

Furnaces for Heat Treatment of Metals, Plastics and Surface Finishing



AMS 2750 D NADCAP

- Pyrometry solutions according to AMS 2750 D requirements
- Easy-to-operate systems
- Cost-saving, efficient documentation features
- Available for new and existing furnaces



How Nabertherm can help you meet the requirements of NADCAP and AMS 2750D



„Nadcap: the leading worldwide cooperative program of major companies designed to manage a cost-effective consensus approach to special processes & products and provide continual improvement within the aerospace & automotive industries” – Performance Review Institute (PRI)

Throughout the aerospace industry this accreditation process results in a standardized approach to quality assurance and a reduction in redundant auditing. By establishing stringent industry consensus standards that satisfy the requirements of all participants, supplier quality is improved by conducting more in-depth, technically superior special process audits (e.g. in heat treatment). Failing in such an audit may lead to sanctions ranging from having to shut down furnaces until compliance is achieved to even product recalls.



What do you have to do?

Today the NADCAP certification is the base requirement to do business with the aerospace manufacturers and their suppliers. As a heat treatment supplier in this respect, you have special needs: you need to know how to control and verify your furnace equipment by pyrometry. In order to comply with the applicable specifications as well as to fulfil your customer's requirements you need to know:

- Are you using the correct furnace for the job?
- Are the temperature readings and recordings accurate?
- Is the amount of temperature variation in the furnace acceptable?
- Is the heat treat load exposed to a consistent temperature throughout the process cycle?
- Can you proof all this to your auditor?

Compliance requirements

The heat treatment supplier must have a detailed procedure covering the means of compliance with customer requirements, including documentation. This also includes the procedure on how your company will comply with the pyrometry requirements set by the Aerospace Material Specification AMS 2750D, which covers



Hardware

- Temperature sensors,
- Instrumentation,
- Thermal processing equipment, and

Testing and reporting

- System accuracy tests (SAT), with which you have to check and confirm in regular intervals the proper function of the control and monitoring instruments, and
- Temperature uniformity surveys (TUS), with which you also regularly have to proof by using additional, external measuring sensors and recorders that the working temperature inside the working space is uniformly distributed and reached within the allowed tolerances.



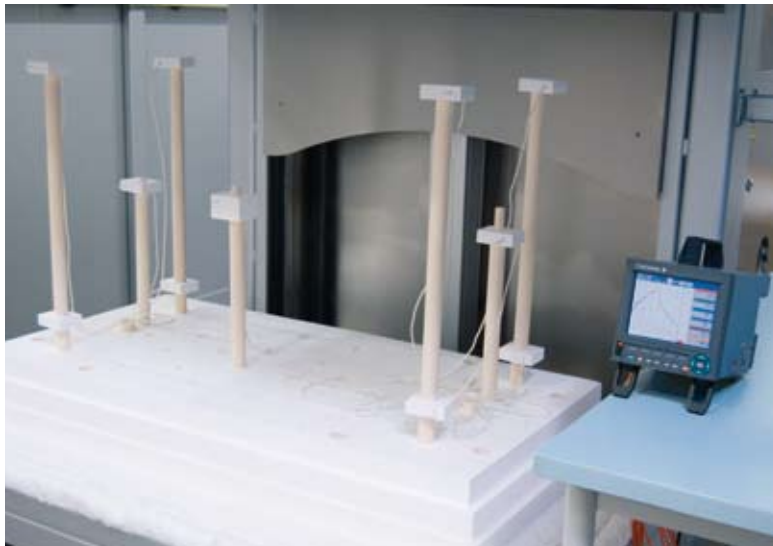
The intervals specified for the SAT and TUS measurements depend on your selection of the furnace class 1-6, defined through the allowed temperature variation at working temperature, as well as the instrumentation type A-E, specifying the number of monitoring sensors and recording instruments per furnace control zone. In combination, both variables - furnace class and instrumentation - strongly influence the time, and therefore costs involved to generate the required test reports for the audits.

AMS 2750D - Furnace configuration		Instrument Type	Normal SAT interval	Max. Allowable SAT interval	Number of Required TUS Sensors			Initial TUS Frequency	Number of Successful consecutive TUS	Reduced Periodic TUS Frequency
Furnace Class	Temperature Uniformity [°C]				< 0,085 m³	< 6,4 m³	< 8,5 m³			
1	+/- 3	D	Weekly	Weekly	5	9	14	Monthly	8	Bimonthly
		C	Weekly	Biweekly				Monthly	4	Quarterly
		B	Weekly	Biweekly				Monthly	4	Quarterly
		A	Biweekly	Monthly				2	Semiannually	
2	+/- 6	D	Weekly	Weekly	5	9	14	Monthly	8	Bimonthly
		C	Biweekly	Monthly				Monthly	4	Quarterly
		B	Biweekly	Monthly				Monthly	4	Quarterly
		A	Monthly	Quarterly				Monthly	2	Semiannually
3	+/- 8	D	Biweekly	Monthly	5	9	12	Quarterly	4	Semiannually
		C	Monthly	Quarterly				Quarterly	3	Semiannually
		B	Monthly	Quarterly				Quarterly	3	Semiannually
		A	Quarterly	Semiannually				Quarterly	2	Annually
4	+/- 10	D	Biweekly	Monthly	5	9	12	Quarterly	4	Semiannually
		C	Monthly	Quarterly				Quarterly	3	Semiannually
		B	Monthly	Quarterly				Quarterly	3	Semiannually
		A	Quarterly	Semiannually				Quarterly	2	Annually
5	+/- 14	D	Biweekly	Monthly	5	9	12	Quarterly	4	Semiannually
		C	Monthly	Quarterly				Quarterly	3	Semiannually
		B	Monthly	Quarterly				Quarterly	3	Semiannually
		A	Quarterly	Semiannually				Quarterly	2	Annually
6	+/- 28	E	Semiannually	Semiannually	5	9	12	Annually	Not Applicable	Annually

