

Vacuum Services

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► Vacuum Pumps

■ Vacuum Pumps



Features:

- OEM trained technicians
- Expansive spare parts inventory
- Fast turnaround time of one week or less for most pumps (expedite available upon request)
- KJLC can arrange to have pump picked up within 24 hours of when customer completes our Health and Safety Form
- Loaner and rental pumps upon request (availability will vary depending on pump size)
- **Certified 12-month warranty on all repairs**



Vacuum Services

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Before Blast Machine



After Blast Machine

Pump Repair Is Easy with KJLC

- Contact the Kurt J Lesker Company at **1-800-245-1656** or **pumprepair@lesker.com** for a quotation on a **standard repair** price.
- We will provide you with a Health and Safety form that will need to be completed and returned prior to shipping the pump for repair. Once the form is reviewed and accepted, you provide us with a PO for the price of a standard repair and ship the pump to our repair facility.

We can make shipping easy by using our transportation partners to pick up the pump from your facility. All you have to do is give us the location of the pump. We can also provide you with special crates for most pumps under 25 cfm at NO CHARGE.

- Once we receive the pump, we will disassemble it and will notify you if it requires any additional components not included in our standard repair.
- We test the pump and will provide you with a detailed report and pictures of the repair process. In some cases we will make recommendations on ways to prolong the life of your pump.
- We return the pump to you.

► Vacuum Pumps



Rotary Vane Pumps



Rotary Piston Pumps



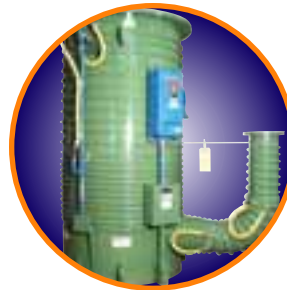
Roots Blower Pumps



Turbomolecular Pumps



Ion Pumps



Diffusion Pumps



Diaphragm Pumps

Pumps Serviced:

- Rotary Vane
- Rotary Piston
- Roots Blower
- Turbomolecular
- Ion
- Diffusion
- Diaphragm
- Cryogenic

■ Remanufactured Pumps

KJLC offers an extensive inventory of 100% remanufactured and certified vacuum pumps, including both wet and dry technologies for rough vacuum to ultra high vacuum applications. All units come with our exclusive 12 Month Warranty and the performance of a new pump at a fraction of the cost! We also offer a quick exchange program for expedited service and reduced down times.



► Magnetron Sputtering Cathodes and UHV Manipulators

■ Magnetron Sputtering Cathodes



We design, manufacture, and service all of our TORUS® sputter sources. Our in-house experts have more than 50 years of combined magnetron cathode applications and service experience.

We offer a complete rebuild service for our popular TORUS brand and other magnetron sputter cathodes, in both circular and linear configurations, and we can supply retrofit assemblies, service, and replace worn part, or provide a complete rebuild, based on your specifications. All sputter cathode services are conducted in our dedicated cathode assembly clean area at our Pittsburgh, Pa. facility.

Rebuild Service Details:

- Magnetic field mapping and field strength analysis
- Cleaning and inspection of insulators, isolation ring, cooling well and tubing, and high voltage electrical lines
- Replacement of all elastomeric materials (seals, gaskets, and o-rings), hardware, and worn components
- Standard turnaround time of 1–2 weeks

Contact our magnetron cathode service department at cathodeservice@lesker.com for more information.



■ UHV Sample Manipulators

UHV sample manipulation devices are sensitive, precision instruments that often require repair or recalibration due to the extreme conditions they may be subject to. The repeated flexing of bellows may cause leaking, whereas frequent bakeouts may cause micrometers to seize or threads to wear and become stripped.

Our in-house and dedicated contract service technicians are specially trained to handle the delicate and tolerance-critical repairs these manipulation devices require.

We Specialize in the Service of:

- Linear rack and pinion (LRP) drives
- Linear shifts
- Magnetically coupled and ferrofluidic rotary drives
- Numerous other types of manipulation devices

Service Details:

- Complete disassembly and inspection of all critical parts
- Thorough cleaning and lubrication of internal assemblies
- Replacement of bearings, gears, and other vital moving parts
- Mass spectrometer helium leak checking ensures vacuum integrity

Contact our service technicians at uhvproducts@lesker.com for more information.

