



CDI Energy Products  
Precision. Engineered. Performance.

# Global Challenges. Global Capabilities.

## Innovative

Building on advanced materials science, we design, engineer, and manufacture high-performance components to the tightest tolerances found in the global energy industry.

## Responsive

Our team of highly trained industry experts is available to provide you with sustained technical support at every stage of production.

## Collaborative

Partnering with our customers we create engineering solutions able to solve the most difficult challenges and bring advanced products to market.

## We are CDI Energy Products, your global custom-manufacturing specialists.

With strategic locations around the globe, we provide critical precision components, on time and to your specification, anywhere in the world.

## Growing our global footprint

**1974** Cott Dowall, Inc. founded as a distributor of O-rings, polyseals, and braided packing in a 1750 sq. ft. office/warehouse in Houston, Texas



**1979** Awarded our first patent for non-adjustable rod packing



**1979** Added a laboratory and began development of proprietary rubber compounds

**1985** Developed CDI S-Seal design, approved by major wellhead OEMs



**1989** CDI Aflas® compounds approved for North Sea applications



**1997** Patented SinterMesh® anti-extrusion apparatus made from PTFE-impregnated steel mesh



1970's

1980's

1990's

## Products and Solutions for the Energy Industry

At CDI Energy Products, we're used to taking on tough challenges. That's precisely why our clients come to us.

"High temperature." "High pressure." "Extremely corrosive." "Hazardous."

To our ears, those are fighting words. As a global solutions company, we manufacture and design custom elastomeric and plastic seals and components as well as ancillary metal parts for the extremes in the energy industry.

## Experience where it matters.

Applications make high demands on performance, and the best solutions make equally high demands on your systems.

For over 30 years, we've provided our clients with innovative, high-performance solutions. Our materials, designs, engineering, and manufacturing ensure a reliable, responsive partner for success.

We are industry leaders of custom manufactured products for specialised applications, and key partners in the development of innovative components and solutions. CDI experts are skilled at collaborating with our clients to research options and produce an optimal solution.

Using full range of polymer materials—including our own formulations—and the industry's most advanced manufacturing capabilities, we create solutions that yield true value.



### Increase Packing Life by 300%

Pump packing life was extended nearly 300% for a pressure pumping company in the Marcellus Shale when it changed to Tuff Breed® WSP3 packing. As a result, overall packing costs were significantly reduced, and the risk and non-productive time associated with onsite repacking was eliminated.

1998 CDI Seals is purchased by Wellington Holdings, owner of Hallite Seals and Polytek



1999 Developed patented SigmaSeal® for control valves



2005 Wellington Holdings is purchased by Fenner, becomes a part of Fenner Advanced Sealing Technologies

2009 Production of high-performance PEEK connectors begins

2011 Manufacturing adds new robotics



2011 Longtime Southeast Asia distributor, Multiseals, was acquired by CDI.



2012 Norwegian Seals is acquired adding advanced metal machining capabilities.



2013 CDI Seals, Norwegian Seals, and Multiseals rebranded into **CDI Energy Products**

2000's

2010's



## Materials science, design, and engineering

Our customised products and solutions are based on the integration of materials, design, and engineering expertise backed by extensive research and manufacturing capabilities.

Our multidisciplinary project team provides you with a versatile resource for developing unique solutions. Engaged at the concept stage, our teams seek first to understand the full scope of your application and your objectives. From there, we work together with you to ensure responsiveness in pursuit of a common objective.

### Material expertise

Materials expertise is what sets CDI Energy Products apart. Our experts stay abreast of the very latest advancements and have in-depth experience with a full range of materials. We develop solutions using our existing proprietary formulations and can design custom blends for your specific application.

To provide the best solution for every application, CDI experts work with a portfolio of materials including:

- NBR
- HNBR
- XNBR
- PA (Nylon)
- FKM (Viton®)
- FFKM
- EPM, EPDM
- FEPM (Aflas®)
- PFA
- PVDF (Kynar®)
- CTFE
- PEI (Ultem®)
- PI (VespeI®)
- PE, UHMW
- POM (Acetal, Delrin®)
- ETFE (Tefzel®)
- ECTFE (Halar®)
- Polypropylene
- PPS (Ryton®)
- PEEK, PEK, PEKEKK
- PTFE (Teflon®)
- M-PTFE
- FVMQ (Fluorosilicone)
- Filled PTFE
- PF (Phenolics)
- Fluoropolymers
- Patented SinterMesh®
- Engineered Thermoplastics

CDI is highly experienced with a broad scope of advanced materials – from rubber, to advanced fluoropolymers and thermoplastics. In difficult applications requiring multiple materials, our expertise ensures reliable bonding and performance.

