



**HOLDING COMPANY**

*when precision matters*

**Company Overview**

# Q Holding Company Overview

- Premier manufacturer of precision-molded and extruded rubber components
  - Branded under QSR Automotive/Industrial, Qure Medical and Quadra Tooling & Automation
- Formed through the combination of Lexington Precision and Quality Synthetic Rubber in 2012
  - Acquisition significantly expanded medical capabilities, created global leader in connector seal market and improved the global footprint
- Marketing-leading capabilities from product concept through delivery, including the largest selection of in-house tooling capabilities in the industry
- Seven manufacturing locations, generating revenues in excess of \$190 million



## QSR Automotive/ Industrial Markets



CONNECTOR SEALS



AUTOMOTIVE INSULATORS



## Qure Medical Markets



MEDICAL SURGICAL

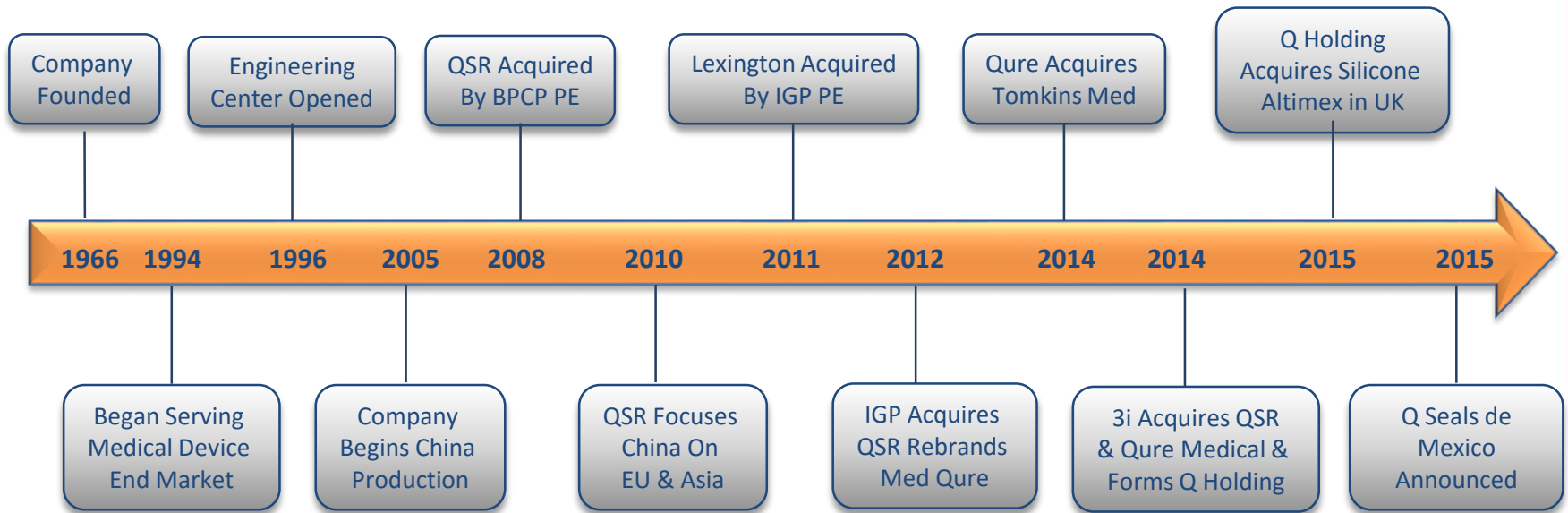


FLUID  
MANAGEMENT



DRUG  
DELIVERY

# Company History



# Q Holding Highlights



# Strong Value Proposition Drives Market Position

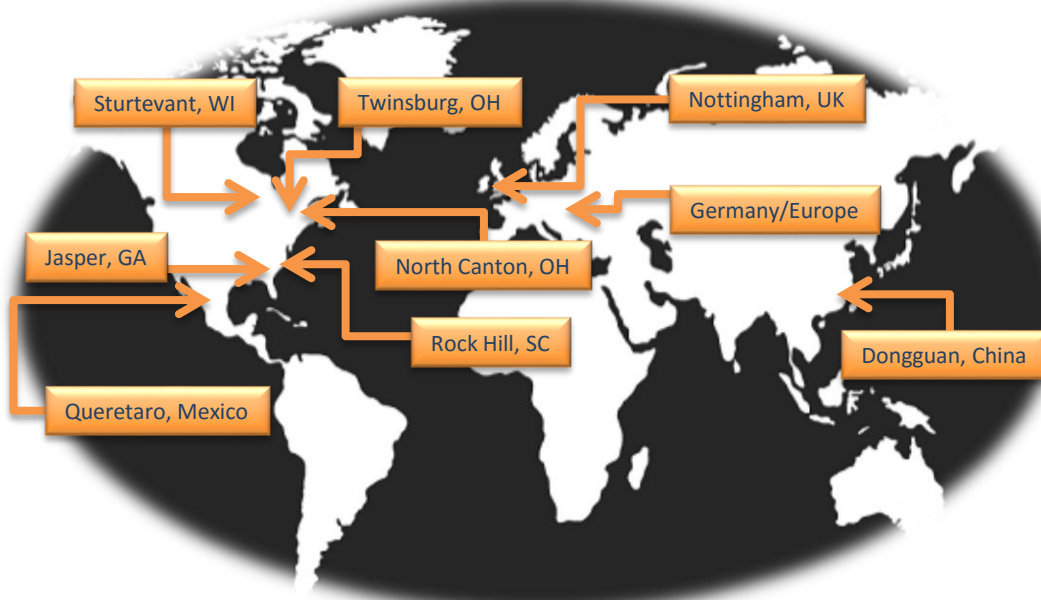
Q Holding has built strong relationships with a diverse group of leading medical device, connector manufacturers, and automotive aftermarket customers who rely on Q for their most complex products



# Facility Locations



**Twinsburg, Ohio**  
**Corporate HQ**  
 Automotive/Industrial  
 Manufacturing  
