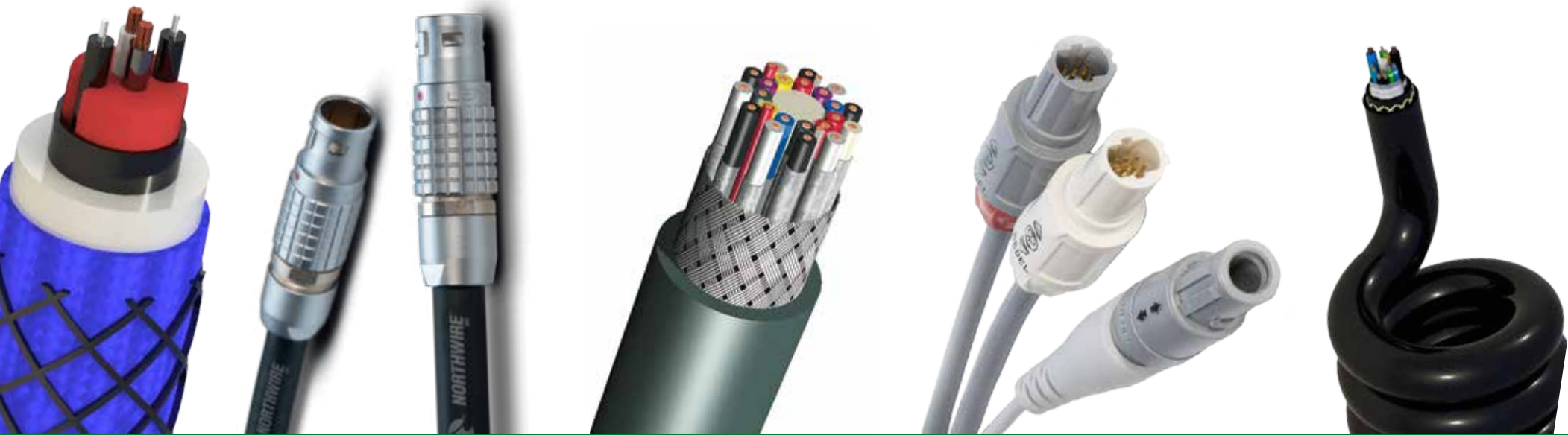




***NORTHWIRE***<sup>®</sup>  
**INC**

A LEMO Group Company

*Your Partner for Custom  
Interconnectivity Solutions*



ISO 9001:2008 | AS9100C:2009 | ISO 13485:2003 | ISO 17025:2005 Qualified



## LEMO

### Precision Custom Connection Solutions

- The Original Push-Pull Connector
- Seven Decades of Expertise
- Over 75,000 Connector Combinations
- Reliable High Quality Connectors

## Northwire

### Custom Technical Cable Solutions

- Wire | Cable | Retractiles
- Assemblies
- Over Four Decades of Innovation
- Over 8,000 Products

