



QE ENERGY INTERNATIONAL COMPANY LIMITED

*Energy saving technology for NG, CNG,
LPG, Gasoline, Diesel, HFO, Coal, Biomass*

**Energy Saving Project
using XPlate® Technology**





XPlate™ (Xenogenic Plate) is the innovative fuel saving proven technology of over 10 years of intense research applied for the UK patent in 2008 and international patent in 2009.

It is a device which is flexible to install at various process applications such as boilers, thermal power stations, cement kilns, ceramic kilns, spray dryers, steel plants, gasification units, or any industry that uses any fuel for combustion with oxygen. This proven technology has been used by many government and private organizations around the world.

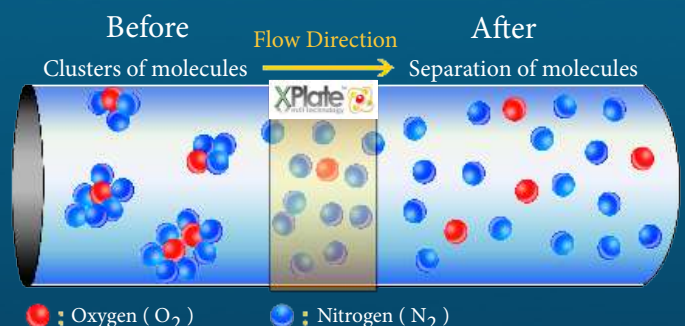
XPlate™ performance was first officially proven in 2010 by the Coal Energy Technology Institute (CETI) of the National Academic of Science (NAS) Government of Ukraine. Several technical trials were later conducted in many parts of the world. At present, XPlate™ trademark has been registered in several countries by Madrid international trademark system of the World Intellectual Property Organization (WIPO) in Switzerland.

Technology Principle

When gaseous fluids such as air flow in any pipe, the molecules naturally move and interact, or hit each other on the side wall of pipe. The interactions that occur between the atoms of a molecule with the other atoms of the other molecule cause the attractive and repulsive forces to occur. These forces are known as intermolecular forces that cause the molecules to adhere together and form molecular clusters.

Clusters of these passing air molecules, O₂ and N₂, can be separated into single O₂ and single N₂ molecules by XPlate™ technology. As a result, O₂ molecules will have more active molecular surface areas available for the complete combustion.

XPlate™ Technology is relatively different from the other existing technologies in the global market. Regardless of fuel type used we basically just provide more reactive oxygen for combustion.

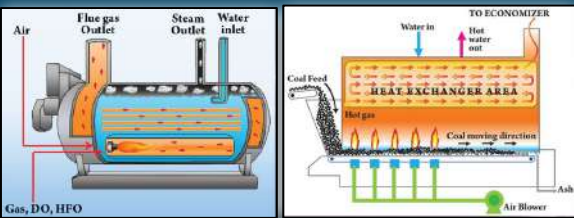


Boilers & Power Stations

Various fuel types including NG, LPG, gasoline, diesel, HFO / bunker oil, coal, biomass are perfectly applicable with XPlate™ technology in boilers. Industrial applications range from the power plants, food and beverage factories, rubber and tire, textile, paper industry, etc. of those using boilers. XPlate™ technology can save fuel consumption, reduce emissions such as CO, CO₂, NO_x and SO_x. Several companies have proven and issued their test certificates.

