Vital performance even in
the harshest environments
of the oil and gas industry

Bodycote

When failure is not an option.

On and off shore drilling and processing, vital to the oil and gas industry, often takes place in some of earth's harshest environments. At Bodycote, we understand the challenges this places on your operations. That is why we deliver industry-approved thermal processing treatments that extend the life of drilling and processing components. By reducing wear caused by corrosion, abrasion, vibration and impact, our services help reduce downtime and keep your operation on schedule.

Bodycote specializes in metallurgical processes that enhance the performance of a wide range of components, protecting your operation from initial drilling through to final processing.

Drilling

Drilling Process

Measurement While Drilling (MWD)

Subsea Operations

Valve Components

Processing

Refinery Operations

Offshore Platforms

Petrochemical

Valves

Our quality meets your standards.

Combining more than 30 years of experience with cutting edge capabilities, Bodycote has developed specialized treatments to improve component resistance to wear, erosion and corrosion. We maintain the highest production standards for quality, safety and efficiency, earning ISO 9001:2008, ISO 14001, OHSAS 18001, ILO-OSH 2001, and NORSOK M-650, Rev. 3 accreditations as well as industry specific requirements. It's no surprise that the world's leading oil and gas companies choose Bodycote as their preferred supplier.

Providing exceptional customer service is the foundation for everything we do. We work with our customers to ensure that we meet their standards and exceed their expectations. When it comes to on and off shore drilling, we know that component reliability can determine your operation's success. That's why we invest in and provide you with progressive technology and a team that can deliver the highest quality every time.

Whether your operation takes you to the highest elevations or miles below sea level, Bodycote ensures your components deliver maximum performance that's more efficient, cost effective and environmentally friendly.

With quality processes, consistent, on-time delivery and an international network of accredited facilities, Bodycote provides what you need, when you need it.

We deliver on time. Anytime.

Our customers count on us for a broad range of reliable services, but they also turn to Bodycote because we offer 24/7 support in every region of the globe. With more than 170 facilities in 27 countries, Bodycote is the world's largest provider of thermal processing services and the partner of choice for the most respected and innovative engineering companies.

Committed to meeting our customers' toughest standards, Bodycote offers an experienced, highly skilled global team, as well as the latest in technology, equipment and quality systems in every facility around the world.

Our operations are managed by some of the best engineers, scientists and technicians in the industry, with the experience and expertise to deliver vital support and a real understanding of customer requirements at all levels, from conventional subcontract arrangements to top level strategic partnerships.

We support global customers with multi-national operations, local niche specialists, and everything in between, providing every customer, large or small, with the right service to support their unique requirements, even as their needs change and their businesses grow.

Anywhere in the world.

* For a comprehensive, location listing visit www.bodycote.com

A greener, cleaner environment.

Bodycote is committed to applying environmental best practices throughout our business activities, ensuring that we minimize environmental impact and meet government regulations and the standards set by the communities in which we operate. We recognise that long-term economic growth depends upon preserving a healthy environment.

Ever at the forefront of technology, Bodycote was one of the first companies to use microprocessor controls to reduce emissions, and we introduced our first load-forecasting systems more than 20 years ago to bring down peak energy demand and minimise waste.

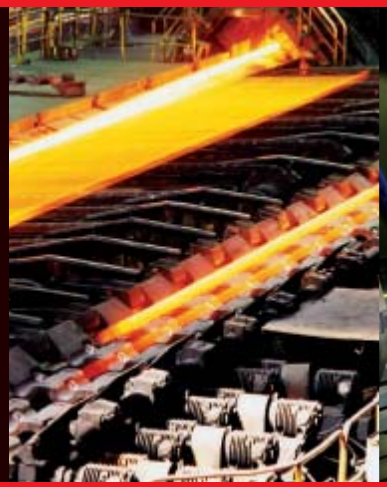
Moreover, in an effort to improve energy efficiency, Bodycote has implemented a variety of systems to reduce water and gas consumption and re-use energy. We are one of the very first heat treaters worldwide to implement the energy management system according to ISO 50001. We have also set a goal of achieving ISO 14001 environmental accreditation at all our facilities, with almost three quarters of our locations already having met this standard.

