PASSIVE FIREPROOFING CO. LIMITED
DAKEN PFP UK LIMITED
Web: www.daken-pfp.com
Email: Sales@dakenpfp.com
UK Contact Telephone Number: +44 7566 229117
Chinese Contact Telephone Number: +86 139 1187 9345

DAKEN
FIRE PROOFING PROTECTION

Daken Fire Box (**DRB**) - Rigid Box Fire Protection System

Fire and explosion are the main concerns of Onshore and Offshore Oil & Gas, and Petrochemical installations. Passive fire protection of Critical Process Control Equipment (CPCE) allows the safe and controlled shut-down of equipment in the event of a fire preventing escalation.

Daken rigid fire box protection system is designed as a high-performance solution that can meet the demanding fire protection requirements to protect Critical Process Control Equipment (CPCE) from hydrocarbon pool fires and hydrocarbon jet fires. Daken Fire Boxes are manufactured using high quality materials and are designed to be user friendly and easy to install, giving access to controls and instrumentation. The Daken Fire Box can be installed on valves, actuators, air tanks, instrument panels, and other safety critical to enable a controlled shutdown in the event of a fire.

The Daken rigid fire box protection system has been widely used both Onshore and Offshore Oil & Gas, and Petrochemical installations worldwide, capable of withstanding the most severe fire conditions. The outer material is typically a high grade 316 stainless steel, which will not be affected by any Oil & Gas or Petrochemical installation environment, subzero ambient temperatures, or ultraviolet radiation. The composite insulation materials are composed of hydrophobic materials and Alkaline Earth Silicate (AES) fibre, which meets the specific thermal requirements of the protected item but maintains the optimum thickness.

The system is designed to be installed as a retrofit system so can be installed during normal operations with engineered cut-outs allowing cables and instrument tubing to exit the system. The system is always designed to be easily installed with access achieved through hinged access doors that are secured using quick release fasteners. This allows the system to remain installed without the requirement to fully remove any panels for everyday operations. In the event of a shut-down, the enclosure can easily be removed in full without the need for specialist tooling or training.

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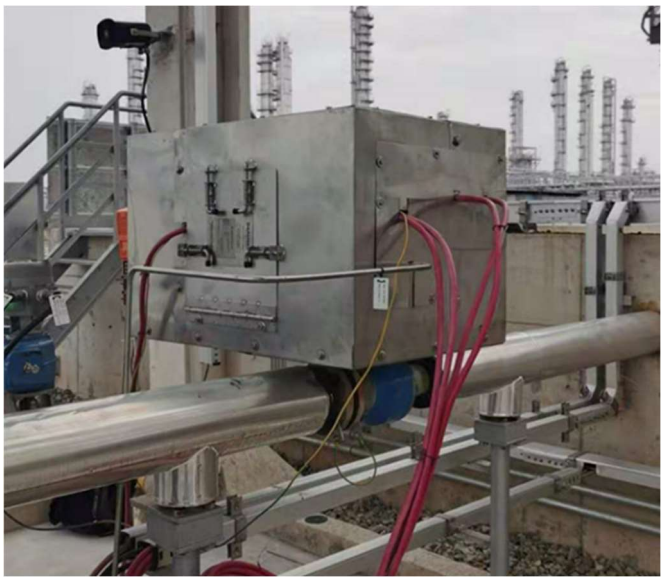
The Daken rigid fire box protection system is a robust solution that will not degrade over time and can be removed and refitted multiple times without the integrity of the system being affected.



Each Daken rigid fire box protection system can be designed from the equipment manufacturer's drawings, 3D models, or a site survey. The design would also account for any environmental space restrictions or clashes with adjacent items and the profile adjusted accordingly. The system is self-supported using support clamps that are clamped to the equipment to secure the fire box and prevent movement in any direction. The prefabricated modular panels are fixed to the clamps and are connected to adjacent panels using bolts and captive nuts that are engineered to allow quick and easy installation. The installed fire box must ensure the necessary structural integrity to withstand specified fires and explosions, and, in some cases, an internal stainless-steel frame may be added.

Where access to the equipment control mechanisms is required, access doors are designed within the appropriate panel; or alternatively the full face or panel may be designed as an access door. All access doors are stepped to prevent a direct fire path and are typically hinged at one edge to reduce the weight of the panel and prevent the panel being fully removed. The access doors are secured using quick release fasteners that are selected based on the fire and blast specification.

