

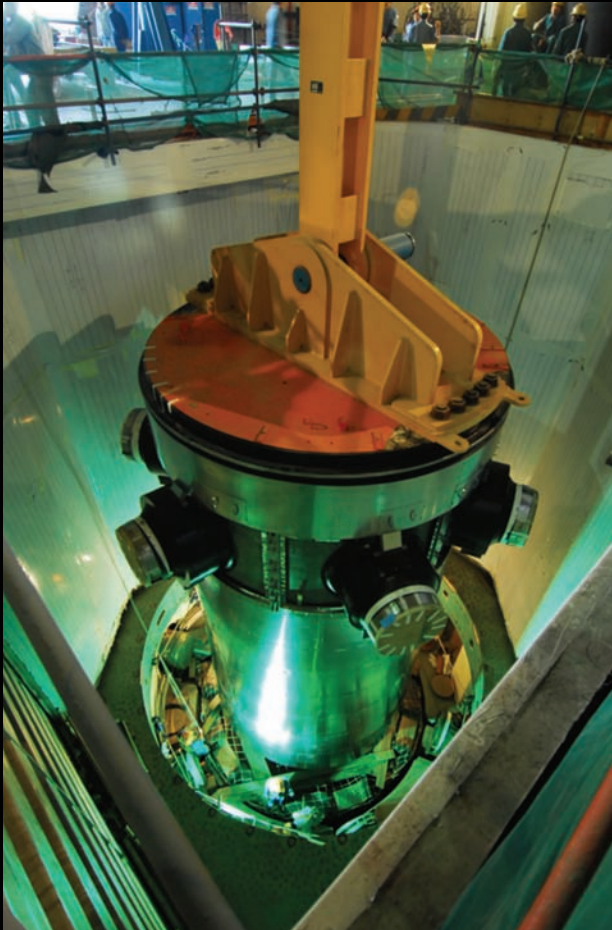
# Reflective Metal Insulation systems

## DARMET™

**Compliant with NRC Guide 1.82 and 1.36.  
Tested to International Standard ASTM C236-89**

Darchem Engineering's Reflective Metal Insulation (RMI) DARMET™: an all-metallic insulation system designed to control the heat loss and temperature gradients on primary circuit vessels and associated equipment and pipework.

DARMET™ is currently installed in over 150 nuclear power plants worldwide.



**DARMET™** is a fully engineered all metallic construction in austenitic stainless steel with excellent performance characteristics.

Reduced heat-losses, lower containment air temperatures and fewer equipment operational difficulties are the hallmarks of its capability.

**DARMET™** offers multi-functional capability in its thermal performance, strength and structural aspects, removability features and through-life durability without environmental or Health and Safety problems.

**DARMET™ will maintain design performance for the life of the plant, therefore eliminating the need for replacement materials and reducing the future cost of plant ownership.**

Reactor Pressure Vessel insulation with **DARMET™** is designed and fitted prior to vessel installation to provide long-life performance without deterioration.

**There are a number of principle features of DARMET™ which provide it with an overall superiority to conventional fibrous insulation systems.**

### **Removability and Replacement**

Being an engineered system, the ease of removability and replacement of **DARMET™** can be varied in accordance with the requirements of a particular application. Therefore, for in service inspection or maintenance, the panels can be designed so that they can be removed in less than a minute. This rapid operation reduces radiation exposure times, reduces labour and material costs and downtime of equipment.

### **Corrosion Resistance**

The **DARMET™** system is generally constructed from austenitic stainless steel. Darchem Engineering has not encountered any situation where it has corroded in nuclear environments since its introduction to the UK's Fast Breeder Reactor research program in 1958.

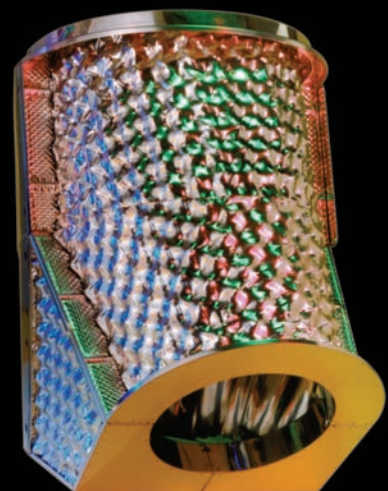
**DARMET™** does not become radioactive when irradiated, making disposal or recycling easier at the end of the plants life **DARMET™** can be decontaminated if required. The self-draining all-metallic insulation can be washed down to remove any surface contamination and compared to fibrous solutions, offers ease in maintenance, removal and refitting.

### **No Health Risk**

**DARMET™** all-metallic insulation contains no fibres and therefore does not contribute to the risks associated with the ingestion of contaminated airborne particles by maintenance personnel. Within some countries fibrous insulation materials are considered to be a class 2 carcinogen.

### **Drainability**

The exterior of **DARMET™** is water shedding. It is self-draining. Its thermal performance is therefore unaffected by water and does not hold chloride in contact with the pipework, unlike Fibrous insulation which quickly slumps when wetted.



# DARMET™

## Performance

**DARMET™** designed panels provide as close a fit as possible to the pipe or vessel being insulated. This means that on vertical risers the design severely restricts any “chimney effect” convection in the air gap between the hot surface and the inner skin.