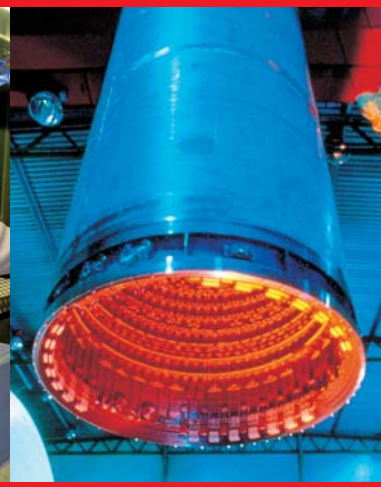
At every stage where Bodycote is involved in the manufacturing cycle, our operations aim to lessen the overall impact on the environment. The key to Bodycote's positive contribution lies in efficiency; as an aggregator of specialised engineering services, Bodycote reduces the carbon footprint of our customers' activities by increasing the lifespan of their products and using modern, energy efficient equipment.

Bodycote offers a complete portfolio of treatment services –

Heat Treatment, Surface Technology, and Hot Isostatic Pressing (HIP).

We will match your requirements with the proper treatment.





What you need. Exactly.

Heat Treatments
hardening, tempering, homogenising, carburising, carbonitriding, nitrocarburising, QPQ, fluidised bed, nitriding (gas, plasma, liquid), electron beam welding, vacuum brazing

Surface Technology
HVOF coating, plasma spray coating, chemically-formed ceramic coatings, ceramic densification, arc spray repair coatings, diamond grinding and lapping, SheraCote®

Hot Isostatic Pressing (HIP)
densification, diffusion bonding, powder metallurgy, near-net shapes, bimetallic materials, cladding

Heat Treatment

Bodycote is the world's largest heat treater with experience in every generation of material. We invest in the latest technology furnaces and control systems to ensure we meet our customers' requirements for temperature uniformity and the critical heating and cooling rates necessary for optimum component performance.

Bodycote's proprietary special stainless steel process (S^3P), imparts wear resistance to selected grades of stainless steel without affecting corrosion resistance. For components exposed to wear, galling and corrosion, Bodycote offers the optimal solution for corrosion resistant materials, significantly extending the life of components.

Surface Technology

Coatings are used to prolong the working life of components. The applications of surface technology in the oil and gas industry are extensive. Our customers' products are subjected to a variety of extreme environments that expose components to abrasion, heat, corrosion and erosion. We select from hundreds of different materials (metals, alloys, carbides and ceramics) to provide the best protection and can finish the materials for many surface conditions from rough gripping textures to mirror finishes.

Hot Isostatic Pressing (HIP)

HIP uses very high pressure inert gas at elevated temperatures to improve the properties of metals and other materials, eliminate porosity in castings and enable the bonding of incompatible materials to manufacture unique, value added components. With the largest operational capacity in the world, and a wide variety of sizes of equipment, Bodycote HIP is able to accommodate large volumes of small product as economically as large individual components. Bodycote research specialists are experienced in working with customers to develop novel materials and applications.

Traditional forging methods often result in parts requiring much machining and welding to meet the required dimensions. The use of Powder Metallurgy (PM) HIP technology offers design and technical solutions to manufacture complex components with near-net-shape surface and internal dimensions. You can produce lighter versions of large components in shorter times, which require less machining. Typical oil and gas products suitable for manufacturing by PM HIP technology include subsea and top-side components such as manifolds, flanges, tee sections, valve bodies and pump barrels/casings.

* For a comprehensive services listing, visit www.bodycote.com

Drilling

Oil and gas exploration is an expensive, potentially high-risk operation that depends upon sophisticated, risk-mitigating technology. At Bodycote, we understand what is at stake for your business and are committed to helping protect your investment and extending the life of your equipment. We give your components the power and reliability to tackle the elements, even in tough offshore and remote area conditions.

