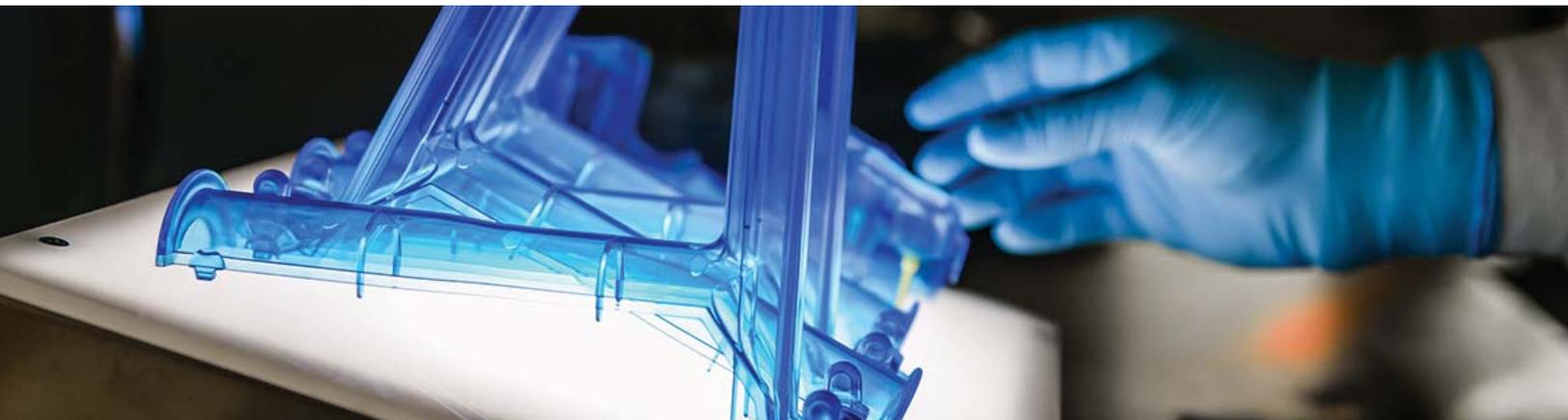


Medical Device Design, Molding and Assembly



 ***JunoPacific***

 **CRETEX**
Medical

Premier Medical Device Design, Development, and Contract Manufacturing Company

Utilizing more than 58 years in the field of precision molding JunoPacific has built its reputation as a premier medical device contract manufacturer and supplier of custom components, sub-assemblies, and fully kitted devices. With facilities located in the Midwest and Silicon Valley, JunoPacific is close to the major medical device hubs in the US while serving the critical needs of medical device OEM's worldwide.



For technical solutions from start to finish, JunoPacific can be counted on for the technical expertise that you need:

- Expertise in multi-shot, micro-molding, reel to reel insert molding and manufacturing
- Design for Manufacturability and Assembly (DFMA)
- Rapid prototype through clinical trials and production
- Continuous improvement process for ongoing partnership

Markets and device solutions

Cardio/Neuro Stimulation

- Headers

Diagnostics

- IVD testing

Endoscopic surgical

- Biopsy

Orthopaedic

- Robotic surgery
- Disposable instruments
- Custom implant procedure kits
- Over-molded, slip resistant grips

Vascular

- Needle guidance
- Artificial heart components
- Thrombectomy devices



Ophthalmic

- Surgical guides and accessories

Hospital

- Enteral feeding
- Fluid management components

Hearing Health

- Micro-molding

Urology

Sports Medicine





Molding, assembly and packaging and more under one roof

State-of-the-art injection molding technologies

- Multi-shot
- Micro-molding
- Over molding
- Reel to reel insert molding

Rapid prototypes

- Short turn aluminum tooling
 - Intermediate shot capacities up to 10K units
 - Steel inserts can be added to further increase shot capacity
 - Full range of materials
- High quality
- Economical

Secondary processing

- Clean room assembly - ISO Class 7 (10,000) and ISO Class 8 (100,000) environments
- Mechanical assembly
- Epoxy/UV curing assembly
- Packaging
 - Pouch and blister tray sealing
 - Labeling and barcode
 - Shelf box
 - Sterilization (outsourced)
- Pad printing
- Hot stamping
- Heat staking
- Ultrasonic welding
- RFID tagging

Customer experience and design support

- Mold tooling design and build
- Mold flow analysis
- Verification and validation testing support
 - Tensile
 - Compression
 - Torque
 - Leak by pressure decay
 - Flow rate
- Design for Manufacturability and Assembly (DFMA)
- Process development and validation
- Pilot production lines to debug, analyze, verify and finalize for production
- Traceability from raw materials through components and final assembly

Quality and Regulatory Accreditation:

- FDA registered as a contract manufacturer
- ISO 13485
- ISO 9001

Materials experience and expertise

- Polyurethane
- Tecothane®
- Carbothane®
- PEEK
- Ultem®
- Thermoplastic Elastomers (TPEs)
- Radel®
- Polysulfone
- Delrin
- Liquid-Crystal Polymer (LCP)
- Lexan®
- Polyethylene
- Polycarbonate

Cretex Medical

Cretex Medical is a family of companies that specializes in medical device contract manufacturing. Private ownership, a long-term perspective and a strong financial portfolio allow us to invest in the leading-edge technology and engineering know-how required to meet today's launch-critical timelines with confidence.

Whether you are a Fortune 500 medical technology stalwart or a promising startup, you can depend on our single-source approach to provide new efficiencies at every turn. When speed-to-market, quality compliance and design for manufacturability expertise are paramount to your program there is no company more capable or more responsive than Cretex Medical.



www.cretexmedical.com



www.rmsmachining.com

Contract manufacturing of medical devices and assemblies using state-of-the-art machining.



www.rmssurgical.com

Custom instrument manufacturing combined with design and fabrication of sterilization cases and trays. Focus on fast turnaround of prototype and production requirements.



www.junopacific.com

Medical device design, contract manufacturing and assembly, specializing in micro-molding, insert molding and multi-shot injection molding technology.



www.meiertool.com

Custom metal stamping, specializing in small and miniature metal-formed components and assemblies.



www.spectralytics.com

Contract laser micromachining and assembly of implantable devices and components for medical device manufacturers.



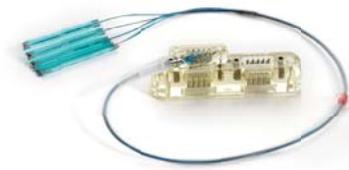
Medical Device Outsourcing

www.qtspackage.com

Medical device outsourcing services including cleanroom assembly, kitting, packaging, labeling, validations, inspection, cleaning, sterilization and supply chain management.



A closer look at precision



Header and lead component –

Polyurethane over-molded IPG header including lead connectors and assembled external wiring.



Complex wire harness –

(Extruded) jacket, terminated end connectors and over-molded strain relief.



Packaged procedure tray –

Custom molded and assembled components, accessories.



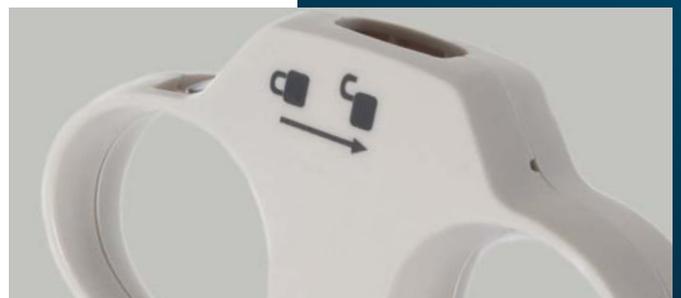
Cannula –

Molded with integral stop cock, trocar needle and hub assembly.



Disposable instrument handle assembly –

including pad printed markings.



JunoPacific, Inc.

Whether you are a major medical device manufacturer or a startup with a great new product, we can deliver what you need — from engineering through production, assembly and packaging. Contact us today to get an estimate for your next project, to arrange a tour of our facilities or just to learn more.

Call us at 763-703-5000.



