



Bodycote

An introduction

Sales Associate / Rogelio Ruvalcaba

At a glance

As the world's leading provider of classical heat treatments and specialist technologies, Bodycote provides its customers with value-adding services which improve their components.



Bodycote

More than **165 locations**
in **22 countries**

Our technologies



Classical Heat Treatments

A group of heat treatment processes used to improve the properties of metals and alloys, and metal joining technologies which are used to join and assemble parts.



Specialist Technologies

A group of highly differentiated and proprietary technologies which enable our customers to produce unique high value-adding products.

Our Markets



Some of the biggest names in engineering use Bodycote:



Over **4,900** Engineers, scientists, technicians and support staff





Our technologies

Classical Heat Treatments



Classical Heat Treatment is the controlled heating and cooling process of metals in order to obtain the desired mechanical, chemical and metallurgical properties during the manufacturing of a product.

Classical heat treatments include but are not limited to:

Annealing

Carburizing

Solution and age

Atmospheric carburizing

Carbonitriding

Ion implantation

Stress relieving

Plasma nitriding

Nitrocarburizing

Hardening

Quenching

Tempering

Gas nitriding



Our technologies

Specialist Technologies



Bodycote's Specialist Technologies refer to a group of highly differentiated processes which offer unique solutions for a variety of applications.

Hot Isostatic Pressing (HIP) Services

Improves component integrity and strength by application of extreme pressure and heat.

HIP Product Fabrication inc. Powdermet®

Additive manufacturing of often complex components in conjunction with HIP.

Surface Technology

Enhances component life using ceramic and metal coatings.

Specialty Stainless Steel Processes (S³P)

Improves the strength, hardness and wear resistance of stainless steels without affecting their corrosion resistance.

Low Pressure Carburising (LPC)

Provides a hardened surface and tough core in a 'clean' process under vacuum.

Corr-I-Dur® (CiD)

Improves corrosion resistance and wear properties, and is primarily used as an environmentally friendly substitute for hard chrome.

Organisational structure



Bodycote Group CEO
Stephen Harris

Specialist Technologies
Global
President: Thomas Oury

Classical Heat Treatment
ADE Global
President: Tom Gibbons

Classical Heat Treatment
AGI Europe
President: Paul O'Neil

Classical Heat Treatment
AGI North America
President: Rick Llope

Classical Heat Treatment
Emerging Markets
EVP: Barış Telseren

Customer-focused businesses – ADE & AGI



Aligning the way we do business with our customers

Bodycote has more than 40,000 customers serviced by more than 165 facilities around the world. These facilities are organised into two customer-focused businesses – ADE and AGI.

ADE: Aerospace, Defence & Energy



Our ADE business is globally organised, with relevant quality certifications, to reflect customer operations in these markets.

AGI: Automotive & General Industrial



Our AGI business includes many multinational, medium-sized and smaller companies, and is regionally and locally oriented to better serve this customer base.

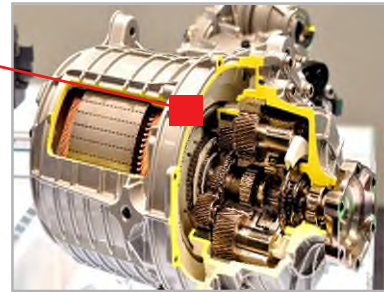
Why do we need Bodycote's services?



Virtually every type of metal component, whatever its application, has received some form of treatment to enable it to perform to the required standard and last longer once it's put into service.

In a world without Bodycote's services...