## Field Proven Solutions for a Wide Range of Industries and Applications



Industrial  
Instrumentation  
& Automation



Aerospace  
& Defense



Electronics  
& Machinery



Test &  
Measurement



Medical  
& Life Sciences



Communications  
& Audiovisual



Information &  
Networking Systems



Public Sector  
& Automotive



Marine &  
Underwater Use



Decorative &  
Architectural Lighting

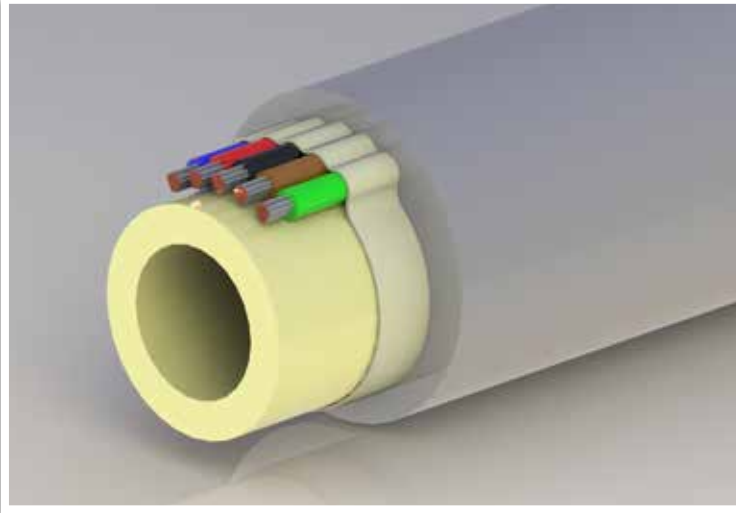
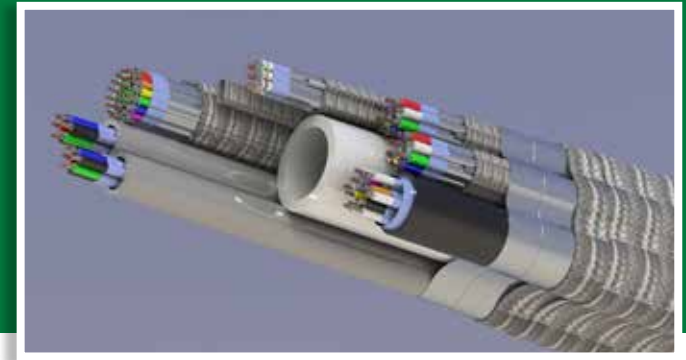


Green Energy

**And much more...**

# Customized Solutions

Northwire, a LEMO Group Company, is your partner for custom interconnectivity solutions. Our Application Engineers and Design Specialists will help you navigate complex requirements to design a solution specific to your unique end application.



## Custom Technical Products

- Wire | Cable
- Retractiles
- Connectors
- Assemblies
- Harnesses

## CAD Capabilities

- SolidWorks | AutoCAD
- Parametric Modeling | Simulation
- Design Validation
- Simpo<sup>®</sup>
- Mold Flow | Extrusion Flow Modeling
- Finite Element Analysis

## Methodologies and Standards

- Design for Six Sigma<sup>®</sup> | Six Sigma<sup>®</sup>
- Lean | Project Management
- American Society for Quality
- Society of Manufacturing Engineers



## Capabilities and Services

- Research and Development
- Project and Program Management
- Procurement and Supply Chain Optimization
- Prototyping and 3D Printing
- High Mix, Low Volume to Low Mix, High Volume

## Injection Molding Capabilities and Equipment

- Low Pressure Injection Molding
- 10Ton Horizontal and Vertical Injection Molding

## Custom Options

### Low Voltage to Mid Voltage Range

- 0V – 2000V

### Conductors

- 2 – 36 AWG
- Plating | Tin | Silver

### Fiber Optics

- Single-Mode Fiber
- Multi-Mode Fiber

### Stranding Options

- Bunched | Concentric | Unilay | Rope Lay

### Tubing

- Nylon | PE | PVC | PUR

### Fillers

- PP | TPES | Nylon | Cotton | Paper

### Shielding- EMI/RFI Protection

- Braid | Basket Weave | Spiral | Serve
- Copper | Stainless Steel

### Solutions with Increased Strength

- Aramid | Carbon
- Flame Resistant Meta-Aramid Fiber
- Galvanized Carbon Steel
- Glass Reinforced Plastic

### Tape and Paper Separation Options

- FEP | Foam PP | Paper | TPES | PTFE
- Spun Nylon | Aluminum Foil | Aluminized Polyester

### Protectant and Water Blocking

- Conductors | Fillers | Tapes
- Insulation Displacement
- Conformal Coatings
- Potting



## Extrusion and Molding Materials

- Fluoropolymers
- ECTFE (Ethylene Chlorotrifluoroethylene)
- ETFE (Ethylene Tetrafluoroethylene)
- FEP (Fluorinated Ethylene Propylene)
- PFA (Perfluoroalkoxy)
- PVDF (Polyvinylidene Fluoride)
- Polyester Elastomer
- PE (Polyethylene) Solid or Foam
- XLPE (Cross-Link PE) Solid or Foam
- HDPE (High Density PE)
- LDPE (Low Density PE)
- LLDPE (Linear Low Density PE)
- MDPE (Medium Density PE)
- TPES (Polyester)
- PP (Polypropylene)
- FRPP (Flame Resistant PP)
- PUR (Polyurethane)
- TPE (Thermoplastic Elastomer)
- TPR (Thermoplastic Rubber)
- PVC (Polyvinyl Chloride)
  - Flexible | Semi-Conductive | Semi-Rigid
- PA (Polyamide Low Pressure)