➤ Pump Oils and Fluids

■ Pump Oils & Fluids

Vacuum pump oils contaminated by tough industrial processes are expensive to replace over the recommended service intervals, especially in large production environments where dozens of pumps in operation are not uncommon.

Our oil reclaim services are an attractive alternative to purchasing new oil, saving you money with a product that's indistinguishable from new while being environmentally friendly. Our dedicated oil reclaim facility is equipped to reprocess numerous types of fluids, and is compliant with both state and federal EPA regulations.

Features:

- Enormous savings of 75% on average over cost of new oil
- Efficient oil recovery yields up to 95%
- Fast turnaround time of two weeks or less (expedite available upon request)
- Certified analysis of reclaimed oil provided with each lot
- Operates under State DEP (301278) and Federal EPA (PAD981939846) permits
- Environmentally friendly incinerated waste cradle-to-grave process
- Free D.O.T. approved shipping containers to send your used oils directly to our facility
- Endorsed by Solvay Solexis for reclamation of Fomblin® PFPE oils

Oils Reclaimed:

- PFPE Oils—Fomblin and Krytox®
- PFPE Oils from Trapped Filters—Fomblin and Krytox
- Silicone Oils—Dow Corning 702, 704, 705, and equivalents
- Inert CFC Oils—Halovac™ 100, 125, 190
- Polyphenyl Ether Oils—Santovac®

Oil Reclaim Is Easy with KJLC:

- Submit a fluid certification form to KJLC for review prior to shipment (www.lesker.com/OilReclaimCert.pdf)
- We provide shipping containers upon request
- Lots processed in order they are received (expedite available upon request)
- Reclaimed fluid sent back to customer within two weeks

Contact our oil reclaim facility at reclaim@lesker.com or 412-826-5294 to start a plan today to reclaim your fluid dollars using our proven oil reclaim services. And remember, our reclaimed fluids are as good as new or your money back...guaranteed!



When purchasing new pump oils from KJLC (see Section 6), look for this symbol for reclaimable oils.



➤ Precious Metals

■ Gold (Au), Platinum (Pt), and Palladium (Pd)

We offer a reclaim program for gold (Au), platinum (Pt), and palladium (Pd). It is very common for customers to use the reclaim credit towards the purchase of new targets or pellets; however, the credit can be applied towards any purchase of KJLC® products and/or services.

Precious Metal Reclaim Is Easy with KJLC

- Contact Sales for a return authorization number prior to returning material
- Return the material to KJLC Clairton via insured shipment through your carrier
- Your account will be credited per the following schedule (at right)

NOTE: Contact sales@lesker.com for more information. For customers outside of the U.S., please contact your local sales office for credit and terms.

NOTE: Credit and Terms above apply to materials returned to KJLC Clairton, Pa.

Pure Precious Metal Reclaim

Pure, spent sputtering targets and pure slugs, pellets, etc.

Reclaim of this type will be credited to your account within 48 hours of receipt of material. The credit is calculated using the Engelhard Industrial Bullion price on the day of receipt.

Material	Amount (Troy ounces)	Percentage Yield	Processing Fee (per Troy ounce)
Gold (Au)	Less than 4 oz.	94%	Call
Gold (Au)	4 oz. – 20 oz.	95%	Call
Gold (Au)	Greater than 20 oz.	97%	Call
Platinum (Pt)	Less than 4 oz.	94%	Call
Platinum (Pt)	4 oz. – 20 oz.	95%	Call
Platinum (Pt)	Greater than 20 oz.	97%	Call
Palladium (Pd)	Less than 4 oz.	90%	Call
Palladium (Pd)	4 oz. – 20 oz.	91%	Call
Palladium (Pd)	Greater than 20 oz.	93%	Call

Middle-Grade Precious Metal Reclaim

Crucibles and E-Beam crucible liners containing melted slugs of pure metal, de-bonded sputtering targets containing trace amounts of indium or other solder.

Reclaim of this type will be credited to your account within one week of receipt of material. The credit is calculated using the Engelhard Industrial Bullion price on the day the credit is processed.

