



# Curtiss-Wright Controls *Overview*

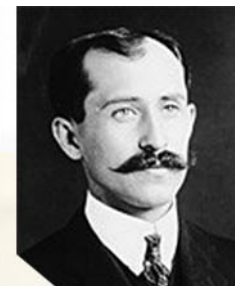
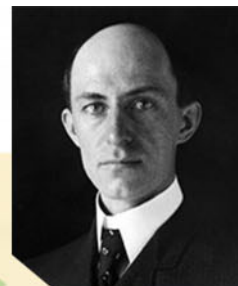


**CURTISS  
WRIGHT** Controls, Inc.  
Embedded Computing

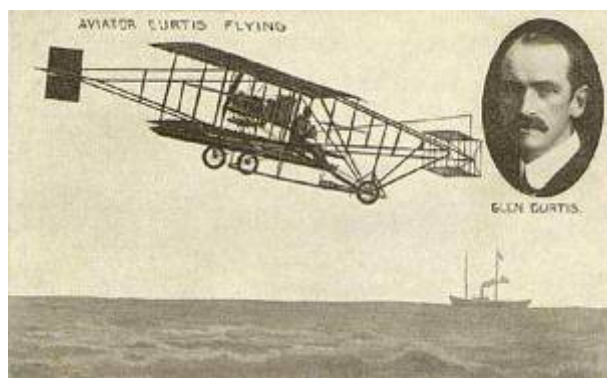


# Building on our Legacy . . .

**Glenn Curtiss**



**Orville & Wilbur Wright**



**100+** years of  
aviation  
heritage  
**75+** years in  
American  
industry







# Heritage

**1929**

*Curtiss-Wright formed through the merging of 12 Wright and Curtiss companies*

*Listed on The New York Stock Exchange*



**1949-58**

*CW major supplier of engines to commercial aviation industry*



**1968**

*Expands into metal treatment business*



**1998-99**

*Expands commercial energy business*



**2004**

*Celebrates 75<sup>th</sup> Anniversary*



**1943**

*Curtiss Aircraft and Wright Aircraft Engines help defend Europe During World War II*



**1961**

*Expands into flow control business supporting U.S. Nuclear Naval Program*



**1978-88**

*Curtiss-Wright refocus its aviation business on aircraft component maintenance, repair, overhaul, refurbishment and rebuilding.*



**2001**

*Curtiss-Wright expands into Embedded Computing market*



**2007**

*Curtiss-Wright Anticipates \$1.5 Billion in Sales*

**2001-05**

*Curtiss-Wright completes recapitalization*





# Curtiss Wright Recent Performance

Track record of performance and growth





# Curtiss-Wright Top Level Business Groups



 Metal Improvement Company, Inc.



« Shot Peening

Heat Treating »



 Curtiss-Wright  
Flow Control Corporation

**Enertech**



**Sprague Products**



**Farris Engineering**



**Solent & Pratt**



High Performance  
Butterfly Valves

**Target Rock CWFC**



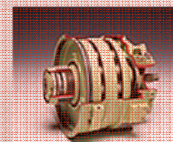
Safety/Relief Valves,  
Solenoid Valves,  
Control Valves,  
Engineering Services

**Paul-Munroe Enertech**

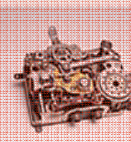


Central Hydraulic Systems,  
Hydraulic Power Units, Installation,  
Startup, Field Service, Spare Parts

