge

A manufacturing business basically transforms materials into more useful forms by the use of machinery and labor. The elements of cost in the business exclusive of the charge for capital consist of:

- Materials valued as they enter the process
- Energy costs
- Wages, salaries and fringe benefits
- Depreciation of machinery and tools employed in production.

In many industries — steel, paper, plastics, rubber, chemicals, petroleum, mining, foods, and tobacco — the cost of raw material is often over 50% of the final product sales price. Earnings are significantly leveraged by the efficient utilization of the raw materials.

Our Concept

In answer to the needs of these industries we offer an increased profitability to our customers . . . "in many manufacturing processes there is a critical point where the conversion of raw material to finished goods becomes the dominant factor in determining final product profitability." By improved control of

this bulk-to-area conversion point, savings in raw material costs and improved product quality are realized. A 2-4 percent reduction in raw material cost is equivalent to a 10-20 percent increase in profit margin. A carefully controlled bulk-to-area conversion ratio will often permit an increase in throughput of 2-20 percent from an existing facility which both reduces unit costs and produces higher sales without additional capital investment. By application of this principle we seek to release the "latent profitability" which will allow our customers to achieve a higher relative earnings growth. AccuRay Systems have accomplished significant successes because of our detailed economic and technical knowledge of each industry and our sensitivity to specific customer needs.

"Resultware"

Industrial Nucleonics has applied the term AccuRay "Resultware" to the integration of all activities necessary to produce results for the customer. In addition to supplying the most advanced equipment, we have found that a diverse blend of services is necessary to complete the "Resultware" package — systems engineering, applications engineering, maintenance engineering, programming, computer-aided consulting, and leasing.

These "Resultware" services are rapidly acquiring the status of a promising new service industry. Together with the design, development and manufacture of process control hardware they form a complementary climate for growth. These activities, welded together with creative systems management, define our future strategy. Our corporate capabilities provide a ready response to economic and technological trends being forecasted for the 1970's and beyond.



INFORMATION TECHNOLOGY

Information is the essential ingredient of control — whether process control, plant control or corporate control. Ideally, information should represent 100 percent of a product being measured. Both environmental and analytical instruments are used to provide information for process control systems.

Environmental instruments measure process conditions such as temperature, pressure, flow or level. These process sensors, however, can only be used inferentially to provide information about the final product. Only direct analysis gives accurate information about the final product.

Analytical Instrumentation

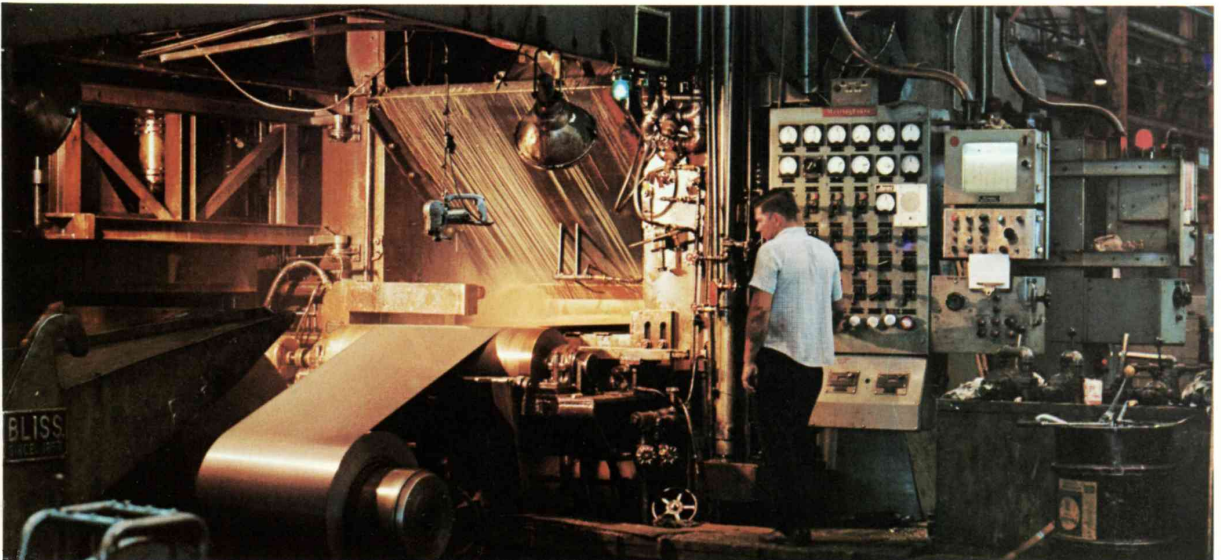
Analytical instruments designed by Industrial Nucleonics measure exact properties of the product such as thickness, weight, or moisture as it is being manufactured. Analytical instruments offered by the Company use a variety of physical and electronic techniques which include beta-, gamma-, and x-ray absorption