1040 Lund Blvd. NW
Anoka, Minnesota 55303
763-703-5000

2840 Research Park Dr.
Soquel, California 95073
831-462-1141

2684 Middlefield Road, Suite A
Redwood City, CA 94063
650-361-8421

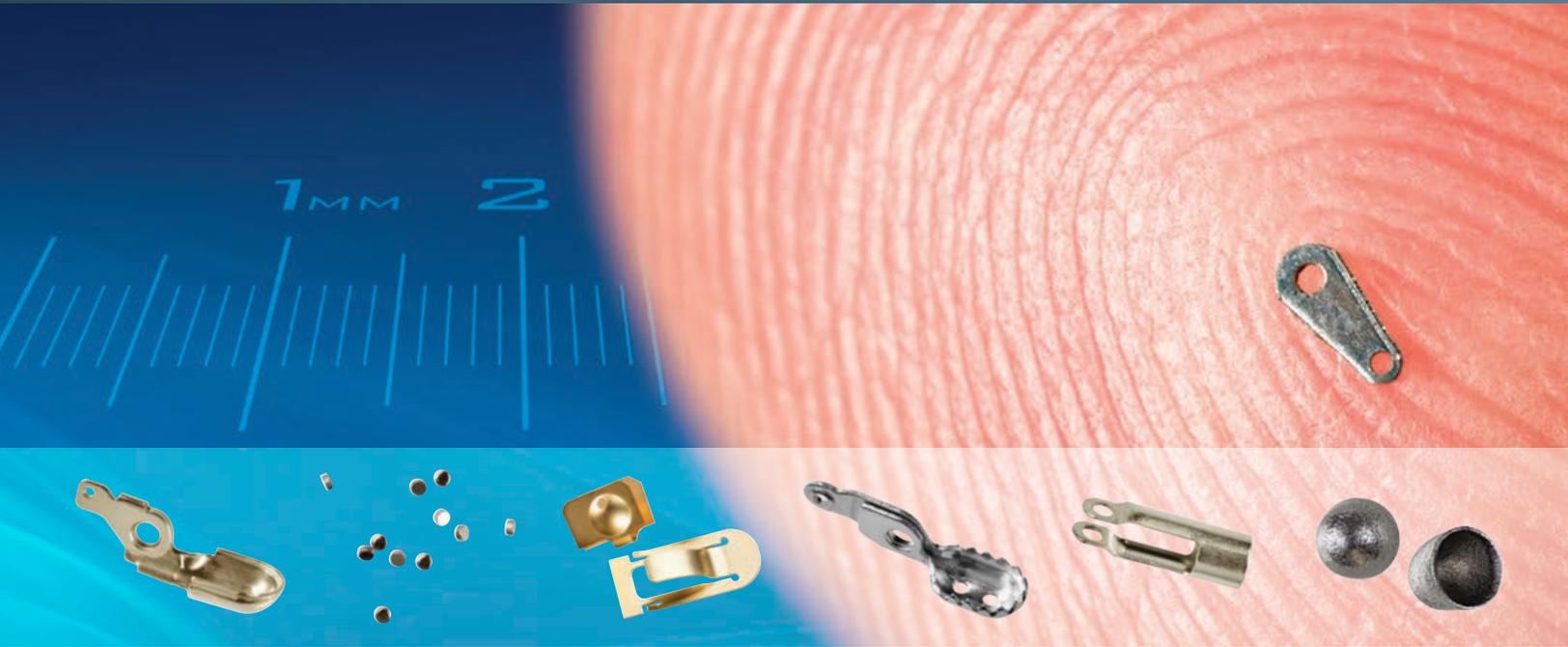
www.junopacific.com

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Meier Precision Metal Stamping Solutions

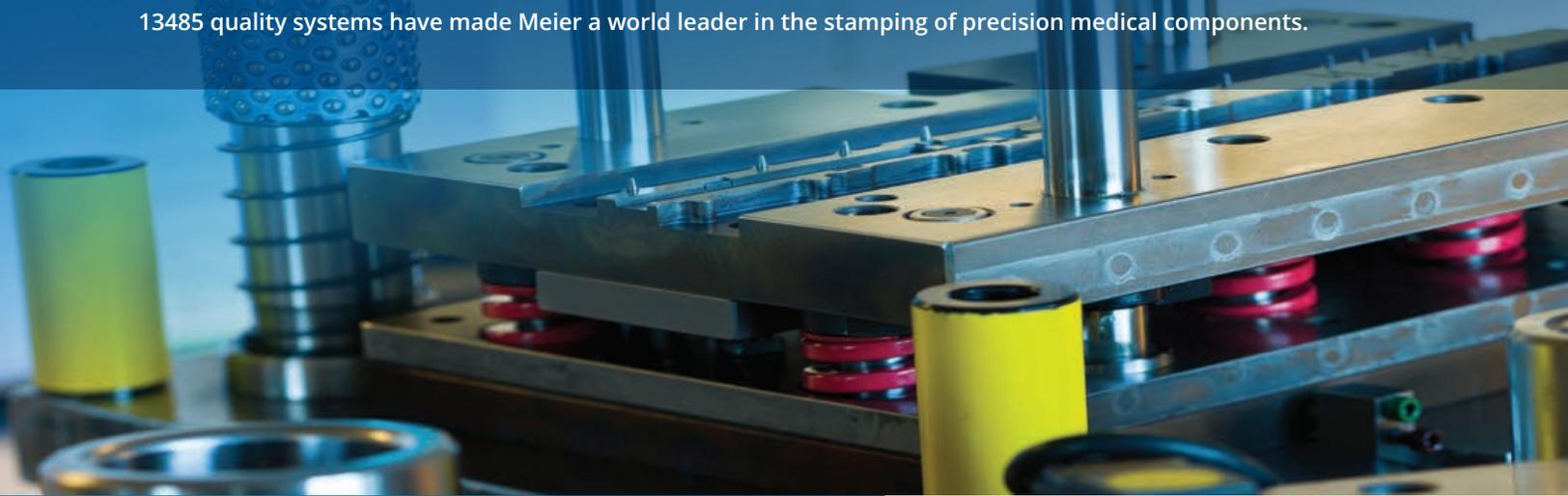


 **Meier**

 **CRETEX**
Medical

When you demand precision in your metal stamped components – *Meier Delivers*

For more than 30 years Meier has produced high-precision metal stampings and subassemblies for the medical device industry. By paying attention to the smallest details we excel at developing lower-cost solutions to the complex and micro-sized design challenges our customers face. Our comprehensive design assistance, prototype services and manufacturing capabilities provide support throughout the product life cycle from concept to high-volume production. Meier's in-house tool design and build capabilities, investments in cutting-edge technologies and ISO 13485 quality systems have made Meier a world leader in the stamping of precision medical components.



History of Excellence.

Demanding markets require innovative solutions and Meier excels in providing the complex and micro sized components required to meet the needs of today's innovative life-saving medical technologies. Rooted in our history of tooling design and fabrication, Meier has assembled a world class team equipped with modern technologies to produce and maintain the high precision tools required to consistently and repeatedly meet our customer's most rigorous requirements. Meier serves many market segments including:

Neurostimulation

Pacing

Endoscopy

Electrosurgery

Hearing Health

Orthopaedic

Customer Experience – The real measure of success

Producing high quality components is only one measure of success. What really matters - and what keeps customers returning to Meier - is the superior experience of working with our development and manufacturing teams supported by lean manufacturing and advanced quality systems. Every step of the process - from Tooling Design and Validation through Production Release - is closely controlled by our dedicated and highly skilled project team of engineers and toolmakers. But the support does not stop there. Throughout the product life cycle we constantly look for opportunities to take the cost out of the process - delivering exceptional value and savings.



Prototypes



Prototyping

Prototypes are often an essential part of the design process, allowing designers, engineers and clinicians to test the product concept before investing in the production tooling. For this purpose, Meier has assembled a fully integrated prototyping center, utilizing our unique stage die system, to quickly and cost-effectively simulate a progression tool in a fraction of the time. This allows you to:

- Try several design concepts and iterations and choose the best solution
- Demonstrate proof of concept
- Test the design and materials
- Evaluate the manufacturability of the component
- Build prototypes that will closely simulate the production components
- Perform early design verification testing
- Produce pre-clinical test units

Tool Design and Build

Dedicated Project Management

Formalized development process; focused on customer interaction from kick-off through production ramp.

