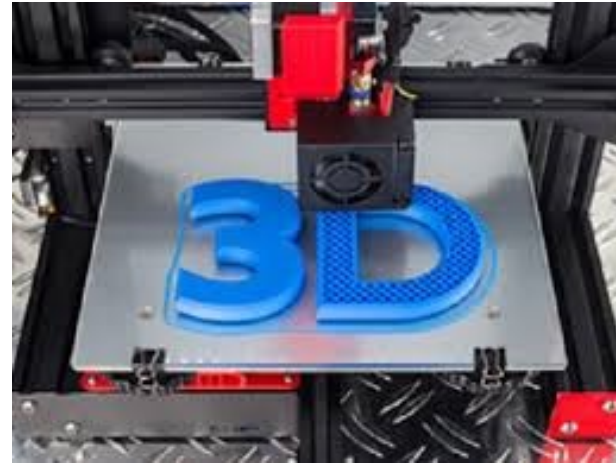




**"MRO Hangar of the Future"**

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# Aviation MRO Technology is Changing



# “MRO Hangar of the Future” - Checks All The Boxes

- ✓ Tool Loss, Safety, FOD prevention
- ✓ Improve productivity
  - ✓ Lean, 5S, continuous improvement
  - ✓ Point of use tooling
  - ✓ Decentralize from large tool cribs, 80/20 rule
  - ✓ Standardization with organization
- ✓ Track calibration/certification dates painlessly
- ✓ Compliance - FAA, EASA, CAAC, TCCA
- ✓ Free up valuable hangar floor space \$\$\$
- ✓ Customer 1<sup>st</sup> impression visiting your operation
- ✓ Attract, hire & retain new technicians
- ✓ Company owned tools vs employee owned