## Aesthetics or Personalization

- Proprietary Designs | Private Labels
- Custom Colors | Color Coding | Custom Cut
- Strip Bar Coding | RFID Tags | Mil Spec | Packaging

## Connector Types

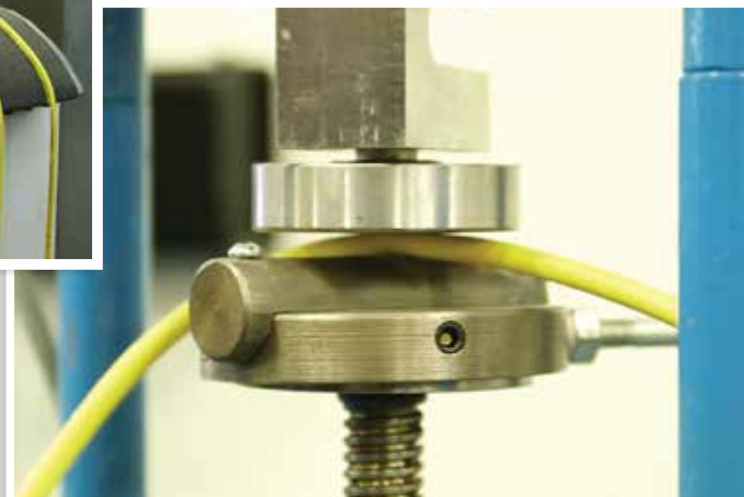
- Push Pull
- Circular
- D-Sub and Backshells
- DIN 41612
- PCB Terminal Blocks
- Rectangular
- RF Coaxial

## Connector Offerings

- LEMO
- Amphenol
- Binder
- Deutsch
- Hirose
- Intercontec
- ITT/Cannon
- Molex
- TE Connectivity (AMP)
- 3M

## Terminations and Protection

- Soldering
- Hand and Pneumatic Crimping
- Insulation Displacement
- Conformal Coating
- Potting
- Epoxy





## Flex Testing



RETRACTABLE



TORSIONAL



ROLLING



BENDING



VARIABLE



C-TRACK

## Test Capabilities



EXTREME  
TEMPS



EXTREME  
HEAT



EXTREME  
COLD



IMPACT  
RESISTANT



CRUSH  
RESISTANT



FLAME  
RESISTANT



EXPOSED  
RUN



DIRECT  
BURIAL



OIL  
RESISTANT



CHEMICAL  
RESISTANT



CUT  
RESISTANT

## Compliance

- RoHS2, REACH and Conflict Minerals Compliant Materials
- Food Grade | FDA Approved Materials
- USP Class VI Approved
- IPC-A-610 | IPC/WHMA-A-620
- CAGE Code 7V821 | ITAR and EAR Registered

## Quality Management Systems

- ISO 9001:2008 | AS9100C:2009 | ISO 13485:2003  
ISO 17025:2005 Qualified
- Independent 3rd Party Test Protocols | UL® | ANSI®  
CSA® | cUL® | CE® | NFPA® | ABS® | IEEE® | MSHA®

## Test and Validation

### Physical

- Durometer
- Tensile and Elongation
- Abrasion Resistance

### Electrical

- Insulation Resistance | DC Resistance  
Dielectric Withstand
- Propagation
- Impedance | Capacitance | Inductance
- Attenuation
- Skew

