



# Introducing Kennametal Conforma Clad® Oil Sands Components

### Slurry Pump Impellers and Suction Liners

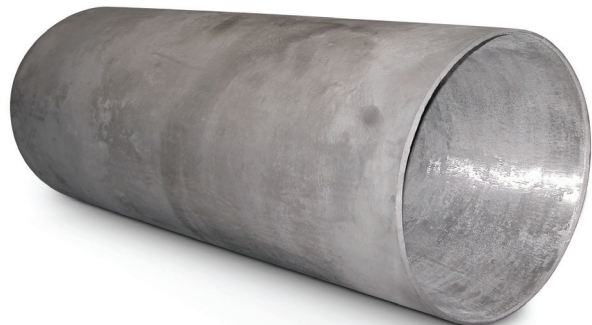
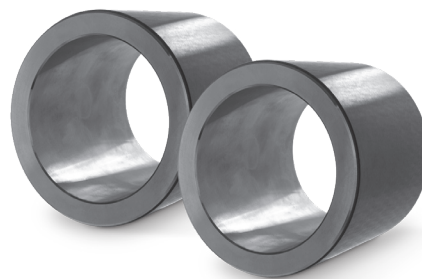
- Cladding extends pump component life 1.5x to 2xs
- Ability to clad high chrome iron components
- Ability to process components up to Ø70" and 6500lb

### Pump Shaft Sleeves

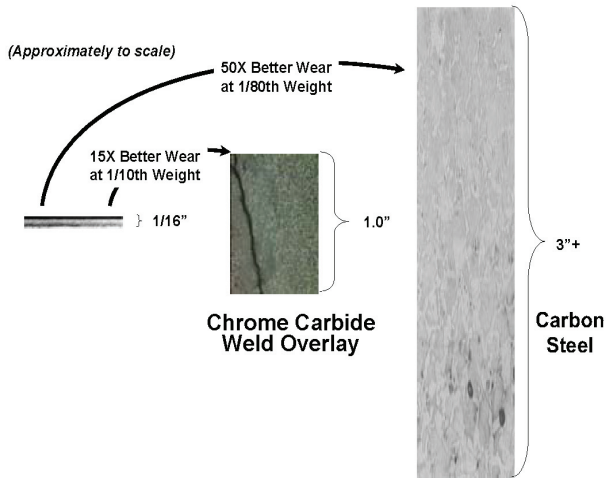
- Clad shaft sleeves last three to six times longer than standard sleeves
- One oil sands mine site has specified Kennametal Conforma Clad for all pump shaft sleeves
- Decreased wear means less leakage flow for shaft sleeves and less frequent packing adjustments
- Reduced wear allows design clearances to be maintained longer

### Venturis

- Kennametal Conforma Clad awarded cladding business for about 50 meters to be installed in oil sands expansion project
- As clad surface finish is 125 RMS to 250 RMS, better surface finish than weld overlay leads to improved meter accuracy



## Equivalent Erosion Resistance



One sixteenth inch (1.5 mm) of Kennametal Conforma Clad's tungsten carbide wear protection performs 15 times better against erosive wear than an equivalent layer of chrome carbide weld overlay, and 50 times better than carbon steel. And because of its extremely high metallurgical bond strength, the cladding is up to five times more erosion resistant than typical nickel chromium alloy castings alone.

## Our Value Proposition

- Avoids unscheduled downtime
- Extends planned outage cycles
- Reduces maintenance costs
- Significantly increases component life
- Maintains consistent product quality

## Full-Service Wear Solutions

- Wear assessment
- Solution design and engineering
- Substrate design and engineering
- Cladding fabrication and application
- Post grinding for precise dimensional control

Kennametal Conforma Clad's process uses infiltration brazing to bond tungsten carbide to the base material of a component forming a hard yet tough and uniform protective cladding that provides superior wear against abrasion, erosion, and corrosion, even under high temperature conditions. Because of its extremely high metallurgical bond strength, Kennametal Conforma Clad resists abrasion up to three to five times better than typical alumina ceramic tiles, which are also limited by their low adhesive bond strength. This severe wear protection maintains critical geometries of oil sands components, which means that slurry pump components, shaft sleeves, venturi nozzles and reactor tubes can deliver the required performance under the harsh oil sands environment.

Properties	Kennametal Conforma Clad®	Thermal Spray	Weld Overlay	Wear Tiles	Plasma Spray
Bond Strength	<b>Very High</b>	Very Low	High	Low	Low
Complex Geometries	<b>Yes</b>	No	Difficult	Difficult	No
Abrasion Resistance	<b>Very High</b>	Moderate	High	Very High	Moderate
Erosion Resistance	<b>Very High</b>	Low to Moderate	Low	Low	Low
Corrosion Resistance	<b>High</b>	Low	Low	Low	Low
Impact Resistance	<b>Moderate</b>	Low	Moderate	Very Low	Low
Oxide Level	<b>Low</b>	High	Low	Low	High
Temperature Resistance	<b>High</b>	Moderate	Low	Very Low	Moderate
Resists Multiple Modes of Wear	<b>Yes</b>	No	Yes	No	No