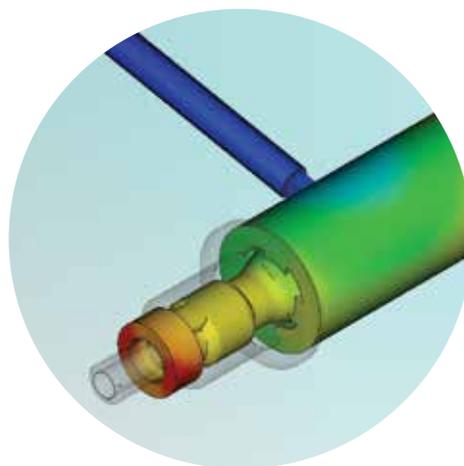
### Design and engineering prowess

Every CDI project begins with multidiscipline experts and a robust product laboratory and testing facility near Houston, Texas. Located on the same campus as our US manufacturing centre to foster a fully cross-discipline culture, CDI design and engineering is a powerful resource for success.

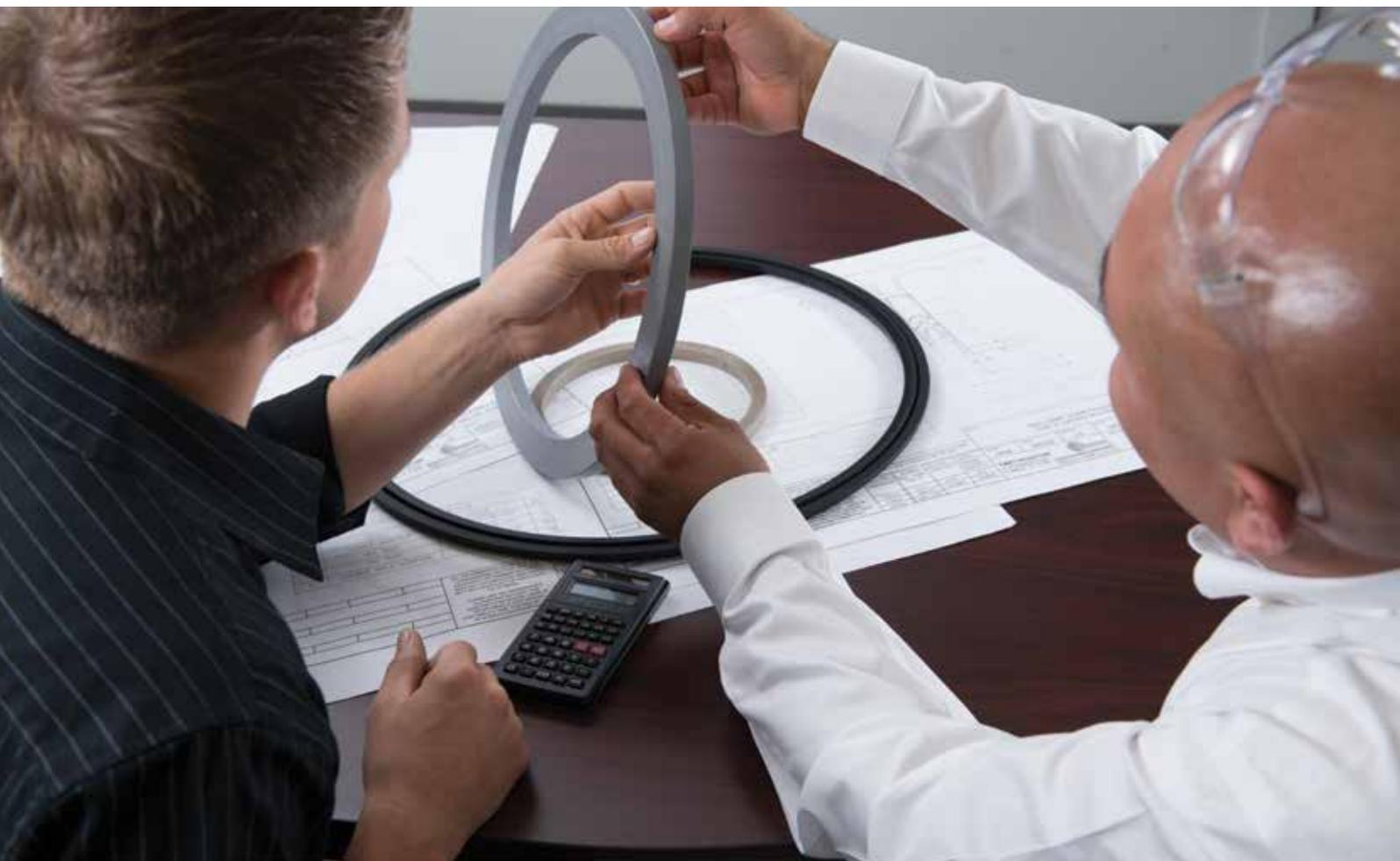
Our laboratory and testing facilities are instrumental in developing specialised proprietary formulations and ensuring the viability of a product application.