and reflection, pneumatic sensing, optical scanning, infrared and radiofrequency measurements.

Advanced research programs cover the entire electromagnetic and "particle" spectrum searching for interacting energy probes in the development of newer and more exact measurement techniques. Simultaneous multiple energy probing systems are also under investigation. For example, the basic MOIST-IRON measuring system involves the computation of percent moisture from an infrared sensor and two radiofrequency probes.

Digital Design

Our engineers have made extensive use of digital technologies to insure that instrumentation will be highly compatible with modern computing systems. AccuRay Systems are installed on process control applications with digital computers representing every major process computer manufacturer.



AccuRay Systems on this steel rolling mill control the conversion of 20-40 tons per hour into final sheet form — equivalent to an annual material throughput of \$25 million.

Analytical instruments produced by Industrial Nucleonics combine to measure exact weight of rubber applied to woven fabric as it is manufactured.



Optimized control systems begin with computer simulation of industrial processes in the laboratory.



Time sharing from a central computer aids AccuRay Systems Engineer in evaluating customer data.

* Professor of Engineering and Director, Purdue Laboratory for Applied Industrial Control, Purdue University.

COMPUTER SYSTEMS

Process control seems destined to be "the computer's next big task." While many industries are still moving cautiously toward accepting complete computer control, the pace is accelerating. Dr. T.J. Williams,* 1967-68 President of the Instrument Society of America, estimates that by 1970 there will be general acceptance of "hierarchy control systems" which tie in process computer control with total financial, accounting, and management systems as an aid to management decision-making.

Special-Purpose Computers

The transition to computer control in each industry begins with the installation of sensing devices to provide continuous process measurements. Automatic control of the industrial process, however, is often dependent upon computed information from multiple sensing devices. This fact has led us to design computers as an integral part of our complete measuring-computer-control systems. Industrial Nucleonics has manufactured over 1,700 special-purpose computers for on-line computation of such variables as conditioned weight, profile averaging, and percent saturation, and for off-line use in variance determination and frequency analysis of process variables. These computers have been developed in both analog and digital designs to interface with basic instrument sensors.



Process engineers use proprietary computer programs for advanced statistical control analysis.

APM — AccuRay Process Management Systems

Advanced systems combine sensors, programming, real time digital computation and on-line control algorithms. Machine operators and customer management are interfaced with the process through a multi-level control approach. The APM system for the paper industry involves closed-loop controls for fibre usage, grade and weight changes, speed, steam usage and other variables. Quantitative management reports are provided for reel, order, shift, and daily summaries as inputs for production and management information systems.

AccuRay Process Management Systems provide an instrumentation-control-management information system which uses a general-purpose digital computer.



LEASING

Advantages of Leasing

Many customers have recognized that maximum benefits are obtained from AccuRay Process Management Systems composed of both equipment and results-oriented services. History has shown that a creative leasing program offers a superior method of meeting this need. Leasing has been extremely successful because of the following customer benefits:

- The ability to install cost-reduction systems without a major capital investment.
- The assurance of system modernization as new measuring-control-computer devices are developed.
- The availability of equipment and services paid for from customer savings obtained by the use of the system.

AccuRay Leasing Corporation

Since 1962 all rental agreements with customers have been handled through AccuRay Leasing Corporation.