300T – 500T Gas boiler
Power plant, Russia

Gas boiler
Rubber industry, Vietnam



Gas boiler
Food industry, Thailand

Coal boiler
Textile industry, Vietnam



Flame Test – Coal boiler, Philippines

Without XPlate™



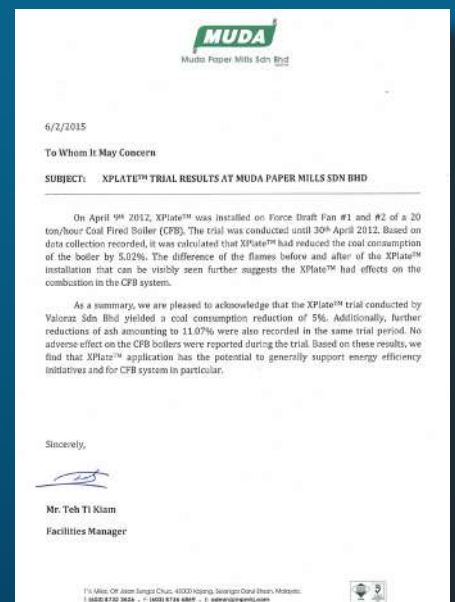
With XPlate™



Crude oil boiler
Oil and gas industry, Russia

Biomass boiler
Adhesive industry, India

CFB boiler
Paper industry, Malaysia



Ceramic Kilns & Spray Dryers

Xplate™ technology is suitable for ceramic factory to benefit fuel saving for tile kilns, tunnel kilns, porcelain kilns, hot gas generation (HAG) and spray dryer. Several renowned ceramic companies have installed and certified Xplate™. Xplate™ also helps to reduce the electricity consumption and the greenhouse gases (GHG).

In addition, Xplate™ can be used with the spray dryer unit in a detergent-making process.

Spray dry, Vietnam



Tile kiln, Indonesia



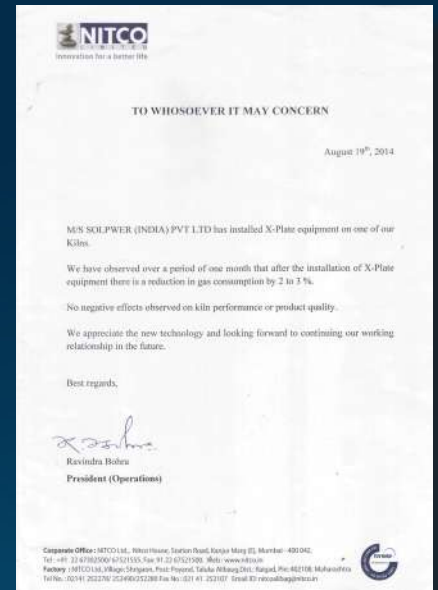
Tunnel kiln, Philippines



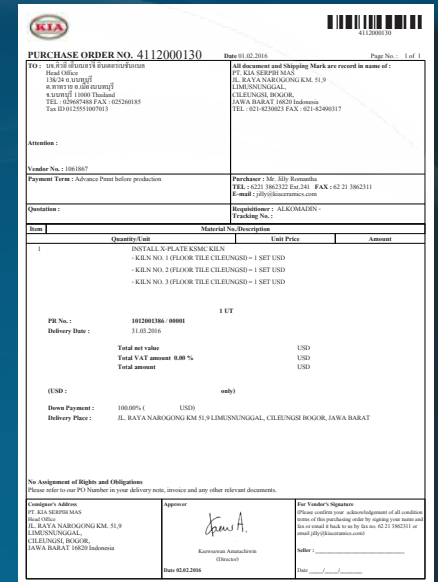
Hot air generation Vietnam

Spray dryer Vietnam

Roller tile kiln India



Roller tile kiln Indonesia



**CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
ĐỘC LẬP - TỰ DO - HẠNH PHÚC**

BIÊN BẢN XÁC NHẬN LẮP ĐẶT XPLATE TRÊN LÒ CHẾ KHUỖ SỐ 3 TẠI NHÀ MÁY GẠCH MÈN BẠCH THẠNH - ĐÔNG NAI - VIỆT NAM

**XPLATE TEST RESULTS AT THE GRATE CHAIN FURNACE NO.3
BACH THANH CERAMIC - ĐÔNG NAI - VIỆT NAM**

Chiều cao của buồng đốt lắp đặt thiết bị công nghệ tiết kiệm nhiên liệu Xplate NPS tại lò chế khuy số 3 sử dụng than và biomass của nhà máy ngày 1/5/2019 và biên bản ghi nhận giữa công ty TNHH Năng Lượng QC Việt Nam và công ty TNHH Cơ Khí Men Bành Thành. Nhà máy xác nhận là thiết bị Xplate đã cài thiết được hiệu suất cháy tại lò với tiết kiệm đạt được trên 2.5%. Không xuất hiện các hiện tượng cụ thể đối với lò và quá trình vận hành tại lò.

