

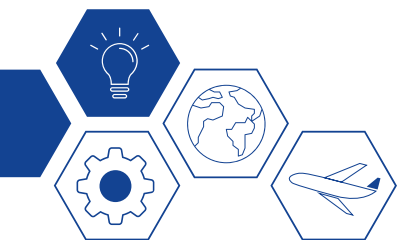
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RUBIG
DRIVING SUCCESS

Technology without limits

Aerospace





YOUR ALLY, WHEN IT COMES TO HEAT TREATMENT

HEAT TREATMENT PROCESSES:

Plasma Nitriding

- ▲ PLASNIT® (classic plasma nitriding)
- ▲ PLASOX® (including post-oxidation)

Gas Nitriding

- ▲ R.NIT+® (classic gas nitriding)
- ▲ GASOX® (including post-oxidation)

Case Hardening

- ▲ R.CARB+® (classic case hardening)
- ▲ Inert gas hardening
- ▲ Carbonitriding

Vacuum Hardening

- ▲ R.VAC+® (classic vacuum hardening)
- ▲ LPC (low pressure carburizing)

RUBIG PARTNERS RELY ON THE PROMISE OF QUALITY

- ▲ Extension of service life
- ▲ Increase in wear protection
- ▲ Improvement of corrosion resistance
- ▲ Adjustment of the necessary strength properties



CERTIFICATIONS, STANDARDS & LICENCES:

- ▲ EN9100
- ▲ ISO9001
- ▲ Customer approvals of OEMs
- ▲ AMS 2759, 2759/1-9, 11,12
- ▲ AMS 2750
- ▲ NADCAP in progress
(accomplishment planned for 2021)



RUBIG HEAT TREATMENT

NITRIDING

PLASMA AND GAS NITRIDING

- ▲ Compact, dense and ductile compound layers
 - ▲ Minimal risk of distortion due to lower treatment temperature
 - ▲ Highest reproducibility and close tolerances in the treatment result
 - ▲ Highest process stability
 - ▲ Sensor controlled furnace control
 - ▲ Masking either mechanically (plasma nitriding) or by means of pastes (gas nitriding)
- RUBIG provides the design and manufacturing of masking

Nitriding is applied, among others, for the following steels:

- ▲ M50
- ▲ M50NiL
- ▲ 32CDV13
- ▲ 40CD12
- ▲ Maraging

CASE HARDENING

CASE HARDENING/CARBONITRIDING AND INERT GAS HARDENING/TEMPERING

- ▲ Know-how for low-distortion heat treatment
- ▲ Highest reproducibility due to fully automatic systems
- ▲ Sensor controlled furnace control
- ▲ Optimal process control for minimum residual austenite content (sub-zero-treatment and tempering)
- ▲ Masking by means of paste possible

Case hardening is applied, among others, for the following steels:

- ▲ AISI/SAE 9310
- ▲ 1.6587
- ▲ 1.6722
- ▲ 1.2842
- ▲ 1.7220

VACUUM HARDENING

TEMPERING/LOW PRESSURE CARBURIZING

- ▲ No negative influence on the surface (scale, oxides)
- ▲ Faster quenching with helium, alternatively also possible with nitrogen
- ▲ Minimal risk of distortion
- ▲ Low pressure carburizing (LPC) for complex alloys

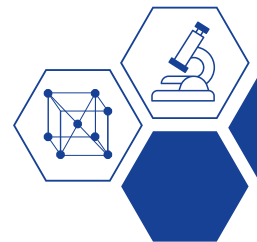
Vacuum hardening is applied, among others, for the following steels:

- ▲ M50NiL
- ▲ M50
- ▲ Cronidur 30
- ▲ AMS 5898
- ▲ Inconel 718





RUBIG COMPETENCE CENTER



Since the 1980s RUBIG Heat Treatment has remained a renowned specialist for the heat treatment of steel and aluminium materials. The technical know-how gained from the unique synergy effect of the entire group qualifies RUBIG today as a global player in the aerospace and aviation industry. The RUBIG Competence Center (RCC), consisting of an R&D and materials laboratory, is where materials science meets practical experience in metal finishing and processing. Thus, it is the foundation and catalyst for technological leadership.