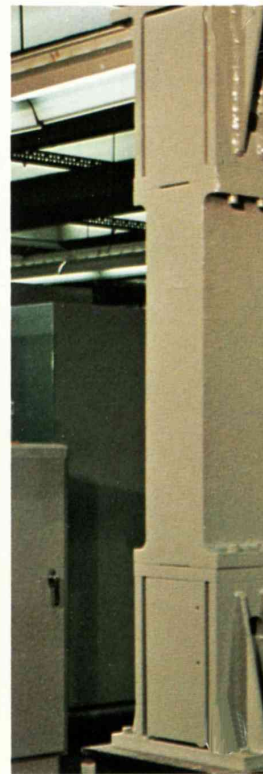
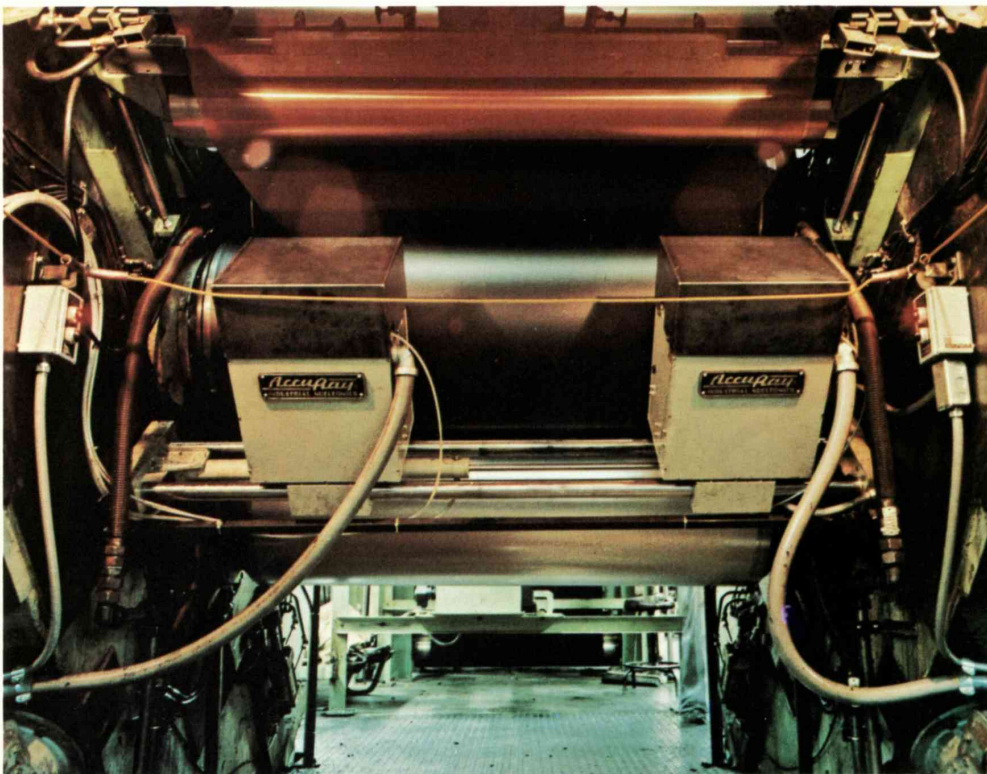
This organization has the mission of providing financial services in the leasing field in addition to installation and maintenance, systems engineering, management consulting, and other "Resultware" services.

Organization

AccuRay Leasing is presently staffed with 192 personnel charged with the vital function of achieving a high level of benefits for customers currently renting approximately \$22 million of systems. Our Customer Engineering Department is the largest organizational unit within AccuRay Leasing and is composed of 161 engineering personnel stationed at field locations where they provide support for rental customers.

Financing

During the year a \$9 million Installment Term Note was arranged with the First National City Bank, New York, in order to finance process control systems owned by AccuRay Leasing Corporation. The First National City Bank, New York, is a leading institution in financing leasing companies. Under terms of this Note AccuRay



Integrating each AccuRay System into the customer's process contributes to a successful leasing history.

Leasing Corporation is solely responsible for servicing the loan.

Joint Ventures

Fostoria-AccuRay, a Joint Venture, has been formed between AccuRay Leasing Corporation and Fostoria-Leasco, Inc., a subsidiary of the Fostoria Corporation of Fostoria, Ohio. Fostoria-AccuRay* has purchased systems shipped by Industrial Nucleonics and has leased these systems to AccuRay Leasing Corporation which has rented them to customers. Financing is being provided by the Society National Bank of Cleveland.

