

**HEAT TREATING
SERVICES**

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**MASTERING STRENGTH.
WORLDWIDE.**



A WORD FROM

THE PRESIDENT OF GLOBAL NITREX HEAT TREATING SERVICES

By using cutting edge technology to help manufacturers overcome wear, fatigue and corrosion challenges, NITREX has been the leading solutions provider in the nitriding/nitrocarburizing industry for almost four decades.

Recognizing that manufacturers value the flexibility of being able to outsource their heat treatment requirements, NITREX has established a best-in-class global network of full service heat treatment facilities.

With nine sites in North America, Europe and Asia, we are proud to offer top quality nitriding, nitrocarburizing, vacuum processing, atmosphere carburizing, low-pressure carburizing and many other surface treatment services to manufacturers in a variety of industries.

Our customers have peace of mind knowing that NITREX maintains a variety of accreditations such as Nadcap, AS 9100, IATF 16949, and ISO 9001 to ensure that the highest quality standards are met for each and every order.

As President of HTS, I look forward to leveraging NITREX's decades of experience in problem solving and application development to create value in our customers' supply chains. We will make use of advances in equipment, controls and data technology to drive continuous improvement and provide an unsurpassed level of quality and transparency to our customers.

JASON OROSZ

President, Global NITREX Heat Treating Services / jason.orosz@nitrex.com

NITREX

A RECOGNIZED LEADER IN HEAT TREATING

TREATING THE MOST CHALLENGING APPLICATIONS

SOLUTIONS THAT ARE TRUSTED THE WORLD OVER

As a pioneer and industry leader in heat treatment, NITREX tackles and solves the most demanding customer application requirements for ever-higher product quality, reliability, durability, and sustainability.

Our mission is simple—to add the most value to your products by enhancing their wear resistance and increasing their surface hardness and fatigue life for maximum application performance, longevity, and cost-efficiency.

- Portfolio of 30+ heat treating processes
- Exclusive provider of NITREG® nitriding /nitrocarburizing treatments
- Wear, fatigue and corrosion protection solutions for engineered metal parts
- A dedicated team of metallurgists and technical advisors to address your most challenging applications
- Ever-stronger local market presence backed by the expertise and resources of a global network

NITREX

HTS
BROCHURE

A Word from
the President
/
A Recognized
Leader in Heat
Treating



HEAT TREATING SERVICES

YOUR GLOBAL PARTNER IN HEAT TREATMENT

We utilize clean heat treatment technologies that enhance critical components for a variety of industrial products, improving the quality and durability of the products, and that are repeatedly chosen by blue-chip customers.

Customers benefit from our comprehensive range of services at multiple locations, leveraging our global expertise, capabilities, and resources to meet their evolving needs for efficiency, reliability, and sustainability.

35+ YEARS OF EXPERIENCE IN HEAT TREATMENT PROCESSES & PLANT AUTOMATION

We distinguish ourselves with our unique service capabilities, driven by proprietary technologies, software and specialized industry expertise, as well as significant intellectual property, heat treatment knowledge, and formula library.

OVER 30 HEAT TREATING SOLUTIONS AVAILABLE

NITREX brings dozens of heat treating processes that add value to customers' products worldwide, with regional services centers, by increasing quality, control and precision, enhancing wear resistance, increasing surface hardness, allowing for weight reduction in parts resulting in energy savings.

- Precise control
- Increased reliability
- Repeatable results
- Clean processes
- Environmental friendliness

- NITREG® GAS NITRIDING
- NITREG®-C NITROCARBURIZING (FNC)
- TRADITIONAL & LOW-PRESSURE CARBURIZING
- CARBONITRIDING
- VACUUM HARDENING
- VACUUM HEAT TREATING
- ONC® POST-OXIDATION BLACK FINISH
- NITREG®-S & NANO-S™ NITRIDING OF STAINLESS STEELS

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Heat
Treating
Services

NITREX

MAKING AN IMPACT IN EVERY INDUSTRY

SOLUTIONS FOR ALL TYPES OF BUSINESSES

NITREX works closely with customers across a wide range of industries to help overcome application challenges, boosting part reliability and performance while optimizing costs. Our in-house process development team has crafted over 4,000 tested and proven recipes and can help select the best

solution for the desired application—reducing development costs, shortening test times, and getting engineered parts to market faster. The team also supports application development at the earliest stages with process- and technology-related know-how for material and part optimization.

