

Doing Well by Doing Good: Technology Education and Business Success

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Abstract: Supporting education leads to better personal outcomes for students and better business growth for the sponsoring enterprises even for businesses whose products are not generally perceived as part of the educational market.

Why Manufacturing is Important

In his presentation to the 2008 Haas Technical Education Conference in Oxnard, California, Peter Hall stated:

The ability to design and shape materials for component parts of the machinery, systems and processes, that provide the vast variety of goods and services, essential for our survival, is the most fundamental and crucial human endeavour.

The critical needs and expectations of an ever increasing global population (+ 70 million/year), must be fulfilled in a sustainable manner, such that the world will not become unfit for human survival.

The ecological, environmental and resource challenges facing mankind are truly a matter of long term survival. This is becoming extremely apparent on a daily basis.

Mankind cannot survive without advanced manufacturing technology.

Company History and Overview

Despite working in machine shops since he was fourteen, Gene Haas finished college with a business degree. He'd left the engineering program at California State University of Northridge just after Lockheed, a major aerospace manufacturing company, experienced financial problems and he graduated in 1975 with a degree in business. Mr. Haas promptly found work through the college placement office and had a job offer paying about \$720 per

month. He was making about double that working in the machine shop so he 'just went back to working at a machine shop' (Graff, 2005,p 1). Thirty years later, Gene Haas is the sole stockholder of the largest machine tool producer in the Western world: Haas Automation, Inc., based in Oxnard California.

Haas Automation, Inc. (Haas) grew out of Mr. Haas' first enterprise, Pro Turn Engineering which made complex parts for the aerospace industry. It was a very small business, with three employees, including Mr. Haas. Mr. Haas continued to work on innovative tools to help manufacture products more efficiently. By 1983, Mr. Haas had founded Haas Automation and, in that same year, marketed a tool he and his friend and colleague Kurt Zierhut, an electrical engineer, had created to fulfill the need for a faster way to load parts: the 5C indexer. This tool is used to accurately and quickly position workpieces to permit faster and more accurate machining. It was the first such tool of its kind. It was displayed at Westec, the California trade show for the machine tool industry, where it was an immediate success. The success of Haas Automation, Inc. was also secured. Three years later, Mr. Haas and Mr. Zierhut were awarded a patent for this indexing system which still holds a key position in the design of the computerized controls for Haas machine tools (United States Patent Office, Patent Number 4,576,530, 1986).

Haas produces approximately 14,000 machine tools yearly from its single, one-million square foot facility in Oxnard, California, which employs approximately eleven hundred full time workers. Haas ships from Oxnard to customers around the world (About Haas)

Such a large volume of machine sales yields a large and demanding customer base. Haas services its machines and its customers through its own technicians and through the Haas Factory Outlets (HFO). The HFO concept was started in 1999 when Haas announced new qualifications for its distribution chain. These requirements included seven day a week service, twenty four

hours a day, and the technical ability to solve a customer's machine problem on the first call. Each HFO is independently owned and operated under the stringent standards designed by Mr. Haas: to provide the 'type of machine he would like to buy and provide (s) the type of service he would like to receive" (Collins, 2008, p 5). There are approximately 60 HFO throughout the world (Modern Application News, 2008). Each HFO is a sales showroom as well as a nexus for field service to existing machines with a service range of within a two hour drive of its location.

Shortly after the HFO concept was unveiled, Haas realized that additional showroom locations were needed for its products . Haas is a very affordable product that provides good value to the customer; it is a favorite machine tool in many areas where there is a need for multiple machines and consistent control systems that can be programmed and operated by the same staff. Without locations to display the machines while they were operating, it would be challenging for Haas to reach its goal of sustained growth through volume sales. Mr. Peter Hall, then general manager of Haas, proposed expanding on the donations of machines and expertise that Mr. Gene Haas had already made to his alma mater, California State University of Northridge and Los Angeles Pierce College as well as to several other schools. Mr. Hall proposed that the program be extended to schools that would be good locations for potential customers to see machines (Bob Skodzinsky, personal interview, March 5, 2009). By 2000, several schools had received machine tools and support from Haas and a sponsoring HFO. By 2001, the root concept of placing machine tools in schools for both education and demonstration had expanded into a group of schools collectively known as Haas Technical Education Centers (HTEC). HTEC are currently located in almost 800 high schools, technical schools ,colleges and universities in the United States supplemented by nine locations in Europe. Another thirty to thirty-five HTEC are expected to open in Europe. Each HTEC in Europe is founded and

