

Energy Savings

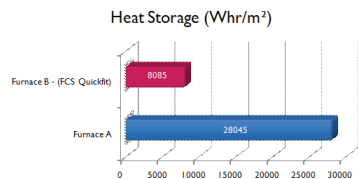
With the ever-increasing cost of energy, it is imperative for businesses to find ways to decrease this most valuable expense.

By installing an FCS Element Hanging System, coupled with our Quickfit Panel System, we are confident that your business will see dramatic energy savings.

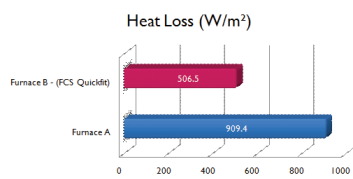
Example

We compared a furnace lined with Fire Bricks to that of one with Quickfit Panels, both under identical conditions. We discovered that:

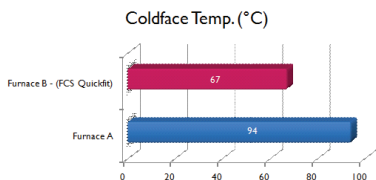
Furnace A Fire Brick 225mm + Backing Blanket 25mm.		Furnace B FCS Quickfit Panel System 225mm + Backing Blanket 25mm	
Hotface Temp. (°C)	1,000	Hotface Temp. (°C)	1,000
Coldface Temp. (°C)	94	Coldface Temp. (°C)	67
Emissivity	0.90	Emissivity	0.90
Ambient Temp. (°C)	20	Ambient Temp. (°C)	20
Equilibrium (hrs)	4.95	Equilibrium (hrs)	2.39
Heat Storage (W/hr/m ²)	28,045	Heat Storage (W/hr/m ²)	8,085
Heat Loss (W/m ²)	909.4	Heat Loss (W/m ²)	506.5



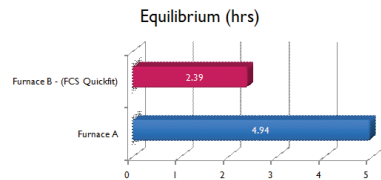
Heat Storage reduction of 71%



Heat Loss reduction of 44%



Coldface Temp. reduction of 38%



Equilibrium Time reduced by 51%

Quality and Innovation



Electrical Element Hanging Systems

Data Sheet - Introduction

FCS have the knowledge and experience to undertake most forms of refractory design, engineering or installation contract.

The 30+ years of experience we have gained spans many industries Including:

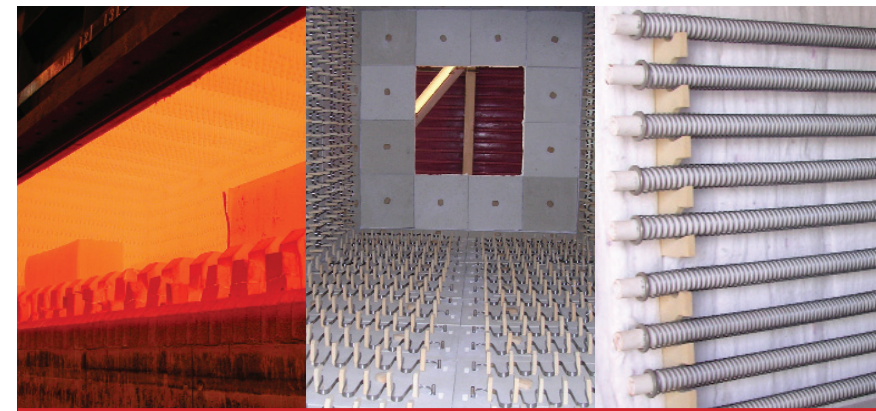
Petrochemical
Incineration
WTE
Ceramics
Heavy Clay
Aluminium
Steel
Aerospace

From on site general maintenance, turn key preventative maintenance contracts to new refractory installation projects. FCS have the prerequisite skills required to manage your refractory contract.

FCS Element Hanging Systems are manufactured and installed to the highest standards and can give these great benefits to your furnace or kiln:

- Can **DRAMATICALLY** reduce Heat Loss
- Can **DRAMATICALLY** reduce Heat Storage
- Furnace fire up times can be shortened
- Low Maintenance
- **ENERGY SAVED**
- **MONEY SAVED**

(Please see backpage for more information)



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Tape Elements

Based on the original PB EES, FCS have developed the original system to incorporate the ability to efficiently and reliably hang tape and coil elements in furnace roofs and walls.

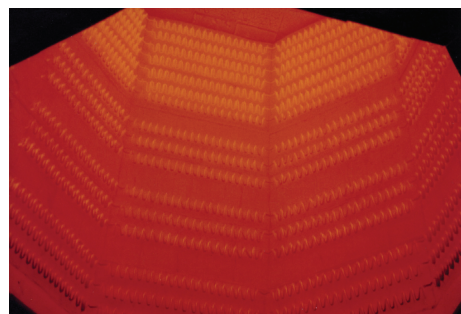
Both types of element can be supported at temperatures up to 1,400 °C - more than the maximum temperatures that Iron, Chrome and Aluminium resistance materials can be used.

Tape Elements

Sinusoidal tape is hung from ceramic hook pins located on ceramic tubes inserted into the stacked fibre modules.

The system, being entirely Ceramic, does not exhibit problems associated with the more conventional Ceramic and Nickel Chrome pin assemblies which are welded to the case.

There is negligible earth leakage even at high operating temperatures and the heat loss through the pins is eliminated as the ceramic pins only extend 75mm into the lining.



The Ceramics are not affected by deleterious effects that some furnaces have on Nickel/Chrome and problems due to ductility of the Nickel/Chrome hook pins are eliminated.

Further developments have been made to enable multiple elements to be suspended side by side from a single hook pin.

After necessary adjustments have been made to the surface area loading of the resistance material (to reduce the element temperature), the power density that can be installed into a wall may be increased by up to 75% over the single element system.



FCS also have many years of experience working with coiled element systems. For more information, please do not hesitate to contact us.



Roof Elements

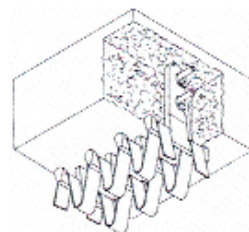
Roof Elements

Elements are suspended on a 'T' Shaped hook pin which is located on two Ceramic tubes inserted into the stacked fibre module.

The use of two tubes supports the weight of elements and hook pins and reduces lateral movement of the pins, thus mitigating the possibility of adjacent elements touching.

The element is suspended perpendicular to the furnace roof as compared with the conventional method of installing elements parallel to the furnace lining.

Where the power density to be installed approaches the top limit of the system (where the overall height of the element reaches 150mm or more), measurements can be taken to keep adjacent elements apart by installing ceramic spacers.



Cut away section of Module showing hook pin arrangement

The installation and removal of elements for servicing is greatly improved when compared to conventional systems.

The system is of particular interest where very high power densities must be installed in furnace roofs, especially in continuous furnaces having low walls where power has to be installed in a combination of heart and roof.

Where it is possible to maintain the pin pitch at 60-75mm, and to restrict the leg length to 110mm, element heat dissipation is considerably better than conventional systems as there exists less inter-radiation between element pitches and a large proportion of the element tape radiates directly to the hearth.

This 'ideal' element configuration is still able to accommodate a power increase of 30-50%.

The majority of UK furnace manufacturers have now adopted this system as a preferred method of reliably installing power in furnace roofs.