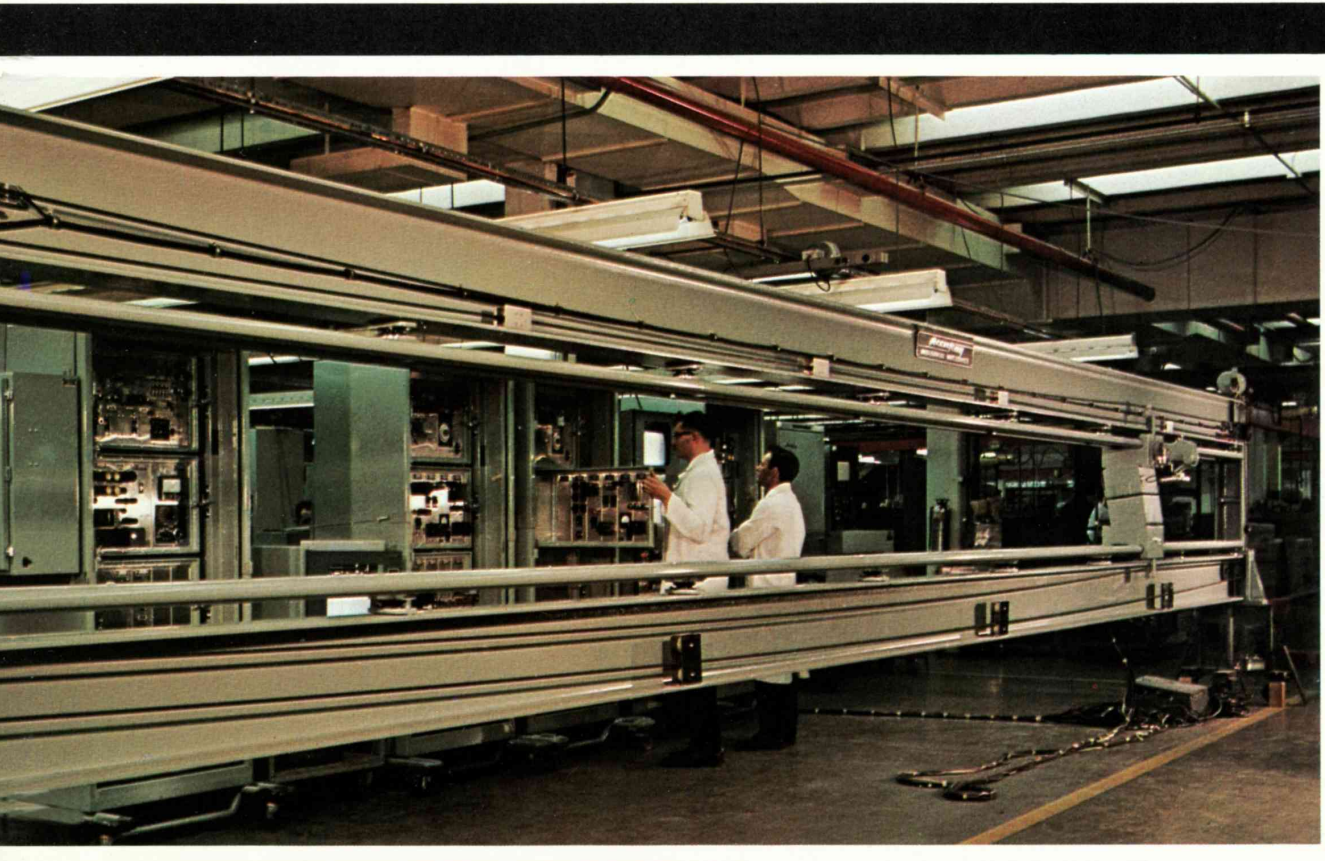
Industrial Nucleonics recognizes the manufacturing income of each system at the time of the sale to the Joint Venture and AccuRay Leasing Corporation receives income for the related "Resultware" services which are such an essential part of the customer rental agreement. As a partner, AccuRay Leasing Corporation also receives 40% of the Joint Venture profits and future equipment residual values.