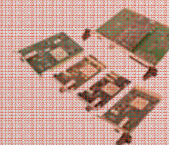
**CURTISS  
WRIGHT Controls**



Engineered Systems



Integrated  
Sensing

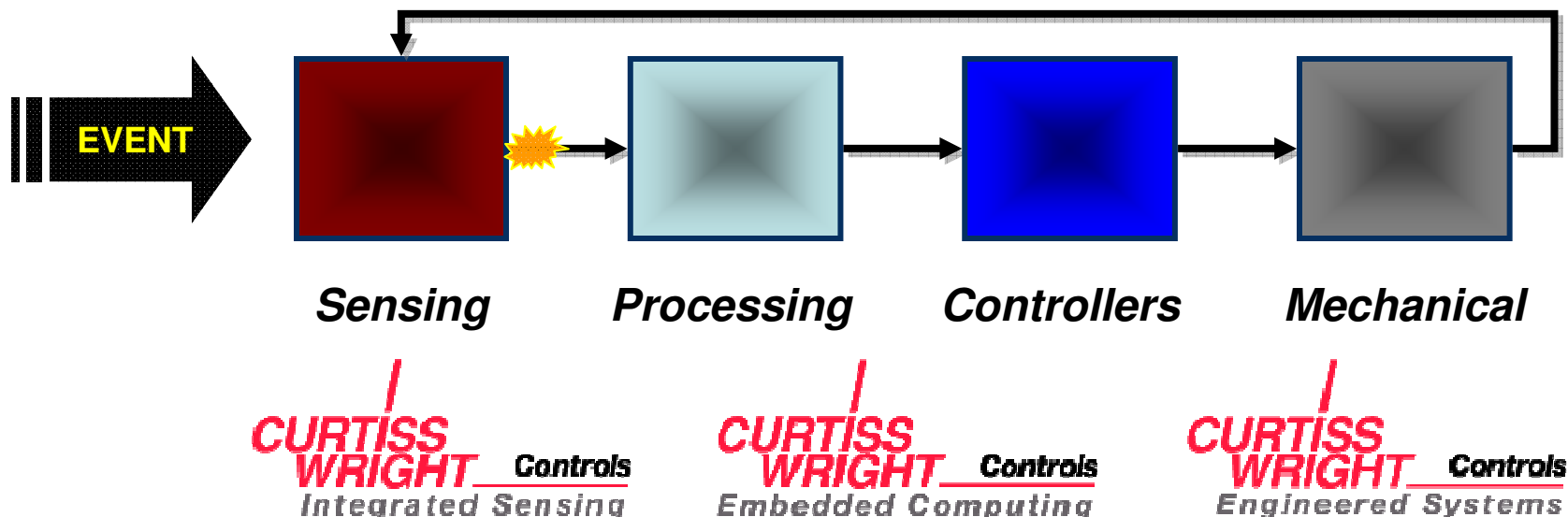


Embedded Computing





## Curtiss-Wright Controls - A Controls Company at Heart



A Comprehensive Foundation of Complementary Products



**CURTISS  
WRIGHT** Controls, Inc.  
Embedded Computing

# Curtiss-Wright Controls Business Units

- Three major business segments
- 2543 total employees worldwide
- 2007 Sales \$592 million



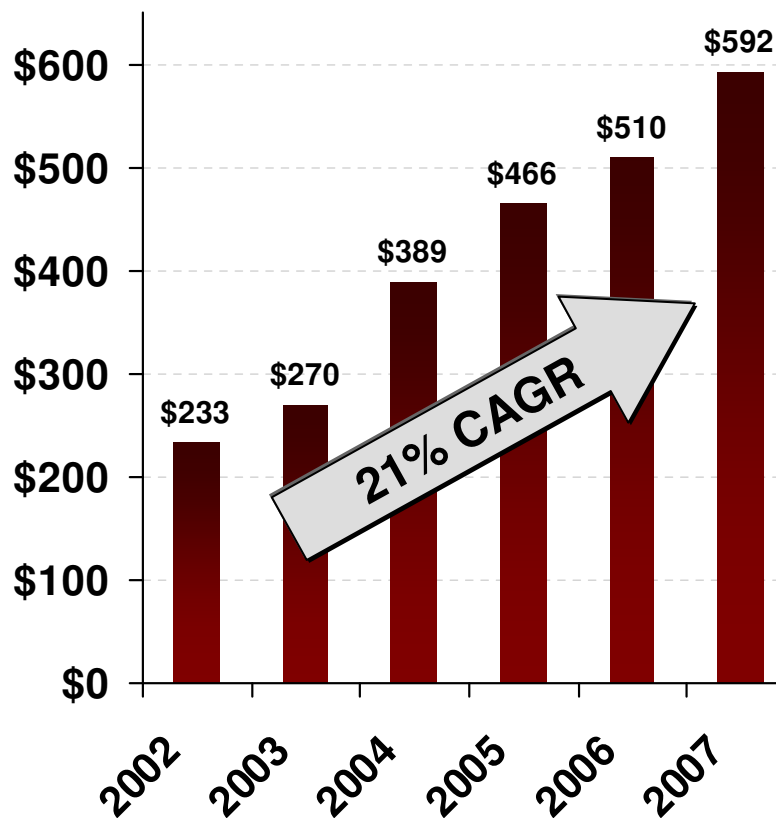
**Industry Leader in Design, Manufacture and Service of Motion Control Components to Subsystems**