# FOD - Safety



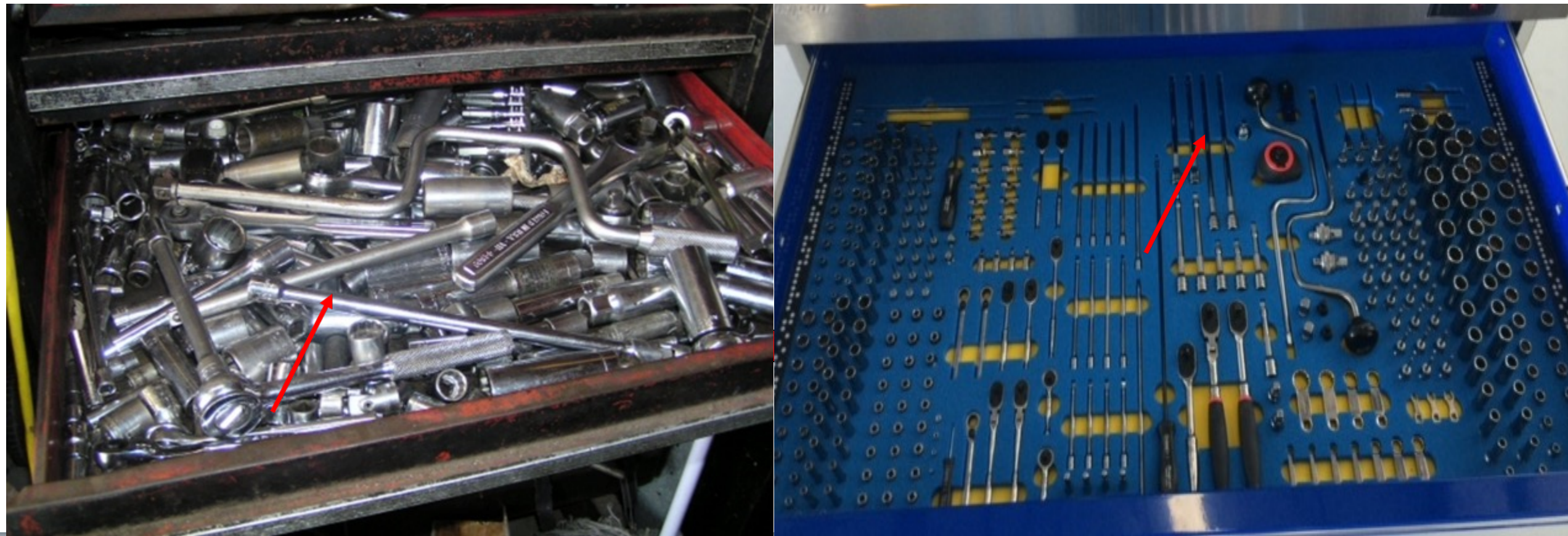
# FOD -Safety





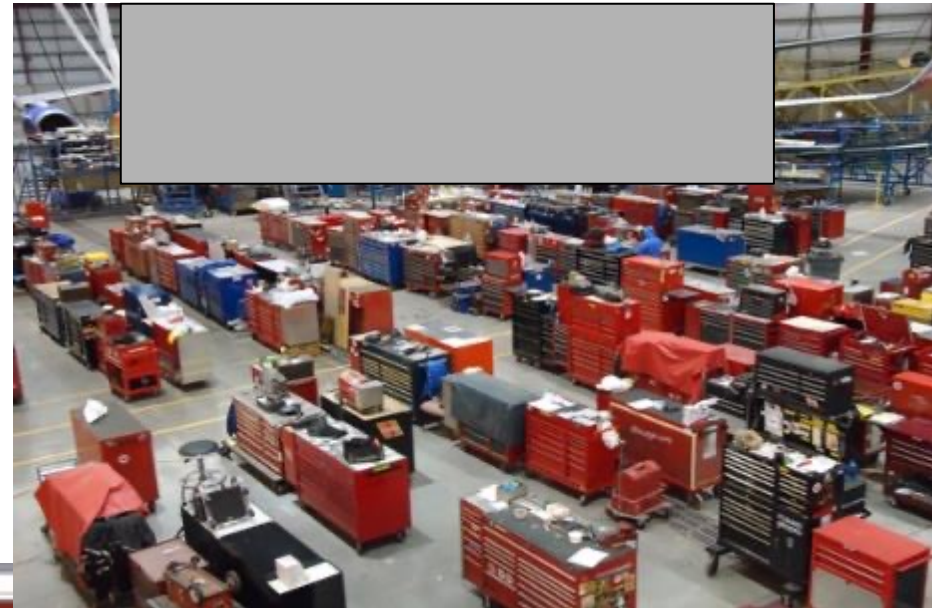
# “MRO Hangar of the Future” Safety Compliant

- 100% audit trail of your tools 24/7
- Tracks the tools to the mechanic & the work location (aircraft)





# Lost Productivity / Valuable hangar space \$\$\$ / Customer Impression





# Customer Impression – Quality, Organization, Safety





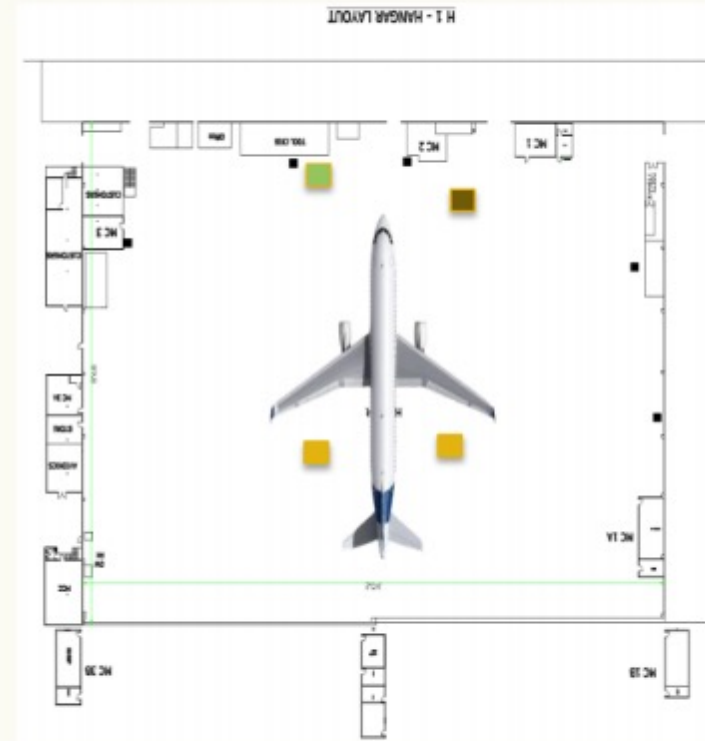
# Example of a fully integrated MRO Hanger of the Future



