Manufacturing innovations in San Diego and environs over the years.

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If you have a story, please submit for publication!:

A retired Sr. Manufacturing Engineer at Rohr Industries wrote the following back in 2001. Stories from other manufacturing breakthroughs will be featured in future articles, as we discover and research the subject.

Glen Curtiss assembled and flew at Air Station North Island, referred to by the Navy as "The Birthplace of Naval Aviation".The Spirit of St. Louis was made in San Diego by Ryan's people. Convair bombers rolled off the assembly in the blink of an eye.

Rohr Industries was born through a drop hammer invented and perfected by Fred Rohr. Our task since then has been to smash metal into compound irregular shapes and assemble them into aerodynamically smooth contours, on schedule, and competitively priced for our customers.

Ryan, Rohr, and Prudden in the shops, plus Hall and Lindbergh on the design board gave birth to the Spirit of St. Louis, which in turn triggered the Boeing School of Aeronautics which launched aviation from barnstorming to a major world contender. Fred Rohr led the company to dominate market share through manufacturing technology. We were and remain a job shop providing parts for customer airplanes. Any significant growth in the market had been due to some advanced manufacturing technology, spurring us ahead of the competition. We recently installed the first five axis laser trimming workcenter for use in the aerospace industry. A few Years ago we were the first to install an abrasive waterjet for cutting flat parts. Staff manufacturing designed and built the machines to make the now famous Dyna Rohr for sound-deadening honeycomb structures.

We developed and installed the first DNC network with a flashing-light trouble board to make it more effective. The RADAR system was invented in-house and put to work even as the rest of industry was talking about shop floor data collection and MRP concepts. Rohr technical people and engineers have generated patent paperwork on Carbon-Carbon, adaptive control, material condition analyzers, automated composite layup mechanisms, and hundreds of labor-saving, quality improving, throughput-enhancing devices and systems which are the direct cause of Rohr's unique, quasy monopolistic stance in the industry today.

You could meet some of the heroes by strolling through the Mantech area on the south end, bottom floor of building 29. Gil Cadwell has his desk next to the east wall. He invented and or developed things like Soniform; where you put a spark--plug like affair in an enclosed mold filled with water and explode the water to shape the metal. The experimental shack did not survive the first attempt, But the process became routine after a while. A few years ago Hydro Forming was a mass production media using steel long-run dies. He developed low cost cast Kirksite dies at Rohr which are now used by the thousands throughout industry. He is the father of SPF, superplastic forming--the process most responsible for our present leadership role in the industry. Bob White, his know--how in stretching metals into shape, is legendary. He developed

urethane faced drop hammer punches, stretch--die springback empirical data and hot draw form of nose lip segments.

Dale Jennings hides on the east side of the Mantech bull-pen in a cobby-hole marked "Abrasive Waterjet". He coinvented and developed the rolling process for making Rohr-grid, invented a method for feeding abrasive into the waterjet which made the process a doable reality, invented and built a trimming machine for removing tooling tabs, and when pressed for more information will simply smile and refuse to take credit for the dozens of other process inventions he has put to work.

Bob Shiflet carried samples of laser trimmed material to at least a hundred management meetings showing the value of this process. It took three years or prototype development work, i.e. Rohr duct iso-grid, inlet particle separator and laser welding. Bob and his right-hand-man Ed Bork, have something to show not only Rohr, but the rest of the aerospace industry. Bob also developed roll form processing of honeycomb net core and has several patents on spherical bearing installation tools.

Bob Debisschop's skills made winners of Indianapolis 500 racers by installing the first turbo, then after a stint as Chief Engineer at Piper and another as Project Engineer at Garrett, came to Rohr and led the way in developing an instant-start turbine APU, the Rohr Single Engine Airplane and lastly, cheap ceramic tooling for use in superplastic forming, a feat yet to be duplicated by our competitors.

The Space--Shuttle is getting bought off by the toughest inspectors in the world, mainly because of the efforts of Bruno Kaiser, (recently retired) whose in-depth knowledge of cutting tools, mechanics and chemistry were put to the test on the now famous **'0'** ring grooves.

In assembly areas you see dozens of automated machines and related hardware assisting the operators in positioning and feeding assemblies to the Drivmatics. This state-of-the-art technology was applied by a soft--spoken Nebraskan who can now be found in Tooling; Harlan Osborn, we call him Ozzie.

Chapter 44 has been our support organization since day one, back when we were called Society of Tooling and Manufacturing Engineers. We led the way, before the union, in creating the apprenticeship program from where so many fantastic ideas and technologies have evolved. Not only at Rohr, but at virtually every major (and minor) manufacturing facility in and around San Diego.

Our last major impact on local industry was the introduction of the Automation Technologist associate degree at City College back in the mid 80’s, and the college level courses in manufacturing and industrial technology at Southwestern College.

Were these days the last of the great times in manufacturing?