KNOW-HOW AND EXPERIENCE

- ▲ long-standing, strategic partner of Tier 1 suppliers in aerospace and aviation
- ▲ highly developed control- and alarm systems from our own facility production
- ▲ highly qualified metallurgists to ensure serial production quality
- ▲ expertise in the estimation of material and heat treatment conditions
- ▲ identification of failure mechanism and determination of reason for failure by the use of systematic problem-solving techniques

METALLOGRAPHIC INVESTIGATIONS

- ▲ light microscopic analysis of the microstructure
- ▲ analysis of the chemical composition (e.g. material grade)
- ▲ hardness test according to Rockwell, Brinell or Vickers
- ▲ corrosion testing (salt spray test chamber, current density/potential test)
- ▲ macro- and microscopical examination of damaged components (stereo microscope, SEM, light microscope)
- ▲ in-house development of new heat treatment processes in state-of-the-art production and research furnaces

- ▲ X-ray residual stress and retained austenite testing
- ▲ training, workshops and consultation

YOUR BENEFIT

- ▲ heat treatment and testing according to aerospace standards
- ▲ development of customized heat treatment processes and strategic support from component planning to integration into serial production
- ▲ know-how on various new production technologies in the aviation industry
- ▲ gaining more insights on materials science through seminars and trainings



RUBIG

INDUSTRIAL FURNACES

TOP OF NITRIDING AND COATING

RUBIG is a leading producer of customized heat treatment plants. The know-how and advantage in technology reflected in the furnaces were gained in the in-house job shop. The "SIR-Surface Improvement by RUBIG" concept stands for the perfect surface and ensures that components meet the demands even under enormous stress.



All RUBIG furnaces guarantee the following advantages:

MODULARITY

- ▲ Flexible systems, perfect for in-house sourcing and future upgrades

INDUSTRY 4.0

- ▲ Simple data exchange with supervising control and ERP systems

EFFICIENT OPERATION

- ▲ Remote maintenance and online diagnostics for increased efficiency

AEROSPACE PACKAGE

- ▲ Data recording fully integrated into the process control system „write once read only“
- ▲ Measuring unit for additional control of the actual flow rates in the gas flow controllers
- ▲ Type N thermocouples, incl. AMS certificate
- ▲ Warning messages as soon as a thermocouple exceeds the specified AMS limits

Plasma nitriding & coating furnaces

- ▲ MICROPULS® EVEREST
- ▲ MICROPULS® PROCOAT
- ▲ MICROPULS® DIAMOND XTENDED

TEMPERATURE CONTROL

- ▲ Independently controlled heating and cooling zones
- ▲ Temperatures are measured directly at the component

MICROPULS® TECHNOLOGY

- ▲ Perfect process control using powerful plasma generators

CAPACITIES

- ▲ Increased degree of filling for cost-effective plasma nitriding

SIR CONCEPT

- ▲ Improved surfaces plus cost savings of up to 20 %

ENVIRONMENTAL COMPATIBILITY

- ▲ Optimum energy efficiency and lowest emissions

Gas nitriding furnaces

- ▲ GASCON K2 BELL TYPE
- ▲ GASCON K2 PIT TYPE
- ▲ GASCON K2 HORIZONTAL TYPE

INDIVIDUALITY

- ▲ From standard systems to customer-specific systems and special system solutions

LONGEVITY

- ▲ Usage of materials like stainless steels or Inconel prolong lifetime of retort

CONTROLLABILITY

- ▲ Atmosphere control (KN, KC, KO or dissociation) possible

RUBIG

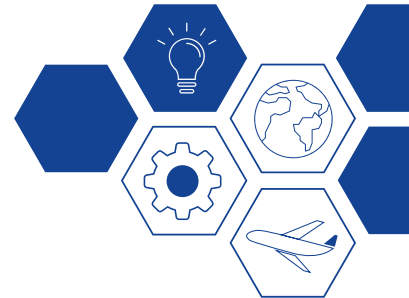
DRIVING SUCCESS

RUBIG GROUP

4 DIVISIONS – 5 COUNTRIES – 1 SYNERGY

Since the foundation of RUBIG in 1946, the company has grown from a small drop forging company to a centre of excellence for metal processing. The unique synergy potential resulting from the close cooperation between RUBIG Industrial Furnaces, RUBIG Heat Treatment, RUBIG Die Forge and RUBIG Technology adds particular value for customers. They benefit from innovative solutions, especially in the field of materials technology with comprehensive consulting expertise.

Sustainability and environmental awareness have been written in capital letters at RUBIG for decades and the company thus has the technological leadership of the „Zero Emission“ plasma technology. The technology was developed at RUBIG Heat Treatment and RUBIG Industrial Furnaces and is also used for forged products.



OUR FOLDER
RUBIG Group



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