

## Saskatchewan Polytechnic

### Innovative Manufacturing Centre (IMC): Saskatoon RAMP facility

#### School of Mining, Energy & Manufacturing

When Environmental Instruments Canada faced the multiple challenges involved in fast-tracking the production of a new device, while walking the tightrope of cost effectiveness and time-saving, the company turned to Saskatchewan Polytechnic's Innovative Manufacturing Centre (IMC) in Saskatoon. The centre focuses on research, additive manufacturing and prototyping, also known as RAMP.

The Saskatoon RAMP facility is the most advanced additive manufacturing (3D printer) facility in Saskatchewan, with the capacity to print in almost a dozen different materials; it contains the only metal 3D printer in the province, as well as a waterjet cutter and a portable 3D scanner.

Since its opening two years ago, the RAMP facility has undertaken several industry research projects, one of them with Environmental Instruments Canada. The company produces radiation measurement devices for the uranium industry. However, its latest product was developed for homeland security markets, and needed to be rushed to production.

The hand-held instrument had to withstand a drop test, which typically requires the production of an over-molded rubberized coating over top of a hard plastic shell. The process of making the device's shell typically involves creating two halves of the part, plus over-molds on each half, requiring the use of four separate injection molds. At \$10,000 per mold, an error or redesign could cost \$40,000, and take additional months of valuable development time. With the help of Sask Polytech Saskatoon's RAMP facility, the shell and over-mold were 3D printed on a multi-material 3D printer using a single print. The process was so successful that Sask Polytech 3D printed the initial production run of the new instrument. Additional research is now being done to improve the durability and ergonomics of the instrument using the power and design freedom of 3D printing.

Manufacturers' prototyping and research projects are the collaborative focus of the Saskatoon IMC, one of two in Sask Polytech, the other of which is in Regina. By accessing the IMCs, manufacturers are able to solve real world problems they can implement immediately. Applied research also allows Sask Polytech students to work with industry partners. In Saskatoon, the new Design and Manufacturing Engineering Technology program provides students with a combination of skills that allow employers to take advantage of new technologies related to Industry 4.0. The program combines traditional engineering design, with state-of-the-art software tools and equipment. Its specialty includes mechatronic systems that integrate electronics, sensors, motor drives, and mechanical systems. The program, and its integration with applied research at the RAMP facility, ensures students have the skills to continue solving manufacturers' challenges.

## INNOVATIVE MANUFACTURING TECHNOLOGY DIPLOMA

Apply now for Fall 2020.

Saskatchewan's manufacturing sector continues to grow and need skilled workers. With the Innovative Manufacturing diploma, you will be prepared to help meet these needs. The program offers a wide range of skill-based training in all aspects of the manufacturing industry, including design, CAD drafting, Computer Numerical Control (CNC) machining, welding, fabrication, robotics, 3-D printing and project management.

Learn more at [saskpolytech.ca/MEM](https://saskpolytech.ca/MEM)

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