- Project Plan and Milestones
- Design For Manufacturability (DFM) review
- Process Failure Mode and Effects Analysis (PFMEA)
- Tooling Failure Mode and Effects Analysis (TFMEA)

Complete in-house tooling capability

- CNC Machining
- CNC Wire EDM
- Precision Surface & Form Grinding



Value Added Capabilities

- Assembly
- Laser Welding
- EDM
- Machining
- Finishing
- Passivation
- Secondary Processing
 - Heat Treat
 - Plating: Gold, Silver, Etc.
 - Anodizing
 - Electropolishing

Support Throughout the Product Lifecycle

- Lean Manufacturing
- Focus on the Customer
- Inventory Replenishment
 - KanBan
 - Consignment
- Tool Maintenance and Repair for the Life of the Program





Materials Expertise

Alloy

Medical Grade Stainless Steel

- 303
- 304
- 316L
- 400 Series
- 17-7 PH

Titanium

- Titanium Alloys

Tantalum

Tungsten

Nitinol

Cobalt Chrome

MP35N

Beryllium Copper

Inconel

Phosphorus Bronze

Nickel 200

Other Materials and Alloys

Precious Metals

Platinum

- 99.9%
- Platinum Iridium Alloys

Gold

- Gold Foil Inlaid
- Gold Plated

Silver

Iridium

Material Thicknesses

.002" through .125"

Tolerances

.0005"





Quality

Right From The Start

The Meier quality system is designed to meet the most rigorous standards of our medical device customers. This includes advanced quality planning during the tool design and build stages through validation and transfer of the product to the manufacturing floor. Meier recognizes that the quality of your device is only as good as the quality of the parts supplied so we invest significant time and effort to assure that the components we manufacture meet your exacting requirements.

Certified Quality System

- EN ISO 13485:2012
- ISO 9001:2008

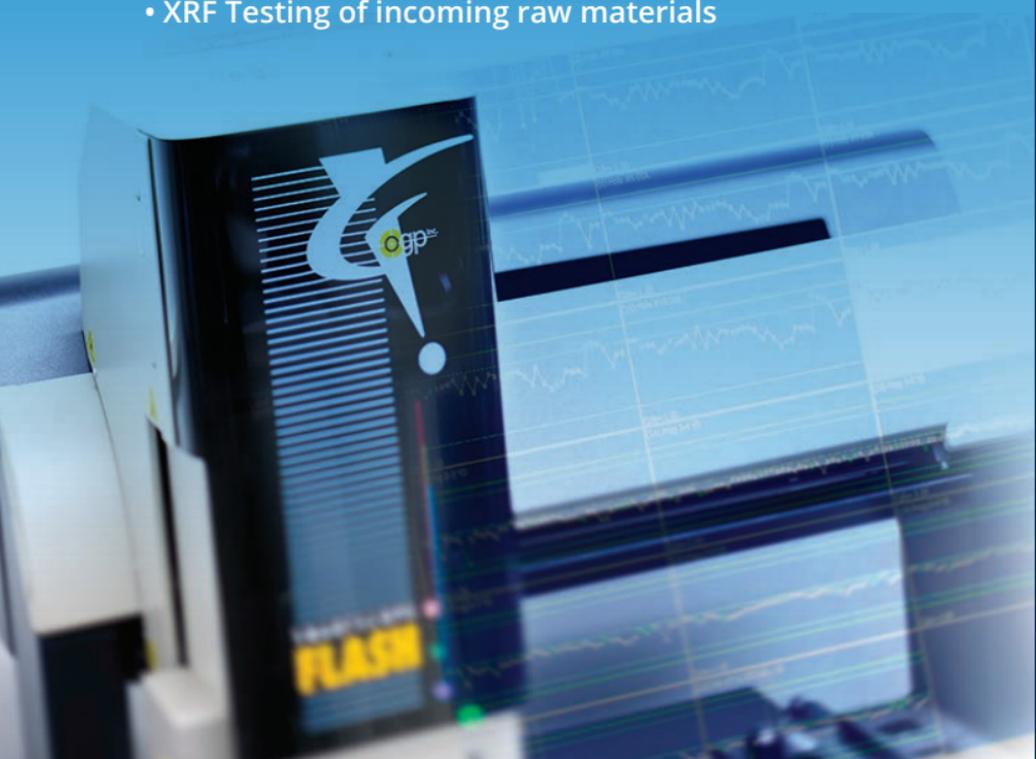
Advanced Quality Planning

Comprehensive and Proven Validation Processes

- Component verification testing
- Tooling & Process IQ, OQ, PQ
- Production Part Approval Process (PPAP)

State of the Art Quality Lab

- Vision measurement systems
- XRF Testing of incoming raw materials



Meier Precision Metal Stamping Solutions



Meier

Custom metal stamping, specializing in small and miniature metal-formed components and assemblies.

rms

Contract manufacturing of medical devices and assemblies using state-of-the-art machining technology.

rms Surgical

Custom instrument manufacturing combined with design and fabrication of sterilization cases and trays; focus on fast turnaround of prototype and production requirements.

JunoPacific

Medical device design, contract manufacturing and assembly, specializing in micro-molding, insert molding and multi-shot injection molding technology.

Spectralytics

Contract laser micromachining and assembly of implantable devices and components for medical device manufacturers.

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763-427-6275
www.meiertool.com
www.cretex.com

Finished Medical Device Assembly & Packaging



A better approach. A better solution.®

QTS offers complete medical device outsourcing services including simple and complex assembly, packaging, validation, sterilization and testing services. We offer clients comprehensive outsourcing for project completion or an a la carte menu of services to suit your unique needs. Whether you have one project or multiple projects requiring medical device outsourcing, we are fully equipped and staffed to handle it.



Package Design Expertise



Materials Sourcing



Engineering Validations



Label Development & Printing



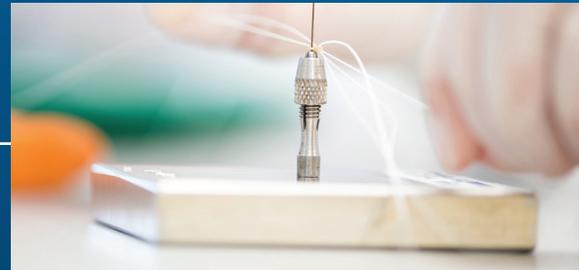
Critical Inspection Services



Cleaning & Passivation



Device Assembly & Packaging



Sterilization Management



Lab Testing Services



Supply Chain Management

Critical End-of-Line Processing

QTS offers extensive medical device outsourcing experience and expertise. Our Minnesota facility provides sterile and non-sterile device assembly, kitting and packaging, with over 54,000 square feet of intuitively designed space including ISO Class 7 cleanrooms, engineering lab, and expansive warehouse for optimized process flow and complete traceability for your medical devices.



QPOD®

Extend your organization with a QTS cross-functional, dedicated team of experts. Our QPOD team will focus on every detail of your project to make sure your device meets specifications, on time and on budget.

Markets

- Orthopedic
- Spine
- Dental
- Neurology
- Cardiovascular
- Biologics
- Urology
- ENT
- Ophthalmic
- Pulmonary
- OB/GYN
- Gastroenterology

Applications

- Implants
- Surgical Instruments
- Surgical Kits
- Combination Devices (Medical Device/Pharmaceutical)
- Pharmaceutical Kits
- Single-use, Bio-fluid Assemblies
- Accessory Devices
- Components
- Single-use Devices
- Sterile and Pre-sterile Devices

Quality for Life

Improving the quality of life for others.

Your medical device improves the lives of others, often times it saves lives. That's what drives us. We partner with you to impact lives and improve quality of life.

Our team of professionals is passionate about Quality — in every project, every process, every transaction and every audit. Because we understand that lives are at stake, we meticulously adhere to your requirements, all medical device standards and regulations.

We employ a robust Quality Management System, which includes electronic storage and change tracking of records, and also provides DMR and DHR traceability. We are responsive and intentional in regard to issues affecting the medical device industry such as RoHS, REACH and conflict minerals.



ISO 13485 Certified

Medical Devices — Quality Management Systems — Requirements for regulatory purposes

FDA Registered

CFR 21 Part 820
Quality System Regulation – Medical Devices

ISO Class 7 Cleanrooms

J-PMDA

Japanese Manufacturing Certification

State of Minnesota Board of Pharmacy Manufacturers License



QSEAL® Pre-Validated Medical Packaging

Validating a package that is compliant to the FDA and ISO 11607 requirements can be a time consuming and expensive obstacle to getting your new medical device on the market. Designed and developed by QTS exclusively for our customers, the innovative QSEAL Pre-Validated Medical Packaging Solution streamlines and accelerates your go-to-market process. Instead of starting from scratch, you can choose rigid and flexible packaging options that include seal validations, five-year accelerated aging, and have already been validated for Gamma, Ethylene Oxide and Electron Beam sterilization processing.

