

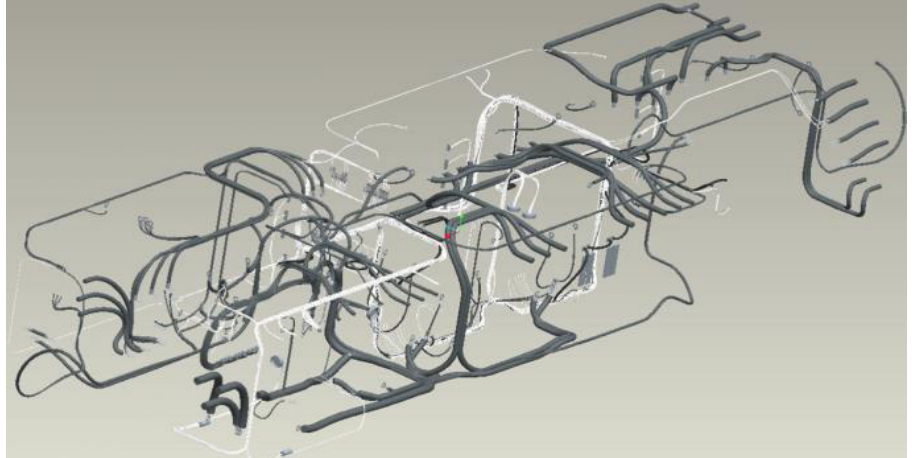
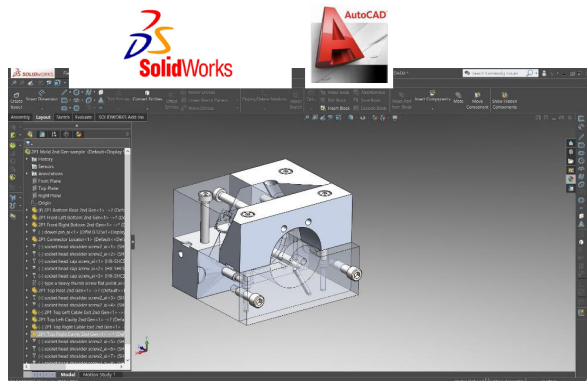
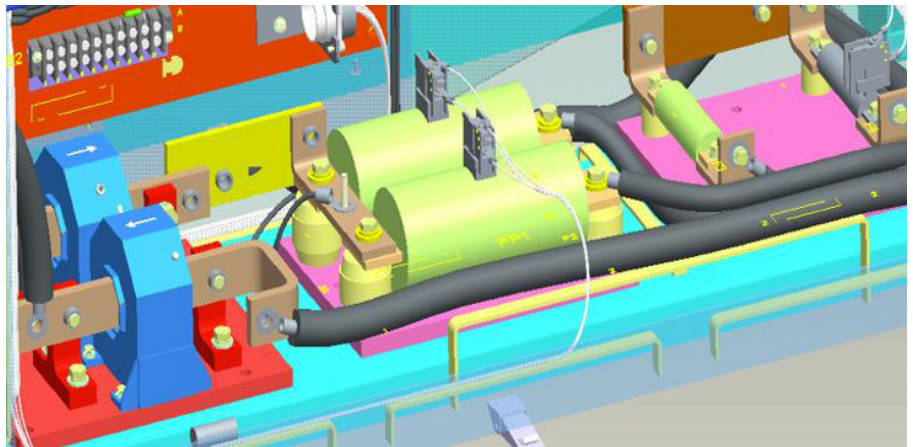
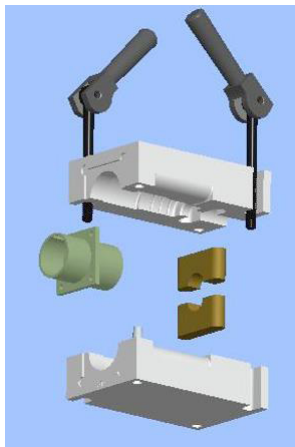
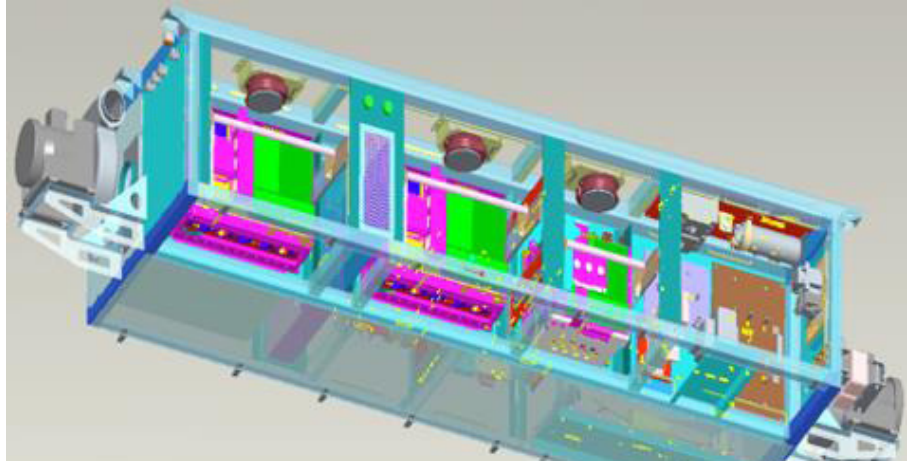