Material	Amount (Troy ounces)	Percentage Yield	Processing Fee (per Troy ounce)
Gold (Au)	Less than 4 oz.	93%	Call
Gold (Au)	4 oz. – 20 oz.	94%	Call
Gold (Au)	Greater than 20 oz.	96%	Call
Platinum (Pt)	Less than 4 oz.	93%	Call
Platinum (Pt)	4 oz. – 20 oz.	94%	Call
Platinum (Pt)	Greater than 20 oz.	96%	Call
Palladium (Pd)	Less than 4 oz.	89%	Call
Palladium (Pd)	4 oz. – 20 oz.	90%	Call
Palladium (Pd)	Greater than 20 oz.	91%	Call

Low-Grade Precious Metal Reclaim

Alloy targets or slugs, evaporation boats coated with gold, crucibles and crucible liners that alloy or react with the metal, chamber and shield scrapings, etc.

Reclaim of this type will be credited to your account within six weeks of receipt of material. The credit is calculated using the Engelhard Industrial Bullion price on the day the credit is processed.

Material	Amount (Troy ounces)	Percentage Yield	Processing Fee (per Troy ounce)
Gold (Au)	Less than 10 oz.	70%	Call
Gold (Au)	10 oz. – 20 oz.	80%	Call
Gold (Au)	Greater than 20 oz.	85%	Call
Platinum (Pt)	Less than 10 oz.	70%	Call
Platinum (Pt)	10 oz. – 20 oz.	80%	Call
Platinum (Pt)	Greater than 20 oz.	85%	Call
Palladium (Pd)	Less than 10 oz.	70%	Call
Palladium (Pd)	10 oz. – 20 oz.	80%	Call
Palladium (Pd)	Greater than 20 oz.	85%	Call

■ **Target Bonding Services**

Our proprietary target bonding processes ensure efficient thermal transfer and electrical conductivity required for sputtering. Indium and conductive elastomers are used to develop a high-strength bond between the sputter target and backing plate. Additionally, these materials allow for differences in thermal expansion to reduce the incidents of de-bonding or target cracking.

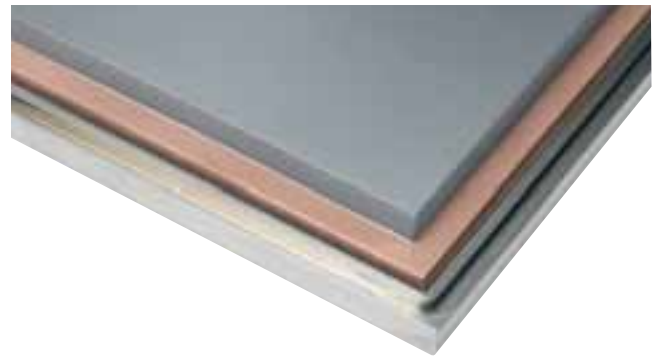
Service Details:

- Indium and conductive elastomer bonding services available
- Large inventory of backing plates and copper cups in stock
- Custom backing plates available upon request

■ **Indium Target Bonding Service**

Indium bonds targets to backing plates for increased thermal conductivity under high-power inputs.

- Many sputtering processes benefit from the higher thermal and electricity conductivity
- Required for most ceramic target materials to avoid cracking from thermal shock
- Easier de-bonding and cleanup of spent materials



Property	Typical Values
Maximum Operating Temperature	150°C
Thermal Conductivity (W/mK)	83
Coefficient of Thermal Expansion (K ⁻¹)	32.1 x 10 ⁻⁶
Electrical Resistivity (ohm-cm)	8 x 10 ⁻⁶
Bond Coverage	>95%
Bond Line Thickness	0.010" +/- 0.003"

Target Bonding Services				
Target Size	Target Material		Part No.	Price
1" to 2" Diameter	Metal or Ceramic		EJBONDMET1	Call
3" to 4" Diameter	Metal or Ceramic		EJBONDMET3	Call
5" to 6" Diameter	Metal or Ceramic		EJBONDMET5	Call
7" to 8" Diameter	Metal or Ceramic		EJBONDMET7	Call
Over 8" Diameter or Linear Targets	—		—	Call

NOTE: Reference the material list in the catalog and www.kjlc.bonding on our website for additional information and the recommended bonding method for your specific target materials. Call your sales representative for details and to order.

➤ Services

■ Conductive Elastomer Target Bonding Service

Conductive elastomers are used for specific materials and applications.

- Ideal for targets with low melting temperatures and reactive materials
- Offers a higher maximum temperature than indium bonding
- UHV rated

Property	Typical Values
Maximum Operating Temperature	250°C
Thermal Conductivity (W/mK)	54
Coefficient of Thermal Expansion (K ⁻¹)	2.2 x 10 ⁻⁴
Electrical Resistivity (ohm-cm)	0.0476
Bond Coverage	>98%
Bond Line Thickness	0.010" - 0.025"

NOTE: Reference the material list in the catalog and www.kjlc.bonding on our website for additional information and the recommended bonding method for your specific target materials. Call your sales representative for details and to order.