Parts

Mud Rotors
Pump Sleeves
Rods
Plungers
Rotors
Drilling Tools
Mandrels
Hydraulic Jars

Parts

Bearing Sleeves
Flow Diverters
Wear Pads
Electronic Chassis
Piston Supports
Manifolds

Parts

Manifolds
Elbows
Tee Sections
Wye Pieces and Flow Meters

Parts

Ball Valves
Gate & Seats
Valves
Valve Actuators

The drilling process is complex enough without having to worry about component endurance. Your goal is to run an efficient operation with minimal impact on the environment – and we can help by making sure your components deliver maximum performance. Our thermal processing treatments reduce wear caused by abrasion, erosion and corrosion, keeping your drilling operation on schedule, without the extra costs and headaches of unplanned downtime.

Measurement While Drilling (MWD) tools are expensive, high-tech electronic systems. They are also central to the success of horizontal and directional drilling. To keep your down-hole operation safe and on track, Bodycote helps ensure reliable MWD precision and efficiency by protecting tool components from wear, corrosion and vibration.

Subsea operations require specialised equipment that must be reliable, cost effective and safe to the environment. The HIP Powder Metallurgy near-net-shape process allows for design flexibility to manufacture parts with complex geometries that require minimal machining compared to conventionally forged billets and preforms. Such design freedom can significantly reduce expensive materials and eliminate up to 80 percent of the welds needed for subsea manifold systems.

Valve components are used in many demanding applications in the oil and gas industry. To meet these challenging product demands, Powder Metallurgy encapsulation and HIP technology offer optimised solutions for material selection that enhances product safety and extends component life. Powder Metallurgy HIP manufacture of valve components also enables efficient manufacturing of complex components designed to operate in harsh environments.

* For further information visit, www.bodycote.com

Processing

Bodycote's many years of experience has allowed it to develop several specialist treatments for the extreme conditions of oil and gas processing. High temperatures and intense pressure continually test equipment durability and component performance. That is why Bodycote provides a variety of treatments to extend equipment life and support processing operations both off shore and on.

Parts

Pump Shafts
Impellers
Compressor Rods
Thermocouples
Mechanical Seals
Piping Pump Casings

In refinery operations, performance and safety matter. There is no room for equipment malfunctions or component failures. Bodycote has developed specific coating products to optimise valve, pump and compressor performance integral to the process. We have the right solution to meet your specific needs.

Parts

Fixings
Fasteners
Mud Pump Rotors

Offshore platforms come in many designs, from fixed to floating, single well to multiple. But whatever its structure, every oil rig operation is challenged with operating efficiently and safely in the deepest waters and the roughest seas. Working under these conditions, Bodycote understands the importance of not only protecting oil rig components from wear, corrosion, vibration and impact, but delivering peace of mind.

Parts

Valves
Separators
Manifolds
Pump Casings
Elbows

The petrochemical industry demands the use of the Powder Metallurgy Near-Net-Shape HIP process in many applications. Powder Metallurgy encapsulation and HIP technology offers unique, optimised solutions for material selection that enhances product safety and extends the life of components designed to operate in challenging environments.

Parts

Ball Valves
Gates & Seats
Valves
Valve Actuators

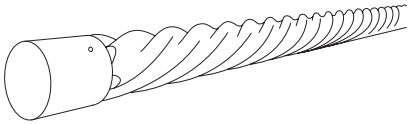
Oil and gas customers depend upon a broad range of manual and automatic valves to keep processing systems operating effectively. High pressure, extreme temperatures and tough environmental conditions can challenge performance, but Bodycote solutions help protect valve integrity. Our coatings reduce friction and provide reliable erosion and corrosion resistance – ensuring valve efficiency and durability throughout your processing system.