Subsequent to the close of our fiscal year ending

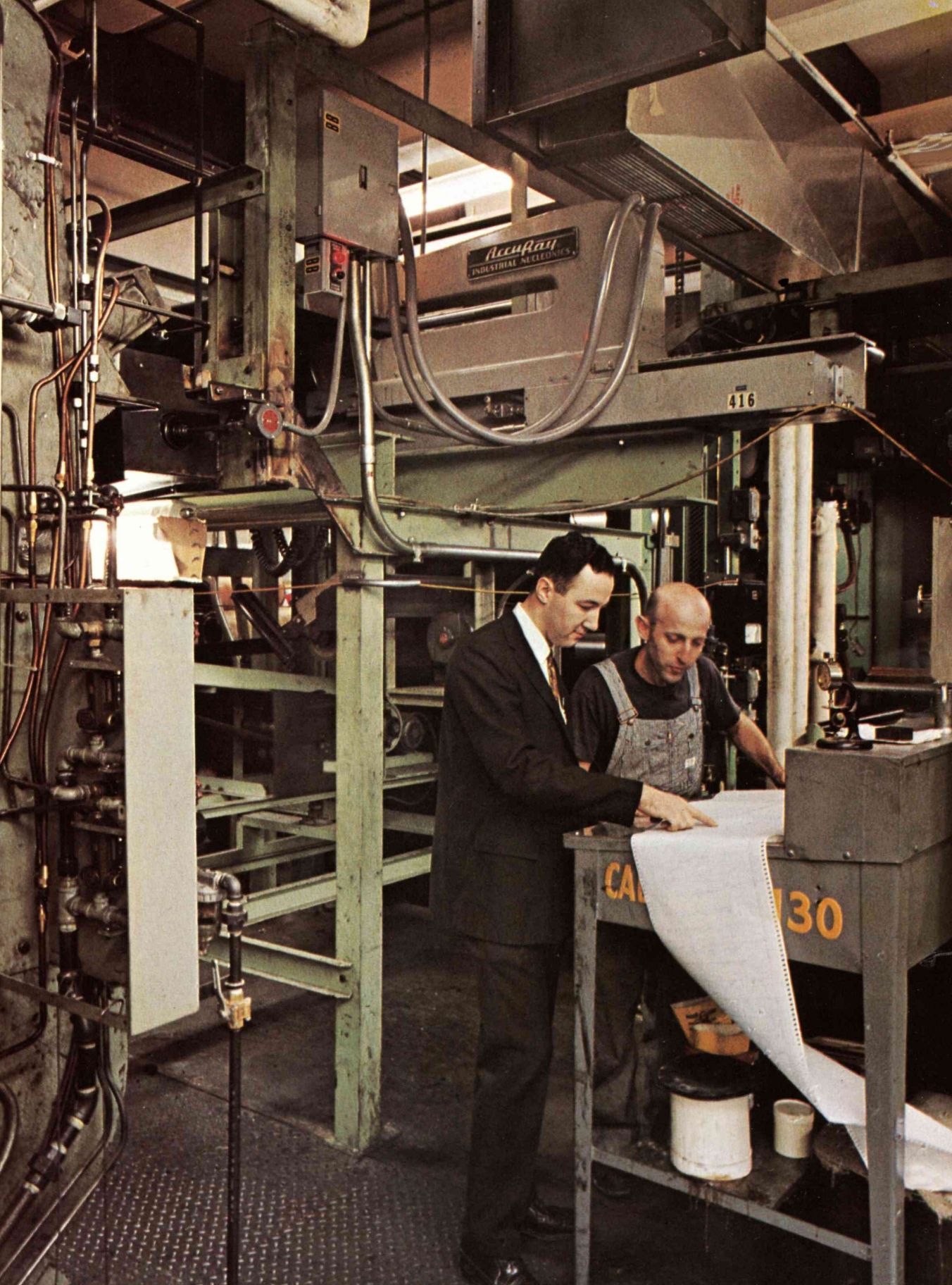
April 30, 1968, AccuRay Leasing Corporation entered into a Joint Venture with the St. Paul Leasing Co., a subsidiary of the St. Paul Companies, Inc., of St. Paul, Minnesota. This arrangement is limited to the purchase of systems having an aggregate sales price not exceeding \$16 million which prospective users may desire to lease during the three fiscal years ending April 30, 1971. However, the arrangement will not extend beyond April 30, 1970 or cover the purchase of systems having an aggregate sales price exceeding \$7 million unless the Joint Venture is able to obtain bank loans or other financing in amounts and on terms approved by both St. Paul Leasing Company and AccuRay Leasing Corporation which approval may be arbitrarily withheld by either party. Initial financing for the \$7 million of purchases is being provided by the First National Bank of St. Paul.