# MRO Hangar of the Future – Strategic Design

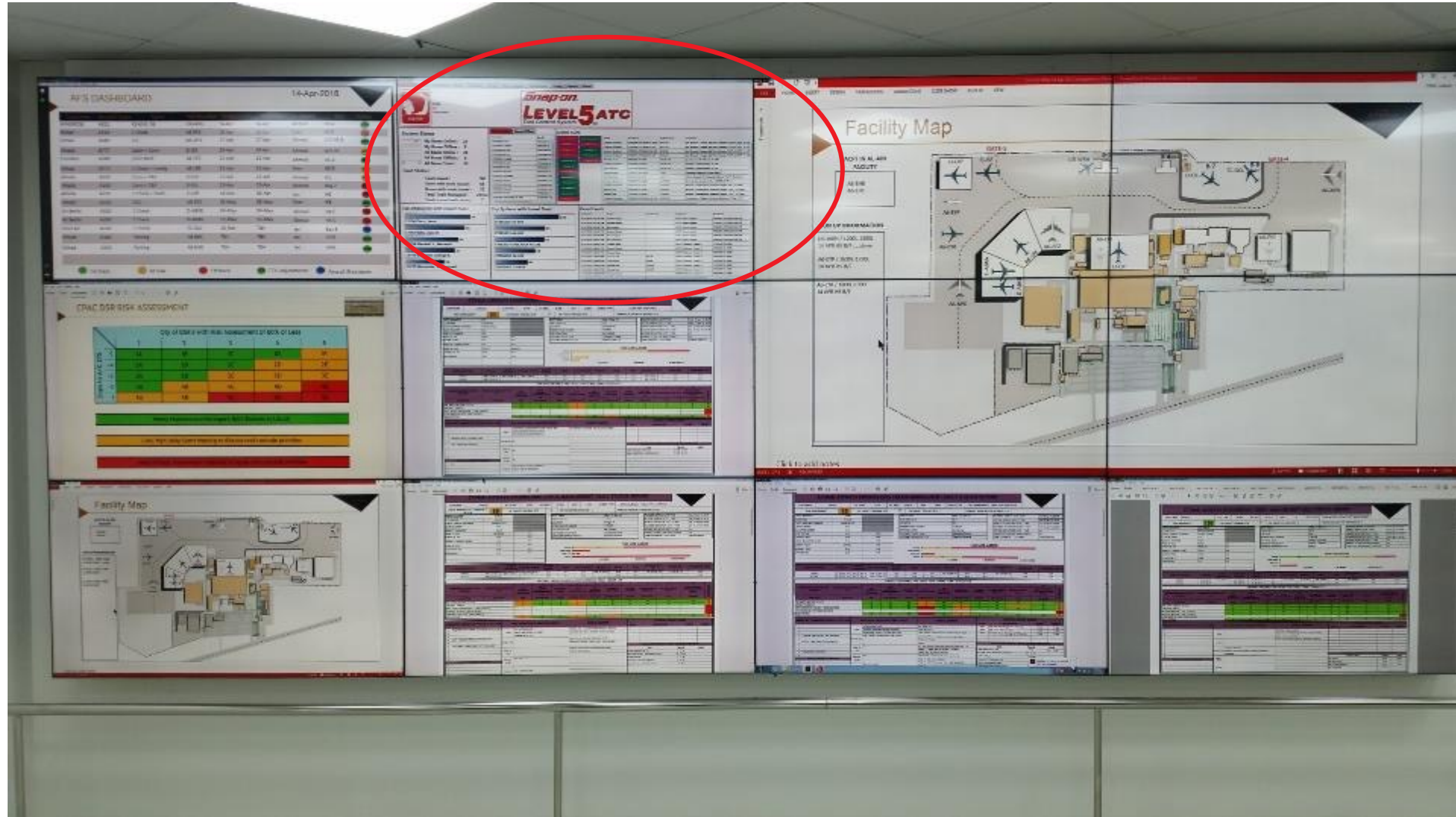
## Automated Tool Control Stations - Locations

