Tank Pressure Monitoring for Firefighting Training Simulator
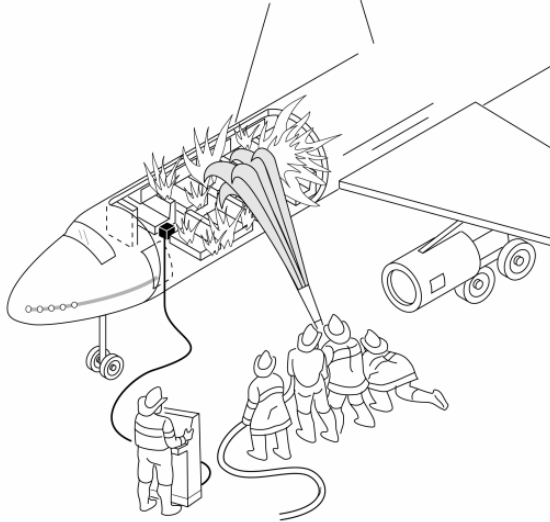
PROBLEM:

FAA regulations require airport firefighters to train on at least one live fire a year. In the past, toxic and hard to control combustible materials were used to stage these fires. Because of stricter safety and environmental regulations training is now accomplished with the aid of computer controlled training systems that use aircraft fuselage mock-ups and propane fuel to safely simulate aircraft fires. The training facilities can be configured to simulate engine, galley, cabin, baggage, and fuel-spill fires. The system must accurately simulate a real fire and respond realistically to the actions of the firefighters. To accomplish this the system needs feedback about the intensity of the fire and the amount of extinguishing agent applied by the firefighters. Temperature sensors alone cannot provide this information.

SOLUTION:

Hydraulic expansion tanks (filled with a mixture of methylalcohol and water) are located throughout the fuselage of the mock-up and connected by hoses to over 200 MLH series 50 psi steel diaphragm sensors. As the temperature of the fire rises, pressure inside the expansion tanks increases to a maximum of 60 psi. When the extinguishing agent is applied to an expansion tank (the tanks are in the form of metal boxes with funnels at the top to collect the extinguishing agent) the alcohol/water mixture cools, contracts, and pressure in the tank decreases. The change in pressure is detected by the pressure sensors and an output proportional to the pressure is displayed on the training facility's main control console. The manufacturer's design called for the pressure ports of the sensors to be mounted through the wall of an electronics enclosure.

⚠ WARNING

PERSONAL INJURY
DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.
Failure to comply with these instructions could result in death or serious injury.

Sensing and Control

ENVIRONMENT:
The pressure sensor's housings were mounted outside the aircraft mock-up so that they were never exposed to high temperatures. The steel used in the MHL Series wetted parts is unaffected by the alcohol/water mixture. The MLH series sensors are protected from many environmental conditions by a housing designed to meet IP65 standards.

SUMMARY:
The rugged and highly dependable Honeywell MLH Series pressure sensors are a perfect choice for this type of application. The thru-wall mounting cability, broad range of pressures, along with a variety of pressure ports and connector styles to choose from make this a very versatile product that can be readily adapted to a variety of applications.

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.
For application assistance, current specifications, or name of the nearest Authorized Distributor, contact a nearby sales office. Or call:
1-800-537-6945 USA/Canada
1-815-235-6847 International
FAX
1-815-235-6545 USA
INTERNET
www.honeywell.com/sensing
info.sc@honeywell.com

Honeywell