 Medical Manufacturing



**Dongguan, China**  
 Facility #1: Automotive/Industrial  
 Manufacturing  
 Facility #2: Medical Manufacturing



**Rock Hill, South Carolina**  
 Medical Manufacturing



**Nottingham, UK**  
 Medical Manufacturing

**Total Number of Company Employees: 1,105**



**North Canton, Ohio**  
 Engineering Center  
 Tooling & Automation



**Jasper, Georgia**  
 Automotive Manufacturing



**Sturtevant, Wisconsin**  
 Medical Manufacturing



**Germany, Europe**  
 Q Holdings Sales Office



**Queretaro, Mexico**  
 Automotive/Industrial  
 Manufacturing

# Comprehensive Value Proposition

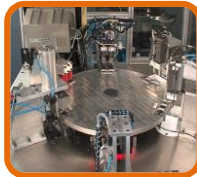


**Materials Development**



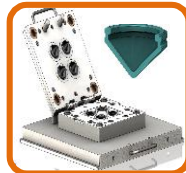
**Design for Manufacturability**

**Compounding & Mixing**



**Automation Development**

**Mold Development**



**Precision Cleanroom Manufacturing**

**Precision Manufacturing**



**Quality**



**Customized Testing & Analysis**



**Cleanroom Assembly**



**Packaging & Distribution**



**When precision matters and you need perfect products on time.**

QSR<sup>TM</sup> QUALITY  
SYNTHETIC  
RUBBER

● *when precision matters*



# The QSR Mission

*Quality Synthetic Rubber is committed to providing world class, precision-molded, elastomeric components. The commitment is a company wide dedication to continuous improvement and customer satisfaction.*