الخطوط  
ETIHAD  
AIRWAYS  
ENGINEERING





# MRO Hangar of the Future - Master Facility Dashboard



# MRO Hangar - Delta Tech Ops, Atlanta





# MRO Hangar - Virgin Atlantic, UK











CGF



MGW



TEB



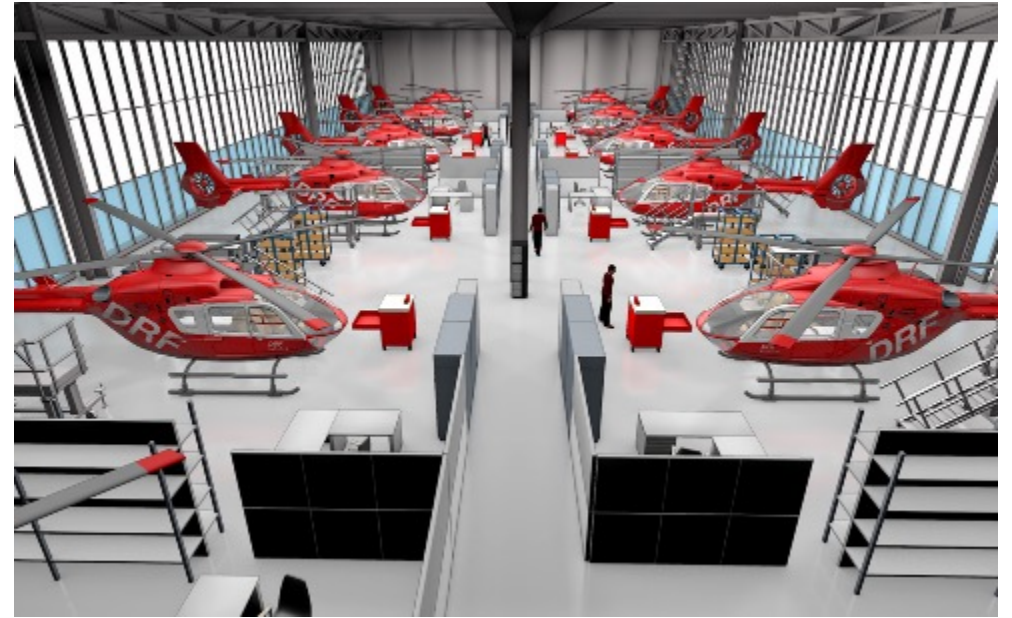
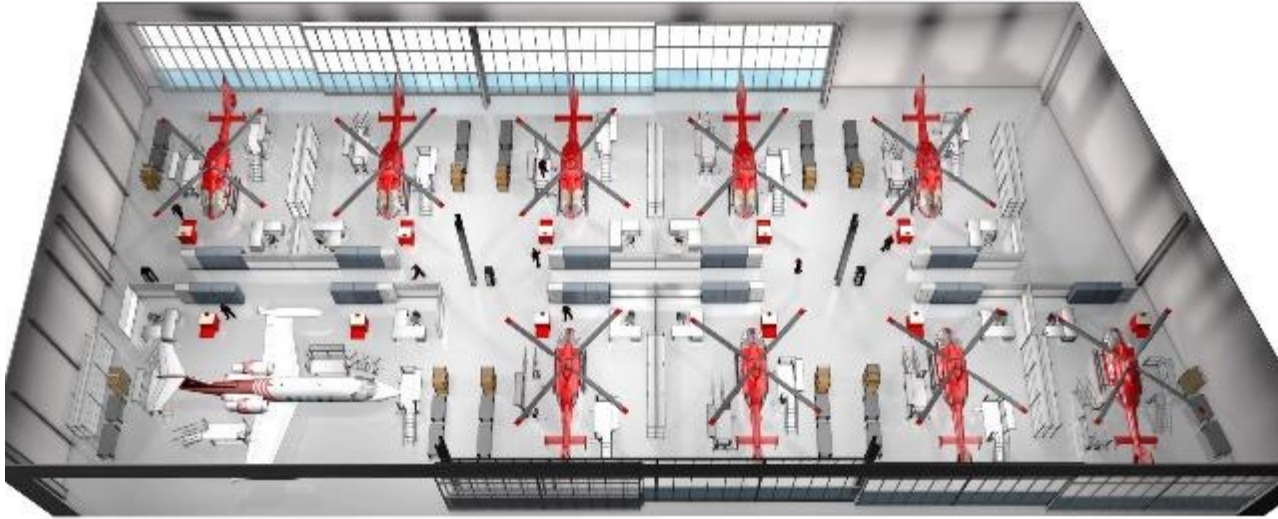
HPN