MARKETS WE SERVE

- Aerospace
- Agriculture
- Automotive
- Commercial vehicles
- Defense
- Electric vehicles
- Gears
- Industrial machinery
- Mining
- Off-road vehicles
- Oil, gas & energy
- Outer space
- Tooling

TYPICAL APPLICATIONS

- Actuators & shafts
- Bearings
- Braking systems
- Castings
- Crankshafts
- Forgings
- Gears
- Pumps & valves
- Springs
- Suspension parts
- Tooling & dies
- Turbocharger parts



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Making
an Impact
in Every
Industry

NITREX

INVESTING IN ADVANCED TECHNOLOGIES



VACUUM
CARBURIZING
/ HTS FACILITY
ILLINOIS, USA

RISING TO THE TOP THROUGH INNOVATION

ENHANCING SERVICE CAPABILITIES & CUSTOMER SATISFACTION

NITREX continuously invests in new technologies, processes, and systems to improve and grow our business and build stronger relationships with customers. These investments enhance our service offerings to better respond to the emerging and evolving needs of customers.

FURNACE TYPE	DESCRIPTION
NITREG® nitriding / NITREG®-C ferritic nitrocarburizing	Over 65 furnaces across the global NITREX network Processing from microscopic size up to 55,000-lb loads
Carburizing	Over 15 furnaces across select locations
Vacuum carburizing	Available at 3 locations in the USA
Plasma nitriding	Exclusively at the Indiana, USA, facility
Vacuum hardening, vacuum heat treat	Available in most global locations
Annealing, stress relief & tempering	Available in most global locations

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Investing in
Advanced
Technologies

NITREX CHICAGO AREA

AURORA, IL, USA

FULL SERVICE
HEAT TREATMENT
FACILITY

LOCATION

1900 Plain Avenue,
Aurora, IL, 60502 USA

T +1 630 851 5880

CERTIFICATIONS



PROCESSES

- Gas atmosphere carburizing
- Integral oil quench
- NITREG® gas nitriding
- NITREG®-C ferritic nitrocarburizing
- ONC® post-oxidation black finish
- Vacuum hardening
- Vacuum carburizing (LPC) oil quench
- Low-pressure carburizing (LPC) & high pressure gas quench (20 bar)
- Carbonitriding
- Neutral hardening
- Age hardening

ADDITIONAL SERVICES

- Various complementary processes, such as stress relief, cryogenic treatment, hardening, tempering, blasting, cleaning, and washing
- Full metallurgical laboratory
- Nitriding of long parts up to 4.5 meters (177") and large diameter parts up to 3.5 meters (138")

NITREX INDIANAPOLIS AREA

FRANKLIN, IN, USA

FULL SERVICE HEAT TREATMENT FACILITY

LOCATION

350 Blue Chip Court,
Franklin, IN, 46131 USA

T +1 317 346 7700

CERTIFICATIONS



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PROCESSES

- NITREG® gas nitriding
- NITREG®-C ferritic nitrocarburizing
- ONC® post-oxidation black finish
- NITREG®-S nitriding of stainless steels
- NANO-S™ surface hardening of stainless steels
- Vacuum hardening
- Vacuum carburizing (LPC) oil quench

- Low-pressure carburizing (LPC) & high pressure gas quench (20 bar)
- Gas atmosphere carburizing & carbonitriding
- Neutral hardening
- Plasma nitriding
- Age hardening

