



# Global Capabilities

January 2018

# Industrial Overview

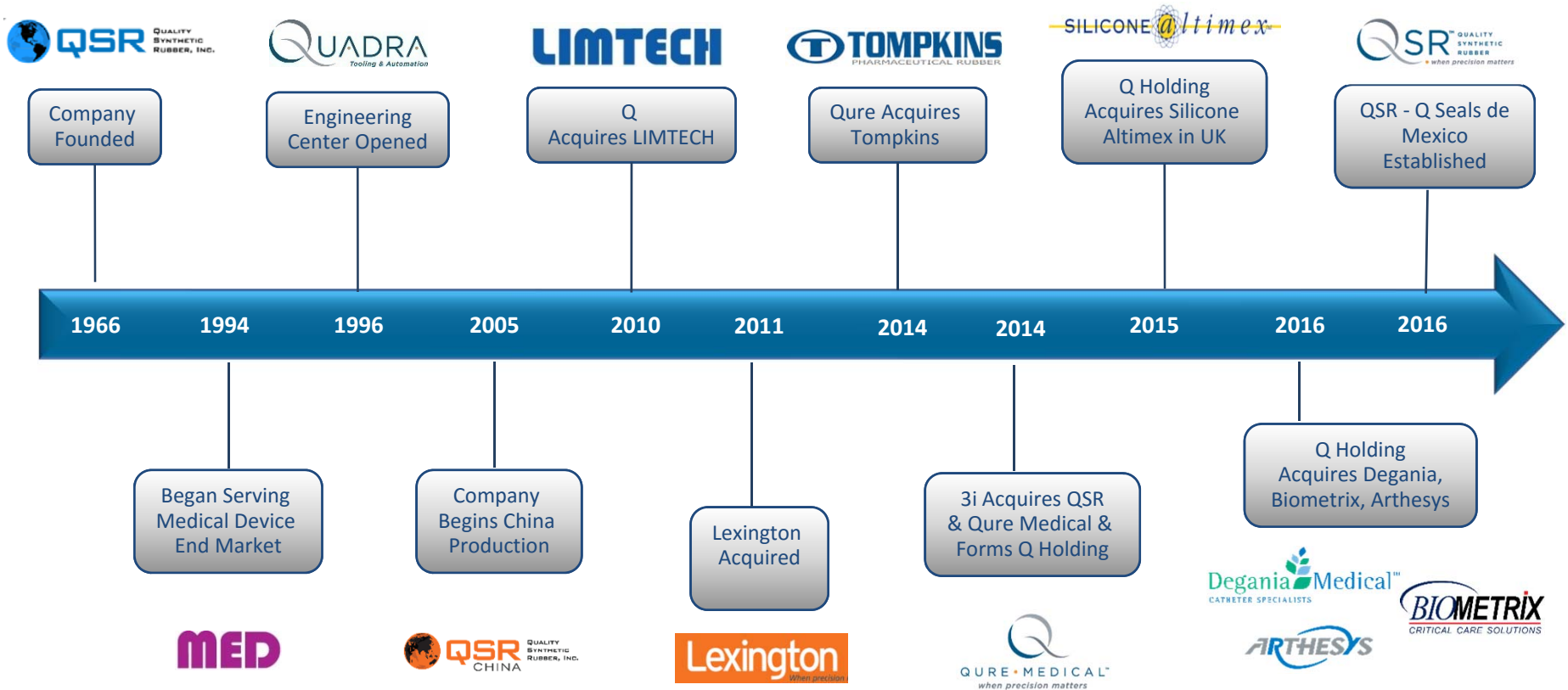
**QSR services global OEMs, Tier 1s and the domestic aftermarket with connector seals and insulators.**

- QSR is focused on two principal product lines:
  - Connector seals used in electrical connectors and wire harnesses to protect connections from harmful elements like oil, water, salt and dust
  - Insulators for automotive ignition systems to seal and insulate terminals on the spark plug and distributor
- Products require a high level of engineering due to material properties, temperature requirements and tight tolerances
- Majority of insulator and connector seal material is internally compounded from proprietary formulations
- Increased electrification of vehicles driven by regulatory and consumer shifts towards more fuel efficient and safer vehicles are increasing the number of connectors per vehicle

