

# DARCHEM THERMAL PROTECTION

## DARMATT™ FLEXIBLE PASSIVE FIRE PROTECTION

Darchem Thermal Protection's Darmatt™ flexible jacket Passive Fire Protection system is a high performance solution designed to meet the most demanding requirements for protection of critical flow and process equipments from Hydrocarbon Pool Fire conditions.

Offering up to an unprecedented 180 minutes protection, Darmatt™ can be fitted to valves, actuators, instrument panels, process vessels, cable trays, pipework and has been supplied extensively worldwide for both Onshore and Offshore Oil & Gas and Petrochemical installations.

### DARMATT™ DESIGN SPECIFICATION

- **Fire Condition** - Hydrocarbon Pool Fire Engulfment up to 180 mins
- **Blast Protection** - Up to 0.43 bar as standard or up to 1.62 bar with Jetfire Darmatt™
- **Limiting Temperatures** - as per project requirements, with Lloyds approved Offtranp software calculations to be issued to clients for each item of equipment protected.



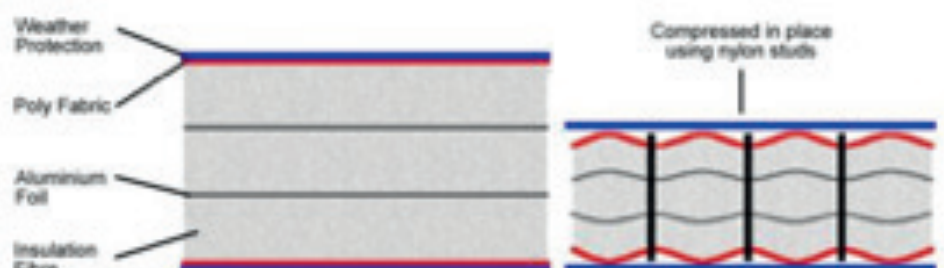
### CONSTRUCTION DETAILS

Each Darmatt™ PFP system is specifically engineered to fit closely around the protected equipment providing a removable, compact and user friendly enclosure. The Darmatt™ PFP system is constructed from pre-shaped panels designed to fit together around the equipment to be protected.

Each panel is made up of layers of insulation fibre and reflective foil, compressed and studded with nylon pins throughout the panel's area. The complete exterior is covered by a non-fire rated weather resistant skin.

The nylon pins hold the components in the Darmatt™ PFP system together to ensure that the insulation materials remain securely in place and do not migrate to a different part of the panel (as experienced with lower quality PFP and insulation jacket systems). The nylon pins also compress the insulation to approximately 60% of its original thickness to provide a very flexible but compact system. All this helps to ensure that the PFP system is easy to remove and re-install.

Cross section detail of standard Darmatt



## DARMATT™

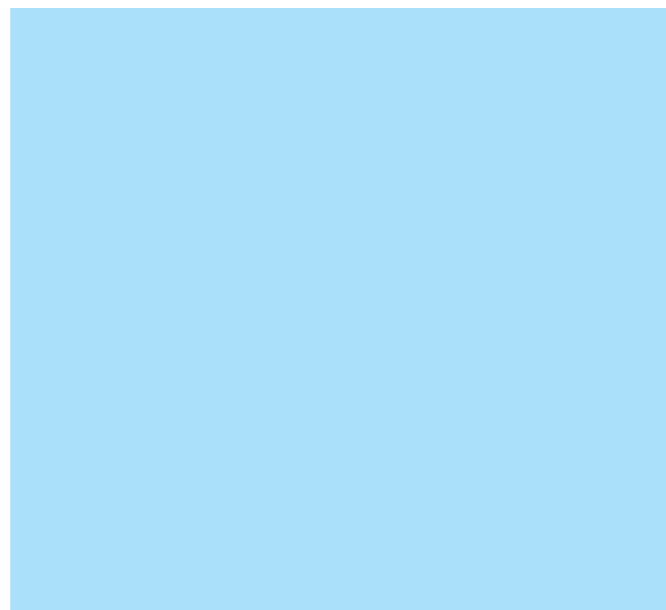
### FLEXIBLE PASSIVE FIRE PROTECTION

#### ACCESSIBILITY – INSPECTION HATCHES AND PENETRATIONS

Inspection hatches can be provided for each Darmatt™ installation to provide quick access to areas of the protected equipment that requires regular inspection or maintenance. Also, access can be further improved by utilisation of a space-frame around actuator controls. Lloyds have approved these hatches for use along with the Darmatt™ PFP system.