# Comprehensive Value Proposition

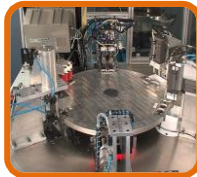


**Materials Development**



**SIGMASOFT**

**Design for Manufacturability**

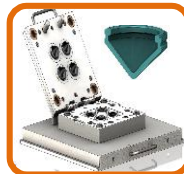


**Automation Development**

**Compounding & Mixing**



**Mold Development**



**Precision Cleanroom Manufacturing**

**Precision Manufacturing**



**Packaging & Distribution**



**Quality**



**Customized Testing & Analysis**



**Cleanroom Assembly**

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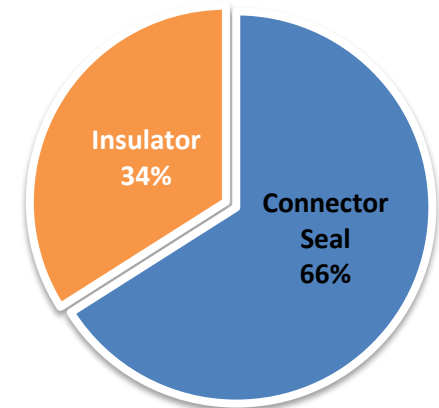
# QSR Key Differentiators

- Design support – **engineered product designs and proprietary materials**
- **Proprietary process technologies** – advanced automation and inspection
- Significant **SKU diversity** – mix of high and low-volume parts embeds QSR in customers' supply chains
- **Quality and reliability** – switching to alternative suppliers not worth the risk
- **“Mission critical”** products – highly technical and crucial to overall system performance
- **Low cost country** source capability – China facility with world class quality

## Major Growth Opportunities:

- Establish manufacturing and technology centers in **Europe** to increase market share
- New Mexican manufacturing – following industrial and medical customers into Latin America growth areas
- Conversion of customers from **LIM to HCR** materials and molding technology
- Increased density of electronics in vehicle systems – **micro-connector seal development**
- Continued development and expansion of breakthrough **“EMI Shielding”** materials and products

## Revenue Breakdown

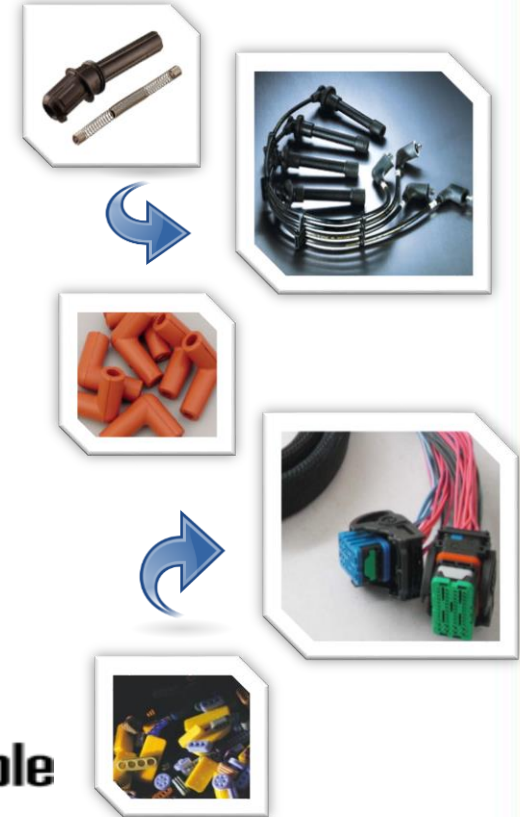


# QSR Automotive/Industrial Overview

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
- QSR services a network of blue chip customers with connector seals and spark plug insulators

