Press release

Bearing mounting with induction heating 4.0 technology

Vaassen, the Netherlands, October 2019. It is well known that bearings fail for many different reasons. One such reason is improper mounting. If the right techniques and tools are not used, bearing life is jeopardized. It is estimated that approximately 30 percent of bearing failure is caused by poor fitting. A serious percentage to consider. Why does this happen? Lack of knowledge, lack of correct fitting tools?

There are many bearing types which require different fitting techniques. For instance, hydraulic mounting, cold-mounting or hot-mounting (interference fitting using heat). This article deals with hot-mounting. A bearing or other part is heated prior to mounting, causing the inner ring to expand. Then the bearing is mounted on the shaft. As it cools down it shrinks and tightens around the shaft.

Methods used for heating can be ovens, oil baths, hot plates, or even open flames with blow torches. The risks are many: local overheating causes material stress, loss of original lubrication, dirt contamination, not to mention the risk of personal injury due to slippery bearings (oil), or open flames. Oil baths and open flames also cause air pollution in the workspace.

Bearing manufacturers recommend induction heating as the optimum heating method. The reasons are obvious. Modern heaters offer many advantages, including time or temperature control. They are energy efficient, reduce heating times, and they also improve safety and working conditions on site. The clean, environmentally friendly work processes are all good reasons to switch from traditional heating methods to induction heating.

Stress-free and safe heating

The new generation of Betex induction heaters have even more to offer. The low and medium frequency induction heaters of the Smart series enable full control over the heating process. Specially designed for industrial use, the heaters have an easy to use touchscreen with many heating options. More importantly: they are fitted with a Delta-T control system. Two temperature

sensors measure the inside and the outside temperature of the bearing or other part and adjust the heating according to the selected variable settings. In this way, the maximum permitted temperature difference between two points can never be exceeded. Heating is even and uniform, and material stress is avoided. Heaters have a USB port for logging purposes. Nowadays it is becoming more and more important to be able to store heating data or create a proof of work report.

Heating bearings

Bearings should never be heated above 120°C (248°F) unless specified otherwise. Extreme heat can affect metallurgical structure and lubrication. Betex induction heaters offer full control including Delta T. When this option is used, the temperature difference between the inner and outer ring can never exceed the maximum pre-set value.

Betex medium frequency induction heaters for mounting and dismounting

These heaters solve difficult assembly or disassembly jobs for medium-sized and large bearings. Compared to traditional methods, the heaters are easy to use. Fast when necessary for disassembly, or controlled and slower for stress-free assembly of valuable bearings. Fixed or flexible inductors can be used depending on the application. Fixed inductors are used for serial work. Flexible inductors are multifunctional and are used for large bearings or irregularly shaped parts, with all the advantages of a safe, stress-free, damage-free, clean and energy efficient heating process. For special applications it is even possible to carry out tests in advance or to use simulation programs.

What to consider when selecting an induction heater

The customer may have particular requirements including a cylindrical or progressive expansion, automatic demagnetization, microprocessor-controlled heating, automatic power adjustment, logging of the heating process. Questions to be asked are: What is the size and type of the bearing or part? The size of the heater is determined by the smallest inner diameter and the largest outer diameter. How often is heating required? Do you need speed, or do you need a controlled heating process using Delta-T? Do you have both mounting and dismounting requirements?

Reducing maintenance costs

Significant cost savings can be achieved with induction heater technology. Sometimes savings are enormous: heating times are reduced dramatically; parts are reused that would otherwise be scrapped; a production plant reduced overhaul time from ten to eight days. But when it comes to bearing mounting, perhaps the most important advantage is the improved quality of the assembly process.

Induction heating specialist Bega

Bega Special Tools has been selling induction heaters for over 40 years. Over the years the design of the induction heaters has evolved, starting with the change from analogue heaters to digital heaters; the introduction of the ergonomic swivel arm; the continued development of the microprocessor for maximum control; automatic demagnetization; production in accordance with CE directives; CSA/UL certification for the Canadian and US market; and finally the design of medium frequency induction heaters for both dismounting and mounting.

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Images:

Image 1: The new generation of Betex induction heaters with Delta-T control system

Image 2: Touchscreen with easy selection of various heating modes

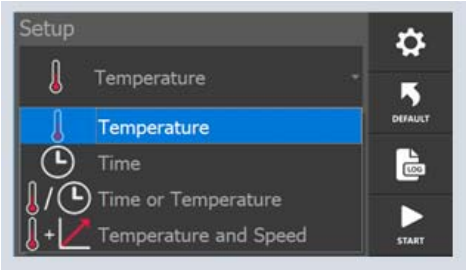

Image 3: Log function and export to USB stick

Images 4 and 5: Betex MF Quick-Heater dismounting bearing rings within minutes

Company information:

Founded in 1978 and headquartered in Vaassen in The Netherlands, Bega Special Tools manufactures and distributes special tools for safe, cost-effective mounting and dismounting of bearings and transmission parts. These tools substantially improve the quality and ease of maintenance and installation of rotating parts in machines, resulting in longer lifespan. Exported to over 60 countries worldwide, Bega products are used in production and maintenance departments of MRO and OEM companies within various types of industries and include special solutions for the wind energy, railway, mining and steel industries.

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TPR International would be grateful for a sample copy of the publication with this article.