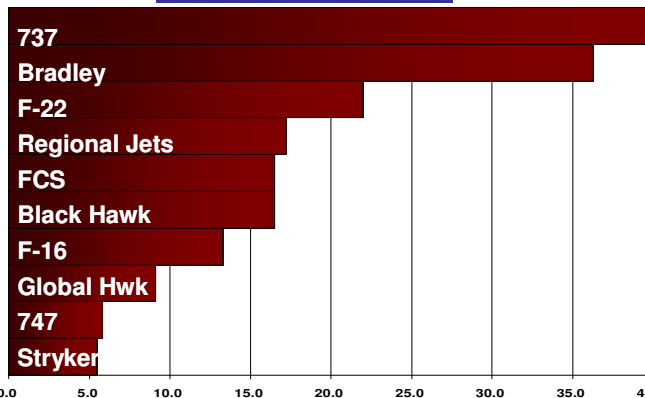
**CURTISS  
WRIGHT** Controls, Inc.  
Embedded Computing

# Curtiss Wright Controls

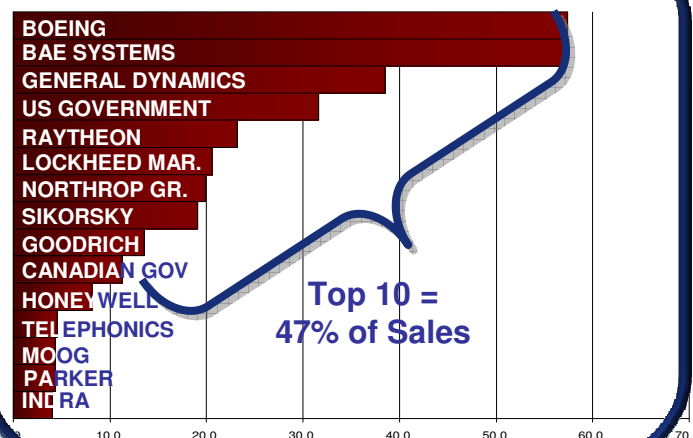
**C-W Controls Sales (2002 - 2007)**



**2007 Top Programs**



**2007 Top Customers**







# Commercial Aerospace



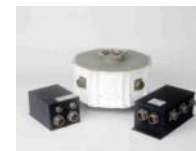
**Trailing Edge Flap  
Rotary Actuators**