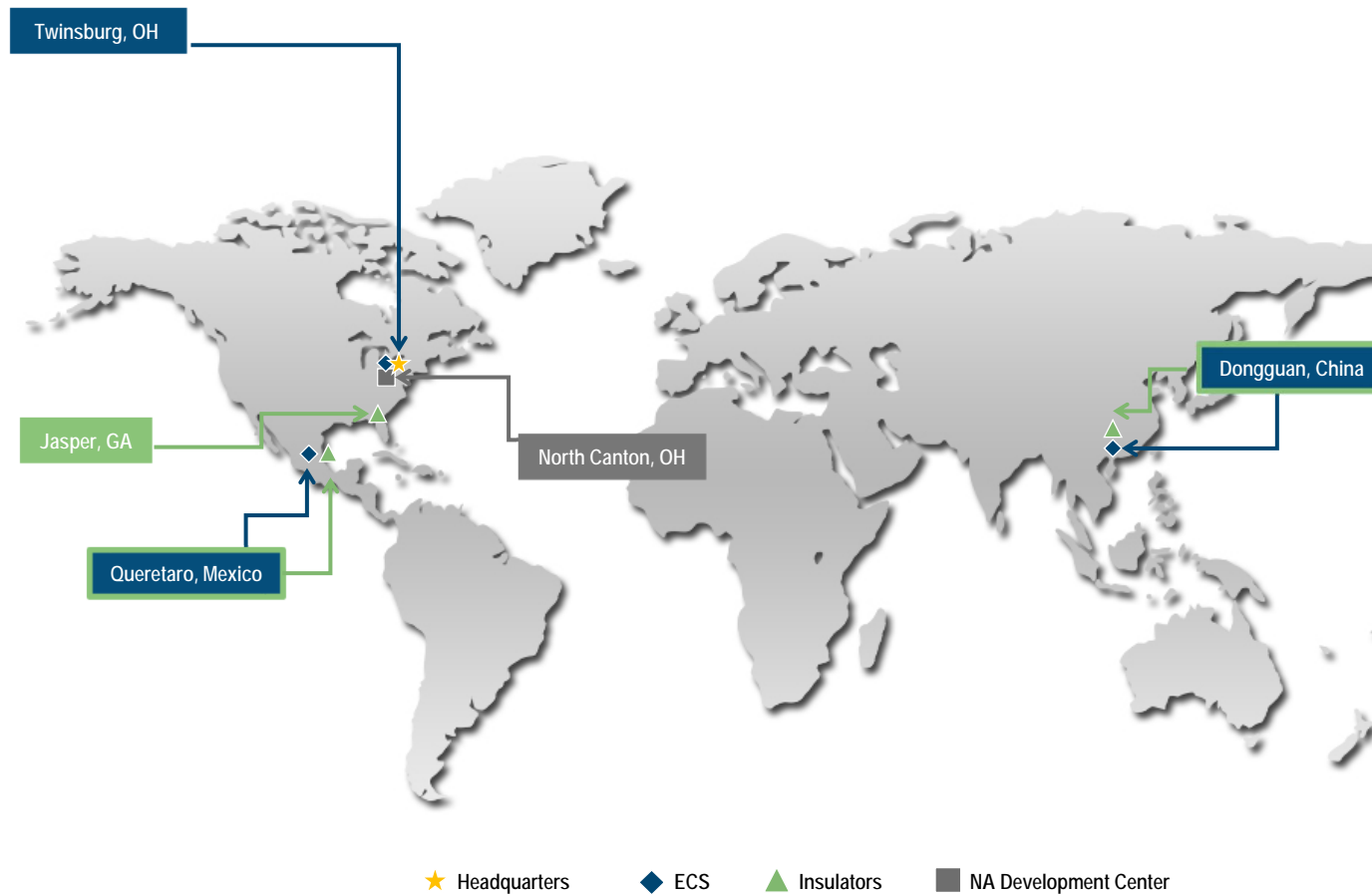
# Key Capabilities

- Design support – engineered product designs and proprietary materials
- FEA/CFD modeling/simulations
- Internal compounding
- Custom early stage prototyping
- Internal tooling capabilities (transfer and LIM)
- “Mission critical” products – highly technical and crucial to overall system performance
- Broad capabilities (HCR, LIM, extrusion, overmolding)
- Wasteless/flashless production
- Subassembly and full assembly
- Proprietary process technologies – advanced automation and vision inspection
- Secondary operations (finishing, slitting)
- Coating application

# History



# Industrial Global Footprint



# Single-Source: Multiple Suppliers in 1!



When precision matters and you need excellent products on time.



# Industrial Markets and Solutions



Automotive

- Cable seals
- Insulators
- Grommets
- Coil-on-plugs (COP)
- Class 3 and class 4 high temperature seals
- Ring seals



Aerospace

- Fiber optic seals
- Wire grommets
- Electrical connector seals
- Wire bundle guides
- Wire seals



Military, Marine, HVAC,  
Appliances & Other Industries

- Capacitors
- Electronic gauging
- Chromatography
- Scientific instrumentation

# Industrial Markets and Solutions



Lighting

- Electrical connector sealing products
- Industrial sealing products
- Enclosure seals



Automotive Aftermarket

- Coil-on-plug (COP) boots with connector springs made in the USA
- Spark plug insulators
- Distributor insulators
- Three-piece assemblies
- One-piece boots
- Boot accessories: nylon clips, heat shields
- Sub-assembly services



Solar

QSR supplies rubber components for these and other solar applications:

- Electric vehicle charging stations
- Residential and commercial solar lighting systems