ADDITIONAL SERVICES

- Various complementary processes, such as stress relief, cryogenic treatment, hardening, tempering, blasting, cleaning, and washing
- Full metallurgical laboratory

Locations
& Service
Capabilities

NITREX LANSING AREA

MASON, MI, USA

NITRIDING/NITROCARBURIZING
HEAT TREATMENT
FACILITY

LOCATION

822 Kim Dr., Mason,
MI 48854 USA

T +1 517 676 6370

CERTIFICATIONS



PROCESSES

- NITREG® gas nitriding
- NITREG®-C ferritic nitrocarburizing
- ONC® post-oxidation black finish
- NITREG®-S nitriding of stainless steels
- NANO-S™ surface hardening of stainless steels
- Age hardening

ADDITIONAL SERVICES

- Various complementary processes, such as stress relief, tempering, blasting, cleaning, and washing
- Full metallurgical laboratory
- Process loads up to 55,000 lb. (25,000 kg) capacity, 5.3 meters (210") long, and 2.8 meters (110") wide

NITREX SHANGHAI AREA

WUXI, JIANGSU, CHINA

NITRIDING/NITROCARBURIZING HEAT TREATMENT FACILITY

LOCATION

#1096 Antaisanlu,
Xishan EDZ, Wuxi,
Jiangsu 214105 CHINA

T +86 510 8878 8627

CERTIFICATIONS



PROCESSES

- NITREG® gas nitriding
- NITREG®-C ferritic nitrocarburizing
- ONC® post-oxidation black finish
- NITREG®-S nitriding of stainless steels
- NANO-S™ surface hardening of stainless steels
- Age hardening
- Vacuum processing

ADDITIONAL SERVICES

- Various complementary processes, such as stress relief, hardening, tempering, blasting, cleaning, and washing
- Full metallurgical laboratory

NITREX

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Locations
& Service
Capabilities

NITREX NINGBO AREA

NINGBO, ZHEJIANG, CHINA

NITRIDING/NITROCARBURIZING
HEAT TREATMENT
FACILITY

LOCATION

#188 Binwan Road,
Fenghua District, Ningbo,
Zhejiang 315506 CHINA

T +86 574 8881 1893

CERTIFICATIONS



PROCESSES

- NITREG® gas nitriding
- NITREG®-C ferritic nitrocarburizing
- ONC® post-oxidation black finish
- NITREG®-S nitriding of stainless steels
- NANO-S™ surface hardening of stainless steels
- Age hardening

ADDITIONAL SERVICES

- Various complementary processes, such as stress relief, tempering, blasting, cleaning, and washing
- Full metallurgical laboratory



NITREX **MONTRÉAL AREA**

MONTRÉAL, CANADA

NITRIDING/NITROCARBURIZING
HEAT TREATMENT
FACILITY

LOCATION

3474 Poirier Boulevard,
St-Laurent, QC H4R 2J5
CANADA

T +1 514 335 7191



PROCESSES

- NITREG® gas nitriding
- NITREG®-C ferritic nitrocarburizing
- ONC® post-oxidation black finish
- NITREG®-S nitriding of stainless steels
- NANO-S™ surface hardening of stainless steels

ADDITIONAL SERVICES

- Various complementary processes, such as stress relief, tempering, cleaning, and washing
- Full metallurgical laboratory

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Locations
& Service
Capabilities

NITREX MILAN AREA

SIZIANO, ITALY

FULL SERVICE
HEAT TREATMENT
FACILITY

LOCATION

Km. 8.440 Via Melegnano,
Siziano PV 27010 ITALY

T +39 0382 617964

CERTIFICATIONS



PROCESSES

- Gas atmosphere carburizing
- Integral oil quench
- NITREG® gas nitriding
- NITREG®-C ferritic nitrocarburizing
- ONC® post-oxidation black finish
- NITREG®-S nitriding of stainless steels
- NANO-S™ surface hardening of stainless steels
- Carbonitriding
- Neutral hardening
- Age hardening
- Annealing