Based on the Xplate energy saving technology that has been installed at the Grate Chain Furnace No.3 of our coal and biomass since April 1, 2019 and MOU between QC Energy Plus Nam and Bach Thanh Ceramic Co. Ltd, we herein confirm the test results that Xplate technology was able to improve our Grate Chain Furnace and saving more than 2.5%. No negative effects were found to the Grate Chain Furnace and its operations.

Công Ty TNHH Cơ Khí Men Bành Thành
Bach Thanh Ceramic Co., Ltd
TRƯỜNG ĐÔNG NAI & LTB
Bao Minh Tâm

VIGLACERA

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
ĐỘC LẬP - TỰ DO - HẠNH PHÚC

BIÊN BẢN XÁC NHẬN LẮP ĐẶT XPLATE TRÊN LÒ SẤY PHUN SỐ 2
CÔNG TY CỔ PHẦN VIGLACERA THAI BINH - THAI BINH - VIỆT NAM

**XPLATE TEST RESULTS AT SPANDRY NO.2
VIGLACERA THAI BINH JOIN STOCK COMPANY - THAI BINH - VIỆT NAM**

Chiều cao của buồng đốt lắp đặt thiết bị công nghệ tiết kiệm nhiên liệu Xplate tại lò sấy phun số 2 dùng khí tự nhiên (NG) số 2 của nhà máy ngày 1/5/2019, nhà máy xác nhận kết quả đã là thiết bị Xplate đã cài thiết được hiệu suất cháy và tiết kiệm sử dụng tại lò sấy phun số 2 dùng khí tự nhiên số 2 với tiết kiệm đạt được 3,74%. Không xuất hiện các hiện tượng cụ thể đối với lò và quá trình vận hành tại lò sấy phun.

Based on the Xplate energy saving technology that has been installed at our NG Spray dry no.2 since June 11, 2017, we herein confirm the test results that Xplate technology was able to improve the NG combustion efficiency and dry efficiency with the NG saving of 3.74%. No negative effects were found in the boiler and its operations.

Công Ty Cổ Phần Viglacera Thái Bình
Thy Binh Joint Stock Company
GIÁM ĐỐC
Nguyễn Duy Linh

HOCHENG PHILIPPINES CORPORATION

PURCHASE ORDER

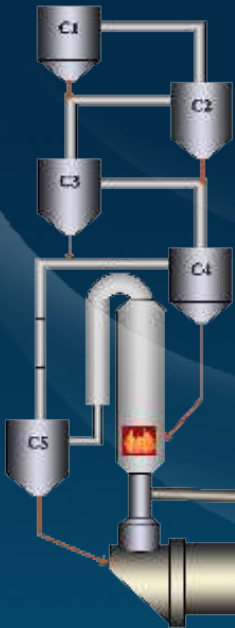
PO NO. PO32781

Item	Qty.	Unit	Material Code	Description	Unit Price	Total
1	1	LOT		Install of X-Plate at Tunnel Kiln 1 Combustion Blowers for S&P Cogest *** NOTHING FOLLOWS *** PIS0429150029	PVP	PVP

Payment Terms: 50% DP Balance 15 D

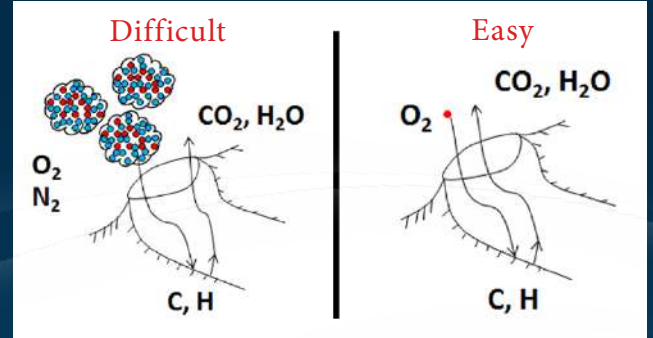
Prepared by: Salvador, Jr. Guan
Checked by: Unit Supervisor
Checked by: Section Supervisor
Approved by: [Signature]
Date: 20 August 2018

