SERIES H
basis weight measurement and control systems...

. . . incorporate years of design and operating experience. "Human engineered" for easy operation, all controls are easy to see and identify . . . simple to operate. Modern digital readouts and exceptional circuit reliability because of solid stating are features available in Series H. Digital set-up is optional.

The functionally-pure modular concept of Industrial Nucleonics' design allows advance large-scale production, pre-testing and stocking of many elements of a system. Yet it provides flexibility in the assembly of a custom design and permits new or improved features to be retrofitted into systems . . . giving unmatched protection against obsolescence.

A "remote electronics" feature offered only by Industrial Nucleonics, permits placing in the machine room only that equipment essential to operating personnel. Industrially-designed cabinets house all electronic equipment, the rugged construction of stainless steel panels and cast door frames maintaining mechanical and electrical integrity for years of reliable use.

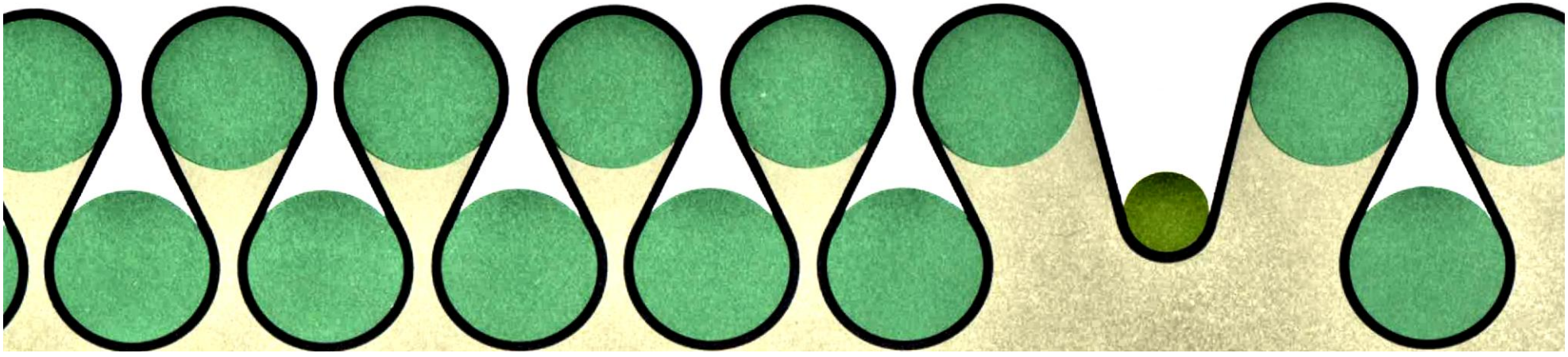
The superior design of the Series H operator station is apparent when even a few of the console's features are considered:

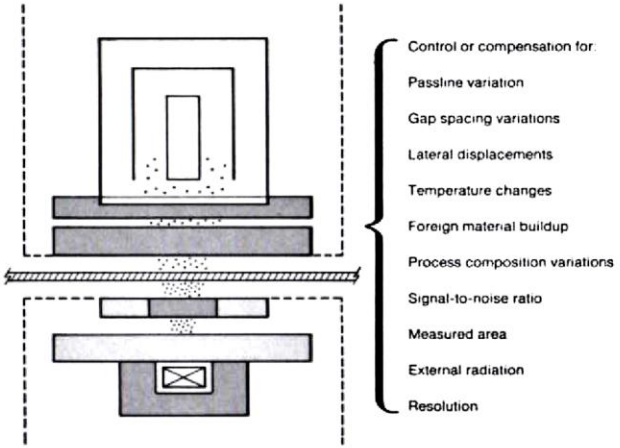
1. "Human-engineered" sloping control panel with clearly identified, easy-to-operate controls. Panel is not cluttered with technical adjustments.
2. Illuminated recorder scales to minimize operator reading errors.
3. Annunciators to tell operating status of system in plain language.
4. Time-of-day identification** to increase chart's value as a permanent record.
5. Illuminated "product off spec" annunciators**, located for quick, easy visibility.
6. Capability to provide composite profile which helps to give a true indication of cross direction variations in the sheet by eliminating the effect of machine direction variations.
7. AccuRay DigiSet* system** for automatic, digital target and range set-up from operator panel or external computer.
8. Digital readouts**, easily seen from 50 feet or farther, for better operator interpretation.
9. All components readily available for service from the front of the station.

