

Technical Project Note

Sikorsky S-92 V 1.01 – 10/02

Jet Fuel heated by THERMOSAFE®



LMK Thermosafe Induction drum heater, with a test Sikorsky S-92 aircraft being fuelled from a barrel of hot JP-8 fuel at 136°F.

Introducing a completely new aircraft into commercial or military service requires extensive certification testing before customer deliveries can begin. The Sikorsky S-92 is an advanced transport helicopter that incorporates the latest design safety features such as flaw tolerance, bird strike capability, turbine burst containment and benchmark crashworthiness.

As part of the performance flight tests for FAA certification, Sikorsky needed to safely pre-heat JP-8 jet fuel in standard 55 US gallon drums, to 136°F (58°C), and deliver it to the aircraft's tank through an approved ground fuel pump with filtration. The drums needed to be vented, so fuel vapour with a flash point of only around 100°F is present, and the potential fire risk very high.

Sikorsky approached LMK for a solution as the THERMOSAFE™ Induction Drum Heater does not use traditional radiant heating elements. The heater always stays cooler than the drum, with the steel drum wall being heated by the induction effect. Thus its key safe use criteria is the auto-ignition temperature of the hazardous vapour. JP-8 is a kerosene type fuel with an auto-ignition temperature well above the safety rating of 170°C (T3) given to the THERMOSAFE™ under its European ATEX approval for hazardous area use.

The drum wall and fuel temperatures were separately monitored for the duration of the tests, conducted at Sikorsky's Florida facilities, and the results logged onto a lap-top computer running analyses software. The project was very successfully completed well within the allotted time-frame. Charles Greenberg, co-ordinator at Sikorsky commented "Safety has to be our number one priority, and LMK's Induction Heater helped us resolve all the potential issues. Technical support from their UK headquarters during the crucial planning and preparation stages was excellent, and we were delighted with the results"

Sikorsky is a subsidiary of United Technologies Corp (NYSE:UTX) of Hartford, Conn, USA, which provides a broad range of high-technology products and support services to the aerospace and building systems industries. LMK Thermosafe Ltd manufacture a wide range of drum and container heating products used in process industries world-wide, including the award winning THERMOSAFE™ induction heater.