■ Copper Cup Bonding

Copper "cups" are backing plates with a raised lip around the circumference to reduce the clamping forces of the sputter gun's hold-down ring. This method is generally used when bonding fragile targets where the pressure may crack the targets. It requires a modification of the O.D. of standard targets and specifies non-standard target part numbers.

NOTE: Reference the material list in the catalog and www.kjlc.bonding on our website for additional information and the recommended bonding method for your specific target materials. Call your sales representative for details and to order.

Kurt J. Lesker
Company

Fomblin® & Galden

THE Source of Solvay Solexis Vacuum Fluids and Greases in North America and Europe.

You can always rely on the Kurt J. Lesker Company to design and manufacture a complete vacuum technology solution to satisfy your process requirements. However, we also offer our individual services on a contractual basis to suit both your project timeline and budget. We offer the necessary engineering, machining, assembly, leak checking, and decontamination services to support your research or production setup.

■ Engineering

We transform your ideas and specifications into designs that satisfy your process application. Our dedicated staff of mechanical, electrical, and software engineers are specially trained in the field of vacuum technology and utilize the latest in industry-standard software, including SolidEdge, AutoCAD®, Mechanical Desktop, Entivity Studio, and ANSYS.

■ Mechanical Engineering

- Create 2D drawings and 3D models in all popular formats
- Finite Element Analysis (FEA) used to simulate structural, thermal, and magnetic properties
- Designs can be downloaded directly into our CNC workcenters for manufacturing

■ Electrical Engineering

- Electrical schematics created using AutoCAD
- Power distribution and equipment control designs
- Circuit board layout and design

■ Software Engineering

- Individual device and complete system-level computer control designs
- Motion control for complex multi-axes devices
- PLC and touch-screen programming

Accepted Native Engineering File Types:

- Solid Edge
- Mechanical Desktop
- Inventor
- Pro Engineer (PRT & ASM)
- SDRC
- Microstation
- Parasolid
- STEP
- DXF
- IGES
- SAT
- AutoCAD (DWG)
- DXF

Contact engineering@lesker.com for more information.

■ Manufacturing

Our state-of-the-art machine shop is equipped to tackle any size project while maximizing throughput.

- Expansive area consisting of machining centers, welding stations, and raw stock stores
- CNC workcenters from industry leaders like Mazak® and Kuraki with **accuracy and repeatability to within ±0.0002 in.**
- Machining centers use “vacuum friendly” sulfur-free biodegradable coolant to reduce outgassing
- Automatic tooling and gantry robot loading maximize shop throughput

- Expert scheduling and tooling accommodate both short-run specials and long-run commodities
- Flexible robotic fixturing and precision laser alignment of weldable components
- Comprehensive component and raw stock point-of-use inventory
- Numerous finishing options include mirror, brushed, bead blasted, and electropolished
- 4-axis machining centers with precision accuracy and repeatability





■ Assembly and Test

Our clean assembly areas provide the proper environment for vacuum system, sub-assembly, and chamber assembly and testing.

- Four spacious, clean assembly areas located in our U.S. and U.K. facilities
- Components and systems assembled in an ultra-clean environment using protective wear to prevent contamination

- Functional testing of equipment to standard procedures and customer specifications
- On-site fabrication shop for immediate modifications and support
- On-site system assembly, startup, and training available to our customers

Contact machineshop@lesker.com for more information.



■ Decontamination

Our trained service technicians regularly handle the corrosive materials resulting from processes such as semiconductor and gas abatement. Please provide current MSDS with submitted equipment for decontamination.

- Operated under State DEP (301278) and Federal EPA (PAD981939846) permits
- All decontamination service technicians are HAZMAT certified
- We will not accept equipment exposed to biological or radiological materials

Contact vacuumservices@lesker.com for more information.



■ Leak Checking

Our professionally trained leak-check technicians utilize the latest in helium mass spectrometry equipment to ensure vacuum integrity for your process equipment.

- Helium mass spectrometers sensitive to less than 10^{-9} Torr/L-sec.
- Regular calibration of leak-checking equipment with calibrated leaks

Contact machineshop@lesker.com for more information.