DAL





# From Concept





# To Operational MRO



**Aviation MRO**



**AEROMEXICO**

**Gulfstream**  
A GENERAL DYNAMICS COMPANY



**Bristow**



**Spiral Solutions**  
and Technologies, Inc.

**easyJet**

**ETIHAD**  
AIRWAYS

**KLM**



**Lufthansa**

**UNITED**



**PNG Air**



**Sikorsky**

A United Technologies Company

**IBERIA**



AN ELBIT SYSTEMS OF AMERICA, LLC, COMPANY

**flybe.**  
Fastest Airlines



**Royal Flying Doctor Service**

**Era**

HELICOPTERS LLC

**HondaJet**

**Emirates**

**National**

National Helicopter Services Limited



**tyrolean**  
Austrian Airlines Group

**Red Wing**  
**Aeroplane**

**CLAYLACY**  
Aviation

**QANTAS**



communications



**aveos**



**DELTA**

**IHI**

**NHV**



# Corporate Flight Departments



**Aviation OEM**



**Raytheon**



**EADS**



**TEXTRON**



**CURTISS-  
WRIGHT**



**BOMBARDIER**



**BAE SYSTEMS**





# Critical Industries



# Military





# Aviation Related Certifications

**SNAP-ON®**

## STRUCTURAL SHEETMETAL ASSEMBLY CERTIFICATION

The successful completion of the **Structural Sheetmetal Assembly Certification** will allow students or the incumbent workforce, who successfully complete the program, to demonstrate a solid understanding of the tools and equipment used in sheetmetal assembly and repair. The ability to properly layout, prepare and fasten sheetmetal assemblies are a fundamental part of the aviation industry.

This certification allows students to be exposed to a variety of drilling, fastening and verification methods that are needed by employers in industry today.

Snap-on, Sioux, ATI, and Starrett, all leaders in aviation tooling, have come together to create a series of best practices utilizing the best tools available.

### COURSE CONTENT INCLUDES:

- Safety
- Layout
- Drilling
- Fastener installation
- Fastener removal
- Precision drilling
- Countersinking
- Inspection



## BUILDING TOOLS FOR LIFE

Snap-on certifications provide a return on technical education investment through hands-on training and state-of-the-art tools and equipment. The **Snap-on Structural Sheetmetal Assembly Certification** relates directly to the following academic subject areas, including:

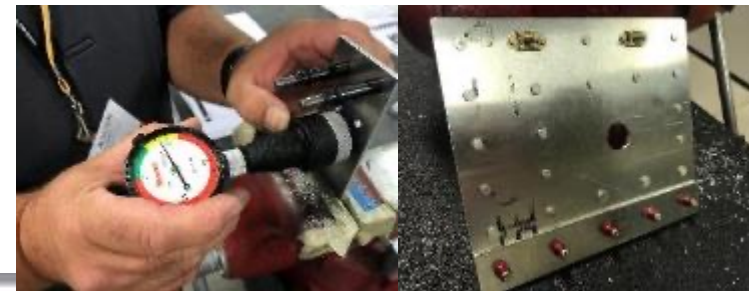
- Aerospace Manufacturing Technology
- Aviation Maintenance Technology
- Auto Collision Repair
- Transportation Manufacturing

Students earn Snap-on certifications as proof of achievement. These NC3 stackable credentials increase employment potential and on-the-job productivity in industries such as:

- Aviation/Aerospace
- Transportation
- Fabrication

For more information and to find the certification school nearest you, please visit [www.snaponcertification.com](http://www.snaponcertification.com), or email: [education@snapon.com](mailto:education@snapon.com).

Snap-on is a proud partner of the National Coalition of Certification Centers.



**Snap-on®**



## DANIELS MANUFACTURING CORPORATION®

### PRECISION ELECTRICAL TERMINATION CERTIFICATION

The successful completion of the **Daniels Manufacturing Precision Electrical Termination Certification** enables graduates to demonstrate solid understanding of the fundamentals of working with precision electrical termination tools. The skills acquired during this comprehensive training are valuable **TOOLS FOR LIFE** that can lead to rewarding careers in the global marketplace.

Crimping is the cornerstone of electrical termination in high-reliability applications in aerospace, land-based and maritime transportation, space exploration, and military defense systems. When properly performed, crimping results in a reliable connection between a contact and conductor that incorporates dependable electrical and mechanical characteristics.

Snap-on, Daniels Manufacturing, and NC3 have combined their industrial experience and expertise to develop a certification that includes hands-on training on tools that are vital to a broad spectrum of critical industries. Those who earn this certification will be proficient in the methodology of crimping; identification of essential component parts such as mil-spec connectors and contacts; and the proper use of a variety of electrical wiring tools.

