

Written Testimony of Eileen Illuzzi, North Country Career Center Director, to the Vermont House Commerce and Economic Development Committee on February 5, 2015

The idea for a Mechatronics and Robotics program at the North Country Career Center (NCCC) came through a request for training from Columbia Forest Products, a national Advanced Manufacturing and Wood Production Company with a facility in Newport, VT. What started out as a conversation for a workforce education and training program in Industrial Maintenance turned into a discovery for a need to provide training in advanced manufacturing in the growing field of Mechatronics.

Mechatronics is the synergistic application of mechanical engineering, electrical engineering (also including electronics), controls engineering and computer science within product design and manufacturing in order to improve and/or optimize its functionality. By adding automated features, students also study the design and use of Robotics.

In the Report from a Trans-Atlantic Technology and Training Alliance Symposium on “The Future of Manufacturing”, October 1-2, 2012 it is noted that as traditional production line jobs in manufacturing decrease, jobs in engineering, design, maintenance repair, serving customers and the manufacture of automated equipment provide steady employment. Dr. Stuart Rosenfeld of Regional Technology Strategies, Inc., goes on to state that

“Manufacturers overwhelmingly ask for a pipeline of better-prepared and, if possible, more experienced applicants from which to choose, and if not experienced, at least with certified skills. They would like to find applicants who can move right into a job and be fully productive with minimal, if any, training. It used to be relatively common to begin a career as a trainee with the expectation of a period of time to learn the job and company culture. Now firms expect hires to walk into a position very nearly, if not completely, job-ready.”

The Mechatronics program at NCCC provides students with the entry level skills necessary to compete in the advanced manufacturing technology career field and/or go on to further post-secondary training. The core foundational skills a student learns in this program (engineering skills and computer science, PLC, CNC and CADD skills) are also transferable to many different careers in Science, Technology, Engineering and Math (STEM) and Manufacturing. With the recent news that the Newport area will be going through major economic redevelopment, a

program like this will become a selling point to draw advanced manufacturing companies to the area.

NCCC is offering an Introduction to Mechatronics and Robotics course to 9th and 10th graders at the North Country Career Center that will give students the foundational skills to go on to the two year program in Mechatronics or another STEM related program or field. We have also begun our two-year program for 11th and 12th graders. The introductory class focuses on defining and identifying a mechatronics system, with an overview of the concepts associated with the various systems of Mechatronics. In the two-year program, students learn about Mechanical and Electrical Engineering, Process Control Systems, Fluid Power Systems (hydraulic and pneumatic), Computer Science and CADD (including 3-D modeling and printing). Students participate in work-based learning projects that will span from design to implementation/manufacturing of a given product. Our current students are well into their design projects. Several students are also out in the community working in both paid and unpaid Work-Based Learning placements utilizing the skills they are learning.

We have begun the process of partnering with Siemens, a world leader in mechanics and automated systems technologies, and will be offering an internationally recognized Industry Recognized Certification for the program during the 2015-2016 school-year. In June of this year, our two Mechatronics and Robotics teachers will attend a two week training with Siemens that will allow them to train and test students for the level one Siemens Mechatronics Systems Certification Program. Administration will also be traveling to Berlin, Germany to the Siemens Technik Akademie Berlin to learn about the systems approach to mechatronics and the German apprenticeship model.

What does the Mechatronics and Robotics program mean for economic development in the Newport area? This same technology and curricula, combined with the use of the training simulators for this program, will be a large component of the NCCC workforce education and training effort in the advanced manufacturing field. We are committed to provide training to local manufacturers to suit their needs utilizing our mechatronics machinery and equipment to offer an array of training classes including fluid power systems, mechanical systems, electrical systems, Programmable Logic Controls (PLC), and CADD. As our Mechatronics and Robotics program develops with Siemens, we will also be able to replicate this certification program for adult students. While NCCC will only be able to offer entry-level certification, there are other

partner schools in the United States (none in the northeast) that offer both level two and level three certifications in conjunction with an Associate's Degree in Engineering. One such program is Motlow Community College in Tennessee, where our teachers will be training in June. In the future, NCCC could partner with the Vermont State Colleges to offer a program in the same way. Using the space and equipment at NCCC we would offer college level technical training to students while utilizing the existing equipment and resources. Students could transition seamlessly from the level one certification to level two and three and earn an associate's degree without ever having to leave the career center facility.

What will it take to make this happen? The partnership with Siemens has already begun, and thanks to the support of the VT Agency of Education and the ability to leverage federal funding through Carl Perkins, equipment has been purchased and initial teacher training is under way. In order to offer levels two and three of the mechatronics certification, additional training at the Technik Akademie Berlin is required, and at this point this is not feasible for the NCCC to peruse. Flexibility with funding for innovative projects that span from secondary to post secondary along a career pathway is essential to create this system.