**RAPID
PROTOTYPING**

ENGINEERING

Engineering

- Computer Aided Design
 - Solid Modeling
 - Molds
 - Harnesses
- 3D Printing
- Wood Shop
- Mock-ups
 - Digital
 - Physical



DEDICATED PROTOTYPE TEAM & FACILITIES

Technicians:

- Experience: 30 years (Avg.)
- IPC-620, Certified
- J-STD-001, Certified

Quality Assurance:

- IPC-620, Certified
- IPC-610, Certified
- J-STD-001, Certified

Materials:

- Qualified Vendor Base

Resources:

- Dedicated Area (1200+ Sq. Ft)

Information Security:

- NIST/CUI Protocols
- ITAR – EAR Registered

Configuration Management:

- Oracle-Agile ERP System
- Document Control
- History Logging-Including Redlines



ORACLE

**AGILE
PRODUCT LIFECYCLE
MANAGEMENT**



STATE-OF-THE-ART TECHNOLOGY - MACHINERY

Automated Cut, Strip, and Crimp

- Analysis
- Validation

Machine Braiding

- 16, 32, 64 Bobbin
- Vertical
- Horizontal

Laser Wire Stripping

Resistance Soldering

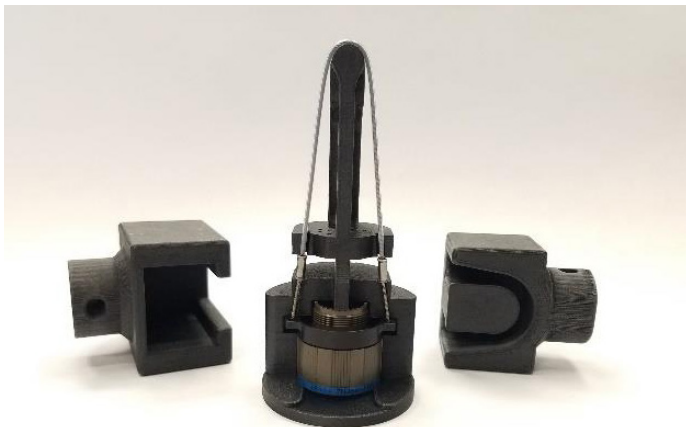
- 36 AWG - 777 MCM

Ultrasonic Welding

- Shield Termination
- Splicing
- Wire Termination

Additive Manufacturing

- Prototype Molds
- AS9102 Inspection Fixtures
- Component Production



PROTOTYPE/PRODUCTION TOOLING -
3D PRINTED NYLON 12 CF: DESIGNED IN SOLIDWORKS
PREMIUM, PRODUCED ON THE STRATASYS FORTUS 450MC