## Products



**DC DIAMOND ELECTRIC**

**YAZAKI**

**MITSUBISHI ELECTRIC**

**General Cable**

**BOSCH**

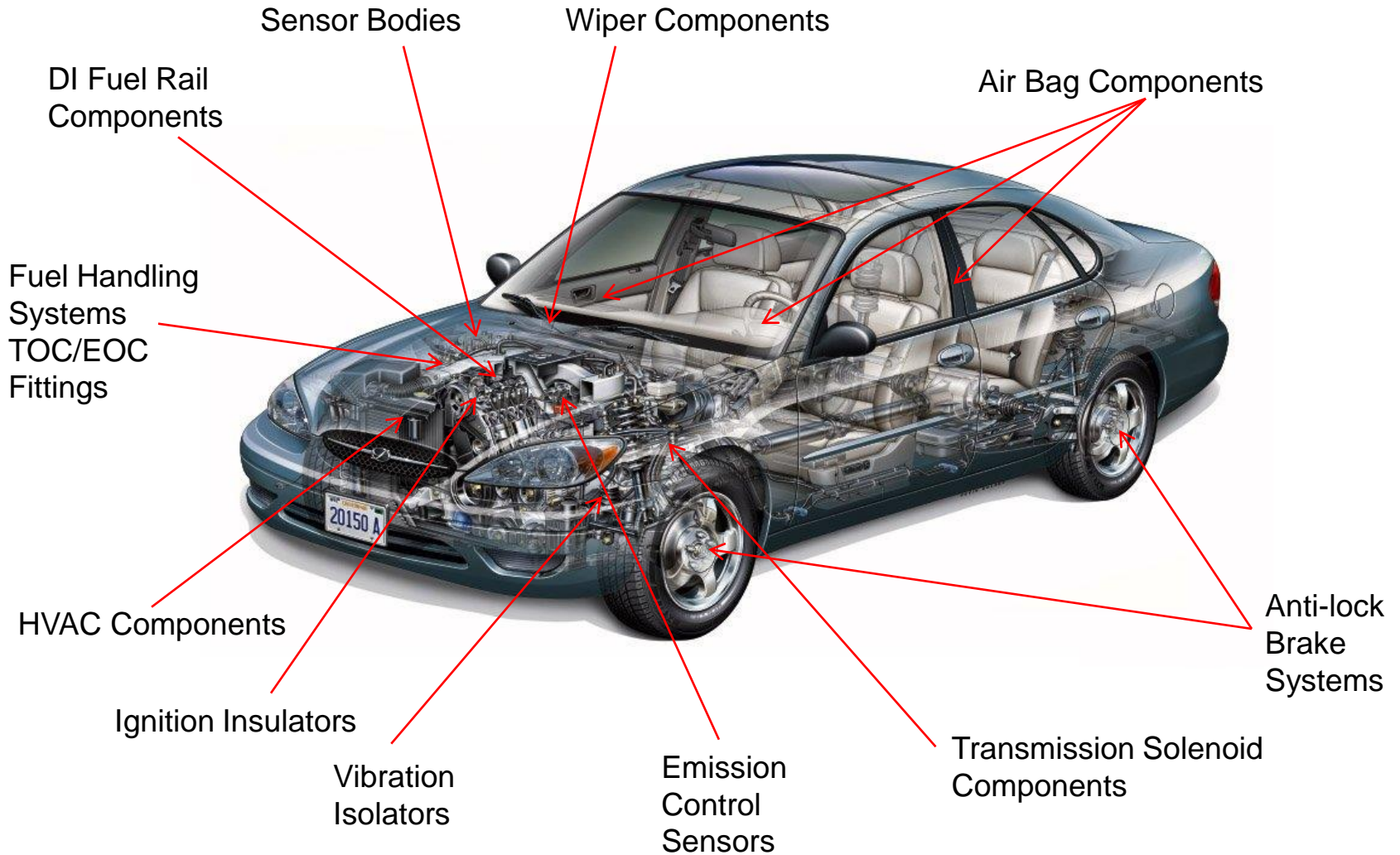
**SMP**  
Standard Motor Products, Inc

**TE**  
connectivity

**molex**

**DEUTSCH**

# Automotive Applications



# QSR Markets



**Ignition System  
Insulators**

- Coil On Plug
- Pencil Coils
- 3 Piece Assemblies
- Small Engine/Marine
- Traditional Harness
  - ❖ Distributor
  - ❖ Spark Plug