The St. Paul Companies, Inc. is a management corporation with assets of over \$840 million and capital and surplus of over \$300 million.

*See note 2 to Consolidated Financial Statements.



This 428" traversing bracket — world's largest — was leased to a major paper company to span a kraft linerboard machine with an annual raw material throughput of \$21 million.



THE ROLE OF THE PEOPLE

The high degree of creativity demonstrated in marketing, finance, research and engineering suggests the excellence of personnel comprising Industrial Nuclear and AccuRay Leasing. A corporate policy of promotion from within provides tangible recognition of achievement and employee development.

Experienced Management

Nearly all of our key managers began their careers with the corporation at an early stage of our growth. These executives have now matured in capability and responsibility and represent, we believe, one of the most experienced managements in the electronics, computer systems, and process control fields. Our top fifteen managers have an average period of service with the Company of fifteen years.

Business and Technical Competence

Achieving significant technical and economic benefits in the raw material industries is a complex business. A wide range of skills must be available to each customer. Intelligent management decisions demand detailed knowledge of control engineering, mathematical techniques, management methods, information systems and business analysis.

Each year we concentrate on recruiting outstanding candidates with business and scientific backgrounds. Currently, over half of all employees are salaried and professional personnel. As a measure of their technical orientation, eighty percent of our college graduates hold degrees in engineering, science, or mathematics. Fifty percent of the college graduates working directly in research and development have Master's degrees, eight of whom have earned the PhD degree. In marketing, more than one-third of all account managers and systems engineers have achieved an MBA degree from a leading business school in addition to their degree in engineering.



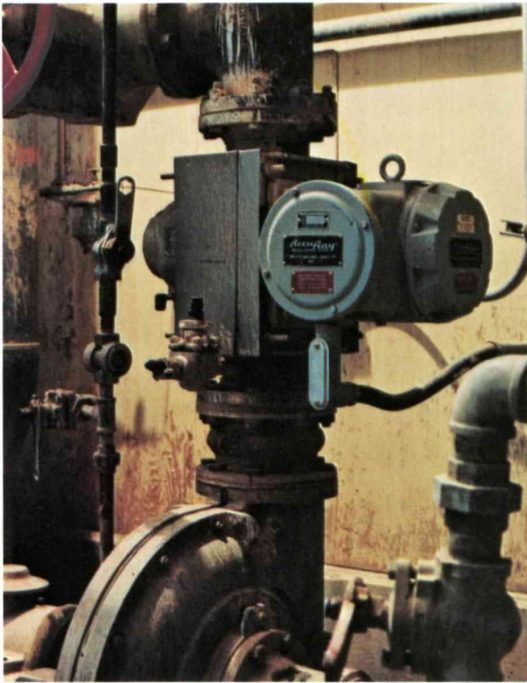
International Division personnel after training will join our expanding subsidiary, AccuRay Europe S.A., headquartered in Brussels, Belgium.

Motivating Superior Performance

Formal training programs, tuition refund, paid memberships in professional societies, and an extensive technical library are some of the means by which our people are encouraged to continue their education. Periodic development reviews help them assess their abilities and develop goals consistent with their own and corporation objectives.