Cretex Medical

Cretex Medical is a growing family of companies that specializes in medical device contract manufacturing. Private ownership, a long-term perspective and a strong financial portfolio allow us to invest in the leading-edge technology and engineering know-how required to meet today's launch-critical timelines with confidence.

Whether you are a Fortune 500 medical technology stalwart or a promising startup, you can depend on our integrated approach to provide new efficiencies at every turn. When speed-to-market, quality compliance and design for manufacturability expertise are paramount to your program, there is no company more capable or more responsive than Cretex Medical.



www.cretexmedical.com



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Contract manufacturing of medical devices and assemblies using state-of-the-art machining.



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Custom instrument manufacturing combined with design and fabrication of sterilization cases and trays. Focus on fast turnaround of prototype and production requirements.



www.junopacific.com

Medical device design, contract manufacturing and assembly, specializing in micro-molding, insert molding and multi-shot injection molding technology.



www.meiertool.com

Custom metal stamping, specializing in small and miniature metal-formed components and assemblies.



www.spectralytics.com

Contract laser micromachining and assembly of implantable devices and components for medical device manufacturers.



www.qtspackage.com

Medical device outsourcing services including cleanroom assembly, kitting, packaging, labeling, validations, inspection, cleaning, sterilization and supply chain management.

Using QSEAL you can build a complete packaging system including:

- PETG trays
- Tyvek® lids
- Poly/Tyvek® pouches
- Nylon/Tyvek® pouches
- Foil/Foil pouches
- Customized tray inserts
- Standard label stock
- IFU paper stock
- SBS shelf boxes
- Foam protection
- Protective packaging sleeves



Quality Tech Services, LLC

Our array of services spans the entire process cycle from package configuration through supply chain management. We tailor our offerings to ensure each client receives the best value by balancing costs and quality with time to market. Our deep industry knowledge and years of experience enable us to deliver an innovative total solution that moves you to market faster and more cost-effectively.

Contact us today to learn how QTS can help with your next project.



10525 Hampshire Ave S
Bloomington, MN 55438
952-942-8321

qtspackage.com

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Corporate Office
311 Lowell Ave.
Elk River, MN 55330
www.cretexmedical.com

Precision-Machined Medical Implants and Components



The gold standard for technology & talent

For over 45 years, rms Company has built a solid reputation in the medical device industry as the preferred partner for precision machined components and assemblies. With more than 450 CNC machine tools under one roof, rms has combined the latest technologies with decades of experience to become a certified supplier to most of the major medical device companies in the world.



For technical solutions from head to toe, rely on rms experts to deliver the manufacturing capabilities you need:

- High-quality, tight-tolerance components and sub-assemblies that help the human body perform as naturally as possible
- Design for Manufacturability (DFM)
- Prototype through clinical trials and production
- Process of continuous improvement for ongoing partnership

Markets and Products

Cardio/Neuro Stimulation

- Connector blocks and housings
- Connector assemblies
- Crimp sleeves
- Electrodes and tips
- Pin connectors
- Rings
- Set screws
- Molded header assemblies
- Lead assemblies
- Lead components
- Anchors
- Machined cans

Cardio/Peripheral/Interventional Vascular

- Delivery mechanism components and assemblies
- Implant components and assemblies

Orthopaedic

- Spinal
- Trauma
- Reconstruction

Ablation

- Delivery mechanism components
- Energy transfer components and sub-assemblies

Drug Delivery

- Machined case components
- Sub-components — infusion pumps, rings, etc.

Endoscopy

- Biopsy device components
- Endoscope components — tips, etc.

Precision machining, assembly and finishing under one roof

World-class machining capabilities

- Precision milling
- Swiss and lathe turning
- Wire and Sinker EDM
- Direct Metal Printing (DMP)
- Ultrafast laser micro drilling

Secondary processing

- Clean room assembly
- Swaging
- Micro laser welding centers
- Color anodizing
- Electro-polishing
- Finishing
 - Tumbling, vibratory, centrifugal and disc
 - Chemical deburring, titanium and stainless steel
 - Blasting, micro and bead
 - Polishing, including cobalt chrome
 - Cryogenic tumbling and blasting
- Cleaning
 - Precision cleaning, aqueous D.I. cleaning, ultra-sonics and vapor degreasing
 - Automated passivation 14-stations with bar-coded specifications
- Part marking
- Assembly



Customer experience and design support

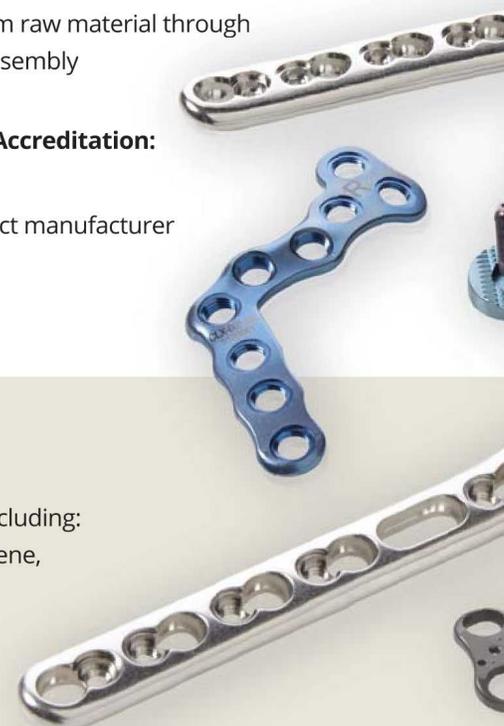
- Cross-functional team project management support
- Design for Manufacturability (DFM)
- Full CAD/CAM capability
 - ProEngineer
 - SolidWorks
 - AutoCAD
- World-class metrology laboratory
- Full IQ/OQ/PQ capability
- Systemic traceability from raw material through components and final assembly

Quality and Regulatory Accreditation:

- ISO 13485
- FDA registered as contract manufacturer

Materials experience and expertise

- Stainless steels
- Titanium alloys
- Precious metals (Alloys of platinum, iridium, tantalum, palladium)
- Cobalt chrome
- MP35N
- Inconel
- Tungsten
- Numerous polymers including: PEEK, UHMW polyethylene, polysulfone and others



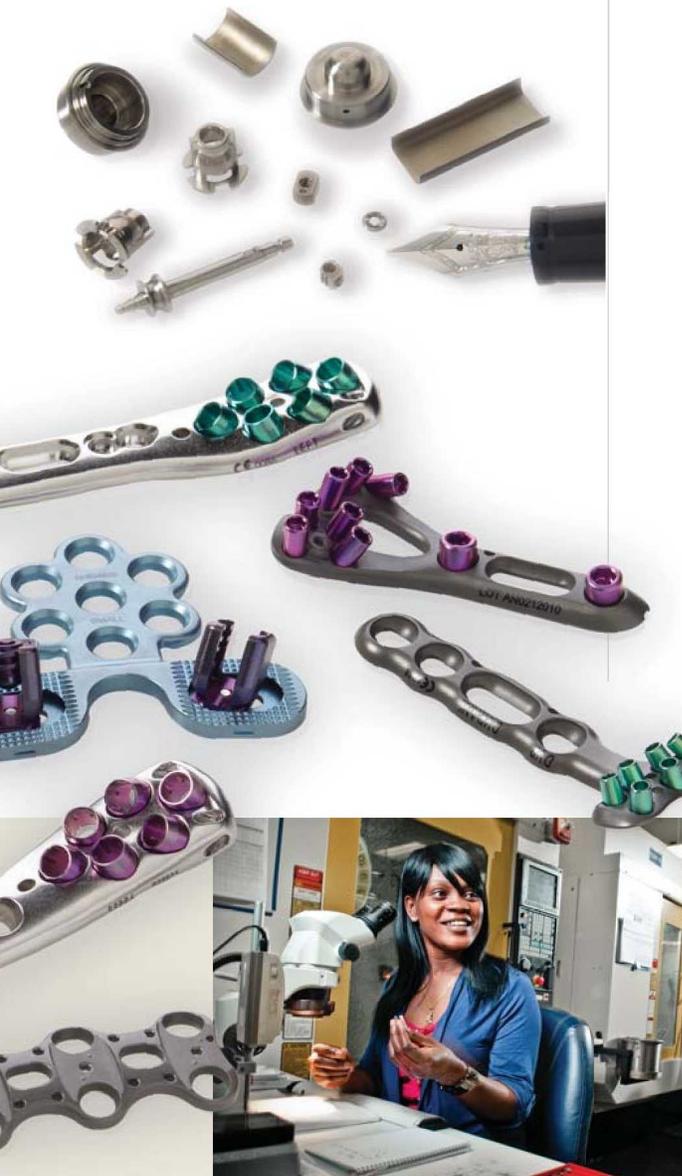
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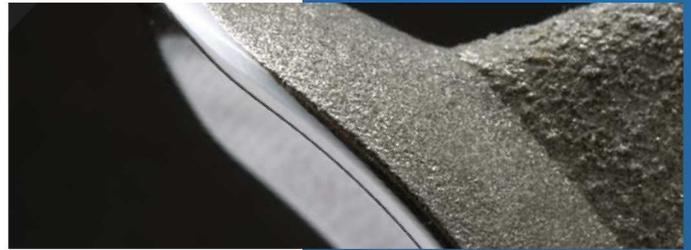
A closer look at precision



