

Daken Flexible Insulation Jacket (**DFI**) - Removable Insulation Systems

Daken Fireproofing Co. Limited have created an extensive product range of PFP systems and insulation jackets spanning several different application types. Daken's Flexible Insulation Jacket Systems are high-performance solutions manufactured using various insulation products to meet different applications used in the petrochemical, marine & offshore, power generation, metallurgical, and food & manufacturing industries. The insulation jackets have been developed to be applied to exhaust systems, valves, fittings, pipelines, ducting, pressure vessels and any other items that require insulation. The systems are all designed to meet the most demanding requirements and to insulate equipment always based on an optimum design to meet the thermal specification and project requirements. In all cases a bespoke design is considered, offering the optimum design to ensure a compact, easy to install, user friendly system is supplied, backed up with thermal calculations to prove performance.



Daken Flexible Insulation (**DFI**) Jackets has four types of products according to different requirements and these are as follows –

- Daken **Aero Flex** Jacket – High performance jacket manufactured using Aerogel materials
- Daken **Acoustic Flex** Jacket – High performance composite system for noise reduction
- Daken **HT Flex** Jacket – High performance high temperature insulation
- Daken **Insulation Flex** Jacket – Standard fully removeable insulation

All Daken Flexible Insulation (**DFI**) Jackets are designed in a similar manner as a single layer solution that is pre-engineered so each item can be installed around the protected item without any issues. The Jackets are designed considering the optimum thickness based on the Jacket type against the thermal specification and project requirements. The design of all Daken Flexible Insulation (**DFI**) Jackets is to allow for a rapid installation to save on manpower and costs during initial installation and shutdowns.

Engineering: Each bespoke design is specifically engineered to fit closely around the protected item using 3D modelling software to ensure a good fit-up and allowing for clash detection to avoid any issues during installation. A 2D drawing detailing the insulation design and the thermal requirements are generated and supplied per item type along with an installation procedure and guide. Additional project documentation can also be accommodated including thermal calculations and project specific documents.

Daken Flexible Insulation (**DFI**) Jackets can be designed from GA Drawings, Customer Models, Project Models, or alternatively a site survey, if required. Our skilled engineers can be deployed to complete up-front site surveys and are familiar with onshore and offshore facilities and are fully conversant with Permit to Work and HSE policies.

Standard Product Design: Our base product features across the full range are as follows –

- The lightest, thinnest, specialized design, insulation jackets in the industry.
- All Jackets are engineered based on providing an optimum thickness to meet thermal requirements.
- All Jackets are designed to be water-shedding to prevent CUI.
- All Jackets are designed to be installed easily without any training or specialised tooling.
- All Jackets use high-grade materials such as silicone-coated fiberglass cloth or polytetrafluoroethylene (PTFE)-coated fiberglass cloth.
- All cloth materials have excellent thermal stability and are capable of withstanding long-term operation in high-temperature environments.
- All materials are oil resistance, water resistance, abrasion resistance, UV resistance, and

resistant to over 90% of chemical solvent corrosion.

- All Jackets are secured using high quality mechanical fasteners considering Velcro as the initial first fix, and the secured using various mechanical fastening as a second fix.
- The Jackets are designed as flat pack items to reduce the volume of packing and storage requirements at site. The Jackets are packed in reverse order so the first Jacket in any package is the first Jacket to be installed ensuring the installation is managed easy and quickly.

Manufacture Capabilities: Huludao Daken Passive Fireproofing Limited employs highly skilled engineers to design various products and has a dedicated permanent manufacture team, with options to bring in temporary staff as required.

Our facility is over 4,400 square meters and includes various manufacturing departments and a warehouse to allow large contracts to be managed easily. Each manufacture department considers advanced manufacturing techniques using automated bespoke machinery that has been developed to improve quality and efficiency.

Our world class manufacturing facility is equipped to manufacture all products and is automated to ensure rapid lead times, reduce waste materials, providing an optimized, efficient service and reducing costs



Daken Aero-Flex Jacket: Ultra-thin super hydrophobic insulation system that helps prevent CUI.



From only 10mm thick the AeroFlex Jacket range offers significant space and weight savings for the perfectly engineered solution. Our dedicated team went through years of research, development and testing to find the perfect design and construction for the AeroFlex Jacket system.

The AeroFlex Jacket system has an innovative and intelligent fail-safe system built into the design. This assures that in the unlikely event water was to penetrate the underside of the insulation jacket it will draw any moisture away from the pipe or equipment and expel it through its built-in ventilation system.

The selection of insulation layer materials for the AeroFlex Jacket system is based on specific application scenarios and performance requirements, considering factors such as temperature range, environmental conditions, thermal conductivity, cost-effectiveness, and installation and maintenance. Daken use high quality super hydrophobic materials such as Aspen Aerogel with a thermal conductivity of $0.015-0.020 \text{ W/(m} \cdot \text{K)}$ which allows for a thinner jacket to be designed and helps prevent CUI.