Quicker and easier preventive maintenance checks and trouble-shooting are afforded with the new test meter shown at right. The meter is incorporated as a standard feature in Series H systems. It monitors 18 critical points in the system with a precision voltmeter mounted directly to an equipment bay panel. As part of a routine checking procedure, the maintenance man can review and record each of these voltages, comparing readings with previous ones to determine abnormal circuit conditions. Thus, greater system reliability is assured and faulty components can be replaced on a scheduled rather than an emergency basis.

**Optional feature

*DigiSet is a trademark of Industrial Nucleonics Corporation.





Source-Detector Geometries

Accurate measurement of basis weight requires source-detector geometries which meet a number of stringent requirements. Each must be sensitive to small changes in basis weight. Yet it should be insensitive to changes in paper composition . . . insensitive to sheet position between the source and detector . . . insensitive to variations in spacing and alignment of source and detector heads while the unit is scanning. In addition, each geometry must be capable of measurement over the entire range of basis weights encountered on any given paper machine.

The geometries employed in AccuRay systems are the product of years of experience with paper industry applications. They provide precise measurement of the industry's many paper and board products, meeting the requirements mentioned above as well as numerous other technical criteria.

Traversing Structures

Accurate on-machine determination of basis weight of paper and board also depends, in large measure, upon maintaining spacing and alignment of source and detector heads as they move across even the widest of sheets. This requires traversing structures of sufficient ruggedness and design integrity to reliably "scan" sensors across the sheet . . . for long periods of time under adverse mill conditions.

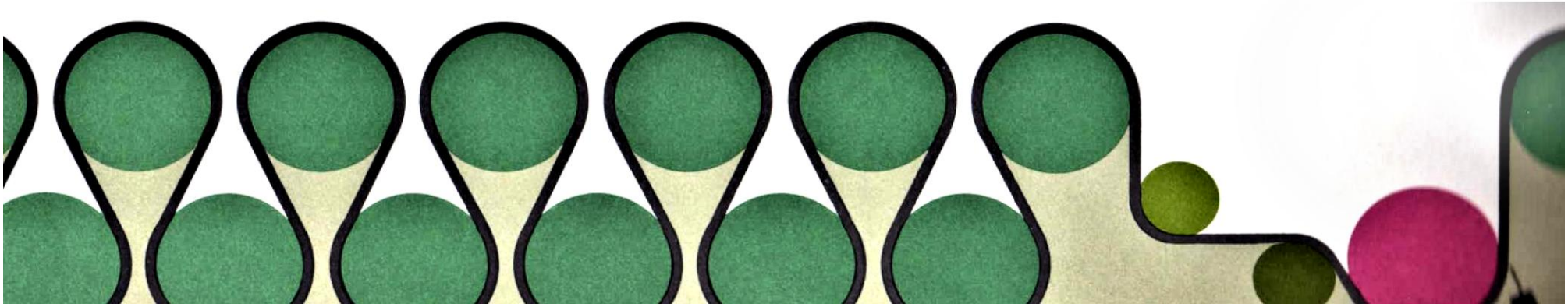
The experience gained from hundreds of on-machine installations has evolved the finest traversing structure available to the paper industry, the Series H wide O-frame. These structures are manufactured of hefty steel I-beams. Versatility is designed in. Location of the drive motor and mechanism on the frame is flexible so that optimum protection, installation and servicing of the equipment are assured. The tubing which carries the source and detector heads can be rotated, extending useful life. Among other superior features of Series H structures are easy-to-reach fittings for lubrication . . . easily accessible components such as the scanning limit assembly . . . and an unmatched drive system including a self-lubricating chain support, new roller chain and matched sprockets, double-supported sprocket bearings and improved cable suspension.