**Connector System  
Seals**

- Single wire
- Multi-Hole Grommets
- Peripheral
- Diaphragms
- Overmolded



**Automotive  
Industrial**

- Isolators
- Seals
- Bellows
- Gaskets
- Grommets
- Diaphragms

# QSR Products

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Insulator Products

## Custom Applications



# QSR Products



Matte seals

Grommets

Wire Seals

Ring Seals

Perimeter Seals

Face Seals

Cable Seals





# Customized Testing & Analysis

- Example automotive specifications utilized:  
SAE/USCAR-2 Rev. 6 and VW 75174 – LV214 with a focus on:
  - Leak testing
  - Mechanical testing
  - Environmental testing
- Customer Specific Tests
- R&D Testing
- Fail mode evaluation Testing

# New Product Test Lab



Temperature Humidity Chamber



Programmable Oven

# New Product Test Lab

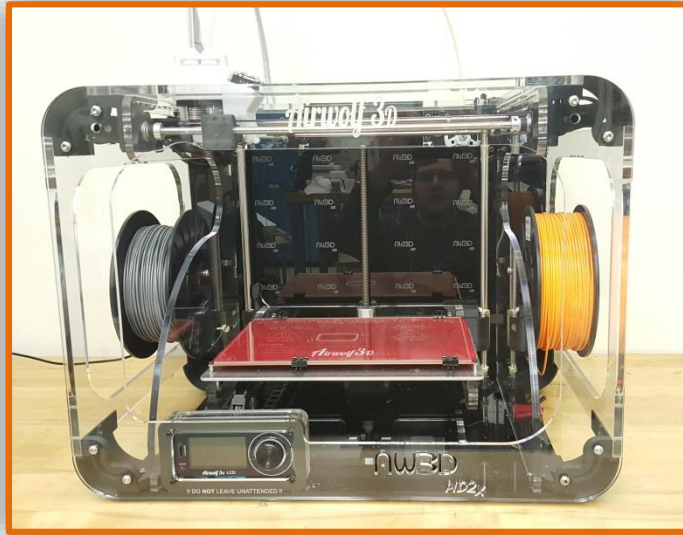


Mechanical force gage and test stand



Pressure/Vacuum leak station

# New Product Test Lab



3D Printer

In the future, QSR wants be more proactive with testing in the development phase in order to identify potential issues up front, before long term testing is initiated by the customer.



## Locations



1700 Highland Rd  
Twinsburg, OH 44087



- 110,000 sq ft Facility
- 270 Team members
- ISO 14001, ISO 17025, ISO/TS 16949, AS9100 certified
- 118 Molding presses ranging in size from 50 to 800 ton
- 36 Automated vision inspection systems

# QSR Twinsburg Core Capabilities

- Headquarters – Global product, process and material development center
- Manufacturing of transfer and liquid injection molded products for North and South American markets
- Distribution warehouse for some QSR-China high volume transfer molded products
- Global LIM manufacturing center
- Vertically integrated mold manufacturing (Quadra North Canton and Sturtevant)
- High and Low volume HCR and LIM molding
- 92 HCR Transfer Presses / 26 LSR (Liquid silicone Rubber) presses
- 100% Automated vision designed and built internally for select products
- Fully integrated work management system
- Costing applications
- Custom material formulations
- FEA/CFD modeling/simulations





优品（中国） Dongguan

No 1 Building, E Section,

Jun Da Industry Zone, Dong Keng District,

Dong Guan City, Guangdong, PRC

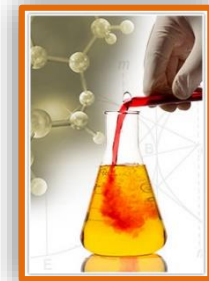


- 250,000 sq ft Facility
  - 50,000 sq ft Actual manufacturing
- 380+ Team members
- ISO/TS 16949, ISO 14001, OHSAS 18001 certified
- 68-350 ton HCR Transfer Presses, 6-700 ton manual HCR presses, 8-auto flip 700 ton presses 2-LV presses, 2-LIM presses
- 25 Automated vision inspection systems



# QSR Dongguan Core 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
- 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
- Transfer/compression molding
- Secondary operations (finishing, slitting)
- Assembly and packaging
- Washing
- Coating applications
- Data integration throughout plant