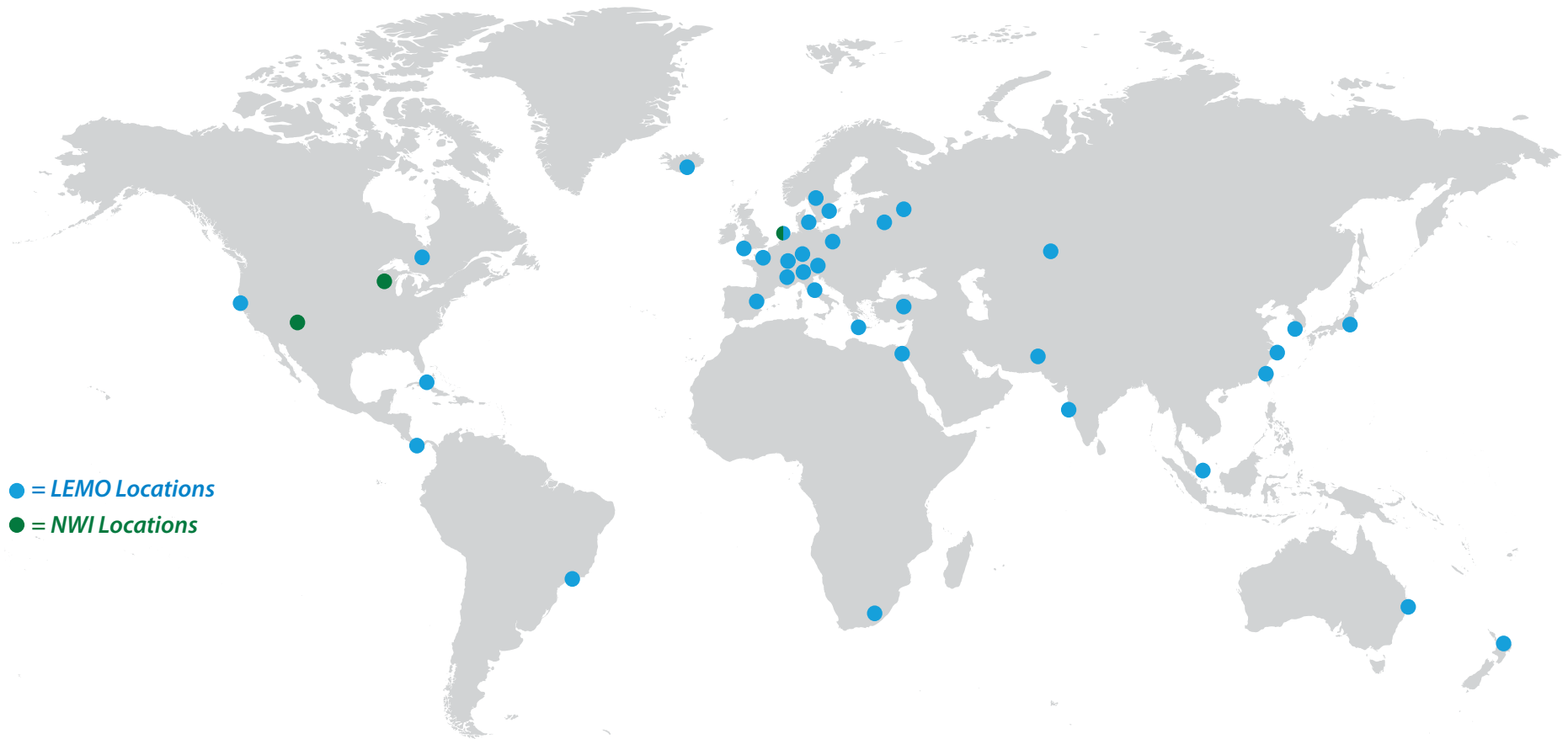
### Assembly Verification

- Programmable Wire Map
- Pinout Tester
- Interferometer



# Global Presence

Northwire and LEMO deliver seamless integrated interconnectivity solutions to customers worldwide.



## Northwire Headquarters

110 Prospect Way  
Osceola, Wisconsin 54020  
cableinfo\_northwire@lemo.com  
Phone: 800.468.1516 | 715.294.2121  
Fax: 715.294.3727

## Northwire Southwest Facility

11 Earhardt Way  
Santa Teresa, New Mexico 88008  
Phone: 575.443.6300  
Fax: 575.874.1555

## West

Fabian Weber  
VP Innovation & Business Development  
fweber@lemo.com  
Phone: 734.709.2077

## South

Kevin Rector  
Business Development Manager  
krector@lemo.com  
Phone: 715.417.1906