**Leading Edge  
Flap Actuators**



**Position  
Sensors**



**Rotor Ice Detection and  
Protection Systems**



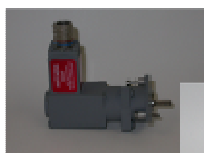
**Cargo Door  
Actuators**



**Trailing Edge Flap Position  
Sensor Gearboxes**



**Trailing Edge  
Flap Drives**



**Brushless DC  
Motors for Cabin  
Pressure Control  
Systems**



**Nacelle  
Debris Door  
Actuators**

**Throttle  
Quadrant  
Controllers**



**Power  
Conversion  
Units**



**Aircraft Computer  
Systems**



**Fire Protection  
Systems**





# Military Aerospace



Canopy Actuators



Weapons Bay Door  
Drive Systems



Leading Edge Flap  
Actuation Systems



Air Data  
Computers



Airborne  
Recorders



Position  
Sensors



Torque Sensors



Flight Control  
Computers



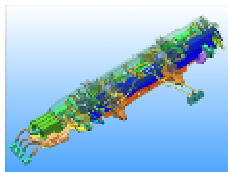
SBC, DSP,  
Graphics, I/O  
Cards



Valve Actuators for  
Thermal Control Systems



Cockpit Control Feel and  
Drive Actuators



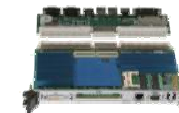
Weapons Bay Hoist  
Systems



Mission Management  
Computers



Navigation Subsystems



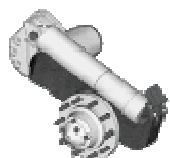




# Ground Defense



**Turret Drive  
Stabilization Systems**



**Hydro-pneumatic  
Suspension Systems**



**Ammunition Handling  
Systems**



**Gunner  
Handles**



**Obsolescence  
Management**



**Autoloader and  
Replenishment  
Controllers**



**Fire Control  
Computers**



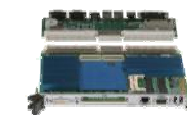
**Targeting Systems**



**Power  
Supplies**



**Position  
Sensors**



**SBC, DSP, Graphics,  
I/O Cards**

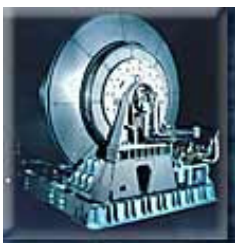




# Marine Defense



**Aircraft Recovery, Assist,  
Secure and Traverse  
(RAST) System**



**Towed Line Sonar Array  
Handling Systems**



**Variable Depth Sonar  
Handling Systems**



**Sonar Domes**

**Specialized  
Structures**



**Aircraft Ship  
Integrated Secure  
and Traverse  
(ASIST) System**



**Radar Display Systems**



**Digital Screen  
Recorders**



**Scan  
Converters**



**SBC, Graphics, I/O  
Cards**

# Industrial



Automated Passenger  
Bridge (APB) Systems



Linear Position  
Sensors



Rotary Position  
Sensors



Joystick Controllers



Diesel Injection  
System Valves



High Speed I/O



Hydraulic Actuators



Audio and Video  
Controllers



Digital Panel Indicators

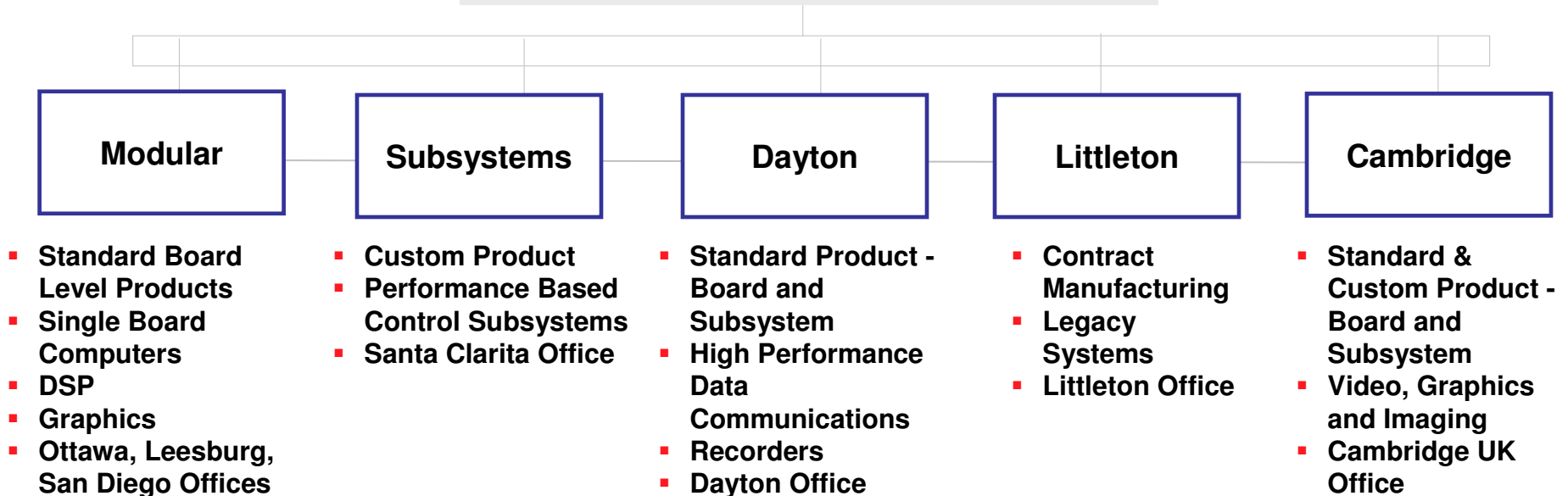


SBC, DSP





## CWCEC Business Units



Each with 20 years experience in the embedded computing market





# Global Sales Team





# Curtiss-Wright Controls Embedded Computing

## Business Evolution



Utilizing the combined strength and experience of our integrated companies



## Diverse International Customer Base



**Over 2000 Customers  
in 26 Countries**



communications



Indra



SAGEM



ITT Industries  
Engineered for life



**Honeywell**



SELEX

Sensors and Airborne Systems

**BAE SYSTEMS**





## Systems Solutions.... Massachusetts Operations





- The Littleton, MA Operations Provides Engineering and Comprehensive Manufacturing Services to the Defense & Aerospace Industries...
  - Circuit Card Assembly (CCA) and test
  - System level assembly integration and test
  - Additional services:
    - Test equipment design/build
    - RF and Electrical design services
    - Design Qualification
    - Product Test
    - Lifecycle support: component selection, Obsolescence mitigation and management, design enhancement, technology insertion