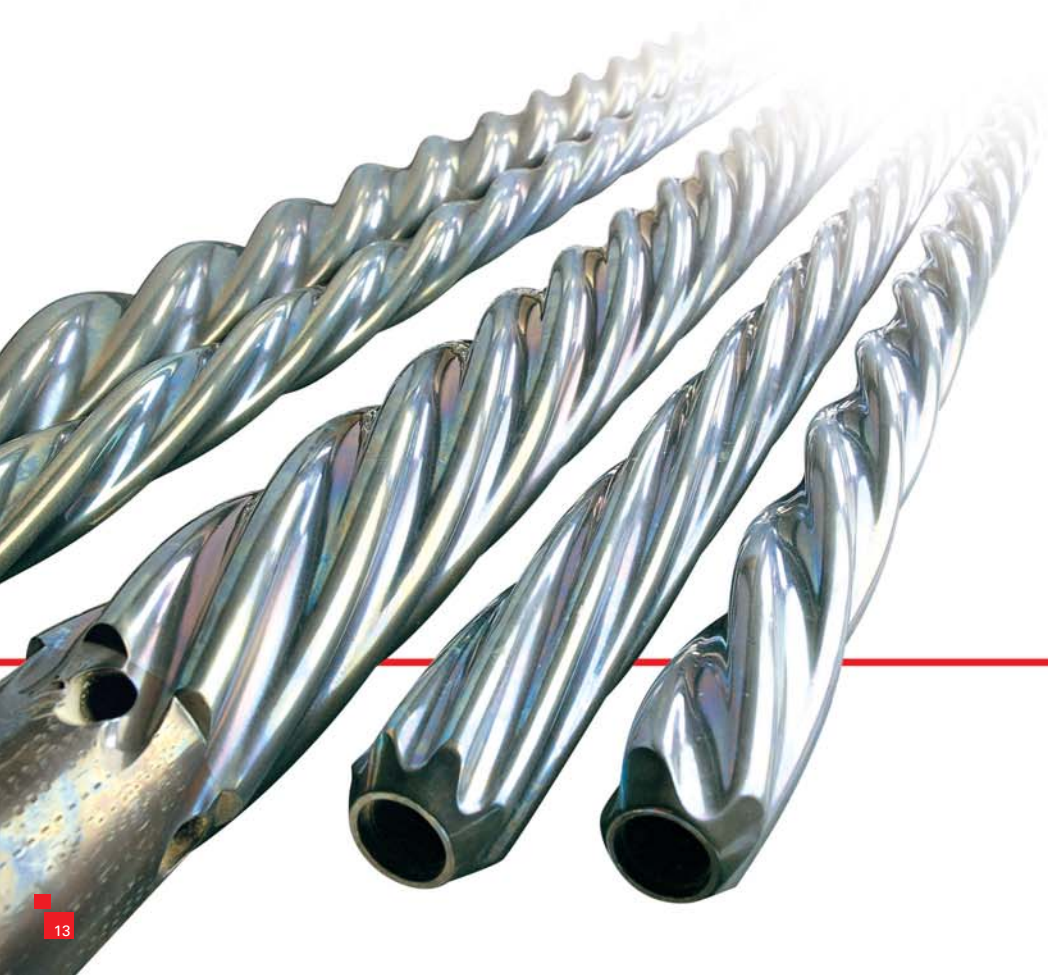
* For further information visit, www.bodycote.com

DOWN TO EARTH – A COMPONENT JOURNEY

MUD ROTORS

Corrosion and wear can lead to expensive downtime in oil & gas exploration, where equipment is in continual use. Mud rotors operate at the bottom of drilling wells; thus,the removal and replacement of worn rotors is particularly time consuming and costly. Following processing by Bodycote, the life of mud rotors is improved by five times.





The rotors begin life as pieces of steel bar

The steel is then machined into the rotor shape required for down-hole drilling

Photo courtesy of Weingartner
www.weingartner.com

A thermochemically formed ceramic surface treatment is applied resulting in a super-hard, corrosion resistant layer which protects the steel and gives superior wear resistance

The rotor must be finish polished using diamond tools due to the extreme hardness of the ceramic treatment

End application – oil drilling service

BODYCOTE COMPONENT JOURNEYS

This is just one example of how Bodycote brings together the huge wealth of knowledge and expertise from across the Group to provide the vital engineering services you need.

Denotes the parts of the component journey undertaken by Bodycote.

Corporate Office

Springwood Court
Springwood Close
Tytherington Business Park
Macclesfield
Cheshire
United Kingdom
SK10 2XF

Tel: +44 (0)1625 505300
Fax: +44 (0)1625 505313

Aerospace, Defence & Energy Division Office

12700 Park Central Drive,
Suite 700
Dallas
TX 75251-1518
USA

Tel: +1 214 904 2420
Fax: +1 214 904 2424

HIP Division Office

155 River Street
Andover
MA 01810
USA

Tel: +1 978 470 1620
Fax: +1 978 475 2951

info@bodycote.com

© Bodycote plc 2011