University Relations Program

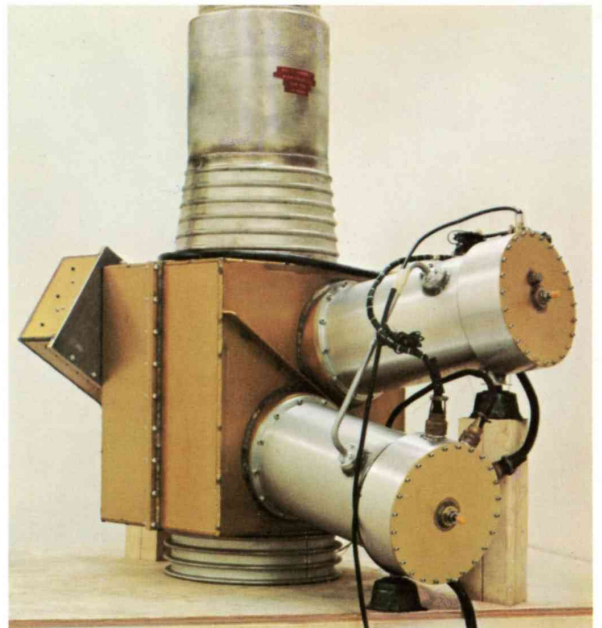
The competence of present personnel coupled with high standards for new employees breeds confidence for the future. Our University Relations Program contributes an annual influx of talented graduates to support our growth. To build an enduring relationship with leading universities, we have provided services and equipment to assist instructional programs. We recently donated AccuRay Systems consisting of basis weight and moisture control equipment to the Pulp and Paper Foundation at the University of Maine and the Department of Paper Technology at Western Michigan University.



Government programs offer technology spin-off for industrial applications.



National Science Foundation estimates show that Industrial Nucleonics is one of only 645 U.S. companies currently performing more than \$1 million of R & D annually.



Fast Response Densitometer developed under NASA contract is used at the National Bureau of Standards in their slush hydrogen facilities.

THE ROLE OF RESEARCH AND DEVELOPMENT

Future generations of AccuRay Process Management Systems will benefit from many emerging technologies ranging from basic sensor research to the design of powerful software languages and low-cost programming. Industrial Nucleonics maintains its technical leadership through a planned investment in research, development, and various phases of engineering which has increased to an annual rate of \$2.4 million per year. An estimated \$2.0 million of these expenditures are directly related to specific research and development projects. Technical programs involve sensors, electronics, computers, non-linear control theory, consoles and displays, fluidics, and systems management.

Return on R & D Investment

While exploring new scientific principles, we place primary emphasis on completing defined programs and products. Our New Product Development Department recently finished the new Series-H design of equipment systems which can be supplied either as an independent measurement-computer-control system or interfaced with a general-purpose digital computer. The Series-H display console was specially styled by Dave Ellies Industrial Design, Inc. and offers the customer a digital and color display of actual performance in relation to desired goals. System electronics use the latest hybrid and integrated circuit technologies. Traversing brackets for supporting multiple sensors offer an improved mechanical design to increase reliability and reduce maintenance. Other products announced for process industry applications include new Level Detector Controls and Continuous Level Measurement Systems.

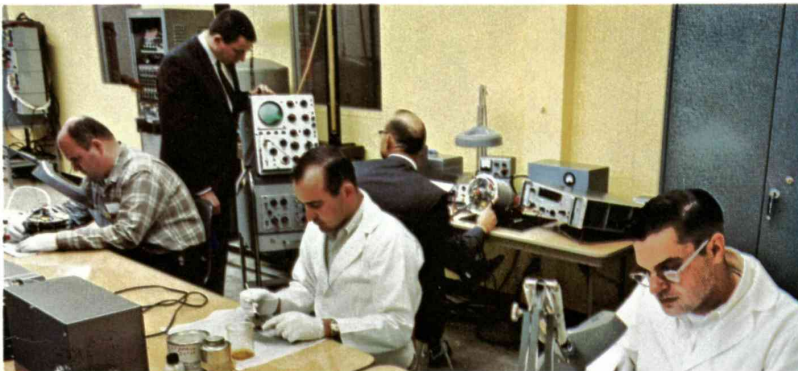
Our systems are required to function accurately and reliably under severe industrial environmental conditions 24 hours a day, seven days a week. Thorough product testing both in the laboratory and in the field is standard practice in order to guarantee reliability and performance.

Federal Systems Division

Through our Federal Systems Division we participate in a variety of government-funded defense and aerospace programs which keep us abreast of the most advanced technical areas. These projects provide a valuable supplement to our company-supported research program. Within the past year we undertook twenty projects for federal agencies ranging from slush hydrogen density measurement of rocket fuel to a shock wave sensing and control system for the inlet of supersonic aircraft engines. A program of particular interest in the air pollution field proved the feasibility of nuclear techniques to measure sulphur dioxide pollutants in smokestacks. A prototype instrument is presently under development.