In addition to the source and detector heads for determination of basis weight, Series H traversing structures are also designed to carry MOISTRON system components — probe, lift-off, sheet temperature sensor and static brush plus the compatible dynamic sample cutter.

MOISTRON systems . . .

. . . provide the most accurate and reliable determination of sheet water content available today, have been adopted by many mills to establish shipping standards.

A principal reason is flexibility. Since no single gauge will meet the wide spectrum of moisture measurement requirements,



MOISTRON equipment was designed as a multifrequency system and with a complete family of probes. This unique design allows selection of the frequencies and proper probe to provide optimum measurement of sheet moisture for each of the paper industry's many products. Also assuring optimum performance is the practice of factory calibrating MOISTRON systems to TAPPI standards.

Trouble-free traversing on and off sheet is provided by an automatic probe lift-off and repositioning mechanism. The light contact pressure is uniform, counterbalanced and adjustable. In addition, a non-contacting infrared sensor determines sheet temperature and compensates so that the moisture measurement remains accurate.

MOISTRON systems provide absolute calibration in percent moisture. This linearized, direct-reading scale is in units the operator understands, and it is easily and accurately read at all moisture levels. Its permanent calibration is not affected by replacement of electronic modules, probe, cables or other system components.

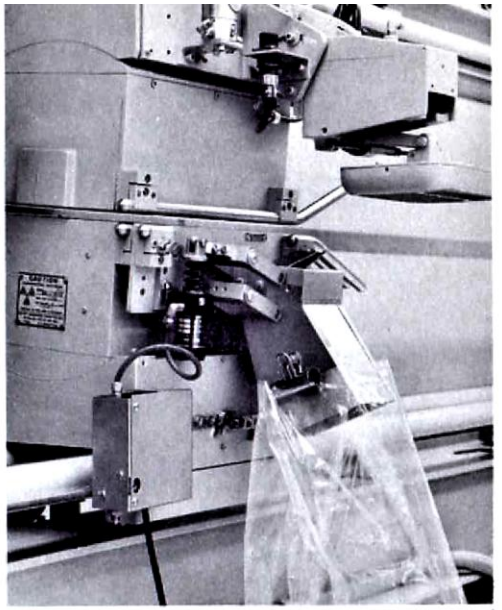
Another plus feature of MOISTRON systems is automatic standardization which checks all electronic functions of the moisture system. This occurs concurrently with standardization of the basis weight system, assuring continuing high accuracy of measurement. Any improper reading, in fact, will shut off that particular system and actuate a service light to alert operators and prevent production of out-of-spec paper.

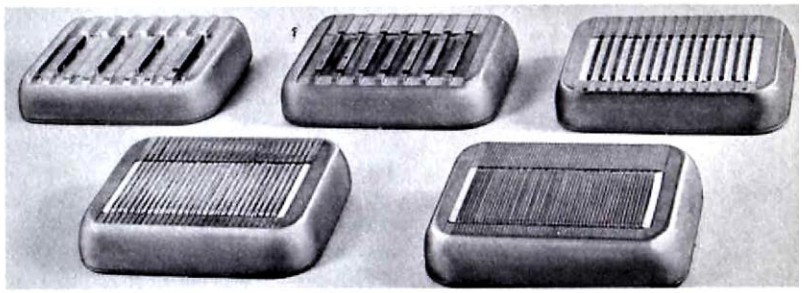
On-machine accuracy of MOISTRON systems is ±0.1% moisture (average deviation of gauge reading from oven-dry gravimetric measurement of dynamic samples). Statistical variation (3 sigma) of individual on-machine samples is 0.2% to 1.0%, including sampling errors. So MOISTRON systems accurately measure water content of products . . . tissue to linerboard . . . and even on sheets with stratified moisture. Range of these systems: from 0.5% to 15% moisture depending on grade; up to 20% on pulp. Spans: normally 5% to 10% moisture full scale. Response: to 0.1 seconds, adjustable time constant.

