

Manufacturing Institute's Return on Investment Calculator

Case Study: Stober Drives

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In 1934, brothers Paul and Wilhelm Stöber founded STÖBER ANTRIEBSTECHNIK in Germany and today STÖBER produces the highest quality gearboxes in the world. With over 80 years of gearing experience, STÖBER is the gold standard. They can build and ship in one day, complete quotes within one hour, and are available 24 hours a day, 7 days a week. They are able to accomplish this by employing the best people, utilizing the best processes, while developing the best products.

STÖBER Drives, Inc. was established in 1991, in Maysville, Kentucky, to manufacture and assemble gearboxes for the North American market. This facility is responsible for supplying gear solutions for the servo and power transmission markets. STÖBER solutions include gear reducers and servo motors. In 2014, Stober Drives Inc.'s total revenue exceeded \$34 million.




As a European company, apprenticeships are in the DNA of Stober Drives, and they are committed to developing and operating registered apprenticeship programs to produce highly skilled employees. They have been utilizing the apprenticeship model since 2005, with 15 employees successfully completing all required activities of intense on the job training and related technical instruction provided by an accredited institution of higher education.

Today, Stober Drives currently operates apprenticeship programs for the following occupations: accounting technician, electrical

technician, machinist, maintenance mechanic, and customer service/sales, with 10 employees actively participating. The plant currently has 114 total employees with 50 working in production. They have 15 skilled machinist and 4 machinist

apprentices, with 2 apprentices still in high school. Apprentices have a loaded starting salary of \$20.00 per hour, with annual wage increases of 10% to journeyman fully loaded salary of \$24.65.

The current structure of Stober Drives' machinist apprenticeship programs consists of 30 hours

A large, yellow industrial fan with a circular metal cage and several blades, positioned in a spacious, well-lit industrial facility. The fan is mounted on a stand and has a power cord extending from it. The background shows a high-ceilinged warehouse with structural beams and windows.

**Stober Drives could
reduce the total cost
per apprentice from
\$337,640.00 to \$168,820.00**

per week of on the job training combined with 10 paid hours per week designated for related technical instruction. The term of the machinist apprenticeship program is 8,000 hours of on the job training and up to 76 semester credit hours of related technical instruction. In general, it takes 15 actual classroom hours to receive credit for one semester credit hour.

Apprentices work 3 days a week and attend classes 2 days per week, sometimes traveling 50 miles to take classes at Morehead State University in Moorehead Kentucky. Apprentices are required to take at least 6 semester credit hours per semester and must earn a minimum of 48 total semester credit hours towards an Associate's Degree in Applied Science to successfully complete the program.

To measure the total investment for Stober Drives' machinist apprenticeship program,

an interview was conducted with Kay Moss, Director of Human Resources. This information will be used to identify cost saving opportunities with Stober Drives' current machinist apprenticeship program and to increase its overall return on investment.



The Cost of an Open Position

Businesses pay a premium when positions go unfilled including lost revenue and productivity. A study by CareerBuilder found that forgone revenue and profits can be as high as \$23,000 per unfilled position. Accenture and the Manufacturing Institute estimated that mid-sized manufacturers alone report more than an 11% loss in annual earnings due to open positions. Stober Drives has a 4% companywide turnover rate and it takes approximately 6 to 8 weeks to fill a vacant machinist apprentice position. Based on these metrics and assumptions, in 2014 the total cost of open machinist apprentice positions at Stober Drives' was \$10,615.00 ($\$23,000.00/52\text{weeks/year} \times 8\text{ wks to fill} \times 3\text{ vacancies}$).

Recruiting and Hiring Costs

The following describes Stober Drives' process to fill each vacant machinist apprenticeship position. They employ an extremely thorough and in depth process to screen and identify candidates. They usually spend about \$200.00 per vacancy to advertise in the local paper and electronic media and also utilize traditional outreach strategies such as posting positions with the local one stop and on community job boards. These efforts generate a pool of candidates and their applications are reviewed by the human resource manager. The human resource manager then conducts 20, twenty minute phone interviews per vacancy and schedule second interviews with at least 6 candidates with the human resource manager and a supervisor. Two candidates are given third interviews and then an offer is made. Although there is no previous manufacturing experience or aptitude testing required, Stober Drives has not lost an apprentice

due to turnover since the inception of their apprenticeship programs. The total recruiting and hiring cost of staff time including loaded salaries equals \$6,060.00 per machinist apprentice new hire.