Emphasis on Patents

The number of patents issued for inventions is an important measure of the creativity and output from our research. Industrial Nucleonics presently holds 199 U.S. patents and 178 patents of other countries. In addition, 129 patent applications are pending in the United States Patent Office and 194 applications are pending in patent offices of other countries. This investment in research has allowed the Company to develop a proprietary position for many of its products and systems.



The Federal Systems Division provides the responsiveness and flexibility of an independent research organization while enjoying complete access to the facilities and production capability of the parent corporation.



Krypton Exposure Technique for detecting fatigue in materials won "IR-100" Award for one of the top 100 technical achievements during 1968.

THE ROLE OF CREATIVE MARKETING

Creative marketing is traditional at Industrial Nuclear. Marketing managers continue to develop a succession of results-oriented programs tailored to customer requirements.

Results Operations Program

Our Results Operations Program is a step-by-step plan to guide each customer from the beginning — through the required management decisions and actions — to a successful completion. The program combines our own efforts with those of the customer to:

- Establish program goals
- Analyze existing operations
- Evaluate limit factors on savings and efficiencies
- Implement techno-economic management decision
- Provide management information systems
- Establish a continuing system utilization control procedure

Customers must make sound management decisions in order to achieve the full economic potential from our systems. The Results Operations Program becomes a framework within which our proprietary experience, methods, and facilities are made available on a continuing basis at all levels of the customer's organization.

Operating Rental Agreement

The Results Operations Program has recently been made even more attractive by the introduction of a dramatic new leasing proposal. The new plan offers an Operating Rental Agreement wherein we provide complete "Resultware" services to assist the customer through an initial acceptance period and into a continuing utilization program. In selected applications we permit the customer to pay for the use of the system on an hourly operating rate. Many customers have applauded this policy because it effectively changes the rental payment from a fixed cost to a variable cost. In this manner, the customer is assured that his rental expense is paid from savings generated by the use of the system.

HISTORY OF MARKETING

1951 • Guaranteed Results Policy

1952 • Applications Engineering Plan

1954 • Systems Engineering Techniques

1958 • Results Rental Program

1961 • Resident Engineering Plan

1963 • Critical Path Results Program

1965 • Five Year Warranty Program

1967 • Results Operations Program

1968 • Operating Rental Agreement



AccuRay Process Management Systems mean increased profit margins and resulting earnings per share growth for each I.N. customer.



WILBERT E. CHOPE



EDWARD McC. BLAIR

BOARD OF DIRECTORS

EDWARD McC. BLAIR
Managing partner of
William Blair & Company

GORDON B. CARSON
Vice President of Business and
Finance — Ohio State University

HENRY R. CHOPE
Executive Vice President of
Industrial Nucleonics, National
President of Tau Beta Pi, Director
of National Chamber of Commerce

WILBERT E. CHOPE
Chairman of the Board of
Industrial Nucleonics

JOHN ECKLER
Partner in law firm of Bricker,
Evatt, Barton and Eckler

DAVID L. NELSON
President of Industrial Nucleonics

ROBERT E. SWENSON
Vice President — Finance/Treasurer
of Industrial Nucleonics

GEORGE B. YOUNG
Director of Field Enterprises,
Director of Chrysler Corporation,
Director of First National Bank
of Chicago



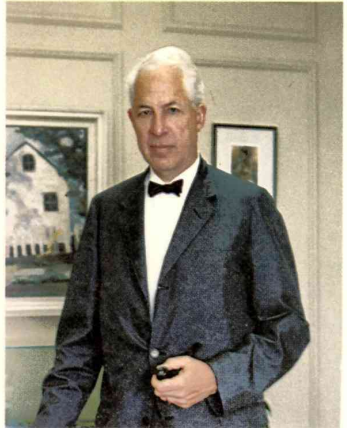
DAVID L. NELSON



HENRY R. CHOPE



ROBERT E. SWENSON



JOHN ECKLER

OTHER OFFICERS

WILLARD C. HAYS
Vice President — General Manager of
Industrial Systems Division

WALTER H. CANTER, JR.
Vice President — Manufacturing

CHRISTOPHER J. CAMPBELL
Assistant Treasurer

RL J. COOPERRIDER
Secretary



GORDON B. CARSON



GEORGE B. YOUNG