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

- **1966**: Company Founded
- **1994**: Engineering Center Opened
- **1996**: QSR Acquired by BPCP PE
- **2005**: Lexington Acquired by IGP PE
- **2008**: Qure Acquires Tomkins Med
- **2010**: QSR Focuses China on EU & Asia
- **2011**: IGP Acquires QSR & Qure Medical & Forms Q Holding
- **2012**: Q Seals de Mexico Announced
- **2014**: 3i Acquires QSR & Qure Medical & Forms Q Holding
- **2015**: Q Holding Acquires Silicone Altimex in UK

- **1966**: Began Serving Medical Device End Market
- **1994**: Company Begins China Production
- **2005**: QSR Focuses China on EU & Asia
- **2010**: IGP Acquires QSR & Qure Medical & Forms Q Holding
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Q Holding Highlights

- Global leader in attractive and growing medical and electrical management markets
- Impressive financial performance and strong cash flow
- Proven and experienced management team
- Global manufacturing platform
- Entrenched relationships with diversified customer base of industry leaders
- Turnkey value-added rubber molding extrusion and assembly capabilities
- Industry-leading engineering and design capabilities
- ISO Class 7 & 8 Clean room molding and assembly
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.

- **Low Price, High Cost of Failure**
  - Components are a fraction of the total system cost
  - Reduced incentive to switch suppliers
  - Steady replacement demand

- **Multiple SKUs and Purchasing Divisions within Customers**
  - Largest customers consist of multiple autonomous purchasing departments

- **Strong Market Position with Lasting Customer Relationships**

- **Committed Tooling Investment**
  - Customers typically invest 1.0x – 2.0x annual revenue in the tool upfront
  - Tools are difficult to move to another supplier, creating long-term clients

- **Intensive Qualification Parameters**
  - Medical products typically specified into the overall medical device approved by FDA
  - Automotive products specified into customers’ end products approved by OEMs and have life-span of 15-20 years

- **Highly Engineered Products**
  - Customers depend on engineering expertise and proprietary solutions
  - Broadest manufacturing capabilities in the industry
Facility Locations

Twinsburg, Ohio
Corporate HQ
Automotive/Industrial Manufacturing
Medical Manufacturing

Jasper, GA
Automotive Manufacturing

North Canton, OH
Engineering Center
Tooling & Automation

Rock Hill, SC
Medical Manufacturing

Queretaro, Mexico
Automotive/Industrial Manufacturing

Sturtevant, WI
Medical Manufacturing

Twinsburg, OH

Nottingham, UK
Medical Manufacturing

North Canton, OH

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

Queretaro, Mexico

Total Number of Company Employees: 1,105

Nottingham, UK

Germany, Europe
Q Holdings Sales Office

Queretaro, Mexico
Automotive/Industrial Manufacturing
Comprehensive Value Proposition

Materials Development
Design for Manufacturability
Compounding & Mixing
Mold Development
Automation Development
Precision Manufacturing
Precision Cleanroom Manufacturing
Cleanroom Assembly
Quality
Customized Testing & Analysis
Packaging & Distribution

When precision matters and you need perfect products on time.
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

When precision matters and you need perfect products on time.
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
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
Automotive Applications

- Air Bag Components
- Anti-lock Brake Systems
- Transmission Solenoid Components
- HVAC Components
- Sensor Bodies
- Wiper Components
- DI Fuel Rail Components
- Fuel Handling Systems
- TOC/EOC Fittings
- Ignition Insulators
- Vibration Isolators
- Emission Control Sensors
- Anti-lock Brake Systems
- Transmission Solenoid Components
# 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

Custom Applications

Insulator Products
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
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
- Vison capabilities
- Metrology
- Lab analysis
- Process control
- SPC
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
Mold Development
Automation Development
Precision Cleanroom Manufacturing
Precision Manufacturing
Cleanroom Assembly
Quality
Customized Testing & Analysis
Packaging & Distribution

When precision matters and you need perfect products on time.
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
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
Fluid Management
- Plunger tips
- O-rings
- Seals
- Diaphragms
- Syringe components

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

Medical Surgical
- 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
New Product Test Lab

Mechanical force gage and test stand

Pressure/Vacuum leak station
In the future, Qure Medical wants to 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

- 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
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....

- 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

- 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

- 41,827 sq ft
- 33 employees
- In-house services for Qure Medical and Quality Synthetic Rubber (QSR)
1810 Renaissance Blvd.
Sturtevant, WI 53177

- 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

- 12,500 sq ft
- 12 employees
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
THANK YOU