ADDITIONAL SERVICES

- Various complementary processes, such as stress relief, hardening, tempering, blasting, cleaning, and washing
- Full metallurgical laboratory
- Nitriding of long parts up to 4.5 meters (177") and large diameter parts up to 2.2 meters (87")
- Carburizing parts up to 3 meters (118") in diameter and length

NITREX **SOSNOWIEC AREA**

SOSNOWIEC, POLAND

NITRIDING/NITROCARBURIZING HEAT TREATMENT FACILITY

LOCATION

ul. Jedności 48,
Sosnowiec 41-218 POLAND

T +48 32 296 66 30

CERTIFICATIONS



PROCESSES

- NITREG® gas nitriding
- NITREG®-C ferritic nitrocarburizing
- ONC® post-oxidation black finish
- NITREG®-S nitriding of stainless steels
- NANO-S™ surface hardening of stainless steels
- Age hardening

ADDITIONAL SERVICES

- Various complementary processes, such as stress relief and blasting
- Full metallurgical laboratory

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Locations
& Service
Capabilities

NITREX MEXICO CITY AREA

QUERÉTARO, MEXICO

FULL SERVICE
HEAT TREATMENT
FACILITY

LOCATION

Calle de Lluvia 8,
Fraccionamiento Industrial,
La Noria, El Marqués, 76246
Santiago de Querétaro,
MEXICO

T +52 442 221 5243

CERTIFICATIONS



PROCESSES

- NITREG® gas nitriding
- NITREG®-C ferritic nitrocarburizing
- ONC® post-oxidation black finish
- NITREG®-S nitriding of stainless steels
- NANO-S™ surface hardening of stainless steels
- Age hardening
- Vacuum hardening
- Vacuum carburizing
- Vacuum processing

ADDITIONAL SERVICES

- Various complementary processes, such as stress relief, hardening, tempering, blasting, cleaning, and washing
- Full metallurgical laboratory



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Locations
& Service
Capabilities

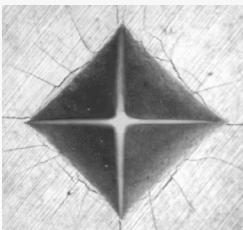
TECHNOLOGIES

THINK NITREG® WHEN WEAR, FATIGUE & CORROSION MATTER

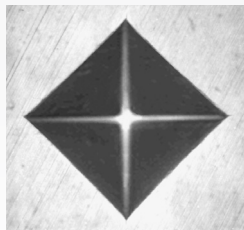
INNOVATIVE TECHNOLOGIES FOR ALL TYPES OF STEEL

The NITREG® brand of potential-controlled gas nitriding and nitrocarburizing technologies are used exclusively in NITREX furnaces. These ecological and time-tested technologies enable the development of customized recipes for various parts, applications, steels, case configurations, and final requirements to enhance wear, fatigue, and corrosion resistance while delivering improved part performance, reliability, and service life.

VICKERS INDENTATIONS – Load of 30 kg on a 4340 steel nitrided to the same specification:



CONVENTIONAL
nitriding



NITREG®
nitriding

NITREG® Gas Nitriding

NITREG® is a gas nitriding technology that is successfully applied to a variety of parts and materials to increase their surface hardness, wear resistance, and fatigue life. Its ability to control the concentration of nitrogen at the surface allows it to manage the growth of the compound layer almost independently from the development of the diffusion zone. This allows for a tighter control of the case depth and the white layer within narrower tolerances.