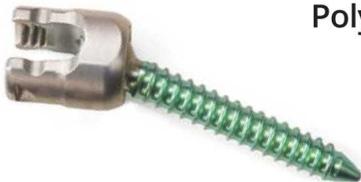
Implantable pacing component –
Stainless steel turned and threaded on Swiss
turning center; EDM produces slot.



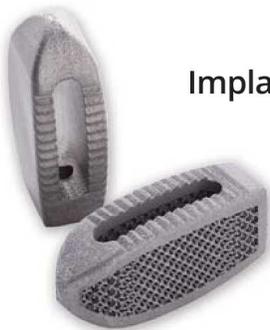
Total joint implant –
UHMW polyethylene and
cobalt chrome; 5-axis
milling, EDM, Swiss turning,
and polishing.



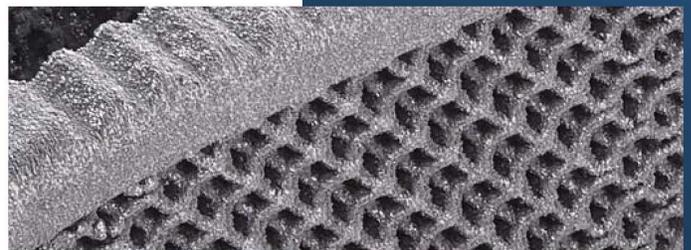
Pacing connector block –
Dedicated manufacturing cell with 9-axis
Swiss turning center and 5-axis wire EDM.



Polyaxial spinal screw –
Head on 13-axis lathe;
screw on a Swiss lathe with
thread whirling.



Implantable interbody cage –
Titanium; Direct Metal Printed.



Implantable fixation plate –
Titanium; 5-axis milling; anodized.



rms Company

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Call us at 763-786-1520.



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Coon Rapids, MN 55433
763-786-1520

www.rmsmachining.com

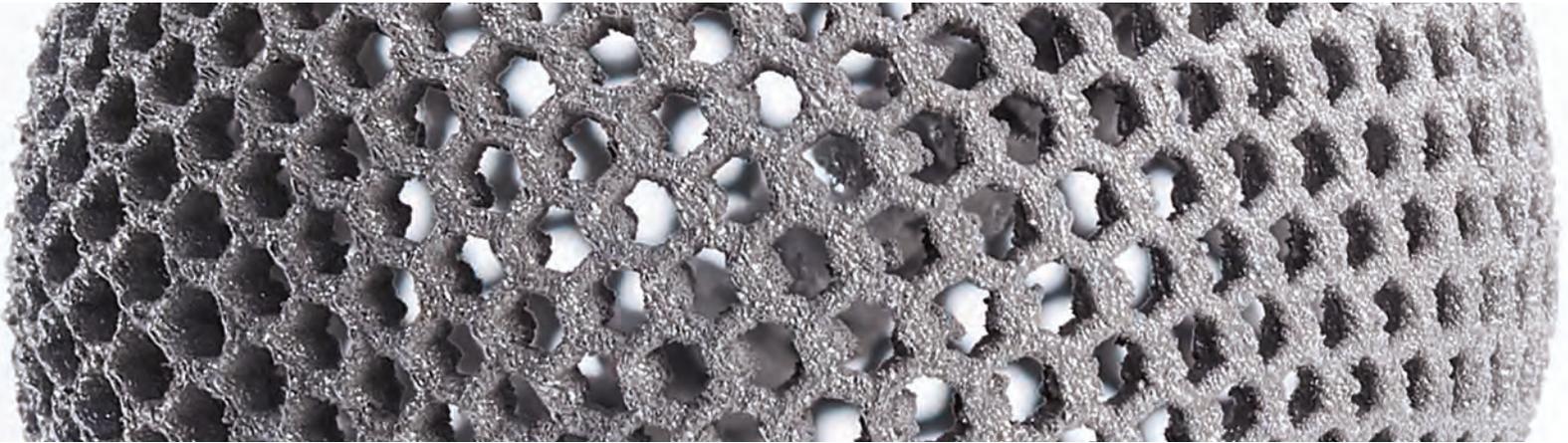
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Direct Metal Printing

Remarkable 3D capabilities for even the most detailed precision parts



Implant printing—from prototype through production—with unprecedented speed



Building on our commitment to advanced technology, rms Company has invested in Direct Metal Printing (DMP) to support the development and manufacture of advanced orthopaedic implants for our medical device customers. As a first-in-the-world certified medical device manufacturing partner to 3D Systems, we have created a world-class U.S. service center for the manufacture of medical implants and components. Through advanced application support from 3D Systems and rms' ability to print parts, offer specific machine features and perform secondary operations in a single location, this new partnership provides our customers with an unparalleled speed-to-market advantage.

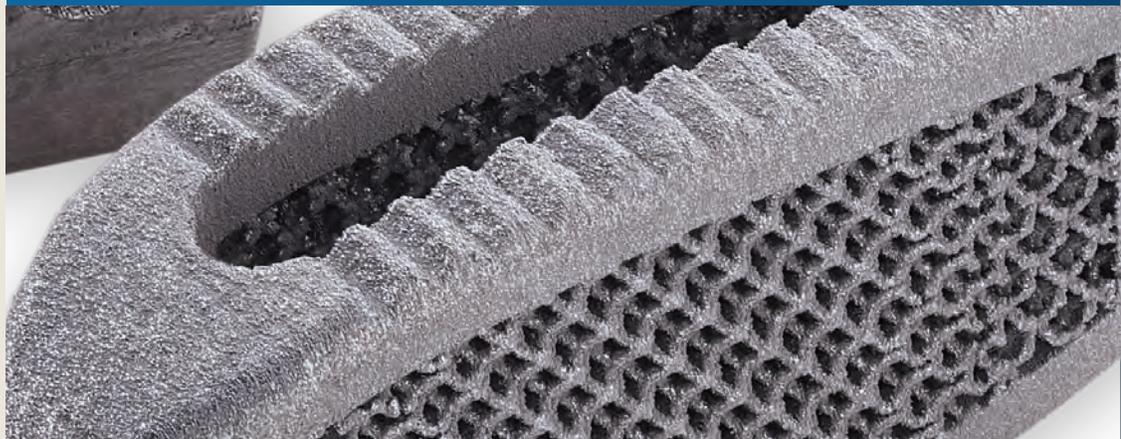


A revolution in the ability to create highly complex parts more quickly

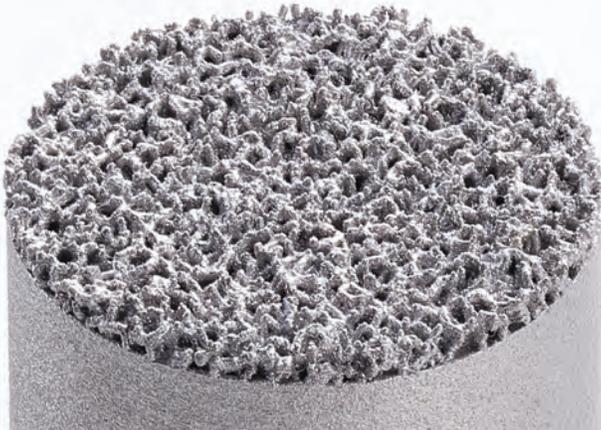
Sometimes referred to as Additive Manufacturing, this process is proving invaluable in the manufacture of implantable medical devices because it offers several benefits that cannot be replicated through traditional machining. Foremost among these is the ability for DMP to “build” highly complex parts that incorporate printed trabecular surfaces and internal matrix structures that were not possible until now.