## Littleton, MA Operations Facility Statistics:

- Plant size: 57k sq/ft
- Approximately 160 employees
- Location – 50 miles NW of Boston
- 50+ years of manufacturing experience
- 25+ years manufacturing into the Military Ground Vehicle and Rotary Wing markets
- 99% of business is with the United States Government and Prime, Military Contractors

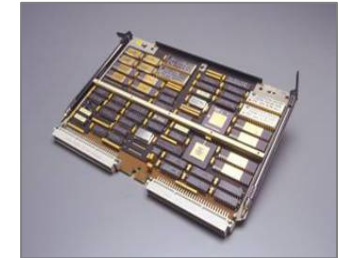
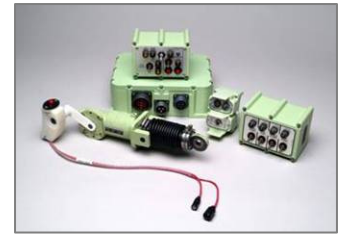






# Littleton, MA Manufacturing Capabilities

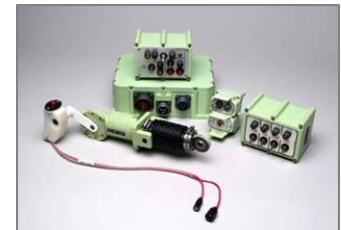
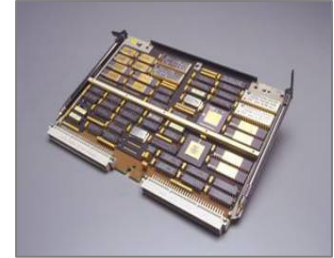
- Electronics Manufacturing Services (EMS) – Manufacturing Capabilities:
  - Circuit Card Assembly
    - In addition to modern CCA, we have retained full leaded through hole capability to serve ongoing and legacy Defense BTP.
    - In-Circuit test and Automated Optical inspection
    - Live burn in
    - Conformal Coating done in house





# CW-Littleton's Manufacturing Capabilities

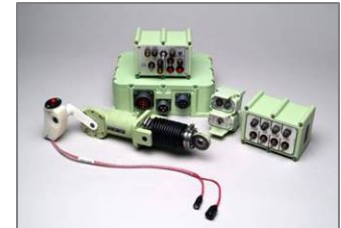
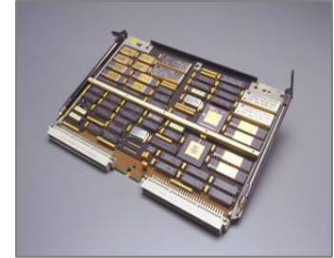
- Electronics Manufacturing Services (EMS) – Manufacturing Capabilities:
  - Wiring Harnesses
    - All gages (00 to 40)
    - Every connection, junction and pin is verified.
    - Every crimp setup is validated before and after use with pull test to failure.
    - Any wire count
      - see 600 wire harness at right
    - Any length





# CW-Littleton's Manufacturing Capabilities

- Electronics Manufacturing Services (EMS) – Manufacturing Capabilities:
  - Systems/Sub-systems/Boxes
    - Military, product box builds on multi-shift operation
    - Quick turn, small batch production
    - Flexible “Lean Cells” assembly: provides efficient, ongoing production
  - Network of proven suppliers: casting houses, precision machine shops, fabrication shops, paint shops that are experienced, Military metal working businesses, providing high capacity, rapid response and assured product integrity
  - Small internal machine shop supports tooling, fixtures, prototype builds and engineering modifications

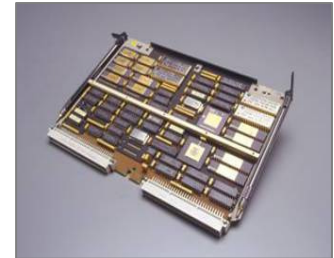






# CW-Littleton's Manufacturing Capabilities

- Electronics Manufacturing Services (EMS) – Manufacturing Capabilities:
  - Testing
    - Complete Electrical, Electronic and RF test equipment, including power supplies, loads, networked scopes, test control PCs, etc. All equipment is readily reconfigured into product specific test stands
    - Thermal Cycling , Hot and Cold burn in, Cold start, Hot Start and Thermal Shock Chambers
    - Combined Vibration/Thermal Environmental Stress Screening
    - Interconnection test, high pot, continuity and isolation
    - Automated switch testing, Automated circuit protection testing through trip and reset





