



# REFRACTORIES

— FOR —

# MINERAL PROCESSING



Global **Refractory** Solutions



# ABOUT ALLIED

Allied Mineral Products is a world leader in the design and manufacture of monolithic refractories and precast shapes. With strong sales and service teams in the foundry, aluminum, steel, heat treat/forge and industrial markets, our success is based on our dedication to *Being There Worldwide with Refractory Solutions*.

Producing quality, consistent products is top priority at Allied and we have the products to meet your refractory needs. Our extensive product line includes innovative refractory technology and longstanding refractory alternatives.

Allied's focus on quality at every stage in the production process is unparalleled. A stringent raw material standard and global quality control testing before and after each batch is produced, provides customers with consistent products. We provide quick response times to any urgent request through flexible manufacturing systems at all our manufacturing facilities.

## Global **Refractory** Solutions



**12 MANUFACTURING FACILITIES**

OVER **145** INTERNATIONAL SALES REPRESENTATIVES

**3** RESEARCH AND TECHNOLOGY FACILITIES

SALES ACTIVITY IN MORE THAN **130** COUNTRIES

**7** PRECAST SHAPES FACILITIES





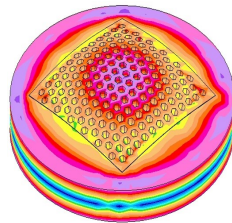
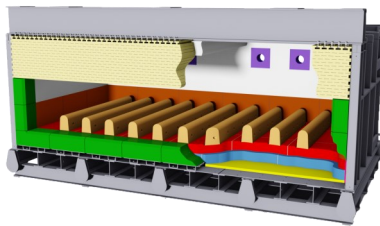
# RESEARCH & ENGINEERING

After gaining a detailed understanding of your specific needs, our team evaluates operating criteria and physical design parameters to create a detailed engineered design encompassing:

- Patented technologies
- Optimized product zoning
- Thermal models to optimize and validate designs
- Proven safety lining system designs
- Unique installation properties and techniques
- Leading edge refractory system designs

We're focused on developing new products, improving existing products and perfecting installation techniques. Our product development and testing is conducted in our state of the art research and technology center. We have an on-site gunning and shotcreting lab allowing extensive testing of installation properties.

As an innovative, technology-driven supplier we're devoted to providing customized refractory solutions for various industry operations. We offer a wide variety of high performance refractory products with superior raw material quality.



FEA Thermal Analysis



Flow Testing



Contact Tests



Strength Tests



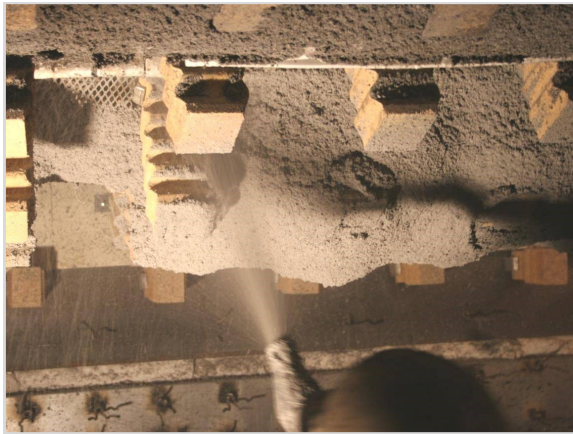


# INSTALLATION | TECHNOLOGY

**Allied is there every step of the way.** Our attention to the needs of contractors and customers creates the basis for developing customized refractory solutions. We have proven methods for installing a wide variety of refractories in several industrial markets including cement, incineration, mineral processing and lime.

Innovations in engineering and product design allow contractors to improve productivity and increase ease of installation. In addition to precast refractory shapes and conventional casting, Allied offers a full line of shotcrete and gunning products that provide the following benefits:

- Reduced downtime
- Low rebound
- Controlled working time to allow trimming
- Castables that can be pumped long distances through small diameter pipes
- Can be pumped at low pressures with no degradation of properties
- Superior shotcreting performance at small hose diameters down to 38 mm (1.5 in)