BENEFITS

- Precise control of the compound /white layer thickness and its properties
- Elimination of closed nitride networks within the diffusion zone
- Excellent control of the case depth
- Uniform hardened surface even in small bores, tight grooves, and sharp edges
- Prevention of over-nitriding, no distortion of parts
- Very high level of process repeatability
- Cost savings due to reduced gas consumption, optimized process times, and elimination of post-finishing operations
- Green technology that reduces pollution

NITREG®-C Nitrocarburizing

NITREG®-C is a nitrocarburizing process with K_N and K_C control that incorporates simultaneous diffusion of nitrogen and carbon into the steel surface. Treatment enhances the wear, fatigue and corrosion resistance of treated steel or cast-iron parts, without distortion of shape or dimensional changes. It is an environmentally friendly equivalent alternative to salt bath nitrocarburizing.

BENEFITS

All the benefits of NITREG®, plus:

- Rapid formation of the white layer on low-carbon unalloyed steel
- Stable γ' -phase content in most types of steels
- Improvement and stabilization of the ϵ -phase content in most types of steels

NITREG®-S For Stainless Steels

NITREG®-S is a proprietary nitriding technology with a depassivation stage that removes oxides from alloying elements to allow nitriding of stainless steel to take over with complete control over the formation of the nitrided layers. All types of stainless steel can be nitrided.

BENEFITS

All the benefits of NITREG®, plus:

- No need for pre-processing preparations
- Excellent wear resistance
- Improved fatigue strength
- Prevention of galling
- No change to the chemical composition of the alloy
- No effect on the steel's non-magnetic nature
- No change in color, shape, or size

ONC® In-Process Oxidation

ONC® is an in-process post-nitriding or post-nitrocarburizing oxidation process with oxidation potential (K_O) control that further enhances wear and corrosion resistance while producing an attractive black finish on metal parts of various grades of steel. It is a low-cost, environmentally friendly alternative to chrome plating and salt bath nitriding.

BENEFITS

All the benefits of NITREG®, plus:

- Even greater corrosion resistance
- Even greater wear resistance
- Attractive black surface finish
- Lowered coefficient of friction

NANO-S™ For Stainless Steels

NANO-S™ is a surface hardening process that improves the wear and galling resistance of stainless-steel components while leaving their inherent corrosion resistance alone. It diffuses nitrogen and/or carbon into the surface, creating a S-Phase structure with extremely high hardness.

BENEFITS

All the benefits of NITREG®, plus:

- No need for pre-processing preparations
- Excellent wear resistance
- Improved fatigue strength
- Retained intrinsic corrosion properties
- Prevention of galling
- No change to the chemical composition of the alloy
- No effect on the steel's non-magnetic nature
- No change in color, shape, or size


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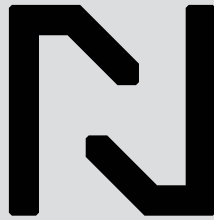
Think
NITREG®
when wear,
fatigue &
corrosion
matter

NITREX

A GLOBAL SOLUTIONS PROVIDER



WE ARE THE ONLY
FULLY INTEGRATED
SOLUTIONS PROVIDER
IN THE PREMIUM
SURFACE TREATMENT
MARKET.



HEAT
TREATMENT
SERVICES

TURNKEY
HEAT TREAT
SYSTEMS

PROCESS &
FLOW
CONTROLS

NITREX

HTS
BROCHURE

A Global
Solutions
Provider

COMMITMENT TO QUALITY CONTROL

NITREX prides itself on providing customers with world-class quality surface treatment systems, controls, and services that improve component reliability and performance, as well as the life span and productivity of their engineering parts. Maintaining quality is a core company value, and the entire team, from receiving to handling, processing, inspection, and shipping, is committed to upholding quality assurance and control procedures.

As a result of our ongoing commitment to quality, NITREX maintains several national and international accreditations. These certificates are critical to our efforts in delivering value to our customers, both now and in the future.