An automotive gearbox might last only a week



An aircraft engine would not last a single flight

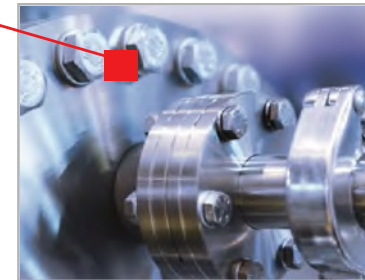


Marine applications would have a much shorter lifespan

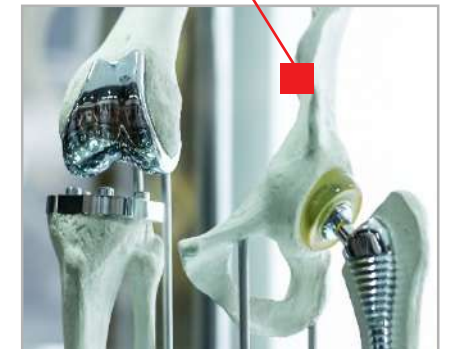


Surgical tools would not be fit for purpose

Fasteners would damage and corrode more quickly



Medical implants would not have the strength or corrosion resistance they need



Bodycote Component Journeys



Demonstrating the vital link in the supply chain



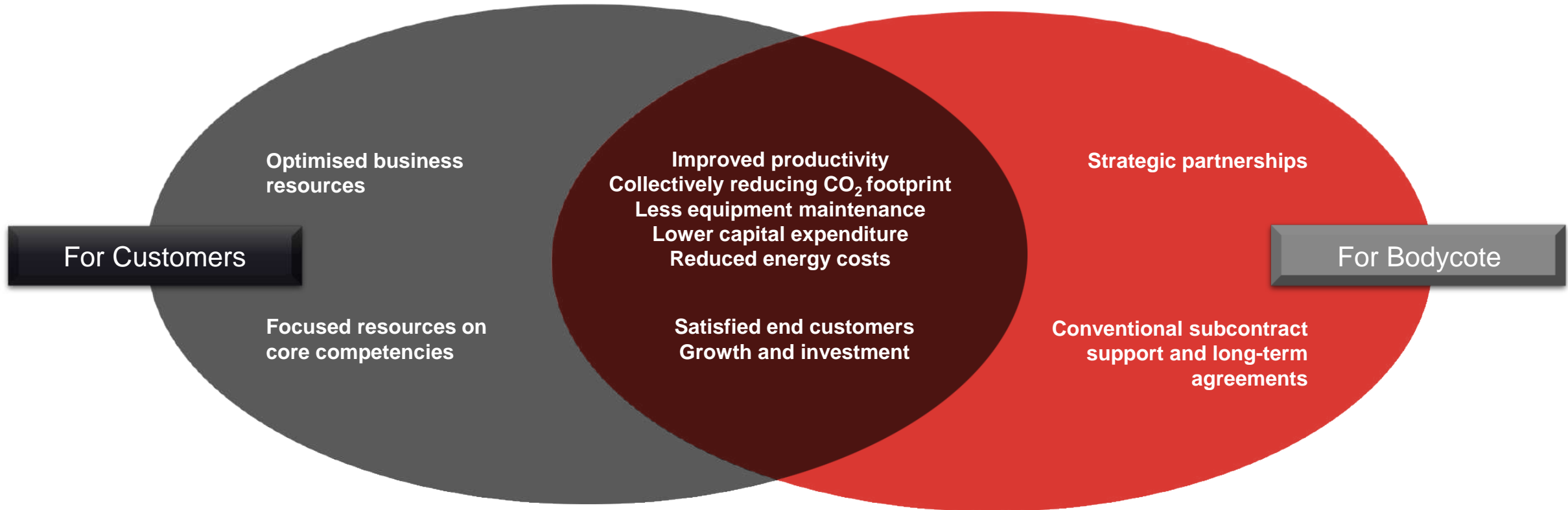
Bodycote created Component Journeys to demonstrate where and why our services are required during the manufacturing process, from raw material to end application.

The component journeys illustrate, in a simplified format, the vital link that Bodycote's services play in the creation of a wide range of components from safety critical aerospace parts to consumer products.

FOLLOW ME...

<https://www.bodycote.com/news-and-media/downloads/>

The proven value of partnerships



Core Values

Our internal compass



Honesty & Transparency

We cultivate a culture of transparency, where honesty and integrity are at the foundation of our business and our relationships. Trust is at the heart of everything we do.



Respect & Responsibility

We behave individually and collectively with respect for each other, our stakeholders and the environment, conducting business responsibly, taking ownership of our actions.



Creating Value

We create value for our employees, customers and shareholders, and this is the very essence of Bodycote.

