

# Refractory Services

## Delivering Results for All Phases

Brand Energy & Infrastructure Services (BRAND®) provides clients with more than 30 years of unmatched refractory installation experience. With years of craft experience and certification to local standards, our refractory specialists and supervisors are experts in all phases of refractory construction including: turnarounds, major revamps, maintenance, and new construction projects.

We also deliver award winning safety performance and unparalleled quality assurance and quality control programs.

Through planning, quick response and thorough cost control BRAND consistently delivers successful and safe refractory projects ranging from 500 to 100,000-plus man-hours. Beyond our Fluid Catalytic Cracking Units (FCCU) experience, BRAND also has superior capability in servicing reformers, hydrocrackers, crude units, thermal reactors, sulfur recovery units and boiler units.

### Refractory Service Offerings

- › Demolition of existing linings
- › Surface preparation
- › Anchor system welding
- › Material procurement
- › Pneumatic “gunited” linings
- › Vibration cast linings
- › Rammed linings
- › Brick linings
- › Pre-fabricated shapes
- › Ceramic fiber linings (blanket and modules)
- › Shop and field installation
- › Unprecedented QA/QC program



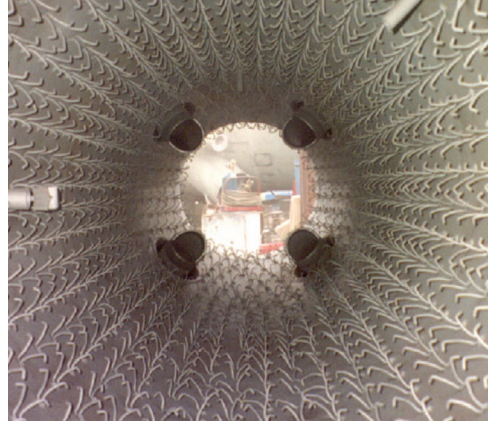
**more safety**  
**more productivity**

# Refractory Services

## The BRAND® advantage

BRAND consistently deliver improved productivity through impeccable planning, quick response and thorough cost control.

**BRAND offers the following expert refractory services:**



### **Ceramic Fiber Systems**

These types of linings are popular in high temperature, low velocity process equipment and should last several years without major repairs if installed correctly. The two most commonly used systems include ceramic fiber blanket linings and ceramic fiber module linings. The success of these linings, like most other refractory linings, is largely dependent upon the anchor system that is generally attached to the process equipment shell by welding.

### **Abrasion Resistant Linings**

These high density refractory linings are found in high velocity process equipment and transfer lines in the refining, petrochemical and power industries. They can be installed by gunning, vibe-casting, ramming or hand-packing.

### **Plastics**

Plastic refractories are generally installed manually with the use of pneumatic ramming guns. These types of linings are found in boilers, incinerators and SRU's in high temperature environments which also require abrasion qualities.

### **High Temperature Linings**

These light and medium weight refractory linings are designed to serve as insulators to protect the vessel walls of process equipment. They also have abrasion resistant qualities. High temperature linings can be applied by gunning, vibe-casting, ramming, hand-packing and pump-casting.

### **Vibe-Cast Linings**

Vibe-casting is a method of refractory lining installation that is common in high abrasion and high temperature process equipment and transfer lines. This type of application requires the installation of steel forms inside of the process equipment prior to pouring the refractory. Sometimes large pneumatic vibrators must be placed on the shell of the equipment to provide a higher density in the finished lining.

### **Corrosive Resistant Linings**

These types of linings are required in highly corrosive environments such as sulfuric acid tanks and secondary containment areas. They come in various forms, including manually applied roll-on coatings, spray-on epoxy systems and hand laid acid brick.

### **Pump-Casting**

This method of refractory installation is sometimes requested for high abrasion and high temperature environments in refining process equipment. It requires specialized equipment and highly skilled refractory specialists and equipment operators to ensure proper results.

### **High Temperature Firebrick**

These types of linings are required in high temperature process equipment such as SRU's, thermal oxidizers, catofin reactors, rotary kilns and reaction furnaces. These bricks must be installed by highly skilled refractory specialists and require precision cutting and placing to ensure the required clearances inside the process equipment are met.

### **Burner Tile**

In many situations it is impossible to identify damaged burner tile until the process equipment is opened and inspected. Most burner tiles are long lead items; however, it is possible to fabricate replacement burner tiles utilizing fast setting, self curing refractory materials in less than 72 hours in many situations.

> best in class safety performance

> specialty team of ~40,000 People

> 30,000+ customers ... and growing

> ~340 locations in 25 Countries

> revenues of nearly ~\$5b

> assets & equipment worth ~\$4.2b

## Why BrandSafway?

# Unique combination of expertise & resources

We are part of **BrandSafway**, a leading global provider of access, specialised services and forming & shoring solutions to the industrial, commercial and infrastructure end markets. With more than 340 branches all over the world, we provide support for ongoing maintenance as well as for refurbishment needs and new construction plans.

### As one strong team, we support our customers:

- > **Brand Energy & Infrastructure Services** is one of the world's largest industrial services specialists;
- > **Brand Access Solutions** is the UK's largest full-service provider of scaffolding and access systems;
- > **Hünnebeck** stands for safe and highly efficient formwork, scaffolding and safety technology.



# Case Studies

## Valero St. Charles refinery



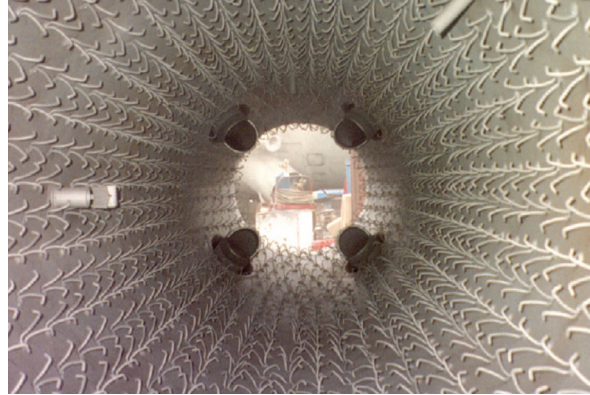
### Louisiana, United States

Valero Refining, North America's largest refiner, entrusted BRAND® to provide the refractory services needed for their Fluid Catalytic Cracking Unit (FCCU) turnaround at their St. Charles, Louisiana Refinery. In less than 33 days, we mobilized 145 refractory specialists and repaired and replaced over 20,000 square feet of refractory. We completed the project with over 57,000 man-hours and no OSHA Recordable Incidents.

“BRAND's supervision was a key element for maintaining schedule in difficult working conditions, which allowed the refinery to return to production within the scheduled time. Thank you for a total team effort.”

**Turnaround Planning Superintendent**

## Motiva Enterprises Llc



### Southeastern United States

When the Motiva Convent Refinery began a major turnaround on its 92,000 BPD Fluid Catalytic Cracking Unit (FCCU), they trusted BRAND to deliver first class refractory services. The project consisted of all of the capital project refractory work, in addition to planned and unplanned refractory maintenance and repairs. Based on our performance in schedule-compliance and our delivering superior safety results, we were given the opportunity to provide additional services on the project; demonstrating our ability to successfully deliver cost effective multiple service solutions.

“BRAND's expectations around safety and quality are far and above what I have experienced with other contractors. It was a pleasure working with them on our most recent turnaround, and I hope to have the opportunity to work with them in the future.”

**Project Manager, Motiva Convent Refinery**

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**more safety  
more productivity**