CRIMP ANALYSIS - CONTINUAL PROCESS



LASER WIRE STRIPPING

STATE-OF-THE-ART TECHNOLOGY - 3D PRINTING & SCANNING

3D Printing - Additive Manufacturing

Stratasys - Fortus 380mc and 450mc 3D Production FM Systems

- ABS-M30 (6 available colors)
- ABS-M30i (medical and pharmaceutical rated)
- ABS-ESD7 (ESD Rated ABS)
- ASA – UV Stabilized ABS (10 available colors)
- Antero 800NA (PEKK)
- Antero 840CN-ESD (Material Beta Test Site)
- FDM Nylon 12, 12CF-Carbon Fiber (black)
- Polycarbonate (White)
- ULTEM 1010
- ULTEM 9085
- Build Envelope: 14" x 12" x 12". (2016 cu/in)
- Accuracy: $\pm .005$ in. overall , or $\pm .0015$ in/in
- Layer Thickness options : .005", .007", .010", .013"



Stratasys – Objet30 Prime – PolyJet System

- Vero (Acrylic Like) (6 colors)
- Polypropylene-like
- Tango (Rubber-like)(3-durometers)
- High- Temp RGD525 (175°F)
- Hardness to Shore D-86

Design and Reverse Engineering Software

- SolidWorks Premium
- AutoCAD LT2019
- Artec Studio
- Artec EVA and Spider 3D Scanners
- Geomagic for SolidWorks

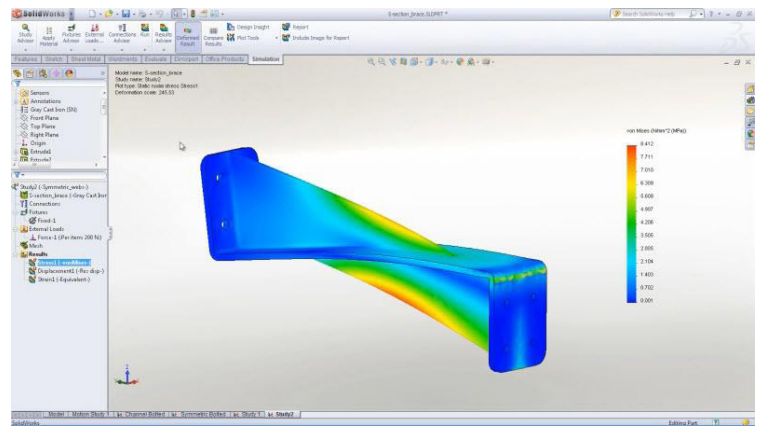


STATE-OF-THE-ART TECHNOLOGY - TESTING

Crimp Analysis (sectional)
 Mechanical Strength Pull Testing
 Environmental Testing
 Particle Contamination Testing
 Thermal Cycle Testing
 Mechanical Cycle/Testing
 3D Modeling Mechanical Failure Analysis