Accuracy and resolution to meet your most sophisticated demands

DMP uses a high-powered fiber laser to fuse metal powder into a solid structure. Because the parts are built up layer by layer, or additively, even highly complex internal and external geometries can be created simultaneously. The fact that there is no tooling involved in the printing process means that parts can be printed directly from a 3D model in a relatively short time. DMP is a net shape process, but the parts are produced with a high degree of accuracy and detailed resolution, providing outstanding surface quality and excellent mechanical properties.



Printed porous structure



Secondary machining of printed implants



Printed spinal fusion cage



Our DMP machine capabilities

- Powerful fiber laser: 500 watts
- Print volume: 10.8" x 10.8" x 16.5"
(275 mm x 275 mm x 420 mm)
- Typical build layers can be set for 30 microns, 60 microns or a combination of the two thicknesses
- Repeatability: x=20 microns, y=20 microns, z=20 microns
- Minimum feature size: 100 microns
- Typical print accuracy: $\pm 0.1-0.2\%$ with ± 50 micron minimum
- Argon atmosphere: Extremely low O_2 present in the chamber during build (25 ppm's) produces parts free of alpha case
- Can produce several different trabecular and porous surface structures
- Validated material: Ti 6AL4V ELI (Grade 23)
- Process conforms to ASTM F3001-14

Secondary processing

- Parts are removed from build plate manually or by wire EDM
- Blasting to remove support materials and loose parent matter "caviar"
- Hot Isostatic Pressing (HIP)
- Precision machining, turning and milling
- Ultrasonic cleaning
- Nitric passivation
- Laser marking
- Anodizing
- Assembly

Information required for quoting a DMP component

- File Types: SolidWorks, Creo, .STL, etc.
- Quantity requirements
- Critical dimensions and hole location call outs
- Preferred build orientation (if known)
- Post processing needs (HIP'ing, machining, blasting, anodizing, laser marking, etc.)

Customer experience and design support

- Advanced application support from 3D Systems
- Design for Manufacturability (DFM)
- World-class metrology laboratory
- Full IQ/OQ/PQ capability
- Systemic traceability from raw material components and final assembly

Quality and regulatory accreditation

- ISO 13485
- FDA registered as contract manufacturer

Photos top left and left courtesy of 3D Systems, Inc.

rms Company

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311 Lowell Ave.
Elk River, MN 55330
www.cretexmedical.com



www.rmssurgical.com

Custom instrument manufacturing combined with design and fabrication of sterilization cases and trays. Focus on fast turnaround of prototype and production requirements.



www.junopacific.com

Medical device design, contract manufacturing and assembly, specializing in micro-molding, insert molding and multi-shot injection molding technology.



www.meiertool.com

Custom metal stamping, specializing in small and miniature metal-formed components and assemblies.



www.spectralytics.com

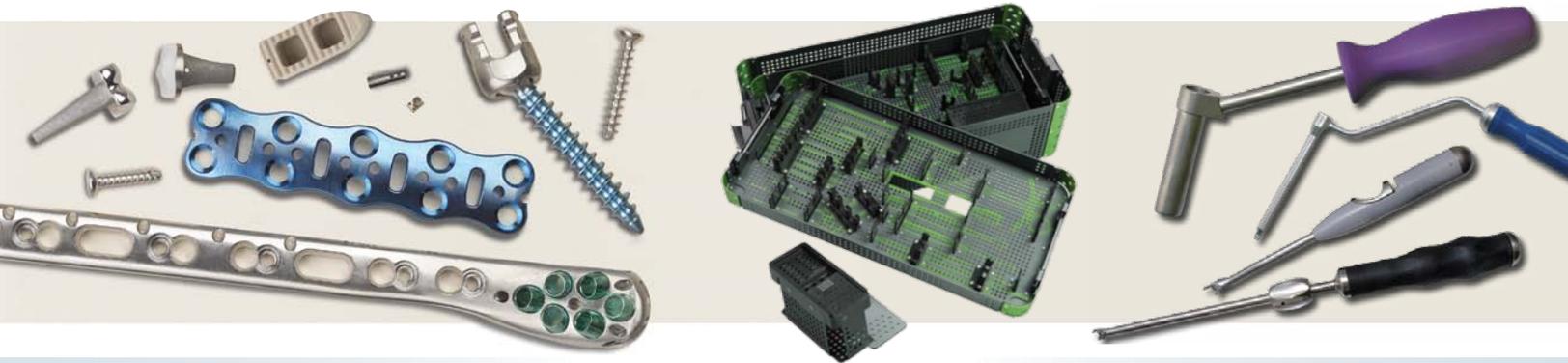
Contract laser micromachining and assembly of implantable devices and components for medical device manufacturers.



www.qtspackage.com

Medical device outsourcing services including cleanroom assembly, kitting, packaging, labeling, validations, inspection, cleaning, sterilization and supply chain management.

rms Orthopaedic Solutions



When you want world-renowned precision and performance, rms always delivers.

For over 45 years rms Company has been building a worldwide reputation for providing precision machined implants and other devices to the medical device industry. Combining strong engineering talent with state-of-the-art technology and systems, rms has become a certified supplier and manufacturing partner to most major medical device companies in the United States and Europe. Additionally, many medical device start-up companies with innovative product concepts rely on rms' proven capabilities to assist in bringing their products to market — on time and within budget.



We have facilities dedicated solely to the Orthopaedic market and designed to match every need — no matter how complex.

The demand for responsiveness, short lead times and complex product families have led Cretex Medical to establish focused factories to better serve the Orthopaedic market. rms continues its long-term focus on implantable devices while rms Surgical has been specifically created to provide surgical instrumentation and sterilization cases and trays. These capabilities serve numerous segments of the orthopaedic market including:

Spinal

Trauma

Arthroplasty

Extremity

Sports medicine

Single Source Procurement and Project Management gives you unprecedented speed to market

By working with rms and rms Surgical, you now have a single source manufacturer specifically created to provide the technical and manufacturing resources you need for on-time market introduction and continuing supply of implants, instruments and sterilization cases and trays.



Orthopaedic Implants

rms – Implants

Located within the rms Company's 215,000 sq. ft. manufacturing facility, the Orthopaedic Team provides high tech machining, metrology and secondary operations to meet your needs, including:

Precision machining

- Milling (up to 5-axis)
- Swiss and conventional turning (up to 13-axis with live tooling)
- Wire and Ram EDM (up to 5-axis)
- Micro laser welding

Forming

Finishing

- Tumbling (including cryogenic)
- Chemical deburring
- Blasting (including cryogenic)
- Polishing

Cleaning

Passivation

Color anodizing

Assembly, labeling and packaging

Cleanroom sterile packaging

rms provides you with added confidence based on years of experience with the following orthopaedic products and wide range of raw materials used in today's products:

Product Experience

Spinal

- Artificial disc replacements
- Dynamic stabilization systems
- Spinal fixation and deformity rod systems
- Plate and screw systems
- Interbody devices

Trauma

- Internal fixation plates and screws
- Intermedular rods

Reconstruction

- Artificial joints

Sports medicine

- Soft tissue reattachment devices

Materials experience

Stainless steels

Titanium

Cobalt chrome

PEEK

UHMW polyethylene

Nitinol

Polysulfone and numerous other polymers



Instrumentation

rms Surgical – Instrumentation

With dedicated instrumentation manufacturing facilities in Memphis, TN (31,000 sq. ft.), and Minneapolis, MN (110,000 sq. ft.), rms Surgical has the technology and talent to provide the responsiveness and quality demanded by today's Orthopaedic OEMs.