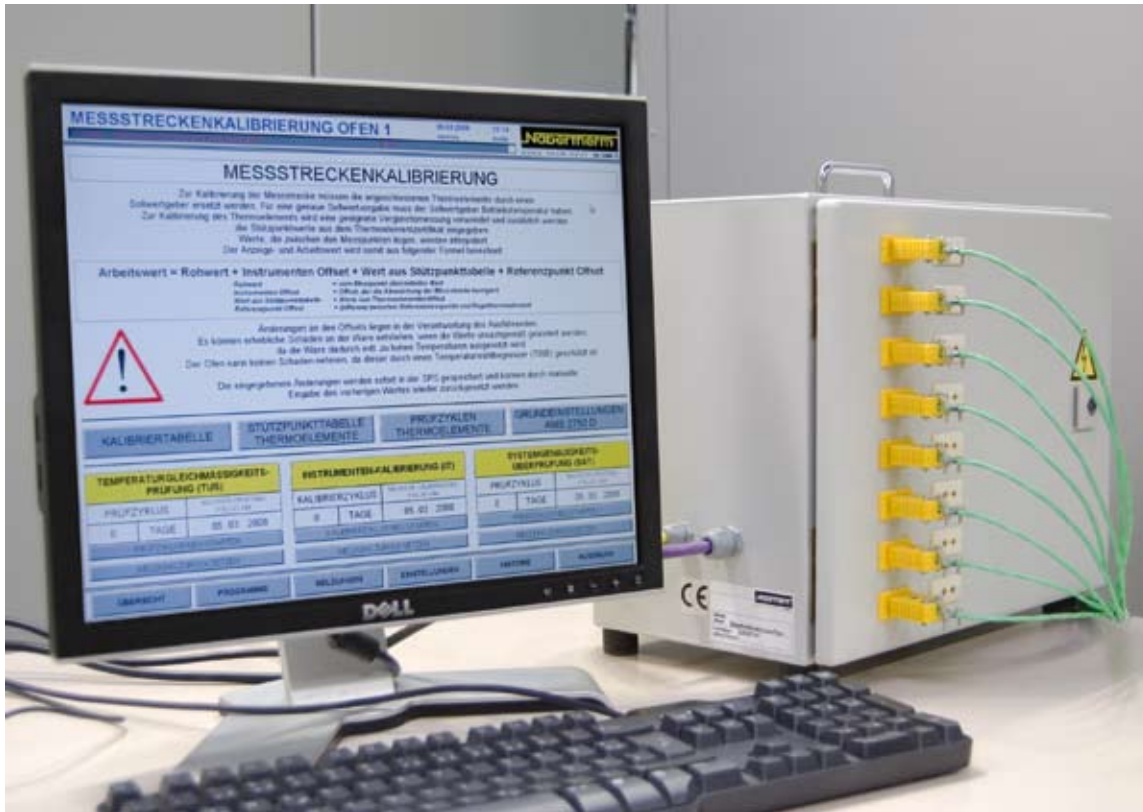
Survey intervals based upon selected furnace class and instrumentation

With reference to your customer's specifications which you have to fulfil in addition to the AMS 2750D, you have to select the furnace performance to suit your heat treatment operation best.

Theoretically, a combination of furnace class 1 and instrumentation A leads to the best uniformity with the longest intervals achievable, both for SAT and TUS. However, practical applications have shown that most furnaces installed for aerospace heat treatment are specified as class 2 / instrumentation B or less. In these combinations the fewer tests required due to extended intervals, can be successfully completed achieving the specified accuracy with an economic advantage.



**Would you like to have less stress with your NADCAP auditor?
 Select an “AMS 2750D – ready” furnace from Nabertherm**



In general all furnaces from the Nabertherm product range for heat treatment can be equipped with a suitable pyrometry package to comply with AMS 2750D.

You only have to define in respect of your heat treatment application

- The furnace class based on the required temperature uniformity
- The instrumentation type

We will supply you with a solution for a furnace not only with a superior quality and very precise, reliable controllers with a lasting repeatability and performance, but also

- Easily accessible, conveniently located SAT/TUS ports on the furnace
- Appropriately selected instrumentation package for an easily achievable longer survey interval frequency
- Nabertherm factory SAT/TUS for easy, no-hassle customer start-up available
- Controller and recorder models available featuring time-saving report generation and integrated alarm functions to support you in meeting the required SAT and TUS intervals
- Furnace logbook with recommended checklists and forms for SAT/TUS included, software solutions with data export to MS Excel also available

We will help you reduce times and save money by offering you a solution for our new and existing furnaces to achieve a NADCAP compliant performance during the necessary surveys as well as for generating the required reports.

Ask us for our detailed information!

www.nabertherm.com