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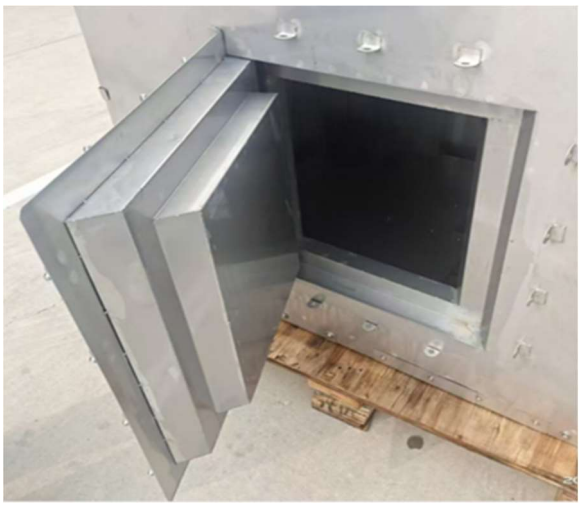
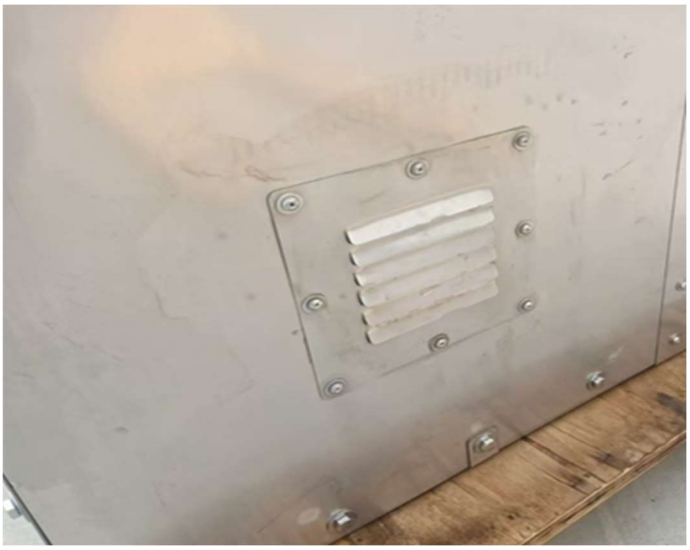
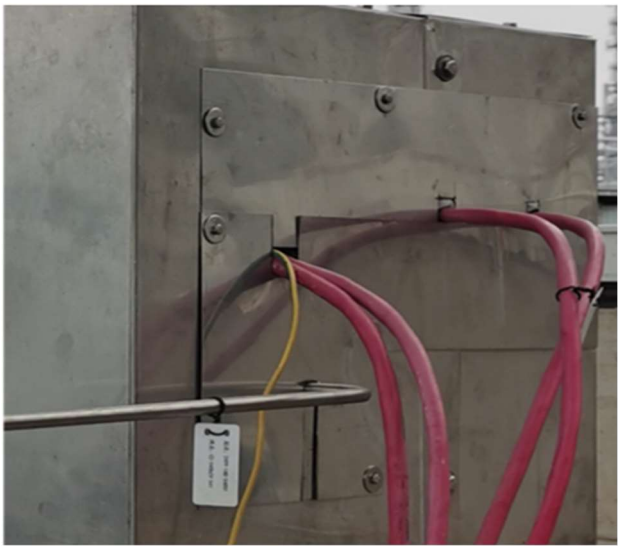


Quick inspection door

The ventilation and heat dissipation system, the drainage system, and the cable / instrumentation tube penetration system are all integrated into the Daken rigid fire box protection system and have obtained overall Type Approval certification from Lloyd's Register.



Third generation ventilation grille



Cable/air tube penetration

The Daken rigid fire box protection system is designed considering the size, mass, shape and profile of the protected item and environmental conditions. The design also considers the duration of fire that is specified and the thermal requirements such as process temperature and the maximum allowable temperature. The system can provide up to 2 hours of fire protection at flame temperatures exceeding 1100°C and the product design can also include features that provide protection against explosions and jet fires.

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The Daken rigid fire box protection system has undergone independent testing and certification and has been determined to have the following capabilities.

- ✧ Obtained Type Approval certification from Lloyd's Register.
- ✧ UL1709 standard hydrocarbon pool fire with a temperature of 1093℃.
- ✧ ISO22899-1 standard hydrocarbon jet fire with a temperature of 1200℃.
- ✧ Explosion blast pressure resistant up to 2 bar.

The Daken rigid fire box protection system main characteristics：

- ✧ Designed and manufactured based on test sample and certification including features as per customer specification or requirements.
- ✧ Designed to ensure the temperature rise over the specified duration is minimized so that the final temperature of the equipment over the given duration is below the maximum allowable temperature and remain operable.
- ✧ Lightweight, easy to transport, and can be installed and removed during normal operations.
- ✧ No performance degradation during its lifespan, even in the harshest environments.
- ✧ Highly resistant to corrosion.
- ✧ All clamps consider a neoprene gasket so resistant to vibration and no issues with dissimilar materials.
- ✧ The installation of fireproof system can be assembled and installed on the project site or in the factory.

Site Services: In addition to site surveys, our Service Team can complete the installation of the PFP, supervise local labour, conduct training, complete inspections, and offer after-sales support.