Repeatedly chosen by blue-chip customers:



AEROSPACE



CHROMALLOY

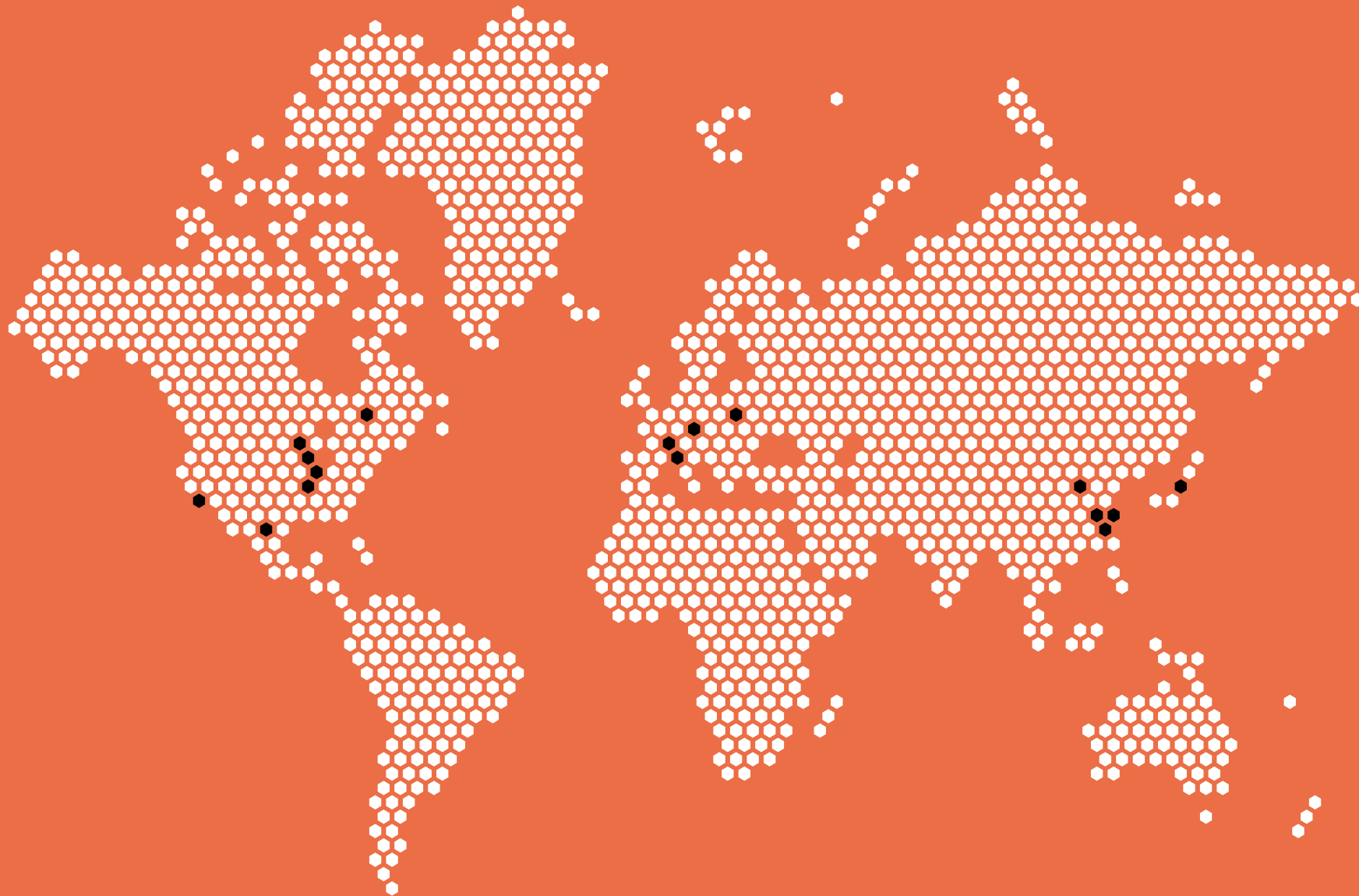


AUTOMOTIVE



INDUSTRIAL





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NITREX

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Commitment
to Quality
Control
/
Global
Positioning



MASTERING STRENGTH.
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