1076 Ridgewood Rd  
Jasper, GA



- 110,000 sq ft Facility
- 248 Team members
- ISO 14001, ISO 9001, ISO/TS 16949 certified
- 72 Transfer molding presses ranging in size 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

# QSR Jasper Core Capabilities

- Ignition/coil insulator molding
- Electrical connector seal product molding
- Automotive products, such as insulators, bellows, grommets, covers
- 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
  - Coating application
- Automated, networked process control systems
- Fully integrated work management system



# Queretaro, Mexico



- 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

# QSR Mexico Core Capabilities

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





Q U R E • M E D I C A L <sup>TM</sup>

*when precision matters*

# The Qure Medical Mission

*We will provide high quality, value-added, integrated elastomer solutions to the consumer, medical device, and life science industries while meeting and/or exceeding stringent industry standards and customer expectations.*



# Comprehensive Value Proposition

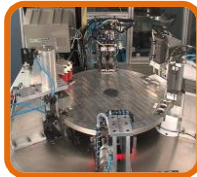


**Materials Development**



**Design for Manufacturability**

**Compounding & Mixing**



**Automation Development**

**Mold Development**



**Precision Cleanroom Manufacturing**

**Precision Manufacturing**



**Quality**



**Cleanroom Assembly**



**Customized Testing & Analysis**

**Packaging & Distribution**



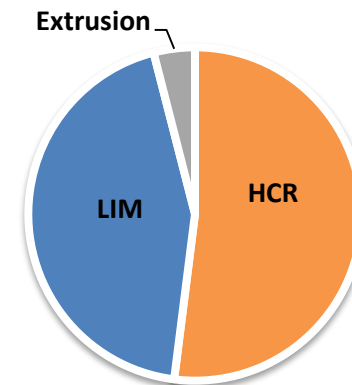
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# Qure Key Differentiators

- Internal compounding and **proprietary material formulations**
  - Tompkins acquisition provides access to **50+ FDA-registered Drug Master Files (DMFs)**
- **Unmatched suite of products and processes**
  - Polyisoprene, organic and silicone polymers technology
  - LIM, HCR (transfer) and extrusion processing technology
  - Overmolding, subassembly and full assembly capabilities
- **Vertically integrated** to “punch above our weight class”
  - Internal tooling capabilities (HCR and LIM)
  - Automation and computer vision inspection technology
- **ISO 13485** certification and facilities capable of producing FDA registered products
- New **Qure Medical facility** in China – capable of supplying multinationals as well as China market with cleanroom capability

## Revenue Breakdown



## Products



# Qure Medical Overview

Qure concentrates on medical components that require high levels of quality and process repeatability and manufactures products for a blue-chip customer base

- Products consist of precision molded rubber components used in medication delivery systems, surgery devices, catheters, and other applications
- Uniquely positioned within the industry to offer a full suite of products to existing and potential new customers. Key differentiators include:
  - Broad capabilities (HCR, LIM, extrusion, over-molding)
  - Internal tooling capabilities (transfer and LIM)
  - Vision inspection and automation
  - Wasteless/flashless production
  - Internal compounding
  - Extensive library of proprietary formulas
- Customers include over 20 of the top 30 medical device manufacturers

## Products



# Qure Medical Markets



**Fluid Management**



**Drug Delivery**



**Medical Surgical**

- Plunger tips
- O-rings
- Seals
- Diaphragms
- Syringe components

- Sleeve stoppers
- Septums
- Valves
- Diaphragms
- IV components

- Duckbills
- Valves
- Seals
- Diaphragms
- Bellows

# Customized Testing & Analysis

- Capable of performing tests for custom applications, including:
  - Leak testing
  - Mechanical testing
  - Environmental testing
- Customer Specific Tests
- R&D Testing
- Fail Mode Evaluation Testing