#### COURSE CONTENT INCLUDES:

- History of connectors and wire termination tooling
- Connector, contact, and terminal identification
- Crimping methodology
- Tool identification, assembly, and operation
- Installing and removal of mil-spec contacts
- Equipment maintenance, calibration, and verification



### BUILDING TOOLS FOR LIFE

NC3 certifications provide a return on technical education investment through hands-on training and state of the art tools and equipment. The **Daniels Manufacturing Precision Electrical Termination Certification** relates directly to the following academic subject areas, including:

- High-reliability Electronics
- Aerospace
- Electrical Termination
- Electrical Wiring
- Tool Calibration and Maintenance
- Space Exploration Technology
- Transportation Technology

Students earn NC3 certifications as proof of achievement. These NC3 stackable credentials increase employment potential and on-the-job productivity in industries such as:

- Manufacturing
- Aerospace
- Space Exploration
- Military Defense Systems Technology
- Transportation
- Power Generation and Distribution

For more information and to find the certification school nearest you, please visit [www.snaponcertification.com](http://www.snaponcertification.com), or email: [education@snapon.com](mailto:education@snapon.com).



Snap-on is a proud partner of the National Coalition of Certification Centers.



# Snap-on®



## SNAP-ON® AND STARRETT®

### PRECISION MEASURING INSTRUMENTS CERTIFICATION

The successful completion of the Snap-on Precision Measuring Instruments Certification enables graduates to demonstrate a solid understanding of the fundamentals of working with precision measurement instruments. The skills acquired during this comprehensive training are valuable **TOOLS FOR LIFE** that can lead to rewarding careers in a vast array of industries in the global marketplace.

Precision measuring is the cornerstone of quality in products and services many people rely upon each day. Starrett, Snap-on and NC3 combined their industrial experience and expertise to create a certification that includes hands-on training on instruments that are vital to engineering, manufacturing, aerospace, power generation, and natural resources, to name a few. Those who earn this certification will be proficient in the use of a variety of instruments ranging from tapes and rules to calipers and micrometers.

#### COURSE CONTENT INCLUDES:

- Tape and Rule Measurement
- Side Caliper Measurement
- Gauge Measurement
- Angle Measurement
- Micrometer Measurement
- Dial Gauge Measurement



### BUILDING TOOLS FOR LIFE

Snap-on certifications provide a return on technical education investment through hands-on training and state of the art tools and equipment. The Snap-on Starrett Precision Measuring Instruments Certification connects directly to the following academic subject areas, and not limited to:

- Auto Collision Repair & Refinishing
- Carpentry
- Industrial Maintenance
- Millwright
- Machine Tool Operation
- Nuclear Technology
- Transportation Technology
- Energy Production & Distribution

Students earn Snap-on certifications as proof of achievement. These NC3 stackable credentials increase employment potential and on-the-job productivity in industries such as:

- Manufacturing
- Metrology Lab
- Metal Working
- Aerospace
- Transportation
- Energy

For more information and to find the certification school nearest you, please visit [www.snaponcertification.com](http://www.snaponcertification.com), or email: [education@snapon.com](mailto:education@snapon.com).

**Starrett**

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**Snap-on**



**SNAP-ON®**

## MECHANICAL AND ELECTRONIC TORQUE CERTIFICATION

The **Snap-on Mechanical and Electronic Torque Certification** is awarded to students who successfully achieve proficiency in the use of torque tools. In-depth knowledge of torque theory, and experience in wrench selection and torque application form **TOOLS FOR LIFE** that enable technicians to be productive, efficient, and safe when using torque instruments in a wide variety of industries.

Whether a technician is just starting out, or a veteran of the shop, a working knowledge of torque theory and application is a fundamental requirement for any engineering, maintenance service or repair position. As the leader in torque instruments, Snap-on developed a certification course that includes hands-on classroom training and advanced lab exercises.

This certification provides a widely recognized endorsement of technical expertise and demonstrated achievement. Students who successfully complete the course obtain the training and professionalism required to be safe, accurate, and proficient on the job.

