CDTI-NEDO JOINT WORKSHOP Energy Saving Engineering - Effective Use of Thermal Energy

Development of High Performance Thermal Insulator and Energy Saving Furnace

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MINO CERAMIC CO., LTD.

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Organization / Company - Corporate Outline

<u>Company name</u> MINO CERAMIC CO.,LTD (美濃窯業株式会社)



Organization / Company - Business Overview

Ceramics & Refractories



Refractories

Construction

Ceramic Engineering & Construction





Flooring & Paving



Advanced Ceramics



Introduction / Waste heat of industrial kiln

Energy balance of the existing high temperature industrial kiln



Introduction / Development schemes **New Energy Saving Furnace** exhaust gas Heat exchanger **Residual heat** of next batch **3**Regenerative Burner (Ceramic heat storage body with core-shell structure) **1**Ultra high porous **High insulation &** ceramics **High efficiency heat recovery** and The projects is commissioned by 🔀 経済産業省 EDO



①Ultra High Porous Ceramics / Performance evaluation

Comparison of power consumption for lining brick of electric furnace



Achieved power consumption reduction by lightweight and reduced thermal conductivity !

①Ultra High Porous Ceramics / Application to other porous ceramics

It is expected that the porous ceramics will be used for a wide range of applications.

Silica

 Low thermal conductivity
 High performance thermal insulator (1000°C or less)

B_4C (Boron carbide)



LightweightNeutron absorption

Nuclear reactor, Fusion reactor

SiC (Silicon carbide)



- High thermal conductivity
 High corrosion resistance
- Gas filter, Heat exchanger

Characteristic value list

		Silica	SiC	B4C
Thermal conductivity	W•m ⁻¹ •K ⁻¹	0.1	12.8	3.7
Porosity	%	90	90	90
Bulk density	g•cm ⁻³	0.24	0.36	0.23
Compression strength	MPa	1.8	0.8	2.1

2Heat Exchanger / Concepts and Properties



③Regenerative Burner / Ceramic Heat Storage Body

High efficiency exhaust heat recovery system for high temp. industrial kiln





Other information / Industrial kilns we produce



We have created various types of industrial kilns.



Thank you very much for your attention.

We will meet the evolving needs of many customers with new development.

For further information...

Ceramics & Refractories

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