# New Product Test Lab



Temperature Humidity Chamber



Programmable Oven

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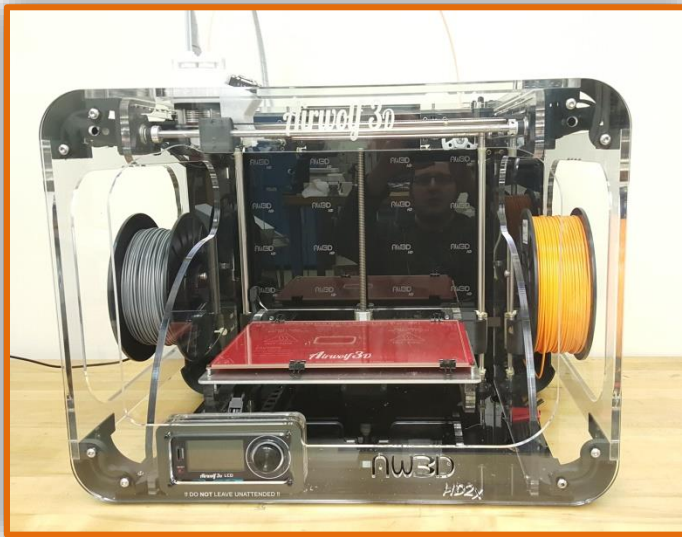


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Pressure/Vacuum leak station

# New Product Test Lab



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In the future, Qure Medical wants be more proactive with testing in the development phase in order to identify potential issues up front before long term testing is initiated by the customer.



Q U R E • M E D I C A L <sup>TM</sup>  
*when precision matters*

## Locations





QURE • MEDICAL  
*when precision matters*

1700 Highland Rd  
Twinsburg, OH 44087



- 11,000 sq ft Facility-  
all Class 8 cleanroom space
- 70 Team members
- ISO 14001, ISO 13845  
certified and FDA registered
- 23 Molding presses
- 3 Production extruders

# Qure Twinsburg Core Capabilities

- HCR silicone extrusion
- LIM-Liquid Injection Molding/LSR-Liquid Silicone Rubber
- HRC silicone molding
- LSR overmolding (specifically onto tubing)
- Implantable silicones
- Packaging and assemblies (FDA registered final product pack)
- Automated vision inspection
- Process management/data





QURE • MEDICAL  
*when precision matters*

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



- 11,000 sq ft Class 8 cleanroom space
- ISO 13845 certified
- HCR and LSR molding presses ranging from 100 to 700 ton
- Vision inspection systems on site
- Employees: 382

# Qure China Core Capabilities

- HCR transfer/compression molding
- Clean room molding
- Vertical LIM molding
- Low cost manufacturing
- Non-organic products for medication delivery, access devices and fluid management
- Custom material formulations
- Progressing on compression molding and die cutting
- Secondary operations (finishing/slitting)
- Assembly and packaging
- Washing
- Coating applications
- Clean room molding and assemblies in ISO Class 8
- Automated vision inspection
- Dedicated in-house mold making and automation



# Qure China Core Capabilities – Cont....

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- Process Management/Data
- Focused process (WL/FL)
- Vertical integration
- FEA/CFD modeling/simulations
- Inorganic/organic material offerings
- High volume capabilities
- Customer service and responsiveness
- Data integration throughout plant

Qure Medical – Silicone Altimex  
49 Pasture Road, Stapleford  
Nottingham, NG9 8HR UK



- Six ISO class 7 cleanrooms with square footage totaling 7,000
- Dedicated platinum extrusion cleanroom
- 80+ team members
- ISO 13485, ISO 9001 certified and FDA registered
- Molding presses ranging in size from MICRO to 150 ton
- Automated vision inspection system and XY loop control
- 3 dedicated pharmaceutical assembly rooms
- 2 extrusion production rooms (Peroxide/Platinum)
- 1 Final inspection/packaging room

