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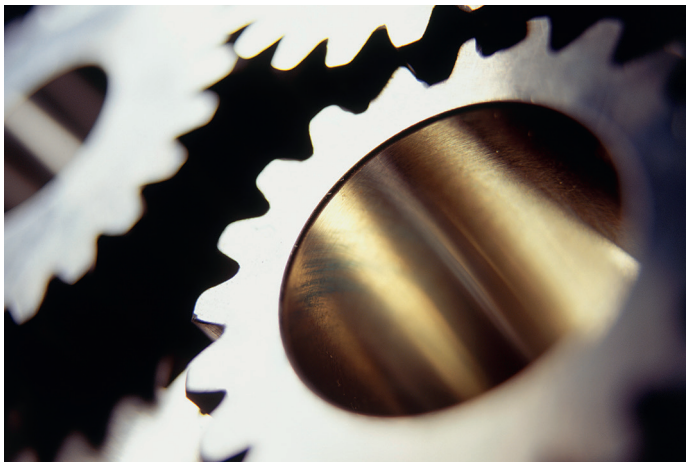
Automotive & Metal Fabrication

ALNAT Audit

Heat Treatment Services

We deliver:

- Furnace audit
- Troubleshooting
- Process optimization
- Performance control
- Support for safe operations



The Industry Challenge

Mechanical properties as well as surface appearance of metallic parts strongly rely on optimal heat treatment processes. While managing safety and quality is key to successful operations, being able to meet evolving market demand is also a must-have today. This is why coping with process deviations, furnace aging or a large variety of alloys grade treatments are frequent concerns.

If you need to measure up to demanding requirements, services associated with industrial gas-based technologies for heat treatment can provide you with truly effective options.

The Solution

A comprehensive solution for and adapted to your needs, ALNAT Audit combines the best of our gases, application technologies and services based on expert support.

More specific, our services encompass new or retrofit project assessment, gas control panel design, audits and various levels of trainings as well as troubleshooting.

ALNAT Audit is suitable for existing or new facilities, annealing, tempering, neutral hardening, atmospheric carburizing, nitriding, brazing and sintering processes.

Your Advantages

Safety and risk mitigation

Regular safety audits of your gas installation are essential to detecting potential negative furnace impact. This is as important in designing a new installation as in controlling or retrofitting an existing one.

Troubleshooting

We can help you fix issues that may take you off guard. Whether it is about your gas installation or your furnace atmosphere, we respond promptly.

Process optimization

Fine tuning heat treatment atmospheres is an integral part of good operating practices. Our specialists are experienced in providing gas expertise to customers, helping them master their furnace performance and product quality.

Performance audit

Recurrent atmosphere and temperature audits ensure your production quality to prevent non-conformities. We provide comprehensive reports with performance gap analysis for continuous improvement plans and long-term follow-ups.

Skill development

Our various training programmes on using industrial gases for heat treatment in safe and effective ways are targeted on improving operator skills and retaining competitiveness.

Core Features

ALNAT Audit Heat Treatment Service	What for?	Gas Analysis	Temperature Analysis	Deliverables
Furnace Audit Spot	Troubleshooting.	Furnace atmosphere analysis: on demand	Furnace temperature analysis: on demand.	Recommendations for corrective actions.
Furnace Audit Recurrent	Periodic safety. Process control.	Furnace atmosphere analysis: one or two times a year.	Furnace temperature analysis: temperature measurement of process and/or temperature homogeneity. One or two times a year.	Recommendations for preventive actions. Guidelines for improvement.
Performance	Periodic safety and process control. Annual technical meetings with our heat treatment team.	Continuous furnace atmosphere analysis and process overview discussions.	Continuous furnace temperature analysis and process overview discussions.	Recommendations for preventive actions. Guidelines for improvement and alterations.

Case Studies

Case study #1: Problems with black oxidation

• Our customer:

— Annealing of gears for weaving machines;

— Heat treatment at 870°C in a batch furnace (0,6 m3);

— Nitrogen atmosphere (5 m^3/h)

• Our solution:

— Oxygen concentration measurement in the furnace during four hours: detection of increasing residual oxygen level from the back to the front door up to 1075 ppm;

— Recommendation for replacing the door seal and mounting a vent to avoid over pressure in the furnace once tightly sealed.

• Benefits:

— No more surface oxidation;

— No more post treatment;

— 30% nitrogen flow reduction.

Case study #2: Random surface colouration

• Our customer:

— Bright annealing of stainless steel tableware at 1050°C in a continuous furnace;

— 75% H_2 - 25% N_2 atmosphere with injections at the inlet and outlet of the furnace;

— Quenching chamber at the exit of the hot zone.

• Our solution:

— Continuous furnace atmosphere and temperature analysis over two days:

- detection of a quenching chamber design issue generating air leakage and insufficient cooling rate;
- detection of a random oxygen concentration between 20 ppm and 2000 ppm in the quenching chamber;

— Recommendation for carrying out sealing work on quenching chamber by the manufacturer.

• Benefits:

— Identification of the problem attributed to the furnace atmosphere:

- Identification of air leakage at the connection flange of the quenching chamber;
- Identification of insufficient quenching speed;

— No more coloured parts coming out of the furnace.

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