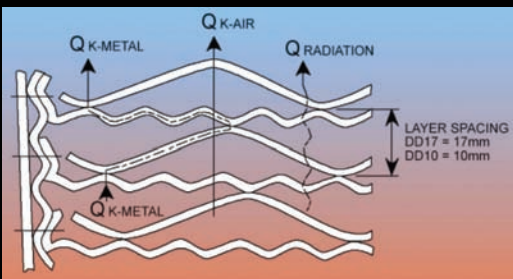
**DARMET™** is an assembly of thin gauge stainless steel foils in factory made cassettes, which have been specifically designed to minimise heat loss that occurs through conduction, convection and radiation.

**DARMET™** all metallic insulation systems are neat, compact and clean in the most complex of arrangements.

## DARMET™ works by:

Creating pockets of air between the alternate layers of dimple foil. The design ensures that this air is kept stagnant, thus reducing heat loss by convection.

The design of the foils reduces conduction by creating the longest possible heat paths. The layers of highly polished stainless steel foil reflect back radiated heat.



Quality of the **DARMET™** product is assured by thorough inter stage inspections and the following requirements of BS EN ISO 9001:2000.

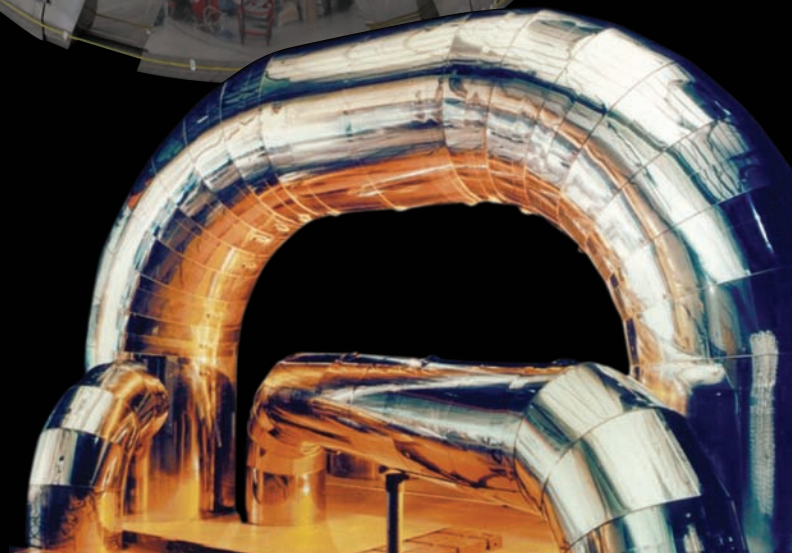
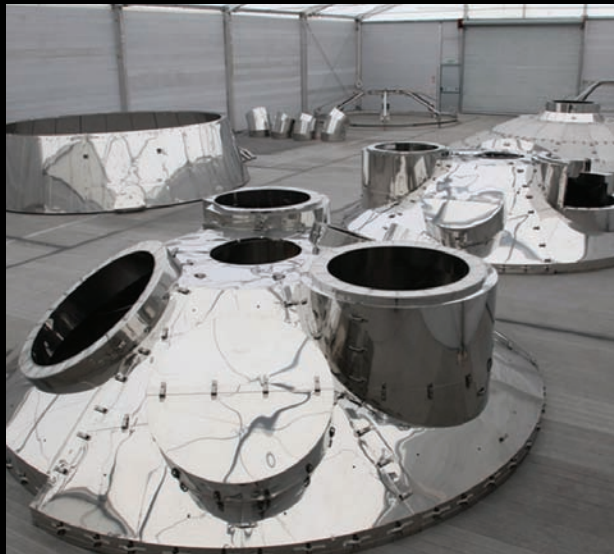
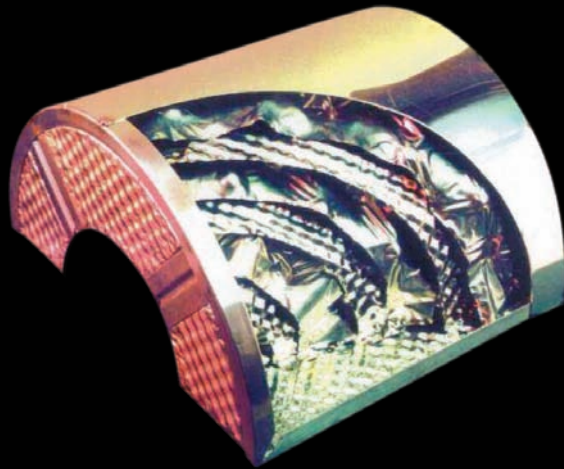
## Testing, Certification and Development

Practical ‘in-service’ experience is complemented by a comprehensive laboratory test programme.

An ongoing programme of product development ensures the Darmet™ continues to be the most “user friendly” thermal insulation system available.

Extensive test programmes have been carried out including:

- Thermal performance on representative large scale vessel areas.
- Thermal performance of large and small bore pipework in various orientations.
- Mechanical shock up to 300g.
- Measurement of effect on thermal performance of ageing and contamination.
- Panel robustness.
- Drainage and water spray.
- Seismic accelerations up to 5G.



**Esterline**

**Darchem Engineering**