Low Rebound



Versatile Hose Diameters



Minimal Dusting



Contractor Friendly Trim Time

$$\frac{\Delta L}{L_0} = \alpha_L \Delta T$$

thermal expansion





# CEMENT

Allied's offers specific refractory compositions with enhanced mineral additions for optimum performance of low cement and conventional castables or gun mixes with uniquely controlled setting options. Designed specifically for the cement market, these products exhibit characteristics such as excellent cycling capabilities and outstanding resistance to corrosion, alkalis, acids and abrasion. Products for cement include:

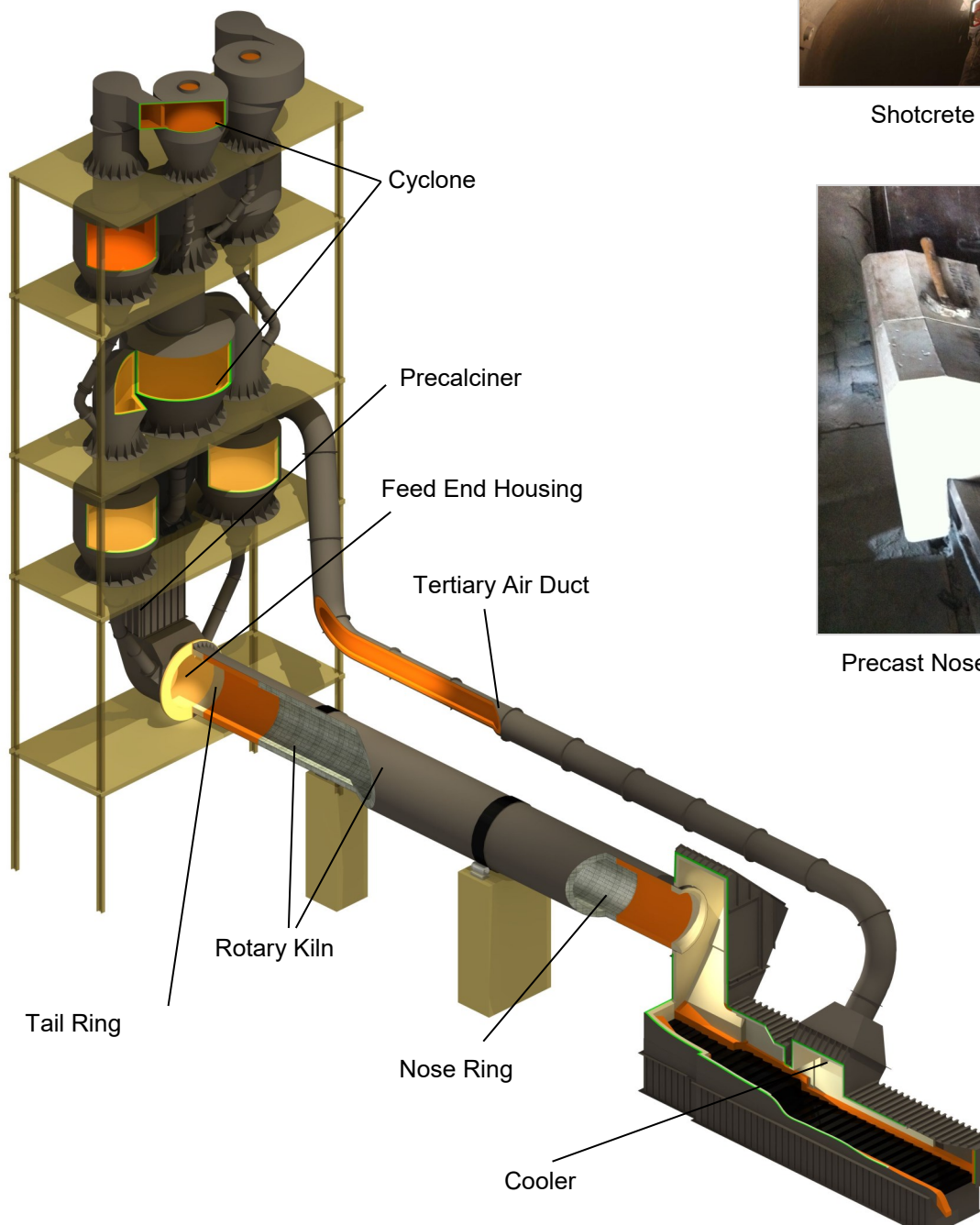
- TUFFCRETE®
- ARMORGUN®
- INSULMIX®
- FAST-TURN®
- GUNCAST®
- DURACON®