Analytical testing performed by the CDI laboratory includes composition analysis to determine the nature of a sample material. Forensic activities are conducted to determine why materials behave in particular ways.

To further enhance performance, material performance testing is conducted to determine physical wear properties.



Plastic flow simulation is used to validate designs (before costly tooling is built) to identify and correct potential problems early on, saving time, money and resources.



### Testing expertise

The CDI laboratory uses a spectrum of plastic and elastomer test methods to ensure material properties meet specifications. Conducted to ASTM standards, these tests include:

**Hardness:** Durometer testing for control purposes, since no simple relationship exists between hardness and any fundamental physical property.

**Tensile properties:** Physical properties for tensile strength, ultimate elongation, and modulus (tensile strength at a given elongation).

**Deflection temperature:** A comparison of the relative behaviour of various materials.

**Compressive properties:** Useful in determining specifications for different grades of materials, and in conjunction with other data to determine overall strength.

**Specific gravity:** The ratio of the density of a material to the density of a reference substance, generally water. It is used as a quality assurance measurement to assure lot-to-lot consistency.

**Tear resistance:** A relative measure of a material's resistance to tear.

**Compression set:** A measure of a material's retention of elastic properties, particularly useful with squeeze type seals.

**Immersion testing:** Provides insight regarding the effect of a particular media on a specific material.

**Heat aging:** Used to determine a material's deterioration due to dry heat.

**Adhesion:** Primarily a quality control test for coating quality and application.

Whether on land or sea, CDI Energy Products provides the best solutions for your application.



## Evaluation and Development

Well conditions continue to grow increasingly extreme as greater depths, higher pressure, intense temperatures, and longer laterals present their own distinct challenges. To survive, products must be robust - requiring a high level of engineering.

Greater redundancy is required for safe and environmentally sound solutions. Unknowns must be removed from the system. Our processes ensure that products are manufactured from the highest grade of materials and are specifically designed for an application. The most appropriate fillers and additives are used to produce reliable, quality products with long lifespans.

For more than 30 years we have worked with the industry to develop the best solutions for surface and subsea applications, including downhole characterization and logging systems.

## Completion and Production

To make the most from their assets, operators are using increasingly advanced tools and technology. We help you optimise your products to provide the best performance and the longest operating life.

With high development costs, reducing downtime is critical. Replacing parts reduces productivity and can even shut down production completely. To address this problem, we provide reliable, high-quality products for downhole tools, pressure pumping, and enhanced oil recovery systems and equipment.



### Products Include

- Energised seals
- Connectors
- S-Seals
- PiPackers®
- Opti-V stacks
- Bonded seals
- Cement plugs
- Well service packing
- Valve seats
- Ram blocks
- Stem seals



Reliable, high-performance products  
for subsea systems and equipment.



### **Subsea**

With rapid advancements in offshore drilling technology, possibilities within the subsea market are continually expanding. Drilling tools and subsurface equipment must travel great distances below the ocean surface, increasing the severity and critical nature of subsea exploration. Field location, corrosion, hydrostatic pressure, and ocean currents are only a few factors to consider while traversing the volatile metoceanic space.

CDI Energy Products is a proven provider of world-class engineering support and critical service components capable of surviving the rigors of the subsurface terrain. From rotary seals in umbilical cords to seal carriers in risers, we ensure your subsea system components receive the highest level of engineering design and material integrity the industry has to offer.

### **Products Include**

- Pack-off assemblies
- Metal-end-cap seals
- Metal-to-metal seals
- Subsea connectors



## Manufacturing

The level of precision performance we deliver doesn't just happen. Every customised product and solution benefits from our extensive machining and moulding capabilities.