Penetrations for operating mechanisms, hydraulic tubing and position indicators etc. can be provided to facilitate problem-free operation and maintenance of equipment without the need to remove the jackets.

It is important that the client identifies any requirements for hatches and penetrations as early as possible such that they can be incorporated into the Darmatt™ PFP system's design.



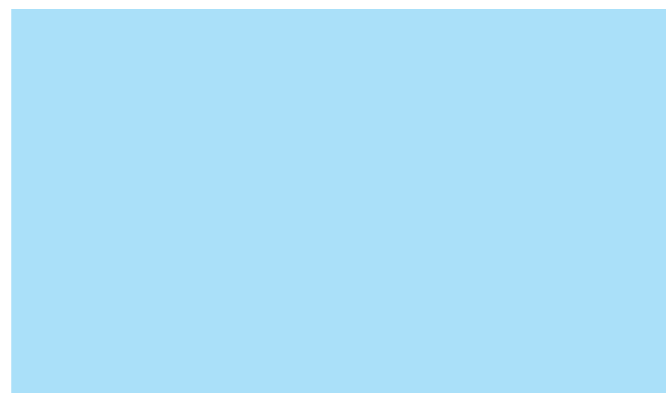
#### DARMATT™ PFP LACING METHOD

Darmatt™ panels are fastened together using high quality PVC coated stainless steel wire lacing. This lacing method is simple to apply and provides an extremely durable fastening, ensuring that the panels are secured permanently. By using this lacing method, the panels can be pulled tight around the equipment in such a way that they take shape around the valve / actuator. Once installed, each panel will retain its moulded shape making future removal / installation quicker and easier. This lacing method has been used on all Darmatt™ PFP systems supplied by Darchem since 1986.

#### TESTING & CERTIFICATION

Since its introduction Darmatt™ has been tested continuously to prove its capability as a passive fire protection system. The Darmatt™ PFP system is ideally suited to protect ESD valves, actuators, vessels, instrumentation panels, cable trays, pipe work, and other process equipment against hydrocarbon engulfment fire.

The Darmatt™ PFP System is Lloyds Type Approved and also holds accreditation from DNV and ABS.



## DARMATT™

### FLEXIBLE PASSIVE FIRE PROTECTION

#### OPTIMISATION OF INSULATION THICKNESS

Darchem Engineering's Lloyds approved software, Offtrap, is used to determine the optimal insulation thickness for each PFP application. This ensures that adequate insulation is provided to protect the equipment in the fire condition and that the thickness of the insulation is kept to the absolute minimum.

The factors below are input into the "Offtrap" software, which calculates and displays the temperature drop across the insulation after a set period of time during the fire.

- Type of Fire
- Duration of Fire
- Limiting Temperature Rise
- Relevant ambient and operating temperatures
- Mass and volume of Equipment
- Exposed Surface Area

#### PRODUCT CUSTOMISATION

Darmatt™ can be customised to meet the customers' specific environmental requirements, these include the following:

- Coloured Cloth to be in line with plant identification policies
- DARVENT™ grilles to aid with ventilation to reduce the internal ambient temperature of protected item and prevent the build-up of gas.
- Access Doors for maintenance or operating purposes.
- Custom designed Rain Jackets for added weather protection.

#### TEMPERATURE LIMITATION

A selection of outer weather resistant clothes is available to take into account differing ambient and operating temperatures for the equipment being protected. The standard Darmatt™ PFP system has a PVC coated outer cloth suitable for a maximum operating temperature of up to 60°C. However for high process temperatures a Silicone coated outer cloth withstanding up to 700°C can be utilised.



# DARMATT™

## FLEXIBLE PASSIVE FIRE PROTECTION

### DARMATT™

#### APPLICATIONS INCLUDE



VALVES AND ACTUATORS



PROCESS VESSELS



CABLE TRAYS



PIPE WORK