URC | UNITED REFRACTORIES CO. DELIVERS

40 YEARS OF PERFORMANCE DESIGNED SOLUTIONS

APPLICATION: **CUPOLA - UPPER STACK** LOCATION: **UPPER MIDWEST, USA**

LEFT: Prior to installation of the shotcrete, metal anchors were applied in the upper stack.

RIGHT: An inspection of the UNI-SHOT RF-60 CF found it to be virtually untouched after 3 months of service.

CURRENT SITUATION

A 300 tons/day lined cupola, producing grey iron, had routinely installed a 6" 70% Al_2O_3 brick lining (72-84 RKB) in the upper stack every year.

GOALS / ISSUES

The goals for the Upper Stack linings were as follows:

- Improve refractory life beyond 1 year
- Reduce refractory costs
- Increase days of operation

Using the 70% Al_2O_3 brick, the plant faced numerous challenges:

- Expensive installation ($)
- Time consuming brickwork (downtime)
- Minimal success with veneers/patches (1 year life)

IMPACT FOR CUSTOMER

After 3 months of operation, the **UNI-SHOT RF-60 CF** looks untouched, potentially providing the plant with the following benefits over the next 24 months.

Benefit	Impact over 24 months
• Increased refractory life (estimated 24 months vs 12 months w/brick)	• Approx. $60,000 savings
• Increased Capacity	• Approx. 4-6 extra days of production

URC APPROACH

UNI-SHOT RF-60 CF

In an effort to address the cupola goals, URC recommended a 6" shotcrete lining of **UNI-SHOT RF-60 CF** . . . an innovative mullite based, no cement, rapid fire shotcrete product.

The advantages of UNI-SHOT RF-60 CF are as follows:

Great Strength

(actual job tested data after 2000°F)

Density	159 pcf
MOR	2980 psi
CCS	14880 psi
C704	6.2-7.3 cc

Fast Heat-Up

- The "Gel bond" allows faster water release than cement bonded products, thereby saving time on heatup

% Weight Loss (H_2O)	Gel Bond	Cement Bond
after 135°F	52	25
after 220°F	97	71
after 300°F	100	80

No Cement Mix

- Unique "Gel bond" requires no costly colloidal silica
- Single component, mixed with water and accelerated with sodium silicate
- Less reactions at hot face than low cement bonded monolithics

More Cost Effective

- NO Colloidal Silica!!
- A UNI-SHOT RF-60 CF lining can be **15-20% MORE COST EFFECTIVE** than colloidal silica products

URC 4U SERVICE EST. 1973

724-941-9300 • www.unitedrefractoriesco.com

8366_CUS_0214