Environment, Health, Safety

Committed to continual improvement

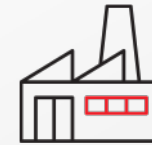


Environment

- A proactive approach to improve sustainability and energy efficiency.
- Bodycote has committed to the Science Based Targets Initiative (SBTi).
- Bodycote helps customers reduce their carbon footprint.
- Committed to reducing overall impact on the environment, through:
 - Use of modern energy-efficient equipment
 - Efficient furnace utilisation
 - Extension of component lifetimes, leading to reduction in waste, materials and energy
 - Introduction of environmentally-friendly alternatives to existing treatments

Safety & Health

- Bodycote takes a proactive approach to continually improving safety – a global incident reporting and EHS management tool is in use at every operational site.
- Ongoing investments to improve safety, especially in pedestrian safety and manual handling improvements to reduce accident frequency and risk.



99% of Bodycote facilities are accredited to ISO 14001



Total water consumption decreased by **4% in 2022**



A further **6%** reduction in CO₂ emissions compared to 2021

Bodycote's commitment to you



People

Bodycote is ideally positioned to **provide solutions for our customers** with the best metallurgists, engineers and technicians in the industry.



Service

A focus on **excelling at customer service** drives our business. Finding value-adding solutions and promoting mutual business development opportunities.



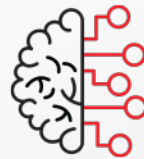
Quality

Our customers have invested in all the components we process. Our facilities hold **international and national accreditations and customer approvals**, providing assurance of top-tier quality.



Technology

Our scale enables our customers to **benefit from our investment** in the cutting-edge technologies and the most eco-friendly equipment.



Expertise

Customers of any local Bodycote plant can **benefit from our knowledge**, skills and technology across the entire group's network.

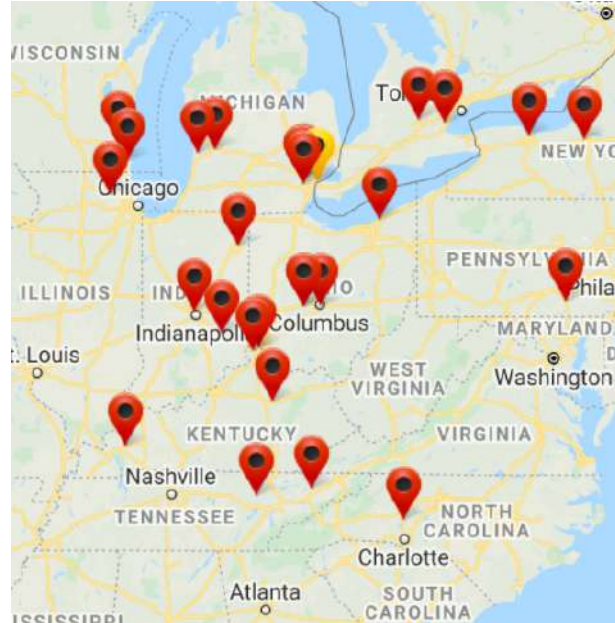


Values

Honesty and Transparency, Respect and Responsibility, and Creating Value. These values represent Bodycote and its people, and our **commitment to our customers**.

AGI NA Foot Print

- Burlington, ON
- Kitchener, ON
- Canton, MI
- Livonia, MI
- Romulus, MI
- Grand Rapids, MI
- Holland, MI
- Sturtevant, WI
- New Berlin, WI
- Eden Prairie, MN
- Elgin, IL
- Indianapolis, IN
- Fort Wayne, IN
- Greensburg, IN
- Highland Heights, OH
- Columbus, OH
- York, PA
- Rochester, NY
- Roselle, NJ
- Syracuse, NY
- Winchester, KY
- Morristown, TN
- Fountain Inn, SC
- Covington GA
- Silao, MX
- SLP MX