On the Job Training Costs

A machinist apprentice generally begins with low productivity and costs the company more than they bring in value and becomes more productive through on the job training and completion of required technical instruction. On the job training costs consists of apprentice and supervisor fully loaded wages, educational expenses, equipment and supplies utilized during time spent in training. Stober Drives requires all apprentices to complete 8,000 hours of on the job training and a minimum of 48 semester credit hours of technical coursework to complete their machinist apprenticeship program. During this period, supervisors usually spend 50% of their time managing and training apprentices and validating and confirming competencies until the apprentice becomes 100% productive. With its current program, Stober Drives incurs an on the job training cost of \$327,640.00 per machinist apprentice. Stober Drives also pays all education related expenses such as tuition, supplies, and books to the tune of \$10,000.00 per apprentice making the total cost for their machinist apprenticeship program \$337,640.00 per apprentice.

Business Impact

Apprentice time to 100% productivity also negatively impacts business. During an

interview with one Stober Drives apprentice, it was discovered that he could not begin training on a new machine until he completed the related coursework which was not offered until the next semester or next academic year. Although he had already mastered his current activity, his progress was impeded by the design of the training program where apprentices complete their related technical instruction as classes are offered by the educational partner which typically don't align with on the job training activities or business needs. Apprentices also spend a large amount of time completing general education courses which increases the length of the apprenticeship and time to 100% productivity.

During this interview, Stober Drives indicated that they are not impacted in downtime when a position is unfilled however, they are impacted by cycle time. Although Stober Drives agrees that cycle time and production downtime could both potentially be impacted by a lack of an unskilled workforce, they did not want to include these metrics into the final return on investment calculation.

Cost Savings Resulting from partnering with an Educational Provider

Stober Drives currently operates traditional time based apprenticeships to train their workforce requiring a minimum of 2000 hours of on the job training and 144 hours of related technical instruction annually for a set amount of time, 8000 hours. Time based apprenticeships takes a longer time to complete (usually 2 to 5 years) and must meet standards established by the Department of Labor. Alternatively, competency based training programs are comprised of competency standards set by industry that

each student is assessed against to ensure all learning objectives have been achieved as demonstrated by appropriate written and hands-on proficiency measurements. Progression through a competency based training program is determined by the student demonstrating that they have met competency standards through the training program and related work, not by time spent in training. This way, students may be able to complete a program of study much faster. As previously mentioned, hybrid apprenticeships are a combination of the two approaches requiring apprentices to complete a minimum number of classroom hours and demonstrate mastery of competencies in order to progress through the program.

There are many cost savings that can potentially be impacted when employers partner with an educational provider to develop and train a qualified workforce including reductions in hiring, turnover and overtime costs. There are also additional savings that can be realized such as a reduction in educational expenses and time to 100% productivity by implementing quality accelerated training strategies. It is estimated that Stober Drives could realize a cost savings in on the job training costs, educational expenses and time to 100% productivity by switching to an accelerated hybrid apprenticeship model. This would reduce the total cost per apprentice for their machinist apprenticeship program from \$337,640.00 to \$168,820.00 and the term of the apprenticeship program from 8000 hours to 4000 hours.

Cost to Implement and Return on Investment

The cost to implement will include staff time for an in depth job analysis, input on curriculum and program design. This estimated activity will take no longer than 40 work hours costing the company approximately \$2,500.00. Nevertheless, this one-time investment will pay long term dividends well into the future.

Conclusion

Due to the growing shortage of skilled workers and the fast pace that technology changes, manufacturers must take responsibility and grow their own talent from within. An accelerated hybrid apprenticeship model leveraging industry recognized credentials can assure that manufacturers have the qualified workforce they need now and in the future.

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