

CHARTING CHANGE

*Workers' Voices in an
Automated World*



An IAM Canada Report

AEROSPACE



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I. INTRODUCTION

At the heart of our organization are our members, workers whose efforts, dedication and commitment to their jobs day in and day out sustains our economy, and builds our communities. The aerospace industry is one that is part of a highly competitive and technologically intensive business environment. Because of recent trends in this industry, and new pressures in the business environment, it was necessary to understand the impact technology could have on the industry and the future of work.

Our study was done using research methods that helped uncover trends through member experiences with automation, and more generally, technological change. Understanding automation from the perspective of our members will help our organization better represent members at the bargaining table, and advocate for policies and legislation that protect all working Canadians.

Information in this report is specific to skilled tradespeople working in the aerospace industry, the majority of which was gathered through focus groups with members.

II. TRENDS

- Smart technologies and AI are proving to transform production, assembly and maintenance of aircraft in the next 30-50 years.
- Ongoing research and development into all electric aircraft, such as the X-57 Maxwell, which will revolutionize the industry completely
- Rolls Royce is developing a suite of bots for use in engine inspections, diagnostics and repairs. These technologies reduce the amount of time needed for diagnostics and repairs, which also reduces costs and shifts maintenance and repair into an on-demand business
- New materials are also impacting the industry, such as carbon fibre reinforced plastic, a lightweight, stiff and durable material used in assembly of fuselage, wings and empennage. Using this materials and new tools, allows for line mechanics who are not NDT certified to inspect parts. In an aircraft wing, CFRP ruptures upon impact and releases a liquid that fills cracks, and hardens.
- Pratt and Whitney Component Solutions in Singapore have embarked on a project to digitize MRO capabilities with artificial intelligence. The goal is to eliminate manual input of service orders and other administrative tasks, but the new program is also expected to increase productivity by 80% in inspection quality of combustion chambers, fuel nozzle injectors and guides, tubes, ducts and manifolds. An AI robotic visual aided system

is also being used in chamber assembly and disassembly.

III. What Our Members Are Saying: “The Company Is Not In the Business of Making Engines, They’re In The Business of Making Profit”

- In workplaces where members work, most common types of technologies being used or those that will be soon are, CNC machining centres, robots that polish gear, and CNC machines that don’t require human operators.
- The automotive industry is seeing the fastest erosion of skilled work, while ship yards are somewhat insulated given high levels of customization in work tasks
- NDT testing and 3D printing are also part of discussions to introduce new materials and methods
- In cases where an employer is a large corporation that merged with another conglomerate, investments in technology followed
- The Amazon business model is impacting work flows and organization
- Evidence of de-skilling, reduction of autonomy over their work. Certain Red Seal trades are seeing a complete erosion of their trade, for instance, millwrights in the United States are certified for each task, instead of demonstrating knowledge of all tasks the trade requires. Micro-credentialing and other types of training are certainly spurring the erosion of trades.
- Use of apps for inspections
- Machines track for how long they’re running versus being idle, this information is used by management to measure output and hold workers accountable. This made workers feel like they were under constant scrutiny

- For some skilled tradespeople, like machinists, the pace of work has increased, it’s intensified, but has also become repetitive. Highly routinized jobs no longer require a highly skilled worker, members noted that there’s almost no difference between a trained worker and one off the street.
- Increasingly, skilled tradespeople are noticing that hands on work is diminishing
- Members noted that training today teaches students how to run parts, not the machine
- Outsourcing of work to highly automated plants is not just a possibility but it’s already happening
- Autonomy and knowledge is being shifted to computerized systems that drive decision making and trouble shooting.

IV. RECOMMENDATIONS

- On the job training
- Ensuring workers aren’t pigeonholed and are offered opportunities for training and growth, as this has shown to protect those most susceptible to becoming technologically obsolete
- Ensuring that as jobs change, pay scales reflect the change in responsibility, skill level and productivity
- Specific collective agreement language
- Establishment of technological change committees with trained representatives that monitor changes and proposals for introduction of new technology.

