



ADVANCES IN COMBUSTION TECHNOLOGY

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SC/EEC Seminar/22nd April,2016

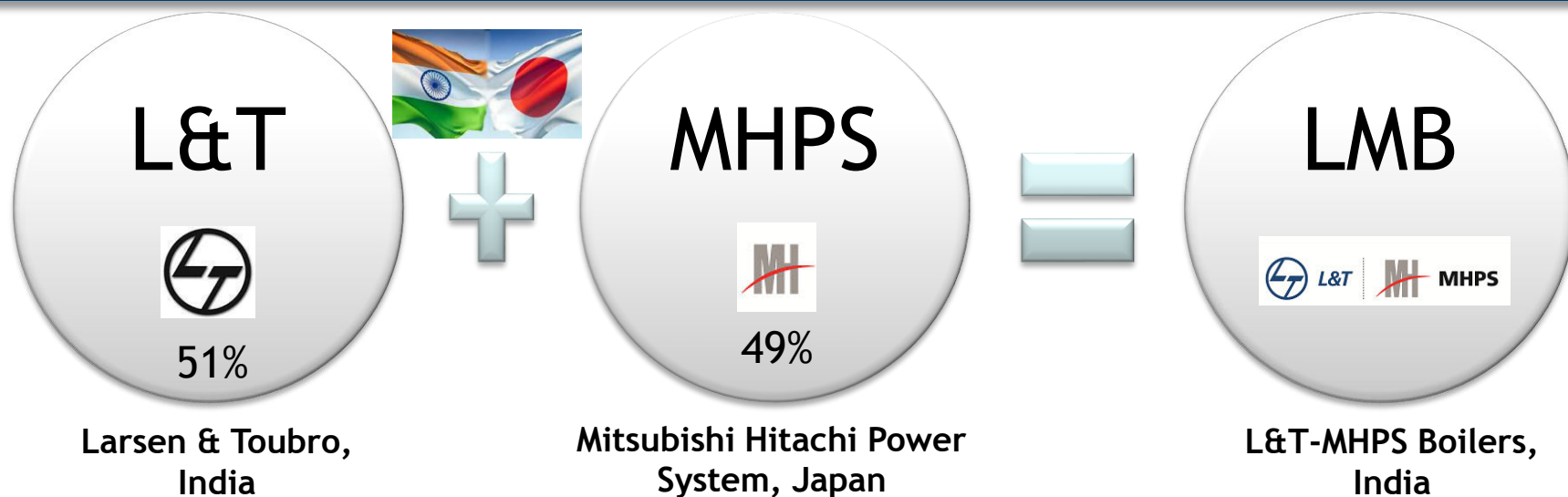
PRESENTATION FLOW

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2	KEY FEATURES OF LMB BOILERS
3	NEW ENVIRONMENTAL NORMS
4	HISTORY OF DEVELOPMENT OF COMBUSTION TECHNOLOGY
5	MECHANISM OF NO _x CONTROL
6	OPERATIONAL EXPERIENCE
7	POST COMBUSTION CONTROL
8	CONCLUSION



INTRODUCTION TO LMB

Joint Venture of L&T and MHPS



Incorporation

L&T-MHPS Boilers
was incorporated
on
April 18, 2007
(20 Years Term)