The system has a built-in superhydrophobic vapor-release system prevents moisture and avoids CUI issues.

The complete outer surface uses a high-performance outer layer that is oil-resistant and chemical-resistant, with superior weather resistance and UV resistance.

The system is Eco-Friendly and free from asbestos, formaldehyde, and other hazardous substances, meeting pharmaceutical, food, and fine chemical industry standards.

The advanced connection system requires no additional sealing, simplified installation even at stitched seams.

Excellent thermal Insulation reduces heat dissipation by over 80%.

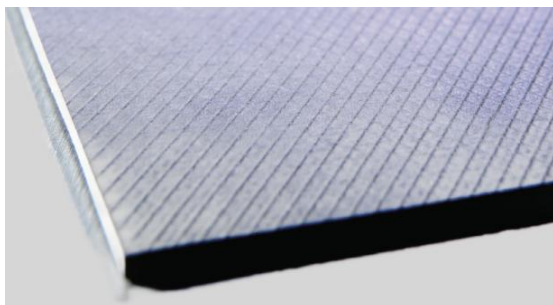
Ultra-Thin & Lightweight ensures the system is easy to install and transport due to minimal thickness and weight.

Quick installation and removal can be achieved, and the system is fully reusable, facilitating equipment maintenance and inspection. Saves up to 80% of the time and cost of installation compared to other insulation materials.

Can reduce the total costs of a project by over 30%, while minimizing downtime and operational expenses.

The system is adaptable to complex structures (valves, vessels, piping) with shape and space constraints.

Daken Acoustic Flex Jacket: Single layer noise reduction insulation system with market leading performance.



Acoustic Barrier Mat insert



Acoustic Flex Jacket

Traditionally, insulation for noise reduction can be made up of many different layers of

materials that can take a considerable time to install all the components. With the Daken Acoustic Flex Jacket installation time can be greatly reduced as a single layer system can offer considerable noise reduction.

Independently tested to international standard ISO 15665 and ASTM E2611, the Acoustic Flex Jacket system can reduce noise by an average of 40dB using a single 50mm thickness layer. This performance exceeds the requirements of classes A, B, C & D of ISO 15665 acoustic test standard and exceeds the requirements of most acoustic noise reduction projects. An additional layer can be added for a further noise reduction of approximately 20dB.

The Acoustic Flex Jacket system can offer more than just noise reduction. The system can include combinations of materials to cover a range of applications such as corrosion under insulation (CUI) protection, high temperature resistance or thermal performance.



Daken HT Flex Jacket: High temperature insulation system for use up to 1,000°C ideal for turbines and exhausts.



The HT Flex Jacket system is constructed from premium quality high performance materials allowing the system to provide a considerable reduction of heat from high temperature equipment such as exhausts, generators and turbines.

The HT Flex Jacket system can withstand temperatures up to and more than 1000°C to considerably reduce radiant heat and protect personnel and equipment in the vicinity of equipment. A single layer of 50mm thickness can reduce the outer temperature of a 400°C+ exhaust system down to below 55°C.

The HT Flex Jacket system is constructed from high temperature resistant technical fabric with a graphite coating ensuring the system is hard wearing and durable whilst being handled and installed.

The installation of the HT Flex Jacket system is variable depending upon the requirements of a project. Typical fixings used would be stainless steel wire and banding straps and, in some cases, high temperature hook and loop and expansion springs can be used.

Daken Insulation Flex Jacket: Advanced weatherproof insulation.

The Insulation Flex Jacket system is tough and hard wearing. The system is designed with a high-performance outer covering to prevent any liquid water penetrating the system to protect equipment from moisture.

The Insulation Flex Jacket outer covering is a hard-wearing protective material to offer protection against harsh weather conditions or for use in areas of high moisture. The material is tough durable and will wipe clean easily. The Insulation Flex Jacket is suitable up to 230°C continuously.

The Insulation Flex Jacket system can be used in many different applications. Widely used for heat conservation and personnel protection from hot equipment in the Oil and Gas Industry and for frost protection of cold equipment, the jacketing is not limited in its application.

Petrochemical Industry



Power Systems



Site Services & After-Sales:

On-Site Survey & Measurement: Daken can conduct on site field measurements using professional instruments to capture critical operational parameters, including as-built geometry and temperature field distribution.



Our engineers undergo rigorous professional training and certification, accumulating extensive experience in industrial scenarios. The team possess in-depth expertise in onshore petrochemical facilities (e.g. refinery reactors, oil pipelines, chemical towers) and offshore installations (e.g. offshore platform equipment, marine power systems). This enables them to develop customized design solutions for complex equipment configurations.

Daken can design based on customer-provided 3D models or 2D CAD drawings (with precise dimensional annotations). Our team of engineers are experienced in the use of various software, and we would create a 3D model and add the insulation jackets to ensure a good fit-up.

In addition to site surveys, our Service Team can complete the installation of all Daken Flexible Insulation systems, supervise local labour, conduct training, complete inspections, and offer after-sales support.