Cement Kilns

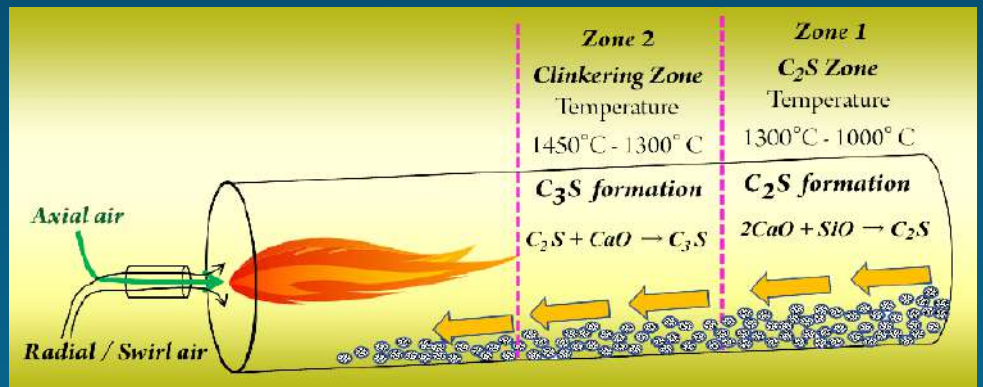
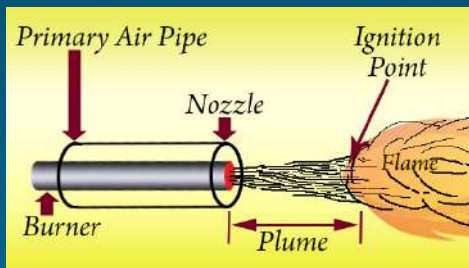


Xplate™ technology has been verified at several cement plants in several countries. Xplate™ breaks the larger-size oxygen clusters into the smaller-size oxygen single molecules that subsequently speed up the oxygen molecular diffusion into the coal structural porous media. This technology can be used with either wet or dry process, and either with satellite coolers or pre-calciner type.

Diffusion of O₂ molecules



Flame and Reaction Zones



Thailand

Without Xplate™

With Xplate™

Korea

Without Xplate™

With Xplate™

Vietnam

Without Xplate™

With Xplate™

Philippines

Without Xplate™

With Xplate™

South Africa

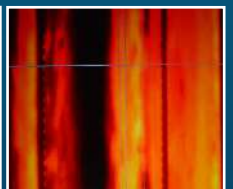
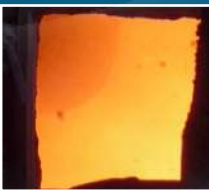
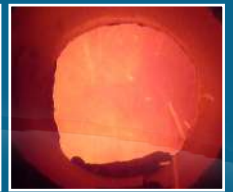
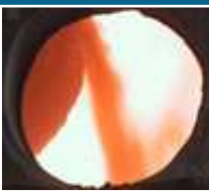
Without Xplate™

With Xplate™

Russia

Without Xplate™

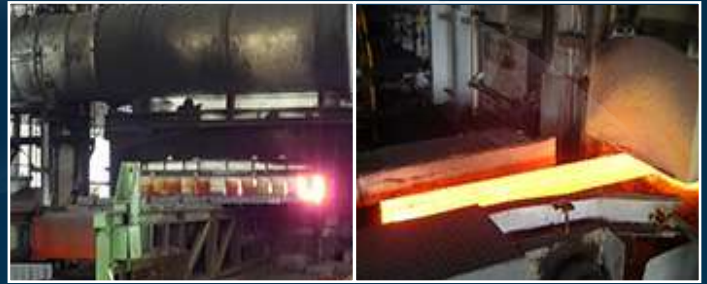
With Xplate™



Steel Reheating Furnaces

XPlate™ technology directly improves combustion in the preheating, heating and soaking zones of the RHF. Various fuel types such as NG, LPG, bunker, etc. can be used.

