

## Coatings against chemical influences:

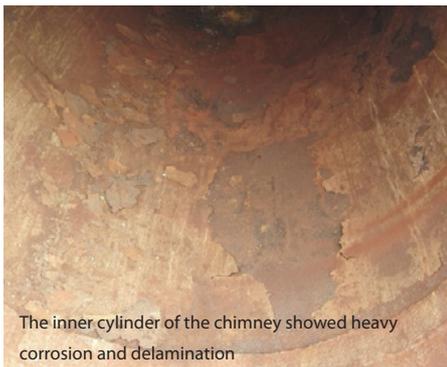
# Ceramic Polymer: Chimney for purified flue gas of a waste incineration plant durably protected against corrosion!

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China: The chimney of a waste incineration plant was protected with our chemically resistant premium coatings against aggressive influences of the cleaned flue gas. Before the application was conducted, sample plates of PROGUARD CN-OC and PROGUARD CN-1M were subjected to a long-term-test and placed into the inner chimney. No corrosion and peeling occurred on the coated plates; therefore, our coating systems were selected for this demanding project.



The inner cylinder of the chimney showed heavy corrosion and delamination

Through the waste incineration aggressive gases arise, which are reduced by wet process with several gas scrubbing. After the complex desulfurization gases such as sulfur dioxide, hydrogen chloride, nitrogen oxide and carbon monoxide are still contained in the cleaned, hot flue gas regarding the allowed emission standard limited values.

### Harmful substances settle in the inner chimney

The noxious substances contained in the humid flue gas settle at the inner walls of the chimney. In case of insufficient protection of the steel, heavy corrosion damages and resulting leakages occur within a short time. Our coatings preserve the chimney from such corrosive destruction of material.

## Technical Details

<b>Project:</b>	New coating of inner cylinder for chimney of incineration plant, area 177 m <sup>2</sup>
<b>Dimensions of cylinder:</b>	Diameter 114 cm, height 48 m - thereof 18 m of stainless steel (bottom and top of the cylinder)
<b>Flue gas, purified:</b>	Flow rate 23,000 m <sup>3</sup> /h, temperature at the outlet between 50 °C and 150 °C, contained noxious substances in the humid flue gas: Hydrogen chloride HCl, sulfur dioxide SO <sub>2</sub> , hydrofluoric acid HF, nitrogen oxide NO <sub>x</sub>
<b>Product requirements:</b>	Durable resistance against aggressive chemical gases and liquids, long-term corrosion protection
<b>Coating products:</b>	<b>Proguard CN-OC + Proguard CN-1M</b> for internal coating of the stainless steel cylinder <b>Proguard CN-1M</b> for the internal coatings of the carbon steel tubes



广州万为石化科技公司  
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**Our Products:**

- Proguard CN-1M
- Proguard CN-OC

**Reliable substrate protection against hot, highly corrosive gases and liquids**

**The employed coating systems:**

The bottom area (8.6 m) and the upper zone (9.2 m) of the new inner cylinder are made of stainless steel. The 3 pipe elements in the middle are built of carbon steel. To achieve optimum corrosion protection with high adhesive properties for both substrates, two different coating systems were applied. PROGUARD CN-1M is a highly resistant product with excellent adhesion and enduring abrasion hardness. Therefore, it is perfectly suitable for chemical applications with high operation temperatures. PROGUARD CN-OC offers the same high-grade resistances, though it is designed for special substrates; this specific coating features an outstanding adhesion on stainless steel, aluminum and galvanized steel.



**Substrate preparation:**

To obtain the best possible adhesion between coating and substrate an accurate surface treatment is essential. Die tubes were prepared to SA 2.5 (ISO 8501-1:2007) by abrasive blast cleaning. Thereby, an average roughness of  $R_a$  50-100  $\mu\text{m}$  (according to NACE RP0287) was achieved. The manual pre-treatment of welding seams with our coating systems provides additional protection.



**Application by airless spraying:**

The application of the solvent-free coating products is conducted by airless spraying. The steel tubes for the middle part of the chimney were protected with PROGUARD CN-1M – in one layer with a thickness of 600  $\mu\text{m}$ . In both stainless steel cylinders firstly one layer of PROGUARD CN-OC was applied in a thickness of 250  $\mu\text{m}$ . As a highly resistant top-coat, PROGUARD CN-1M was sprayed on wet in wet in a thickness of 350  $\mu\text{m}$ , so that a total coating thickness of 600  $\mu\text{m}$  is accomplished.



**Examination of coating result:**

The cured surface of PROGUARD CN-1M is smooth and free from pores. To check the absolute impermeability after fully curing, a high voltage porosity test regarding NACE Standard SP0188 was passed. Also the total thickness was checked according to the quality assurance and inspection plan of Ceramic Polymer GmbH.

**Would you like to preserve your facilities durably against aggressive chemicals?  
Our corrosion protection experts gladly assist you!**