Our highly skilled manufacturing specialists and programmers precisely transform advanced materials and designs into the finished product. We use sophisticated CNC machining equipment that enhances manufacturing flexibility, versatility, and statistical process control for greater efficiency and quality.

In addition to our wide range of polymer manufacturing processes and capabilities, CDI has advanced metal machining capabilities to support your need for ancillary metal components. With the latest CNC machine equipment, electrical discharge machining, and CMM measuring equipment, we can produce metal parts to complement our elastomeric products, and wellhead and drilling equipment.

With manufacturing facilities in the US, Singapore, Germany, Brazil, and the UK, our manufacturing operations entail more than 30 different moulding and manufacturing processes, including:

- Bonding
  - Rubber-Metal
  - Rubber-Plastic
  - Rubber-Rubber
- Calendering
- Composite Fabrication
- Compression Moulding
  - Rubber
  - PTFE
  - Advanced Thermoplastics
- Custom Compounding
- Custom Tooling and Machine Designs
- Extrusion
  - Melt
  - Paste
  - Ram
- Injection Moulding
- Isostactic Moulding
- Machining
  - Manual
  - CNC
  - Screw
  - Rubber
- Metal Machining

## Quality Assurance

A key requirement in the global energy industry is the documentation and control of all processes and materials. As a global organisation committed to quality, we invest in systems and people that manage, control, and document all aspects of production - ensuring products meet your specifications and requirements.

CDI Energy Products addresses quality at every step in the process, from concept to completion. Our investment in state-of-the-art manufacturing technology, from robotics to cleanrooms, ensures the highest level of precision.

The highest quality is ensured through adherence to the ISO 9001:2010 standard and through detailed contract review, well defined and repeatable processes, and statistically based inspection plans.

Quality also involves product delivery. CDI excels at developing precise solutions and delivering them on short lead times. To meet client schedules without interruption, we track performance at each stage in the manufacturing process through delivery of the final product.

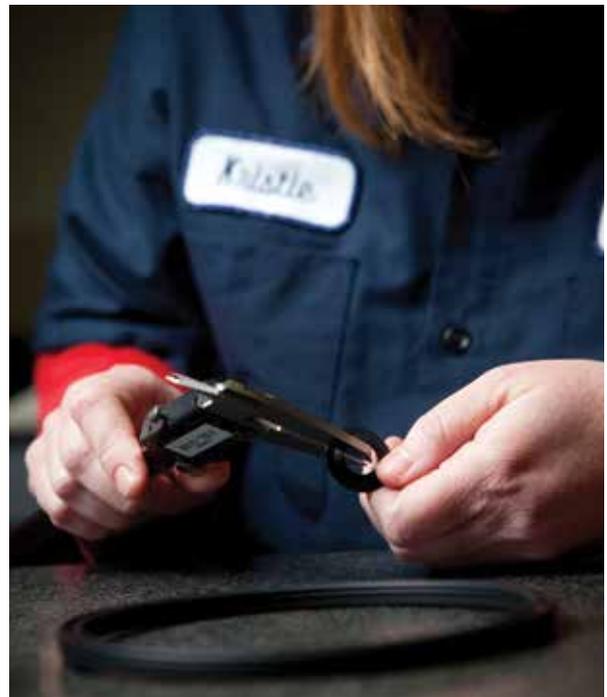
## Health, Safety, Environment (HSE)

At CDI, health, safety, and the environment are of the utmost importance. Our first priority is to ensure our employees go home the same way they came to work.

Creating an environment and culture of safety first benefits our customers by allowing us to recruit and retain the best of the best. Our ISO 14001 and OHSAS 18001 management systems help us continuously improve on all elements of HSE while ensuring regulatory compliance.

We value HSE for the same reasons you do. We care about our people, customers, and corporate responsibility.

Superior materials,  
precisely transformed for  
ultimate performance.





To learn how CDI Energy Products can improve performance in your operations, please visit our website at: [CDIproducts.com](http://CDIproducts.com).

Or talk with our experts at your regional office.

### **In-depth Global Solutions**

CDI Energy Products is a designer and manufacturer of custom plastic and elastomeric products, seals, and ancillary metal components. As part of the global group Fenner, our multiple locations enable us to partner with clients worldwide to produce unique, high-performance solutions for the energy industry.



**DISCLAIMER:** The descriptions, design and performance information, and recommended uses for the products described herein are based on our design and manufacturing experience, product testing in specific conditions, and industry standards. As such, this information is for general guidance only. Our products are accompanied with their own warranty which is given in writing at the time of sale.

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