John T. Parsons

Born January 7, 1913, Detroit, Mich.; the father of numerical control.

Professional Experience: president and owner, Parsons Corp., Traverse City and Detroit, Mich., and Stockton, Calif, 1954-1968; president/owner, The John T. Parsons Co., Traverse City, Mich., 1968-1986.

Honors and Awards: first recipient, Joseph Marie jacquard Award, Numerical Control Society, “for outstanding technical contributions” as the “Father of Numerical Control,” 1968; Medal, Society of Manufacturing Engineers Engineering, “presented to John T. Parsons, industrialist and inventor whose brilliant conceptualization of numerical control marked the beginning of the second industrial revolution and the advent of an age in which the control of machines and industrial processes would pass from imprecise craft to exact science,” 1975; National Medal of Technology from President Reagan, 1985; charter fellow, Society of Manufacturing Engineers, 1986; DEng (Hon.), University of Michigan, 1988; member, National Inventors' Hall of Fame, 1993.

Parsons' activities involved the direction of the design (test static, dynamic, and flight), the development of unique manufacturing processes, and the tooling, including brazing and adhesive bonding, for the first all-composite airplane (for the Office of Naval Research), and many other composites and metal structures for aerospace industries. He directed the design and construction of the first numerical control milling machine, under a US Air Force contract, and now has 30 years' experience designing and applying computers to manufacturing and administration operations, leading to random sequence 'just-in-time” manufacture. Among his accomplishments related to the application of computers to numerical control (N/C) were:[1]

1944 Devised manufacturing system for producing 22' Sikorsky R-5 rotor blades in an old mill-construction furniture factory with 12' x 12' bays and 7' headroom. Quality and costs were such that the US Army refused to approve Sikorsky's request for a second source, even when the schedule increased to 405 blades per month. (Parsons' first aircraft job.)

1945 Conceived/installed first production facility in the world for metal-to-metal adhesive bonding of primary aircraft structures-R-5 Sikorsky rotor blade spars. Redesigned spar from spot-weld to adhesive bonded construction.

1946 Tooled rotor blade plant to also produce 1,260 pair of “Ercoupe” airplane wings per month. Directed program to use punched-card machines for the solution of engineering problems (probably the first company in the US to do this).

1947 Devised and implemented a system for producing airfoil tem plates on manually controlled boring mill, using machine tool table settings calculated and tabulated on IBM accounting machines.

1948 Conceived a machine tool for producing aircraft structural shapes automatically from punched-card/ tape input.

[1] From a biographical outline which accompanies the collection of his papers archived at the Special Collections Division, Newman Library, Virginia Tech.

1949 Negotiated and executed the contract on behalf of Parsons Corporation with US Air Force to build the first numerical control milling machine. Coordinated its development with Parsons staff and principal subcontractors: IBM, Snyder Corporation, and Massachusetts Institute of Technology. Monitored design and completion of machine, 1950-1952.

1950 Conceived/installed a modular tooling system for aircraft plants, resulting in great reduction in tooling costs and floor space requirements.

1951 Designed the layout of a new rotor blade manufacturing plant, including materials laboratories for ferrous and nonferrous metals, resins and reinforced plastics, and test laboratories for structural, dynamic, and flight test.

1952 Took leave from Parsons Corporation. Purchased all rights in numerical control patents he had originally assigned to the corporation.

1954 Devised and installed Operations Control System at Parsons Corporation using single source document to control total engineering, manufacturing, quality, and service functions.

1955 Granted exclusive license to N/C patent to Bendix, and was signatory to its sublicenses to General Electric, TRW, Sundstrand, Milacron, Allen-Bradley, IBM, Fujitsu, Bosch, and so on.

1956 Doubled the size of the rotor blade plant; installed the first electronic blade tracker in the world (furnished by Chicago Aerial Industries). Conceived and installed a hydraulic adhesive bonding press with a 2' x 22' platen with automated load/unload system. Conceived and installed programmable salt bath furnaces for heat-treating 25'-long alloy steel tubes.

1957 Conceived badge-activated time clock, directed design and construction of breadboard model; directed preliminary design of point-of-sale machine, portable inventory recorder, and badge-activated vending machine.

1959 Conceived the unique process, did the plant layout, and directed the installation of a production facility for 55' diameter fiberglass geodesic radomes.

1961 Evaluated vendor proposals, then purchased and directed the installation of facilities for producing seamless metal tubes up to 26-'/2” diameter x 125' length. Produced tubes with wall thicknesses as low as .007 plus or minus .0002” for the Minuteman Missile. Directed plant-wide psychological testing to select employees to be entrusted with the operation of this very expensive equipment, which was the sole source for Saturn booster fuel lines.

1962 Conceived, designed, and directed the installation of a programmable, totally enclosed surface preparation system integrated with white room techniques, for adhesive bonding stiffener rings to tubes up to 30” diameter x 56' long used in projects such as the fuel lines for the Saturn Booster for the Apollo moon shot program. Conceived the complete facilities and plant layout for producing 7' fiberglass turbine-type blades for a supersonic wind tunnel at US Air Force's Arnold Engineering Development Center.

1963 Designed the complete facility for producing monoblock ship's propellers up to 28' diameter. Subcontracted the foundry design to Lester B. Knight Associates. US Navy used these concepts to upgrade its Propeller Shop at the Philadelphia Naval Shipyard.

1964 Conceived and directed the installation of a special 4-axis N/C machine tool for helicopter rotor blades.

1965 Participated in the blade design and conceived the manufacturing process and tooling for the first tapered metal helicopter rotor blade (Lockheed AH-56 helicopter). Not even one blade was scrapped during the entire program.

1967 Conceived a programmable surface preparation system for adhesive bonding stainless, titanium, aluminum, and alloy steel aircraft structures up to 35' long in random sequence.

1969 Devised N/C techniques and tooling for producing polystyrene foam patterns for aluminum, bronze, iron, and steel castings marketed under “ComputerBilt” trademark. (Sold 300 castings produced from such patterns to various machine tool builders.)

1969 Conceived a unique N/C part-programming machine, and directed the prototype construction.

1970 Developed the theory and commercially exploited the process for machining thin section forgings in one cut per surface, without distortion.

1971 Conceived and used in production the N/C system for the automatic inspection of turbine blades.

1973 Initiated design studies on rotor blades for large wind energy systems.

1977 Conducted design studies on N/C ball-screw presses to replace crank, eccentric, and hydraulic presses for many uses.

1978 Conducted extensive design studies on advanced CRT and terminal keyboards.

QUOTATION

Burt Raynes, a manufacturing engineer who became chairman, president, and chief executive officer of Rohr Corporation, after inspecting Parsons' Traverse City plants, stated, “There aren't 25 people in the United States capable of understanding the magnitude of John Parsons' accomplishments.”

BIBLIOGRAPHY

Biographical

Ward, J.E., “Numerical Control of Machine Tools,” *McGraw Hill Yearbook of Science and Technology*, McGraw-Hill, New York, 1968, pp. 58-65.

UPDATES

Portrait added (MRW, 2013)