## Additional CW-Littleton Capabilities

- Comprehensive Manufacturing Services (CMS) – Competencies:
  - Obsolescence Mitigation
  - Engineering Services
  - ESS Lab / Testing / Quality Assurance
  - Program Management
  - Product Life Extension

We are more than a Job Shop, and are committed to Supporting our customers throughout their product lifecycle





## Customer / Program Snapshots

- BAE (UDLP) / Bradley
- TACOM / Bradley and More
- CECOM / Radar Warning
- General Dynamics / Abrams and More
- Textron / Armored Security Vehicle

**BAE SYSTEMS**



**GENERAL DYNAMICS**  
Strength on Your Side™



**TEXTRON** Systems

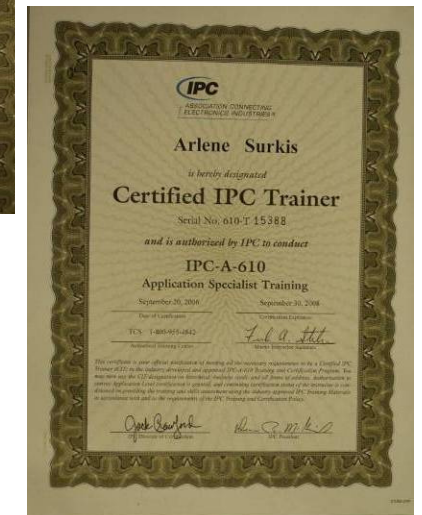
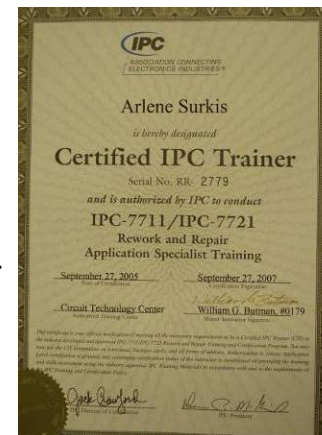






# Certifications and Qualifications:

- **Quality**
  - Quality: AS9100
  - Quality: ISO 9001: 2000.
  - Resident on-site Government QAR.
- **Manufacturing**
  - ESD control: MIL-STD-1686 & ANSI/ESD-S2020.
  - Soldering: IPC-A-610D & J-STD-001D Class 3.
  - Conformal coating: MIL-I-46058 & IPC-A-610C.
- **Purchasing**
  - Defense Contract Management Agency (DCMA) / Contractor Purchasing System Review Certification (CPSR).
- **Accounting**
  - Approved by Defense Contracts Auditing Agency (DCAA)
- **Facility Clearance**
  - Cleared to SECRET
  - Security Officer on site





## Curtiss Wright Expansion

### Expected Growth:

**2007 = \$38M**

**2008 = \$40M**

**2009 = \$45M**

**2010 = \$54M**

### Drivers:

- ✓ Organic
- ✓ New capabilities
- ✓ Curtiss Wright manufacturing consolidation
  - ✓ "US Eyes only" center of manufacturing



# Facility Expansion Objectives.....

- Relocate and combined current Littleton, MA separate building operations into a single, modern, facility
- Expand from current 57K Sf to an initial 63K Sf, with option for further additional expansion of 50K Sf
  - Expansion space to support:
    - New Surface Mount circuit card assembly equipment
    - New Environmental Stress Screening test chambers
    - Expanded manufacturing and engineering services
- **Planned \$\$ Investments (2008-2009):**
  - Facilities Renovations: \$2.0M
  - Capitol Equipment: \$2.5M



DEK Horizon Screen Printer



Assembleon Opal-Xii Placement



Assembleon Opal-Xii Placement



Assembleon MG1 Placement



BTU Pyramax Reflow Oven







## Curtiss Wright Employee Expansion

**Expansion to drive estimated 30 additional new employees that will be sourced from the local region:**

- **Engineering**
  - Design Engineers: 3
  - Technicians: 3
- **Manufacturing**
  - Skilled operators/assemblers: 15
  - Mfg. Engineers: 4
  - Managers: 1-2
- **Support**
  - Various: 3





## **Curtiss Wright Expansion**

- ✓ **Curtiss-Wright's preference is to stay local and retain and grow its current workforce**
- ✓ **We are in the “due diligence” phase with the 151 Taylor St, Littleton facility**
- ✓ **We look forward to working with the town of Littleton**