The automatic sample cutter . . .

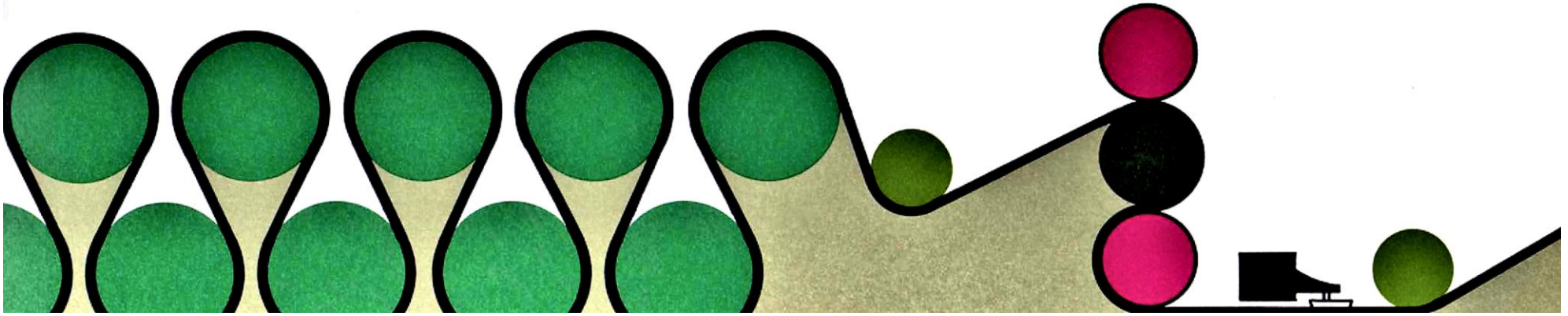
. . . developed by Industrial Nucleonics . . . takes a sample from the moving sheet, deposits it in a plastic bag, permits dynamic correlation of MOISTRON system accuracy by oven-dry comparison. As pictured above, the cutter can be easily attached and removed from the source and detector heads of an AccuRay system.

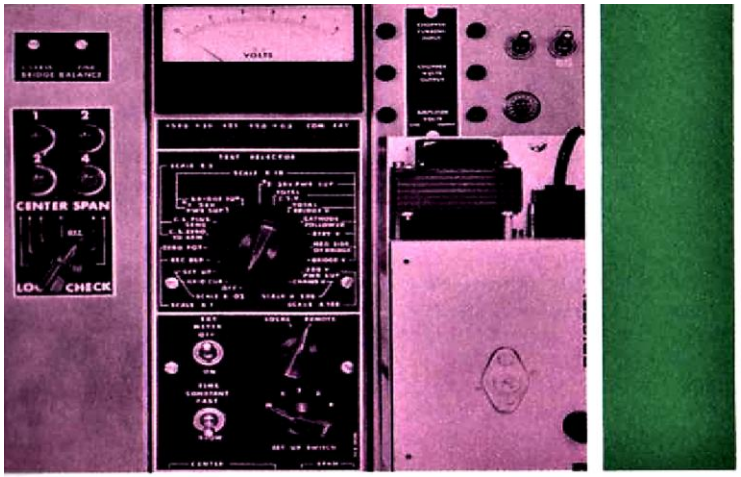
A portable cutter-control unit provides the following functions: pre-programmed cutting time varying from zero to sixty seconds, optional manual control over cutting time, manual override of the automatically timed signal, optional automatic withdrawal whereby the source-detector and probe retract to the off-sheet position at the end of each sample cut, and automatic chart marking which identifies the portion of the recorder trace corresponding to the sample.





The cutter normally delivers 98% reliability (two sheet breaks per 100 samples taken) on paper with basis weights from 24#/3,000 ft.² to 69#/1,000 ft.². Lighter and heavier weights can be cut with a slight reduction in reliability.