Precision machining

- Milling (up to 5-axis)
- Swiss and conventional turning (up to 13-axis with live tooling)
- Wire and Ram EDM (up to 5-axis)
- Gun drilling
- Welding stations (including TIG)

Secondary processes

- Laser marking and engraving
- Finishing
 - Tumbling
 - Blasting
 - Electropolishing
- Cleaning
 - Ultrasonics and vapor degreasing
- Passivation (nitric and citric)
- Epoxy painting
- Assembly
- Packaging and labeling



Materials experience

- *Stainless steels*
 - 17-4 ph and 17-7 ph
 - 300 and 400 series
 - Custom 455 and 465
 - Gall Tough and Nitronic 60
- *Titanium*
- *Aluminum*
- *Brass*
- *PEEK*
- *UHMW polyethylene*
- *Polycarbonate*
- *Acetal copolymers and numerous other polymers*



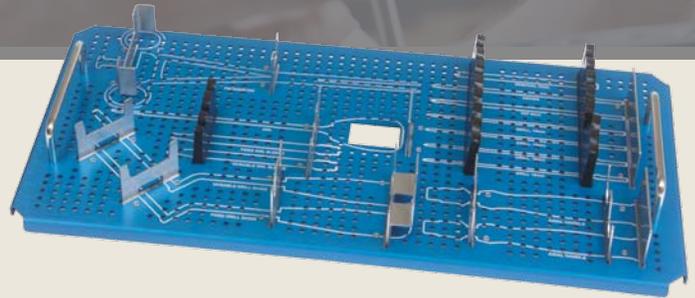
Sterilization Cases & Trays

rms Surgical – Sterilization Cases & Trays

Located within a 110,000 sq. ft. state-of-the-art manufacturing facility, rms Surgical applies more than 25 years of metal fabrication experience to the design and manufacturing of custom sterilization cases and trays. The engineering, project management, manufacturing capabilities and systems are designed to provide the responsiveness and flexibility required to ensure reduced leadtimes and on-time product launches — the critical success factor for today's orthopaedic companies.

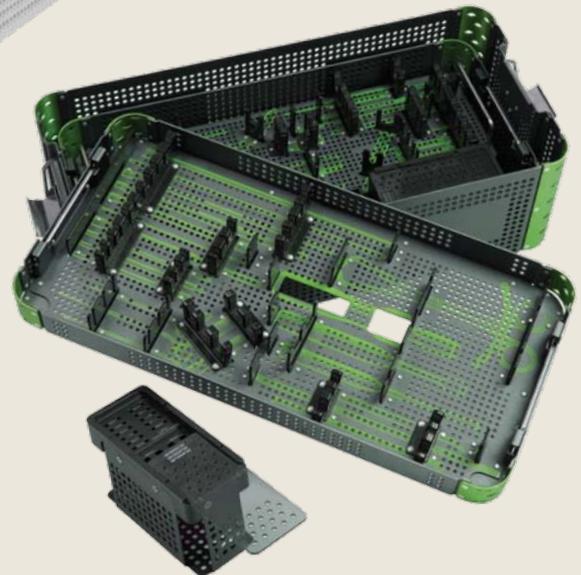
Using the following capabilities, rms Surgical can provide hybrid designs, single or multilevel stackable cases and trays, as well as caddies or nests.

- Case & Tray design capability
(using actual instruments or CAD models)
- Prototyping
- Metal fabrication
 - Laser cutting
 - Stamping
 - Turret punching
 - Press brake forming
 - CNC machining
 - Wire forming
- Plastic machining
- Plastic injection molding
- Nylon coating
- Surface treatment
 - Passivation
 - Anodizing
- Marking
 - Laser marking
 - Silk screening
- Assembly and packaging



Materials experience

- Stainless steel
- Aluminum
- Radel®
- Propylux®
- Silicone



Customer Experience – The real success factor

Manufacturing equipment is only one component of success. What really matters — and what keeps customers returning to rms and rms Surgical — is the superior experience of working with a development and manufacturing team supported by advanced manufacturing and quality systems. These systems allow us to properly manage your project and provide accurate and timely schedules and status reports. Furthermore, our lean organization allows our customers direct access to the team members actually working on the project.

Development assistance

- Design for Manufacturability support – detailed review of designs to ensure the product is manufacturable consistently at a reasonable cost.
- Complete Case & Tray design capability
- Prototyping capability for implants, instruments and cases & trays

Quality Systems

- ISO 13485 Certified facilities
- FDA Registered facilities
- Quality Engineers and Statisticians on staff to assist with validations and qualifications

Project Management

- A detailed Project Management process, from Order Review through Product Launch and Post Mortem, results in a realistic project plan with regular communication of project status.

The Team Concept

- A cross functional team with open communications allows you to talk directly with the professionals and experts responsible for every aspect of your project.



Cretex Medical

Cretex Medical is a family of companies that specializes in medical device contract manufacturing. Private ownership, a long-term perspective and a strong financial portfolio allow us to invest in the leading-edge technology and engineering know-how required to meet today's launch-critical timelines with confidence.

Whether you are a Fortune 500 medical technology stalwart or a promising start-up, you can depend on our single-source approach to provide new efficiencies at every turn. When speed-to-market, quality compliance and design for manufacturability expertise are paramount to your program, there is no company more capable or more responsive than Cretex Medical.



Contract manufacturing of medical devices and assemblies using state-of-the-art machining and molding technology.



Custom instrument manufacturing combined with design and fabrication of sterilization cases and trays. Focus on fast turnaround of prototype and production requirements.



Medical device design, contract manufacturing and assembly, specializing in micro-molding, insert molding and multi-shot injection molding technology.



Custom metal stamping, specializing in small and miniature metal-formed components and assemblies.



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rms Orthopaedic Solutions

Whether you are a major medical device manufacturer or a startup with a great new orthopaedic product, we can deliver what you need — from engineering through production, assembly and packaging. Contact us today to get an estimate for your next project, to arrange a tour of our facilities or just to learn more.

Call us at 763-576-6419.



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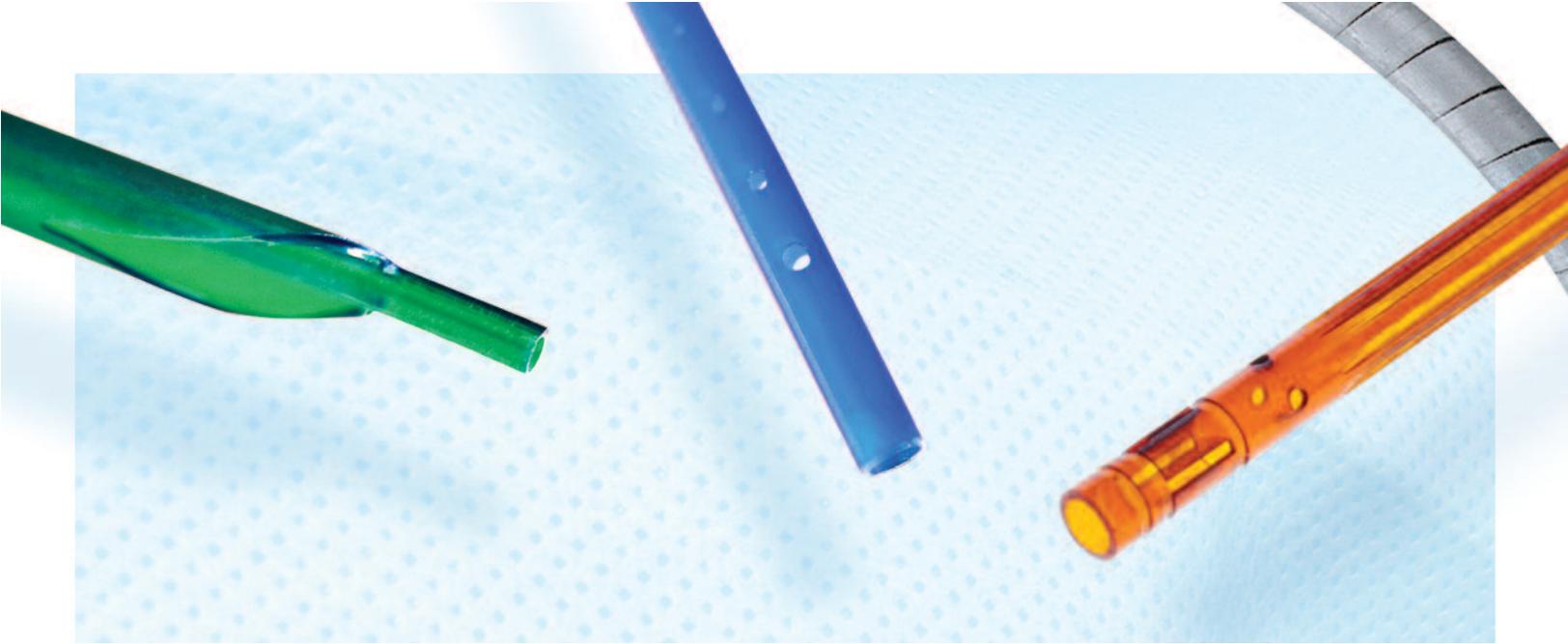
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www.rmssurgical.com

rms and rms Surgical are part of the Cretex Medical Family of Companies.



