
SHIMCO™
AEROSPACE | DEFENSE | INDUSTRIAL
Canada's only full service custom shim manufacturer
serving the global aerospace, space, defense and industrial supply chain.
All Information is Confidential and Proprietary to Shimco North America Inc.

Shimco – Overview

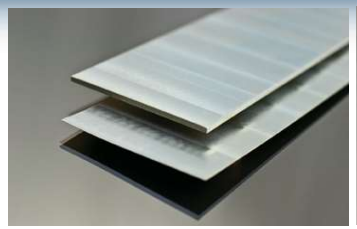
Shimco's New Plant – Cambridge, Ontario

- Shimco has been in operation for over 30 years
- Focus is on Aerospace 80%; Defence 17% & Space 1% – 98% of sales
- Company has tripled in size since acquisition in 2011
- Focus is on automation, technology R&TD, efficiency, capacity and cost reductions
- Strategic initiatives: Facility expansion supporting vertical integration & a Centre of Excellence; Technology R&TD – IntelliShim, special processes

Shimco - Background

Full Lamination Shims

Edge Bonded Shims



Tapered Shims

Solid Shims

Machined Parts/Details

- Shimco is the **only company of its kind in Canada** and one of a dozen globally
- **Traditional Products (Built-to-Print)**:
  - Shims: Laminated, Edge Bonded, Tapered, Solid, Shim Stock (Laminated, Solid)
  - Washers and Spacers
  - CNC Machined Parts/Details (milled, turned); Formed Parts; Simple Sub-Assemblies
  - Materials: Aluminum, Stainless/Carbon/Tempered Steels, Polyimide, Plastics and Nylons, Titanium, Fiberglass
- **New - Special Technologies and Services**:
  - IntelliShims, Plasma Electrolytic Oxidization Coatings, Centre of Excellence

We manufacture shims for many key markets throughout the world in aerospace, space, industrial markets and more.

AIRBUS HELICOPTERS

asco

Bell Helicopter
A Textron Company

EMBRAER

BOMBARDIER
the evolution of mobility

SAFRAN
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Wesco Aircraft

MITSUBISHI
HEAVY INDUSTRIES, LTD.

HEROUX DEVTEK

Triumph Group, Inc.

UTC Aerospace Systems

Kawasaki

Experience **The Perfect Fit**

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Flexible Manufacturing Systems

- 12-pallet FMS, incorporating 2 horizontal machining centres – 1 operator, 32 jobs loaded at once. Operator does not need to be a CNC machinist but needs strong computer skills.
- "Lights-Out" operation

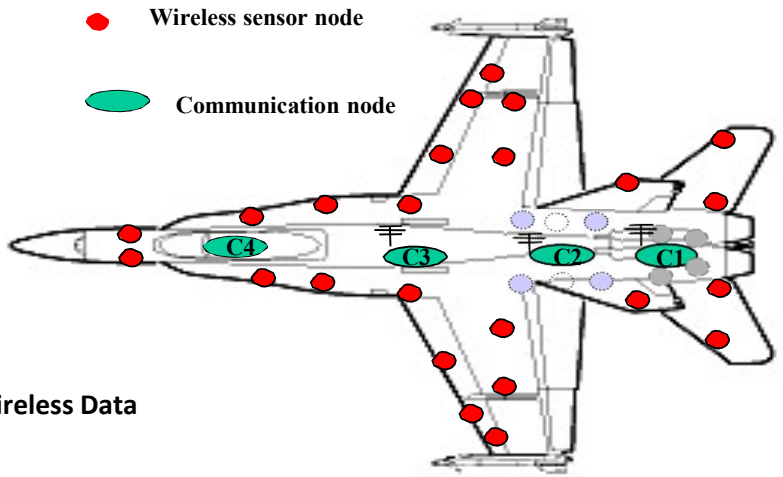
Evolution of Shimco

From a manufacturing company to a technology company that has manufacturing capabilities:

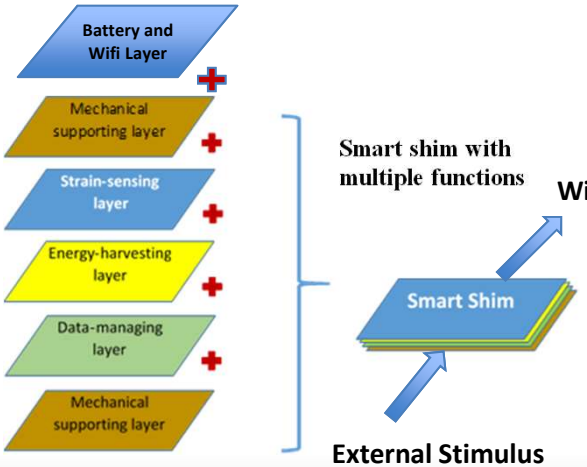
- 1980-2011: traditional manufacturing in a traditional (conservative) industry - aerospace
- 2011: original owners sell the company
- 2011-2012: tackled the immediate jobs of updating the website, implementing internal structure (policies and procedures, etc.), customer visits, trade shows
- 2012-2014: focused on improving internal work flow
- 2015/2016: implemented new ERP, created our own web-based programs to schedule and monitor production, automatic KPI reporting, automatic load forecasting, paperless environment – improved overall efficiency by 25%
- 2015-2016: built a new facility, based on lean-flow concepts – efficiency up another 10%
- 2016: recognized that Shimco's core products are being slowly phased out through new technologies, materials and assembly processes; decided to design a product that was needed as opposed to what was a "4-letter" word ("shim")
- 2016-2018: R&D and prototyping of our new "IntelliShim"; OEM partnerships developing

Overview – IntelliShim

- **Wireless sensor node:**
  - detecting strain, temperature, load
  - Self-powering, data transmission
- **Communication node:**
  - Acquiring data, data analysis
  - Real-time structural health monitoring



Laminated shim



Patent Pending

Shimco – DPHM IntelliShim Development Timeline

1.	2016/08	Preliminary planning (Shimco - peelable shim technology, University of Waterloo – Nanotechnology)
2.	2016 Fall	Concept defined, IP Agreement with UoW finalized (Shimco assigned all current and future rights)
3.	2017/03	CARIC Membership, PCT patent 1 filed
4.	2017/06	NSERC Engage & CARIC Aero Connect: Proof of Concept achieved
5.	2017/11	OCE VIPII Project Funding: Prototype development, demonstration, lab validation ($150k); PCT patent 2 filed
6.	2017/12	NSERC CRD grant approved ($153k)
7.	2018/02-11	Industry input re performance requirements: structures, landing gear & engines - secure Tier 1 & OEM strategic participation
8.	2018/05	New composite nano-structure developed – PCT patent 3 filed
9.	2018/08	IRAP grant approved - $180k over 24 months; hired PhD, formed R&TD dept
10.	‘18/08-’20/04	Prototypes validation to industry performance requirements. Identification of 2 platforms/components to support In-Situ demonstrations and validations (NRC SFST Facility – Ottawa)

Shimco – IntelliShim Skill Sets Needed

1. **R&D Phase** – needed to hire PhD level employees, to manage internal and external research, with both research institutions and OEM R&D teams

2. **Pre-Commercialization Phase** – will need industrial and mechanical engineers to assist with commercial designs, assembly processes, testing

3. **Commercial Production Phase** – will need hi-tech assembly technicians, new Quality Technicians and training for the current QA employees

Skills Development – the New Age

- The skill requirements at Shimco are changing. In the past, it was OK to have the "basic skills" for traditional manufacturing, but now we look for people that:
  - Have a strong understanding of digital work flow and digital instructions
  - Have the ability to be "upskilled", as our policy is to try to promote from within
  - Have several skill sets, as it will allow for cross-departmental support and opportunities for personal growth
  - Show personal values that mirror ours: honesty, integrity, respect and cooperation. Our commitment to employees is long-term so we want to ensure that new hires fit our culture.
- Generally, look for the traits above and then train to specific Shimco needs
- Challenging to find skilled employees, for machining in particular, which is pushing us to automate more and more (e.g. FMS)
- Very low success rate with traditional hiring sources; employee references successful
- Difficult to hire/keep people in the younger age groups, as expectations are very high and unrealistic

Questions?

Thank You

Shimco

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