■ **Field Service and Support**

At KJLC®, we believe that a sale is never truly complete when it comes to doing business with our customers. We offer a complete, 3-tier service and support program geared toward maximizing your process uptime while minimizing costs and inconvenience. Our skilled service technicians and engineers and vast spare parts inventory enables us to service your process equipment quickly and effectively. You can always count on us for first-rate sales support—before, during, and after your vacuum system or components purchase.

Contact vacuumservices@lesker.com for more information on structuring the correct support and service package for your process needs.



■ **Warranty Repairs**

Any product found to be defective and still covered under the original warranty period may be returned for service. KJLC manufactured products will be serviced and/or replaced at our facilities, while distributed products will be processed by KJLC and serviced by their respective vendors. All warranty repairs are subject to our standard terms and conditions; please reference the back of the catalog.

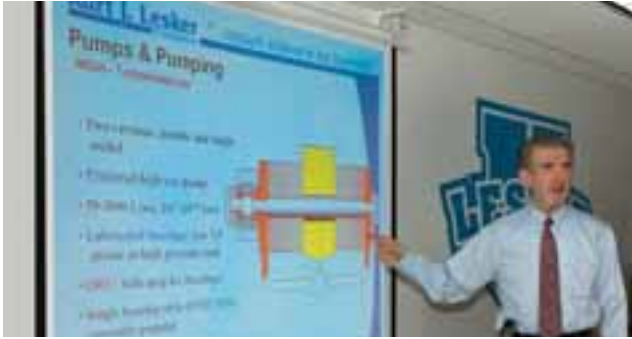
Contact sales@lesker.com for more information.

Warranty Service Is Easy with KJLC

- Submit a return authorization form to KJLC for review prior to shipment (www.lesker.com/RA.pdf)
- Return merchandise, noting return authorization number, to:

Kurt J. Lesker Company
Attention: RA #
1515 Worthington Avenue
Clairton, PA 15025 USA

► Lesker University



The Kurt J. Lesker Company is proud to offer our in-depth vacuum technology training courses at our corporate headquarters in Pittsburgh, Pa. These "university style" courses are geared toward scientists and graduate students. Enjoy

complimentary breakfast and lunches while experiencing both the practical and theoretical aspects of vacuum technology. Tour our manufacturing and assembly areas to see a modern vacuum science company in action. Learn from the best in the industry—enroll today at Lesker U!

Schedule

Our Lesker University courses are offered twice a year, in May and October.

- Registration for Spring semester (May courses) due by April 1
- Registration for Fall semester (October courses) due by September 1

Final details of registration, including dates and times of specific courses and accommodations will be mailed by April 15 for Spring semester, and September 15 for Fall semester students.

- Courses offered sequentially throughout the semester week, allowing students to attend the whole series or pick and choose

Rates

- 15% discount on any course for groups of 3 or more.
- 10% discount for two or more courses.

Included Materials

- *Modern Vacuum Practice* by Nigel Harris
- Course handouts and PowerPoint® presentations
- Complimentary breakfast and buffet-style lunch
- Certificate of completion

Courses

Vacuum Practice 101

A one-day introductory course covering the basic concepts and principles of vacuum technology.

Prerequisites: None required

Course Outline:

- Suction and Vacuum
- Pressure
- Conductance
- Pumping Speed
- Outgassing
- Gas Load
- Throughput

Vacuum Practice 201

An accelerated one-day course covering the critical components of a vacuum system and it's interrelationships.

Prerequisites: Vacuum Practice 101 or related physics background

Course Outline:

- Vacuum Chamber Materials
- Flange Sealing Systems
- Pumps and Traps
- Valves
- Pressure Measurement
- Pumping System
- Vactron® Modeling

Vacuum Practice 301

A one-day course introducing physical vapor deposition techniques.

Prerequisites: Vacuum Practice 201

Course Outline:

- CVD versus PVD
- PVD Deposition Methods/Sources
- Materials
- Source Plumes
- Thin Film
- FAQs

Customized, on-site training classes are also available, subject to the availability of our Lesker-U instructors. Contact university@lesker.com to discuss your requirements.

For more information, detailed course syllabus, and registration, visit www.lesker.com/lesker-u.cfm.

Bonus Voucher

20% off

PFEIFFER VACUUM

leak detectors for class attendees.
Terms and conditions apply — contact university@lesker.com for details.