managed by a local HFO. All of these locations serve students by providing them with the latest in manufacturing technology and serve Haas by developing both potential customers through familiarity with the Haas product and by providing multiple showroom locations throughout the county in existing schools.

Company Financial Information and Scope

Haas Automation, Inc. is a sole proprietorship and is debt free. It does not release financial reports. Information is available through Haas Automation published material and through the manufacturing industry press. The stated goal of Haas Automation is to “deliver top-quality products at affordable prices...with high-tech innovations and rock-solid engineering” (Haas, 2008).

Manufacturing Application News reported “Haas Automation, Inc., of Oxnard, CA, reports 2007 as the most productive year in the company's history, with CNC machine tool production exceeding 13,755 units - up 10 percent from 2006 - and a 19 percent increase in revenue, to more than \$880 million. The 2007 numbers exceeded the company's record-setting year of 2006” (Modern Application News, 2008). Total 1997 domestic USA consumption of machine tools valued over \$3,025 was 64, 968 units. (AMT, 2008). Haas is one of the largest providers of machine tools in the world and the largest American machine tool manufacturer.

Half the production in 2007 shipped to international locations and 40 new HFO locations, primarily in Europe, opened in 2007 (Modern Application News, 2008). Sales in Europe increased by 58 percent over the 2006 sales. Sales in China showed an increase of 65%: sales in Asia, excluding China, increased by 20% with Latin American sales increasing by 17.5%. (Modern Application News, 2008). By the beginning of 2008, it is estimated that Haas had shipped a total of more than 100,000 machines around the world (Haas, 2008).

Haas products are used in a wide range of manufacturing applications in general machining, aerospace, medical and other industrial operations that require economical, customer friendly, reliable machines. The machine tools range in size from the “office machines”, so named because these machines can fit through an office door to the five-axis vertical machining center that weighs over 16 tons.

The first year of Haas operations (1983) saw production of 240 units by 15 employees with only one product, the soon-to-be patented collet indexer (the 5C). By 1986, production had risen to 40 units per month and, in less than five years, Haas was producing a variety of machine tools and machine tool products. Customer input had led the Haas team to produce a vertical machining center, the VF-1, with a selling price of under \$50,000, well below the price of any other American-made machine tool at the time.

Haas currently produces over one-hundred products at price points ranging up to \$300,000 including machining centers, lathes, turning centers, rotary tables as well as the ‘very first one’, the VF-1, (Graff, 2005) which is still available in a very modern version, for approximately \$ 50,000.

Haas Technical Education Centers (HTEC)

Ogden-Weber Applied Technology College (OWATC) joined the ranks of Purdue University, MIT, Boston University, Macomb Community College, Vincennes University and many other US schools when it became an HTEC in May, 2008. OWATC is located in Ogden, Utah, a small city in an area known more for its spectacular scenery and recreational opportunities than for strength its manufacturing base. Ogden, however, is home to several

manufacturing companies, including many that make high precision, high quality parts for medical or aerospace applications. Unfortunately for the manufacturers located in Ogden, there were very few people studying for this “different choice, not an inferior choice”(Nelson, 2008) of a manufacturing career.

