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TBAISD PRECISION MACHINING TECHNOLOGY PROGRAM STUDENT

## LINDSEY MATTHEW

ELK RAPIDS HIGH SCHOOL – 2015

Lindsey Matthew, a senior currently enrolled in TBAISD Career-Tech Center's Precision Machining Technology (PMT) program, considered her options before pursuing a career in manufacturing, and now her future looks bright. "I looked at agriculture and cosmetology," the Elk Rapids senior commented, **"but I heard about the numerous job openings becoming available in this area as people are retiring and thought I would give it a try."**

Matthew is also nearing completion of a second co-op position during the two-year program and has found a niche in the quality department. "Learning how to lay out parts we make in class and using manual gauges have helped me," Matthew noted, as she spends time at Skilled Manufacturing during the week performing manual layouts and visual inspection of parts made for the aerospace industry.

The work required in the trade is new for her, as she's the first in her family to pursue this career field. She had an older friend who went through the PMT program and told her how great it was. "My first exposure to the program was when I visited in 8th grade," Matthew recalled, "and, since being involved in the program, I have really enjoyed making things out of the various raw materials."



Lindsey Matthew, an senior student enrolled in TBAISD's Machining Program, validates a new Mazatrol program created during class.

Developing process plans for each project made in class is probably the hardest task that she's had to do, as she has had to think through each step and make sure she had all the tools she needed, but it's been a rewarding experience for her. "You have to learn your tools and pay attention," advised Matthew. "But the TBAISD PMT program is a good start to a good job." 🌟

TBAISD SUPPORTING COMPANY PROFILE

## ELECTRO-OPTICS TECHNOLOGY

Choosing an area for quality of life has as much to do with organizations as it does with individuals and families. Electro-Optics Technology (EOT) is one such organization, as, while it was founded in California, it relocated to Northern Michigan soon after its launch. EOT, which designs, manufactures, and assembles components for users of high-powered lasers, has been actively supporting TBAISD's Precision Machining Technology (PMT) program since 2004, when it began its operations just west of Traverse City. One of the primary products it manufactures is the optical isolator, which helps protect powerful lasers from harmful feedback and keep the light focused on where it needs to be. "It kind of works like a check valve," explained Geoff Niessink, EOT's Machine Shop and Facilities Manager. "It keeps the light pointed in the right direction and eliminates the back flow of energy."

To manufacture these space-aged products, EOT uses a wide variety of equipment to get the job done. "We have manual equipment,

CNC mills and lathes, and surface grinders," noted Niessink. "Although we have an established product line, new product development is happening all the time. We use manual machines for one offs or making fixtures and use the CNC equipment for parts requiring any kind of volume."

**To staff this machine shop, Niessink relies heavily on PMT program students to fill its entry level positions.** "They have a good foundation in the basics," commented Niessink, "and we are able to bring them in as co-op students to have them learn about us and see if it is a long term fit." Just as important, Niessink pointed out, is that there is a long-term plan for each student they hire. **"I don't bring them aboard unless I know there is a potential spot for them after graduation," he explained.**

This strategy has helped employee and employer alike as EOT's success has resulted in it building a new \$3.1 million facility in East Bay Township. With the majority of its products being sold to overseas customers, including

China, EOT has "bucked the trend" of offshore manufacturing and instead has steadily added to its machining capability over the years. "We outgrew our existing facility three or four years ago," said Niessink, "and it has prevented us from adding additional customers." With the new building scheduled to open shortly, it'll help with increasing capacity and production. Given the opportunity for professional growth and advancement within EOT, Niessink is focused on making sure the company gets the right person at the start. "I want students with the desire to learn and who are motivated to learn how to solve problems," stated Niessink. "We start them out in the sawing/deburring operations and they are limited only by their own desires." Successful students have gone on to master the operation and set-up of manual equipment, as well as half-million dollar CNC equipment. "The people who succeed have a real passion," the manager explained, "and it shows in how they go about their business and perform at a consistently high level." 🌟



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FORMER TBAISD CTC PRECISION MACHINING TECHNOLOGY STUDENT

## YEVGENIY VOROBYOV

Yevgeniy “Eugene” Vorobyov, a 2010 graduate of the TBAISD Career-Tech Center’s PMT program, didn’t think he’d be a shift supervisor so soon after high school graduation. But, then again, he didn’t really know what to expect when he enrolled into the PMT program. “I was considering construction and welding,” Vorobyov said, **“but my brother was in manufacturing and went through the PMT program and got a job right out of high school, so I thought I would give it a try.”** Vorobyov began working at Electro-Optics Technology (EOT) while employed as a co-op student in January, 2009, and has steadily increased his capabilities and machining knowledge. “It is a slow process,” commented Vorobyov, in terms of building the skill set required to successfully process parts while meeting customers’ due dates.

“I started out doing the sawing and deburring operations and moved on to the manual machines,” recalled Vorobyov. “I was soon running the CNC equipment, with the help of other experienced machinists. I was also able to study existing programs and soon learned how to write code and fix problems on my own.” The company recognized Vorobyov’s achievements, and he was promoted to running the lathes on second shift where he was in charge of setting up and operating the production equipment.

Aside from the satisfaction of developing his professional skills, the higher pay that accompanies this more challenging work has also had its benefits. “I wouldn’t have been able to afford my Camaro SS without it,” he reflected.

Having trained, while in the PMT program, on the same equipment that EOT uses has made the transition to using the CNC a little bit easier for Vorobyov. “We have more than just Haas equipment at EOT,” explained EOT’s second shift supervisor, “but the training on the PMT machines helped Vorobyov a lot.” Moreover, the training software PMT used enabled him to become familiar with the basic functions of the machines, and, as Vorobyov explained, “it helped me learn the layout of the controller and what it all means. The training course is designed to teach you the basic set-up and programming for both the lathe and the mill.”

EOT has invested in its employees by sponsoring GD&T training for its machinists and has sent Vorobyov downstate for programming training (CAM) which he uses to write machining code for the various parts EOT uses in its product line. The complexity of the CNC machines vary from a simple three axis mill to the more sophisticated bar-fed eight axis turn / mill equipment. “It’s amazing what can be done with today’s technology,”



*Eugene Vorobyov, TBAISD graduate, displays one of the many items made at EOT. This part, made on the 8 axis machine in the background, is completed in one set-up.*

observed Vorobyov. “We are producing complex, high quality parts in less time and effort than ever before and that helps keep us competitive.” With the continued growth of EOT, as well as in his own professional career, the Traverse City West graduate is off to a great start and is making an impact here in Northern Michigan. 🌟

## precision machining

### What is it, and who uses people with these skills?

Precision Machining is the skilled trade that includes job titles such as Tool and Die Maker, Machinist, Toolmaker, Moldmaker or Diemaker. These individuals are highly skilled and are utilized by all sectors of the manufacturing industry. Some other areas these skilled workers are sought after are: NASCAR racing teams, amusement parks such as Disney World, NASA and the Research and Development area of many companies.

### Where can this career lead, and what about income?

According to the U.S. Bureau of Labor Statistics, the average 26-year-old Toolmaker or Precision Machinist earns \$49,000 a year. In comparison, a 26-year-old with a B.S. English Degree averages \$35,000 a year, while a Fast Food worker makes \$15,000 a year. Many skilled tradesmen become business owners, middle and upper management employees, mechanical engineers, quality engineers, and quality managers, increasing salary possibilities. Companies quickly recognize the training, discipline, problem-solving abilities, and organizational skills of these types of individuals.