### COURSE CONTENT INCLUDES:

- Tool Safety
  - » Hand Tools
  - » Electrical Tools
- Principles of Fasteners
- Understanding Torque Theory
  - » Clamping Force
  - » Bolt Elasticity
  - » Use of Extensions
- Hands-on Operation of Torque Tools:
  - Mechanical Instruments
    - » Click-type Wrenches
    - » Dial-type Wrenches
  - Electronic Instruments
    - » Torque-angle Instruments
    - » Lightweight Micro Torque Wrench
    - » Digital Torque Screwdriver
  - Training Aids
    - » Digital Torque Testers
    - » Skidmore Wilhelm Device
    - » Torque Stand



## BUILDING TOOLS FOR LIFE

Snap-on certifications provide a return on technical education investment through hands-on training and state of the art tools and equipment. The **Snap-on Mechanical and Electronic Torque Certification** connects directly to the following academic subject areas:

- Auto Collision Repair & Refinishing
- Carpentry
- Industrial Maintenance
- Machine Tool & Die
- Automotive Maintenance Technology
- Electromechanical
- Machine Tool Operation
- Mechanical Design Technology
- Agribusiness & Science Technology
- Nuclear Technology
- Wind Energy Technology

Students earn Snap-on certifications as proof of achievement. These NC3 stackable credentials increase employment potential and on-the-job productivity in industries such as:

- |                      |                 |
|----------------------|-----------------|
| ■ Automotive         | ■ HVAC          |
| ■ Aviation/Aerospace | ■ Manufacturing |
| ■ Diesel/Heavy Duty  | ■ Mass Transit  |
| ■ Electrical         | ■ Mechanical    |
| ■ Energy             | ■ Mechatronics  |
| ■ Engineering        | ■ PC Repair     |
| ■ General Repair     | ■ Robotics      |

For more information and to find the certification school nearest you, please visit [www.snaponcertification.com](http://www.snaponcertification.com) or email: [education@snapon.com](mailto:education@snapon.com).

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**SNAP-ON®**

## MULTIMETER CERTIFICATION

The **Snap-on Multimeter Certification** is awarded to students who have been trained in the use of Snap-on advanced electrical monitoring equipment. The knowledge and experience gained in this critical discipline are **TOOLS FOR LIFE** essential to a successful career in critical industries such as automotive repair, transportation, wind power, manufacturing, HVAC, and robotics.

This certification includes training on the problem-solving capabilities of Snap-on digital multimeters — the same technology used by professionals in the workplace. Training is focused on subjects from basic applications to advanced troubleshooting.

This certification provides a widely recognized endorsement of technical expertise and demonstrated achievement. When students successfully complete this Snap-on certification, they obtain one of the most requested skills in the industry today.

### COURSE CONTENT INCLUDES:

- Multimeter controls and operation
- Meter display readings and symbols
- Importance of proper terminal connections
- Basic applications
- Troubleshooting techniques
- Hands-on operation of Snap-on multimeter models:
  - » EEDMS04D auto ranging
  - » EEDMS25D auto ranging, true RMS
  - » EEDMS75D digital clamp on
  - » EEDMS96D true RMS, USB to PC, graphing software
  - » EEDM604D auto ranging, true RMS, CATIII certified 650 meter certification
- Lab exercises
- Online testing



## BUILDING TOOLS FOR LIFE

Snap-on S-Tech certifications provide a return on technical education investment through hands-on training and state of the art tools and equipment. **The Snap-on Multimeter Certification** connects directly to the following academic subject areas:

- Auto Collision Repair & Refinishing
- Industrial Maintenance
- Automotive Maintenance Technology
- Electromechanical
- Agribusiness & Science Technology
- Nuclear Technology
- Wind Energy Technology

Students earn Snap-on S-Tech certifications as proof of achievement. These NC3-backed, stackable credentials increase employment potential and on-the-job productivity in industries such as:

- Automotive Repair
- Aviation/Aerospace
- Diesel/Heavy Duty
- Electrical
- Energy
- Engineering

For more information and to find the certification school nearest you, please visit [www.education.snapon.com](http://www.education.snapon.com), or email: [education@snapon.com](mailto:education@snapon.com).

Snap-on is a proud partner of the National Coalition of Certification Centers.







THIS CERTIFIES THAT

\_\_\_\_\_

has completed the prescribed lesson, lecture and laboratory assignments for the course listed below and is entitled to this certificate.

**Snap-on Meter Certification**  
(3 Hours)

03/02/2018  
Date Completed



Career Center East  
School/Certification Center



**Snap-on®**





| LEARNING THAT WORKS.

NC3 helps to create highly-skilled and jobready workers through a growing network of educational partners and industry leaders through industry-driven, portable certifications



**Snap-on**