# Products



Electrical Connector Sealing



Electrical Insulating



Industrial Sealing



Cable Seals



Industrial Sealing



Custom Molded Solutions

# Blue Chip Customer Base





# Locations

# Twinsburg, Ohio

1700 Highland Road  
Twinsburg, OH 44087



- 110K sq ft Facility
- 270 Team members
- ISO 14001, ISO 17025, ISO/TS 16949, AS9100 certified
- 116 Molding presses ranging in size from 50-800 ton
- 33 Automated vision inspection systems

## Key Capabilities

- Headquarters – Global product, process and material development center
- Manufacturing of transfer and liquid injection molded products for North and South American markets
- Global LIM manufacturing center
- Additional Capabilities:
  - Vertically integrated mold manufacturing (Quadra North Canton and Sturtevant)
  - High and Low volume HCR and LIM molding
  - 90 HCR Transfer / 26 LSR (Liquid Silicone Rubber) presses
  - 100% Automated vision designed and built internally
  - Fully integrated work management system
  - Coating application; OSIXO coating machine
  - Custom material formulations
  - FEA/CFD modeling/simulations
  - Aerospace

# Jasper, Georgia

1076 Ridgewood Road  
Jasper, GA



- 110K sq ft facility
- 248 Team members
- ISO 14001, ISO 9001, ISO/TS 16949 certified
- 65 Transfer molding presses from 150 to 800 ton
- 2 Tilt mixers (110L) and 1 intermixer (90L)
- Comprehensive analytical laboratory
- Optical metrology laboratory
- 20 Automated secondary systems: vision inspection
- Function testing, assembly/insertion, coating application

## Key Capabilities

- Ignition/coil insulator molding
- Electrical connector seal product molding
- Automotive products, such as insulators, bellows, grommets, covers
- Additional Capabilities
  - High precision mold design and machining
  - Automated HCR transfer molding
  - Silicone and EPDM material mixing
  - Comprehensive material development
  - Post molding value-add and quality capability:
  - Vision inspection
  - Spring/insertion installation
  - Metal detection
  - Prototyping
  - Automated, networked process control systems
  - Fully integrated work management system



## Quadra *Tooling & Automation*

3565 Highland Park Street NW  
North Canton, OH 44720

1810 Renaissance Blvd.  
Sturtevant, WI 53177



- 55,000 total sq ft
- 2 R&D centers
- 28 Tool builders
- 15 Engineers
- 60 Total team members

## Key Capabilities

- Custom early stage prototyping skills
- SIGMASOFT mold flow simulation
- Mold design and flow engineering
- SolidWorks and AutoCad
- Ansys non-linear FEA Modeling and simulations
- CAM / CNC programming
- Additional Capabilities
  - Power mill, part maker
  - Surfcam, Gibbs cam
  - Machines
    - 5 axis CNC machining
    - Laser marking machine
    - Surface grinders
  - Wasteless flashless tooling design
  - Overmolding rubber to plastic and rubber to metal mold design

***Surpassed 5K Molds Engineered and Manufactured July, 2016***

# Dongguan, China

优品（中国）Dongguan  
No 1 Building, E Section,  
Jun Da Industry Zone, Dong Keng District,  
Dongguan City, Guangdong, PRC



- 250,000 sq ft Facility
- 380+ Team members
- ISO/TS 16949, ISO 14001, OHSAS 18001 certified
- 68-350 ton HCR transfer presses
- 6-700 ton manual HCR presses
- 8-Auto flip 700 ton presses
- 2-LV presses, 2-LIM presses
- 25 Automated vision inspection systems

## Key Capabilities

- Manufacturing of molded products for Asian and European Markets
- Parts shipped through QSR Hong Kong and domestically from Dongguan
- Asian sales and engineering support
- Local tooling sources developed for ring seal type products
- Additional Capabilities
  - High precision tight tolerance components
  - Inorganic/organic material offerings
  - Custom material formulation
  - On-site material mixing and testing
  - LIM-Liquid Injection Molding/LSR-Liquid Silicone Rubber
  - Secondary operations (finishing, slitting)
  - Washing
  - Data integration throughout plant
  - Transfer/compression molding
  - Assembly and packaging
  - Coating application

# Querétaro, Mexico

Q Seals de México, SRL de CV  
Carretera Estatal 431km 2+200, Calle B Int.69  
Parque Tecnológico Innovación  
El Marqués, Querétaro CP. 76246



- 63,000 sq ft Facility with expansion property available
- Maquila-structured operation with the ability to ship internally to Mexico locations as well as internationally

## Key Capabilities

- Molded elastomeric components, including:
  - Electrical connector seals
  - Electrical insulator boots
  - Medical device components
  - Specialty rubber products
  - Consumer goods
- Additional Capabilities
  - Extrusion
  - Assembly
  - Packaging
  - Mixing
  - Molding
  - De-flashing
  - Vision capabilities
  - Metrology
  - Lab analysis
  - Process control
  - SPC

# Business Development Team

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Thank You