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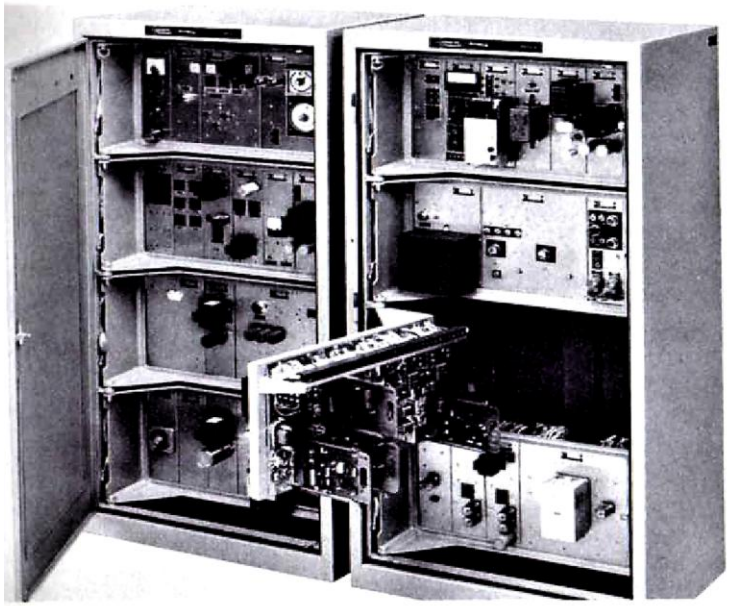
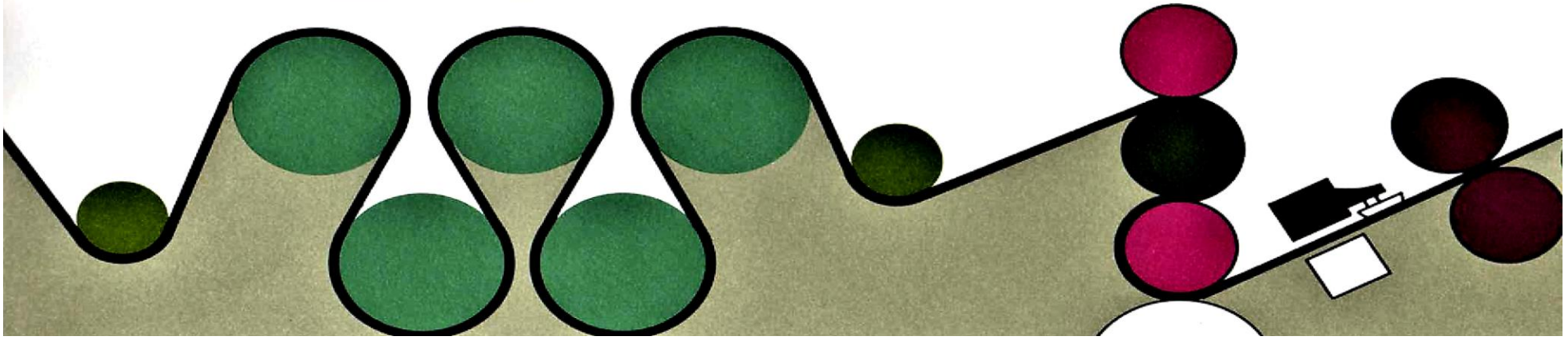



WET END MOIST HI
WET END MOIST ON
WET END MOIST LO
BASIS WEIGHT ON
REEL MOISTURE HI
0 6 C.C
BASIS WT. TARGET
+ C 1 2
BASIS WT. DEVIATION
0 5 C.C
MOISTURE TARGET
+ C C.7
MOISTURE DEVIATION




BASIS WEIGHT ON
BASIS WEIGHT LO
6 9.6
BASIS WEIGHT
MOISTURE ON
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MOISTURE
SLICE SCREWS
AccuRay
SUPPRESSION
SPAN
RANGE
GRADE
CLASSIFIER LIMITS


BASIS WEIGHT ON
5 8.8
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MOISTURE ON
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MOISTURE
AccuRay