# Qure Medical Europe (d.b.a. Silicone Altimex Ltd.) Core Capabilities

- ISO class 7 cleanroom production
- Liquid silicone rubber injection molding
- Medical co-extruded tubing (Barium stripe/color)
- Large commercial tubing up to 200mm diameter
- Profile extrusion/molded connections
- Platinum silicone tubing
  - High performance pump tubing using laser loop control
  - High performance cardiopulmonary tubing
  - Non-contact laser-controlled extrusion and inspection release
- Bio pharmaceutical products and assemblies
- Platinum addition cured products
- Peroxide cured products
- Braiding – pharmaceutical/medical/commercial tubing
- In-house materials testing
  - Laser micrometer tubing inspection
  - Pressure testing
  - Torque screw cap measuring
- In-house development
- Bioburden monitoring
- Export on a global basis



1810 Renaissance Blvd.  
Sturtevant, WI 53177



- 89,000 sq ft Facility
  - 60,000 sq ft White room manufacturing space
  - 8,000 sq ft Class 8 cleanroom
  - 1,200 sq ft Class 7 cleanroom
- ISO 13485 Certified and FDA Registered
- 55+ Molding presses ranging in size from 12-200 ton
- 130+ Team members



# Qure Sturtevant Core Capabilities

- LIM-Liquid Injection Molding/LSR-Liquid Silicone Rubber
- Transfer/compression molding
- Assembly and packaging
- Insert over-molding
- Dipping
- Washing
- Coating applications
  - Parylene
  - Plasma
  - Dip coating
- Pad printing
- Medium and low volume
- Progressing on high volume cold runner
- Progressing on assemblies and packaging
- Implantable LSR
- In-House tooling
- Full mold automation including part removal
- Cleanroom molding and assemblies in ISO Class 7 & 8
- Automated vision inspection



663 Bryant Boulevard  
Rock Hill, South Carolina 29732



- 58,000 sq ft Facility
  - 15,000 sq ft Class 8 cleanroom
- 140+ Team members
- ISO 13485 Certified
- 58 Molding presses ranging in size from 150 to 800 ton
- 24 custom-developed automated vision inspection systems
- FDA Drug Master Files for numerous materials

# QURE ROCK HILL CORE CAPABILITIES

- Custom material development support
- Transfer/compression molding
- Secondary operations (chlorination, slitting, assembly, packaging)
- Washing
- Coating applications
- Automated vision inspection
- Dedicated in-house mold making capabilities
- Vertical integration
- FEA/CFD modeling/simulation
- Inorganic/organic material offerings
- High volume capabilities
- High precision, tight tolerance components
- Customer service and responsiveness
- Data integration throughout plant
- Process validation







3565 Highland Park Street NW  
North Canton, OH 44720



- 41,827 sq ft
- 33 employees
- In-house services for Qure Medical and Quality Synthetic Rubber (QSR)

- Machines
  - CNC Machining Centers
  - CNC Lathes
  - CNC Swiss Lathes
  - CNC Sinker EDM
  - CNC Wire EDM
  - Laser Marking Machine
  - Surface Grinders



- Software
  - Engineering
    - SolidWorks 2016
    - AutoCAD
    - Ansys Non-Linear FEA
    - Ansys CFX Fluid Dynamics
    - Sigma Soft Mold Flow simulation
  - CAM / CNC Programming
    - Power Mill
    - Part Maker
    - Surfcam





1810 Renaissance Blvd.  
Sturtevant, WI 53177



- 12,500 sq ft
- 12 employees

- Machines

- CNC Machining Centers
- CNC Lathes
- CNC Swiss Lathe
- CNC Sinker EDM
- Surface Grinders
- 5-Axis



- Software

- Engineering
  - SolidWorks 2015
  - AutoCAD
- CAM / CNC Programming
  - Gibbs Cam
  - Machining Strategist



# Quadra Core Capabilities

- Solid modeling
- FEA simulation
- Mold flow simulation
- Industry-leading CAM (computer-aided-manufacturing) software
- Design for manufacturability
- Proprietary mold development
- Early-stage prototyping
- CNC swiss turning/milling
- CNC sinker and wire EDM machining
- High speed 3-axis CNC machining
- High speed 5-axis CNC machining
- High grade materials
- Flashless tooling
- Rubber to plastic overmold tooling design and build
- Rubber to metal overmold tooling design and build





HOLDING COMPANY

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THANK YOU