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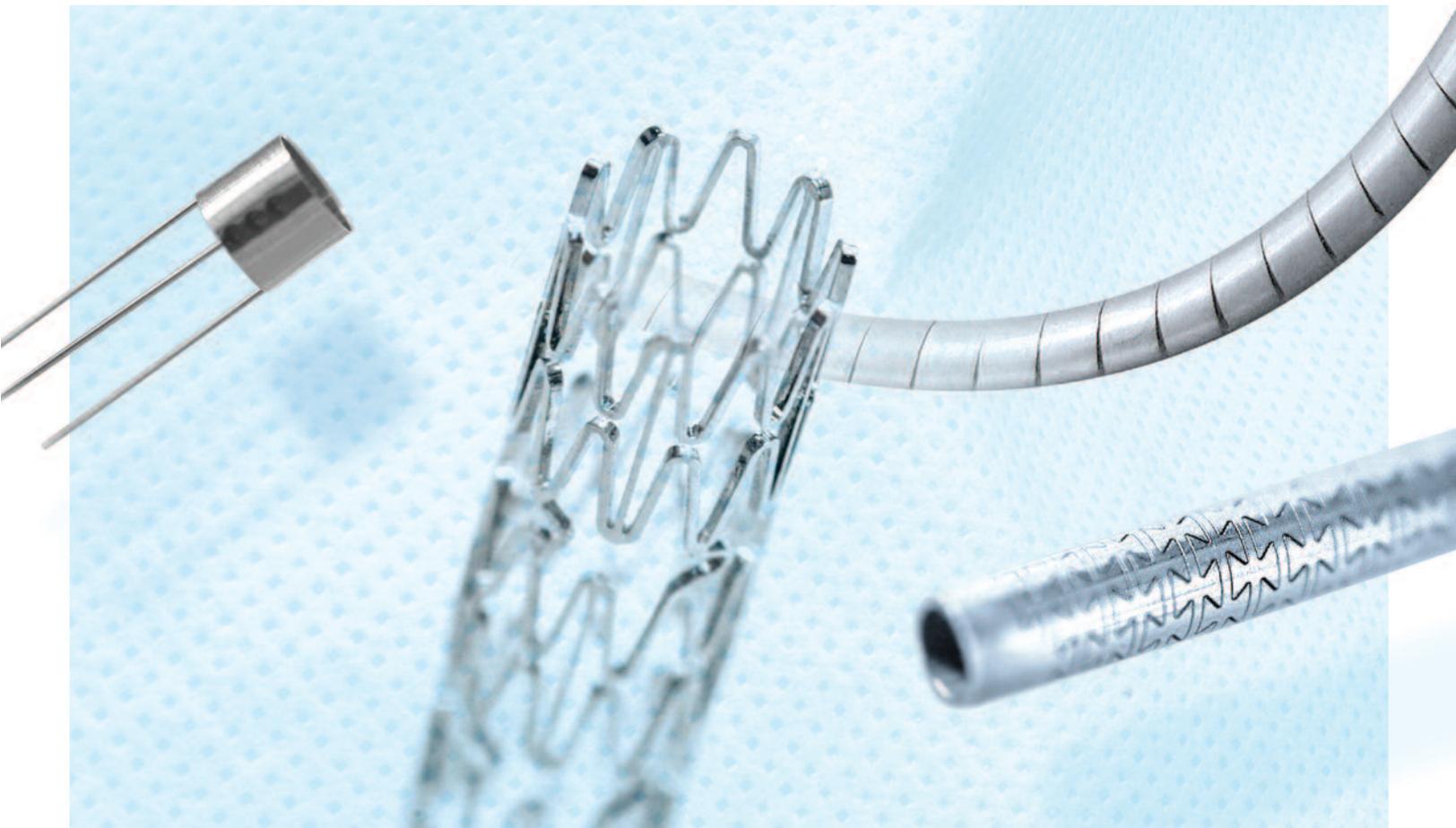


 ***Spectralytics***

A Cretex Medical company

Spectralytics provides contract manufacturing for precision micromachining, welding, cutting, drilling and ablation of Metal, Plastic and Composites.

ISO 13485 Certified



From precision stent machining to drilling close tolerance holes for catheters and embolic protection devices — is just the beginning of our capabilities.

Metals

Steel and Aluminum to Titanium and Nitinol, and every type of metal between. We can provide the finest micro scale components.

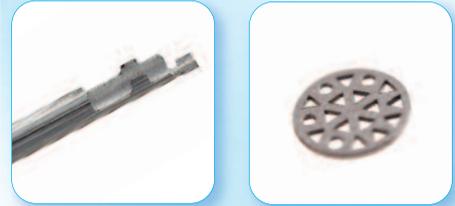
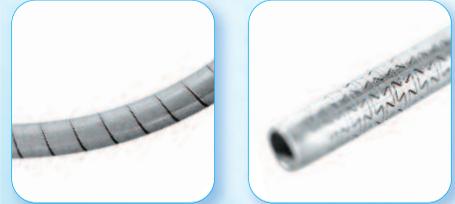
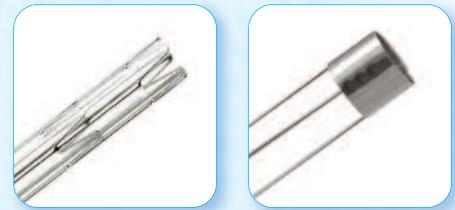


Separate cleanrooms for our metal finishing, laser welding, polymer machining and packaging.

Plastics

Tubing, sheets, any odd shape, we have the skills and tools to make the finest plastic micro scale components.

- > Laser Cutting
- > Laser Welding
- > Electropolishing
- > Texturing/Microblasting
- > Laser Drilling



- > Hole Drilling
- > Wire Stripping/Ablation
- > Profiling/Shaping & Skiving
- > Laser Cutting
- > Marking



ISO 13485 Certified

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A Cretex Medical company

Product Development Services

Laser Processing Solutions for Medical Devices



 ***Spectralytics***

 **CRETEX**
Medical

Accelerate your success

Have confidence to iterate your medical device designs and accelerate time to market with laser processing services dedicated to product development. Our Development Center ensures you *meet or exceed deadlines* with dedicated technical experts and cutting-edge laser processing equipment.

Responsive and reliable service

You know your medical device application and how your component is supposed to function, we know laser processing and how to meet your specifications. Our laser technicians and application engineers not only build high quality parts, but partner with you to build a custom solution and become an extension of your team. Whether a cardiovascular, neurovascular, drug delivery or orthopedic application, our team won't stop until we bring your product to life. Spectralytics isn't just a "job shop" – *we're your partner in manufacturing.*

Dedicated capacity for a competitive edge

Equipment specifically dedicated to product development and prototyping means speed takes precedence.

Our Development Center includes:

- Laser cutting, welding, and ablation machines at multiple wavelengths and speeds
- Laser machine components in tube, sheet, wire, sub-component and other raw stock shapes
- Capacity to scale into commercial, high-volume production
- 100+ stocked materials, including metals, polymers and composites under one roof
- Class 10,000 Cleanroom
- Post-processing services, including marking, annealing, chemical cleaning, passivation, texturing, electropolishing, assembly, heat shrinking and more
- Inspection capabilities

Markets and applications

Cardiac/vascular/interventional

- Leads
- Coronary stents and scaffolds
- Peripheral stents
- Ablation catheters
- Mapping catheters
- Peripheral delivery catheters
- Atherectomy catheters

Neurovascular

- Access products
- Clot removal components
- Implants

Drug delivery

- Catheters and components

Orthopedic

- Flex drills and reamers
- Anchors



A Cretex Medical company

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