CRIMP ANALYSIS - PULL TEST - SECTIONAL

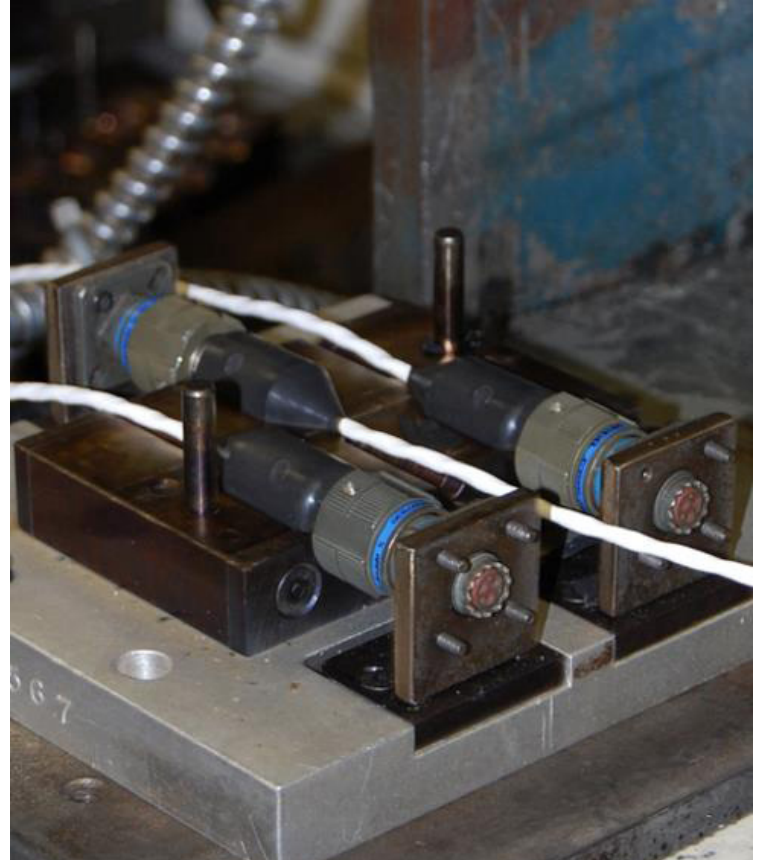


FAILURE ANALYSIS - SOLIDWORKS PREMIUM

STATE-OF-THE-ART TECHNOLOGY - UNIQUE PROCESSES

Over Molding and Encapsulation:

- Transfer Presses
- EFD Units
- Autoclave
- Quick Turn Molds
 - 3-D Printed, High-Temp Polymers
 - Steel
 - Aluminum



AUTOCLAVES - PRESSURE/VACUUM/HEAT

STATE-OF-THE-ART TECHNOLOGY - UNIQUE PROCESSES

Machine Braiding:

- 6, 32, 64 Bobbin
- Vertical
- Horizontal

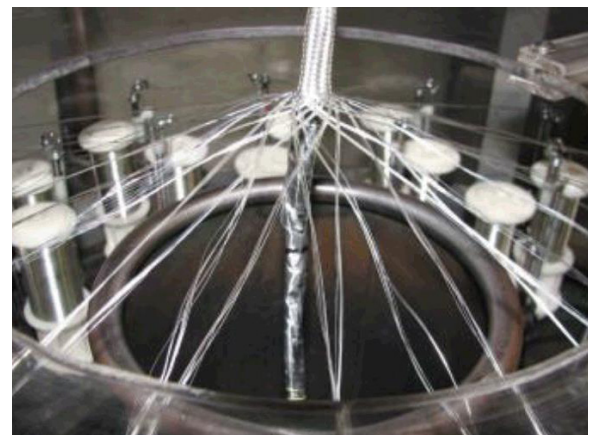
Laser Wire Stripping

Resistance Soldering

Ultrasonic Welding/Wire Termination



ULTRASONIC WELDING/SPLICING

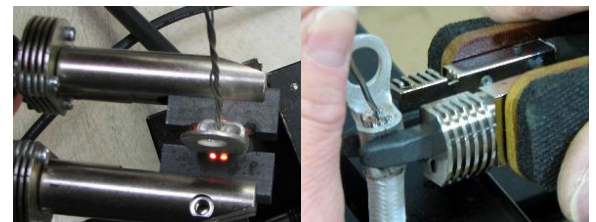


MACHINE BRAIDING SHIELDING AND COVER



UV-CURE - CONVEYOR

ULTRA SONIC CLEANING



RESISTANCE SOLDERING

EXPERIENCE HIGHLIGHTS

MRAP Development Project

- 26,000 MRAP Assemblies Shipped
- 28,000 Total Assemblies Shipped during a 9 Month Period 5,300 Assemblies Shipped in 1 Month
- 39 Top Level Assembly P/N's
- 1,200 Engineering Hours In First Month
- Incorporated Red Lines in Configuration,
- Changes w/o Delivery Interruption
- Processed 332 ECO's In 9 Months



MISSILE Development Projects

- AGM-114- Hellfire
- BRIMSTONE
- RIM-161 – Standard Missile 3 (SM-3)
- ATCM(s) – Missile System
- AGM-65 – Maverick
- AGM-176 – Griffin Missile System
- AIM-9X/Sidewinder
- AI3 - Accelerated Improved Interceptor Initiative
- AIM-120 – AMRAAM
- M220-TOW – Anti-Tank Guided Missile System FGM-148
- Javelin – Anti-Tank Missile
- JAGM – Joint Air-to-Ground Missile
- JCM – Joint Common Missile
- NLOS -Non-Line of Sight Missile System PAVEWAY – Laser Guided Missile
- TRIDENT – Submarine Launched Ballistic Missile



TORPEDO Development Projects

- Mk-48 ADCAP Torpedo
- Mk-46 Lightweight Torpedo
- Mk-50 Lightweight Torpedo
- Mk-54 Lightweight Torpedo
- Trident II Missile System

