

## ADVANCING AEROSPACE TRAINING PROGRAMS AT B.C. INSTITUTE OF TECHNOLOGY



PROJECT	NGRAIN <sup>®</sup> PRODUCER <sup>®</sup> TRANSFORMS CLASSROOM TRAINING
CLIENT	BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY
KEY OBJECTIVES	<ul style="list-style-type: none"> <li>▶ INCREASE HANDS-ON PRACTICE OF TASKS</li> <li>▶ REDUCE EQUIPMENT COSTS</li> <li>▶ IMPROVE LEARNING ENVIRONMENT</li> </ul>

### CHALLENGE

Providing students with sufficient access to equipment is one of the most common challenges faced in the technical trades. Physical equipment can be expensive to acquire and schools often have only a handful of common models to provide students with practical hands-on experience; this forces instructors to rely on written manuals and 2D line diagrams to represent variations of the equipment and modified procedures.

In many cases, entire classrooms crowd around a single piece of equipment watching each other review procedures with the instructor; limiting the amount of time each student has to practice.

These challenges were all too familiar at BCIT. Instructors needed a way to increase the amount of practical time students could have with equipment in order to memorize engine parts and review key procedures.

*“We knew that in order to give students more time to practice maintenance skills, we were going to have to think outside of the box, [...] We needed a way to ensure that they could practice tasks, examine engine parts in detail, and create their own library of information in their head.”*

**Brian Hosier**  
 Director, Media & Technology Services,  
 Learning and Teaching Centre, BCIT

### BACKGROUND

The British Columbia Institute of Technology (BCIT) is a polytechnic school designed to give more than 48,000 students access to a hands-on and pragmatic education each year. In its School of Transportation, BCIT offers aircraft maintenance engineering and gas turbine technician training programs at the Vancouver International Airport. Students in these programs learn how to inspect, repair and modify engines in accordance with the stringent standards set by the aviation industry.

The Pratt and Whitney PT6A engine is used in both of these courses as a training module. Common in the aerospace industry with more than 6,500 operators using the turboprop engine worldwide, the PT6A is an ideal teaching model for students to learn maintenance procedures such as the disassembly and assembly of parts, damage inspection, and part replacement.

## SOLUTION

Launching CUBE, a 3D Simulation Development Lab in partnership with Lockheed Martin, Western Economic Diversification of Canada, and NGRAIN, BCIT is now providing its students with virtual objects to improve learning and maximize performance. Using NGRAIN Producer software to create interactive 3D equipment simulations of the PT6A engine, BCIT instructors have designed a way to guide students through key procedures involved in the maintenance of the engine and increase the time they have to practice. No longer restricted by the limited amount of time students could use the engine to practice tasks, students can now sit at desktop computers to learn the different engine parts, how to disassemble and assemble an engine step-by-step, and develop the important troubleshooting skills needed on the job.

*“Using simulations in our programs has increased the amount of time each student can spend learning about the maintenance and care of an engine, [...] Initial test results show that students are retaining more information and increasing their skill levels. By providing students with access to the highly realistic NGRAIN equipment simulations, we’re reducing the chance of error in the field.”*

**Brian Hosier**

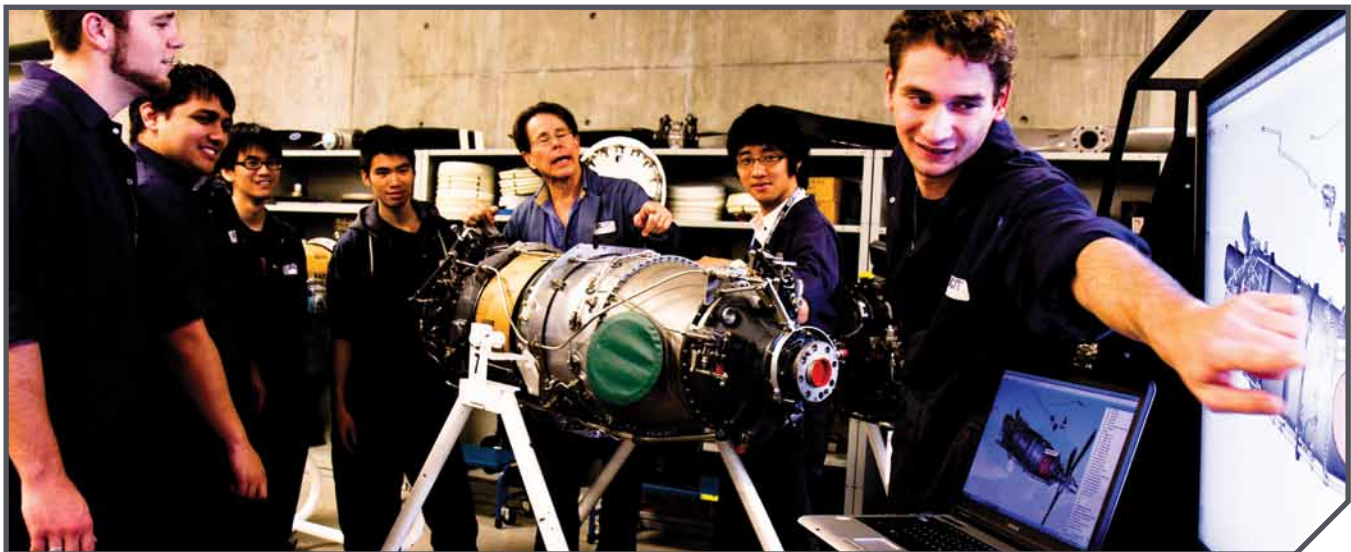
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## RESULTS

As a direct result of incorporating 3D equipment simulations in its courses, BCIT is helping its students to acquire a higher level of knowledge and skill. Confident in how BCIT students are learning with simulations, this cutting-edge school is now making this new teaching platform available online to colleges across Canada so that they may also use the simulated PT6A engine as a training module.



Students learn maintenance procedures on PT6



BCIT combines interactive 3D with classroom environment