



AEROSPACE CASE STUDY

MESSIER-DOWTY LTD

For Messier-Dowty, safe and efficient materials handling systems form a vital part of their manufacturing processes, with new and challenging manufacturing problems to overcome for each new product. The use of Titanium for some components requires state-of-the-art heat treatment processes to ensure that the maximum strength is retained whilst minimising component weight. This heat treatment process required a very special handling system to ensure consistency of material performance.

The brief

Titanium components weighing up to 150Kgs were to be heated in a Fluidised Bed furnace to a temperature of over 900°C and quenched within 12 seconds to ensure consistency of performance. The basket of components were to have a clearance inside the furnace of only a few millimetres, requiring the components to be lifted out of the fluidised media at a critical speed to minimise media displacement. Once exposed to the air, the components had to be fully submerged in the quench tank within 12 seconds, without causing a splash. In order to achieve this, the design needed to incorporate automation, speed control and level detection to allow for differently designed components.

Crane Services were entrusted with the design for this critical material handling system, and working closely with the furnace manufacturers selected by Messier Dowty, were able to demonstrate that the solution was simple, efficient and cost effective.



The solution

A highly specialised, free standing, twin overhead runway system was designed and installed over the furnace and quench tank incorporating inverted rack and pinion travel drives, and a specially designed hoist system using Demag drives, including a sprung location cowl. The jigs of components were to be hoisted up to the cowl to stabilise the component basket during rapid transfer from the furnace to the quench tank. Both travel and hoist drives were inverter controlled to enable the optimum acceleration, deceleration and transfer rates to be achieved.

Automation of the system enabled the operator to locate the dead centre of the furnace to ensure a clear lift out of the furnace. Once latched onto the basket, the automatic sequence was engaged, and the quench process followed an automated cycle, including agitation whilst in the quench tank.



The result

After over 10 years of use, the system is still used in the heat treatment of critical landing gear components. The system has proved to be extremely reliable, requiring only 6 monthly routine maintenance. Actual quench times have been set well within requirements.

For all your lifting and crane service enquiries contact Sales on 01384 370318