Billet RHF plants, Thailand



Steel Electric Arc Furnaces

XPlate™ can significantly enhance oxygen diffusion into the molten steel scrap in steel EAF application. The smaller molecular size of O₂ will increase yield and reduce energy consumption.

Billet RHF plants, Vietnam



Coal Gasification Processes

Chemical reactions of carbon, oxygen and steam in gasification process have great benefits by XPlate™ technology. The more freely-moving molecules of both oxygen and steam can react more effectively with the coal porous granules, enhancing more CO, H₂ and CH₄ concentrations in syngas. Typically the syngas calorific value increases by 1% with less coal consumption.

Coal gasification plant, Vietnam



Gasifiers



Gasification, Vietnam

DATE: June 5, 2014

To: VIETNANG COMPANY LIMITED
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SUBJECT: XPLATE Test Results at Coal Gasification Process

Prime Yen Binh Joint Stock Company is active manufacturing leading company in Vietnam. XPLATE equipment has been successfully installed at our coal gasification plant using coal as the energy source since April 18th, 2014. The positive results of XPLATE test were concluded as follows:

- XPLATE improved the chemical reactions in gasifier and yielded increased quality of syngas.

Process parameters	Gasifier No. 1
% CO in syngas	+ 2.9%
% CH ₄ in syngas	+ 3.3%
% H ₂ in syngas	+ 0.9%
% CO ₂ in syngas	- 9.3%
Syngas Heat (Kcal/Nm ³)	+ 2.6%

- Prime reserved rights not to disclose the results of coal saving quantity to public.
- No negative effects on the coal gasification process and its operation were observed with XPLATE.

Signature of General Director

CÔNG TY CỔ PHẦN
PRIME YEN BINH
HÀ NỘI

ĐIỂM DỐC
Dương Xuân Anh

Glass Furnaces

Positive gas saving in a gas-fired glass furnace combustion by XPlate™ technology has been commercially proven in Thailand. Improvement can be seen at the regeneration ports that chemical reactions occur more intensively due to speed and greater collision possibilities of single oxygen molecules towards the completeness of oxidation.



Environmental Benefits

XPlate™ helps in reduction of greenhouse gas (GHG) emission by improving combustion efficiency of fuel carbon.

CO₂

- ✔ By carbon mass balance, reduce carbon fuel reduces CO₂ outlet (Ton/day)

NO_x

- ✔ By nitrogen mass balance, reduce N₂ inlet reduces NO_x outlet (Ton/day)

SO_x

- ✔ By sulfur mass balance, reduce coal fuel inlet reduces SO_x outlet (Ton/day)



Technology Advantages

- Reduce fuel consumption
- Reduce electricity consumption
- Reduce greenhouse gases (GHG) emissions
- Install without downtime on process
- Apply to most combustion processes
- Support green industrial revolution policy according to the government

COMPANY PROFILE

QE Group of Companies (QE) specialise in innovative engineering, manufacturing and technology. We have invented a technology to treat air as a single molecule which on entering a combustion zone results in fuel savings and reduce pollution. The technology is applicable to natural gas, liquid fuels, LPG, solid fuels like coal and biomass where have been proven by our clients and engineering organizations in a wide range of industries such as power plants, cement plants, ceramic kilns, spray dryers, boilers, gasification units, steel reheating furnaces, EAF and glass furnaces in 15 countries including UK, Ukraine, South Africa, Botswana, Russia, Belarus, United Arab Emirates, India, China, South Korea, Thailand, Vietnam, Philippines, Malaysia and Indonesia. The XPlate™ product trademark is being applied for registration in 45 countries.

Our Mission:

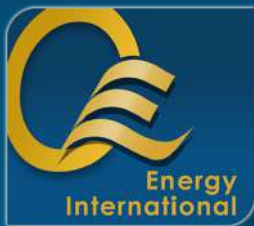
To provide considerable fuel savings and reduce green house emission worldwide

Our Vision:

To be recognized as the world leading player in fuel saving and reduce emission technology



<https://Xplateglobal.com>



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Energy saving for global environment