Shotcrete Installation



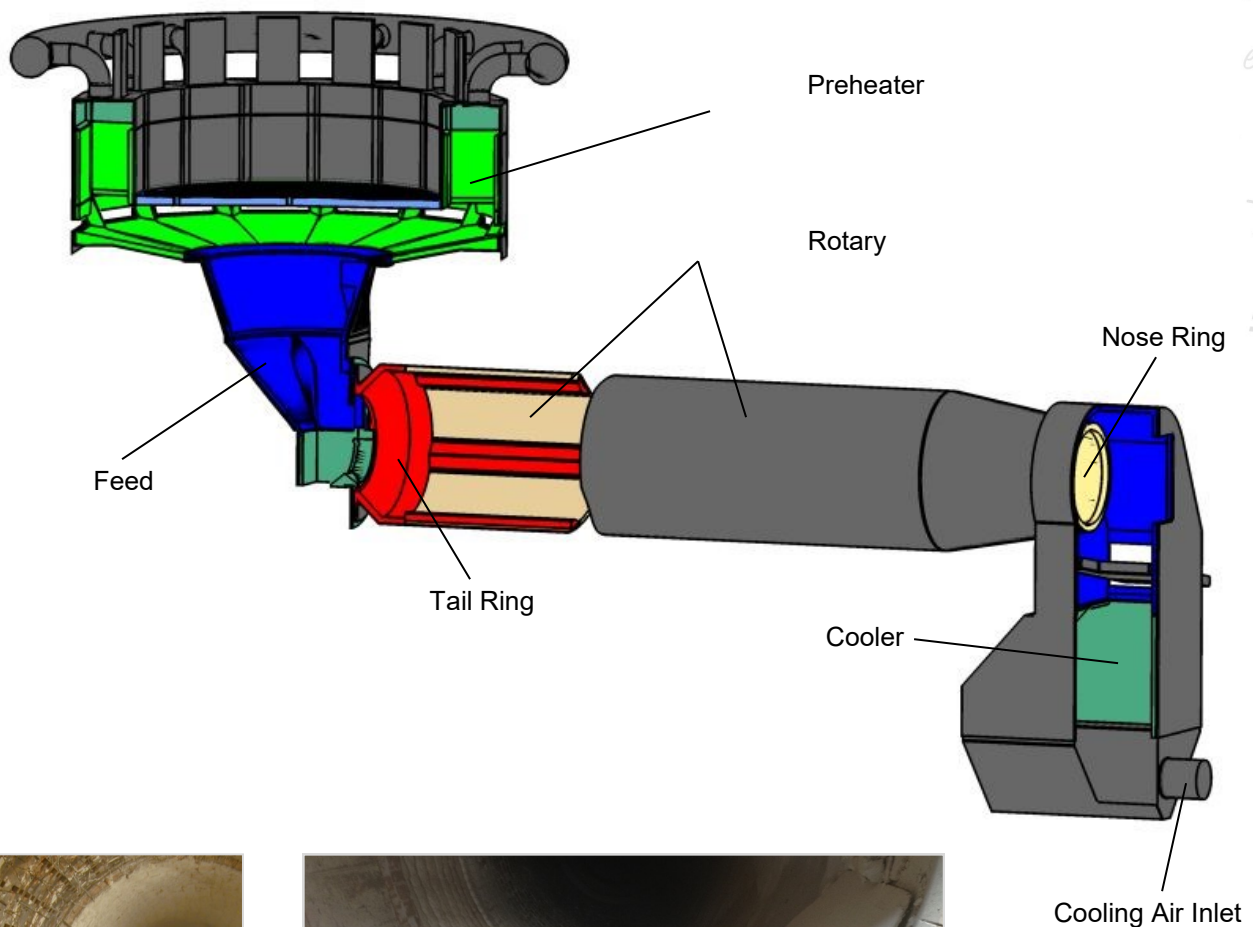
Precast Nose Ring Shapes





Allied offers monolithic refractories and customized precast, pre-fired refractory shapes for the lime market with unique installation solutions providing improved productivity, ease of installation and faster turnaround. Trade names include:

- TUFFCRETE®
- ARMORGUN®
- ARMORKOTE
- DURACON®
- METAL-ROK® - precast, prefired refractory shapes



Shotcrete Installation



Precast Nose Ring Shapes

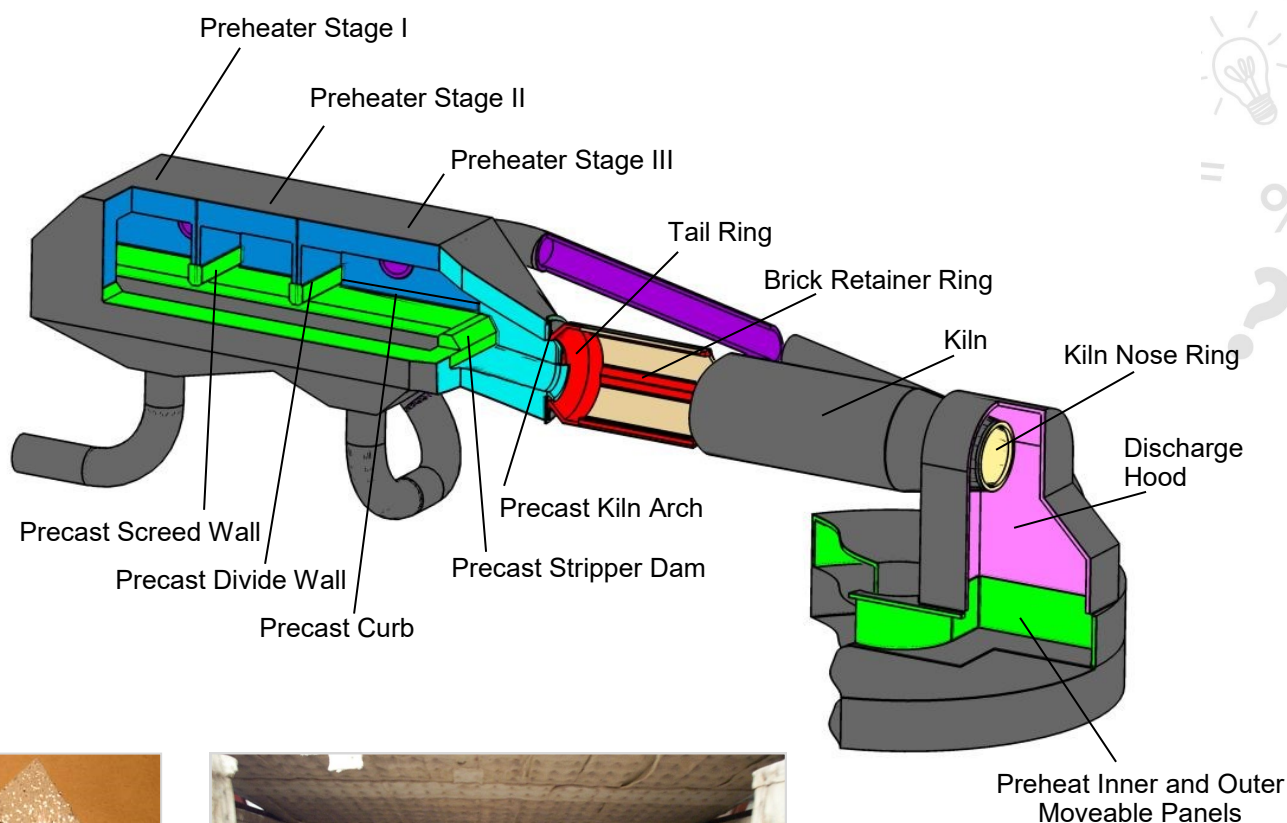


# ORE PROCESSING

Allied's complete system of monolithic shotcrete and gunning products along with a full range of precast, prefired, refractory shapes, allows for minimal construction shutdown time and fast start ups.

Products designed for this application include:

- TUFFCRETE®
- TUFF-FLO
- ARMORGUN®
- GUNCAST®
- Precast, pre-fired refractory shapes - alumina insulated products requiring precision fit in the field
- METAL-ROK® - precast, pre-fired refractory shapes where abrasion impact meets the challenge of the ore process



METAL-ROK® shape samples



Outer Wall Precast Shapes





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Global **Refractory** Solutions



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