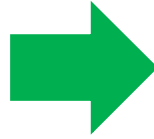


Mexico Operations

2 Automotive plants in production

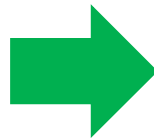
■ 2007 Silao, Mexico

- Low pressure carburizing
- Batch furnaces
- Shot peen
- Nitride
- Vacuum Degrease
- Car-Bottom: SR & FNC
- Deep Freeze



■ 2015 SLP, Mexico

- Low pressure carburizing
- Nitride
- Shot peen





Bodycote

Mexico – Silao Facility

Silao Mexico - 100% Automotive

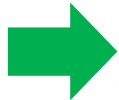
Available processes:

- Carburize
- Low Pressure Carburizing
- Carbonitride
- Nitride
- Corr-I-Dur™
- Ferritic Nitrocarburizing
- Stress Relieve
- Car-Bottom (SR/FNC)
- Deep Freeze

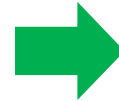


Quality certifications:

Silao GM Supplier
Quality Excellence
Award over 6
consecutive years

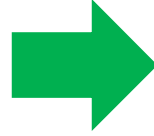


IATF
16949:2016
certified
since 2010



Virtual Tour - Silao

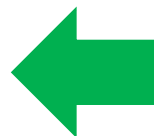
Reception of materials and LPC area



Batch IQ Furnace area



Processed parts and LPC area



Nitriding area



Atmosphere Batch Furnace (IQ)

7 Batch Furnaces processing...

- Carburizing
- Carbonitriding
- Ferritic Nitrocarburizing
- Neutral hardening
- Top cool

Furnace Capacity

- Max Temp: 945°C
- Load sizes: 900 x 1,200 x 900 mm
- Load Capacity: 1,500 Kg.
- Oil quench

Auxiliary equipment

- Washing
- Tempering
- Pre-Oxidation
- Vacuum Degrease.
- Deep Freeze



Low Pressure Carburizing



Quench cell is capable of 20 bar gas quench with variable speed fan control



Carburizing cells are capable of 1,000°C and can process load sizes of 23.5" W x 26" T x 40" deep.



Nitriding

Core process:

- Gas Nitriding
- Ferritic Nitrocarburizing
- Corr-I-Dur™

Special processes:

- Vacuum Stress Relieve
- Vacuum Subcritical Anneal
- Vacuum Temper



Applications (examples)

- Ball studs
- Brake rotors
- Springs
- Brake Pistons



Car Bottom Furnace

Process:

- Ferritic Nitrocarburizing
- Stress Relieve



Furnace Capacity:

- Max Temp: 650°C
- Load sizes: 6.0 x 3.0 x 4.0 m
- Load Capacity: up to 20 Tons





Bodycote

Mexico – San Luis Potosí Facility

San Luis Potosi Mexico - 100% Automotive

Available processes:

- Low Pressure Carburizing
- Corr-I-Dur™
- Ferritic Nitrocarburizing
- Nitriding

Low Pressure Carburizing

- Pre wash
- Pre-Oxidizing Furnace
- Carburizing Cells/Gas Quenching
- Tempering
- Rust Prevention Dip and Dry

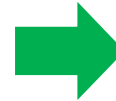
FNC and Nitriding

- Pre wash
- Pre-Oxidizing
- Nitriding (48 X 72 x 36 / 3Tons)
- Rust Preventive



Quality certifications:

IATF 16949:2016
certified since 2020



Low Pressure Carburizing



Quench cell is capable of 20 bar gas quench with variable speed fan control



Carburizing cells are capable of 1,000°C and can process load sizes of 23.5" W x 26" T x 40" deep.



Nitriding

Core process:

- Gas Nitriding
- Ferritic Nitrocarburizing
- Corr-I-Dur™

Special processes:

- Vacuum Stress Relieve
- Vacuum Subcritical Anneal
- Vacuum Temper



Applications (examples)

- Ball studs
- Brake rotors
- Springs
- Brake Pistons



BIQ Furnaces

Available area for new projects

- 2 BIQ available furnaces for:
 - Carbonitriding
 - Carburizing
 - Quenching & Tempering
 - Ferritic nitrocarburizing (FNC)
- Everything prepared for 2 additional BIQ furnaces installation.





Bodycote

Thank you