The Ogden, Utah area was experiencing acute shortages of qualified technical and scientific workers for highly skilled and lucrative jobs in the area. It was also experiencing a decline in college enrollments, reflecting a decline seen nationally. “In Utah, 2005 marked a low point in the number of graduating high school seniors” (Weber, 2008, p 3) and worker shortages faced Utah firms with ““difficult choices about whether to shift business to places with a more abundant supply of workers, even if the efficiency of workers is lower” (Weber, 2008, p 2). Compounding this problem is the common perception that manufacturing is still “dirty, difficult and dangerous” (Weber, 2008, p 4) and that most manufacturing jobs have been sent offshore. Both of these perceptions are inaccurate. The bulk of manufacturing jobs that have left the United States are jobs where there is little “value added” and where unskilled or semi-skilled labor is utilized. The Bureau of Labor Statistics indicates that manufacturing productivity has increased over the last ten years despite the loss of almost four million manufacturing jobs (BLS, 2005). During the last ten years, United States manufacturers have seen substantial movement from manual machining where the machinist controls the part processing to computer-numerically controlled (CNC) machining, where the part processing is done through a computer program, programmed and implemented by the machinist, that directs the cutting tools. This change in manufacturing technology was a factor in improving the productivity of the industry. It has also changed the type and content of the education needed for these positions. These types of manufacturing jobs have gone from “blue collar to white lab coat” (Weber, 2008, p 4) as the

machinists require more advanced technical skills, including advanced algebra and trigonometry, in order to meet the exacting requirements of complex production. In the Odgen-Clearfield area, the median wage for a machinist is \$40,650, exclusive of benefits (Weber, 2008, p 4) and higher than wages for other occupations in the same geographic area, including some that require a four-year degree or an advanced degree (see Exhibit 1).

It has been noted that “there is a general sentiment that in order to be successful, one must go to college”...”society, however, often implies that only four-year institutions fit the definition of college” (Weber, 2008, p 4). Technical colleges, for many people, have no place in the post-secondary school environment. For potential students, as well as for employers, this mis-perception deprives both populations of valuable learning experiences that can lead to rewarding employment and serve as a feeder channel to a four year college or university while providing the technical college student with a good job.

The HTEC program provides a valuable and structured resource to students, educators and employers by making technically advanced equipment available to schools at low cost and, in some cases, no cost at all. This initiative benefits Haas specifically through the increased visibility of Haas products in multiple potential markets. It also benefits society by providing an avenue for good people to get good jobs. This education can move a citizen from receiving state assistance to becoming a taxpayer a time from of less than a year to two years (Weber, 2008, p 3) to a job that earn pays an average of \$ 660 more per month than one requiring only a high school diploma. That job can provide the funding to a potential student to continue his or her educational career and bring more value to the student as well as to society.

Exhibit 1

Occupational Wages-Published May 2008 (data from May 2007) - Annual
Ogden-Clearfield Metropolitan Statistical Area (MSA)

<http://jobs.utah.gov/jsp/wi/utalmis/occwagemain.do>

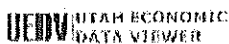
Selected Area: Ogden-Clearfield MSA

[Click Here for Hourly Wages](#)

Occupational Wages-Published May 2008 (data from May 2007) - Annual

Area	Occupation Title	Married/Head of Household	Married/Head of Household	Median	Midline Range	Training
View Area	Accountants and Auditors	\$39,230	\$52,110	\$55,070	42110 to 72240	Bachelor's degree
View Area	Aerospace Engineering and Operations Technicians	\$31,250	\$53,870	\$52,120	35340 to 68220	Associate degree
View Area	Aircraft Mechanics and Service Technicians	\$41,240	\$45,050	\$48,320	43030 to 58720	Post secondary vocational training
View Area	Civil Engineers	\$44,330	\$57,910	\$57,140	48450 to 64730	Bachelor's degree
View Area	Industrial Machinery Mechanics	\$35,400	\$45,020	\$45,500	39950 to 51550	Long term OJT (> 12 months)
View Area	Librarians	\$28,250	\$44,020	\$44,430	34100 to 54020	Master's degree
View Area	Machinists	\$22,800	\$38,590	\$40,300	28950 to 50340	Long term OJT (> 12 months)
View Area	Training and Development Specialists	\$26,700	\$40,370	\$38,910	28850 to 50120	Bachelor's degree

[Utah Occupational Wage Home](#)



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JO Ann -
Senior Job!
Strong Analysis.
Paper: A
Oral: A