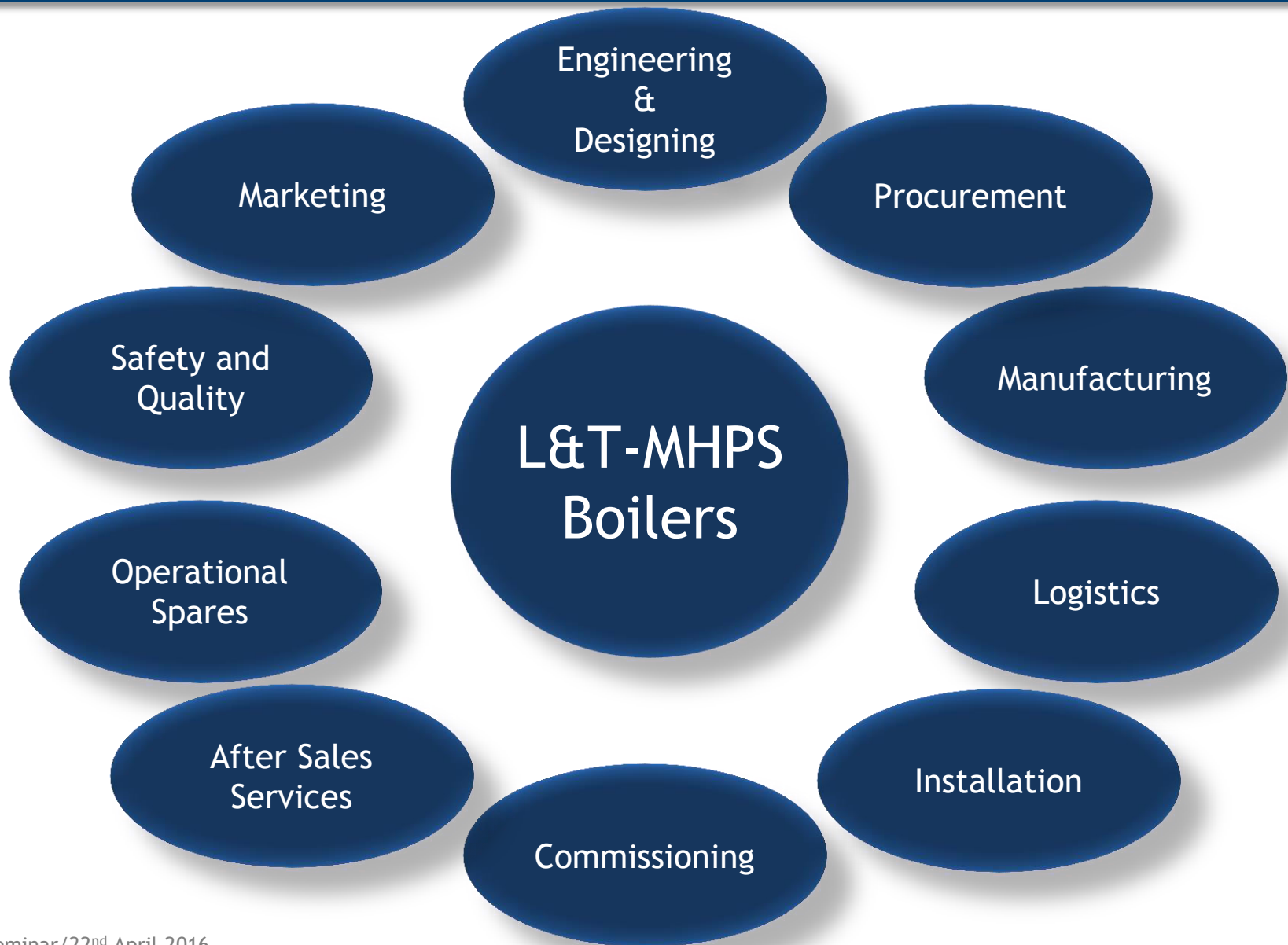
Scope

Complete
Technology Transfer
of Supercritical
Boilers

Product Range

Supercritical Boilers
of 500 MW and
above including
Pulverizer

LMB's Scope of Business



Offices, Manufacturing Facility & Project Sites Location



Head Office,
Marketing,
Engineering,
Project
Management,
Supply Chain Groups
Faridabad

Manufacturing
Facility
Hazira, Surat

Engineering Centre
Chennai

Offices &
Factory

Projects

2 x 700 MW
NPL Rajpura

2 x 660 MW
NTPC Tanda

2 x 660 MW
RRVUNL Chhabra

2 x 660 MW
Jaypee Nigrie

2 x 660 MW
MPPGCL Malwa

3 x 660 MW
Mahagenco
Koradi

2 x 660 MW
NTPC Khargone

Snapshot of Offices and Manufacturing Facility



Head Office, Marketing, Engineering, Project Management,
Supply Chain Groups, Faridabad



Engineering Centre, Chennai



Administration Block, Hazira

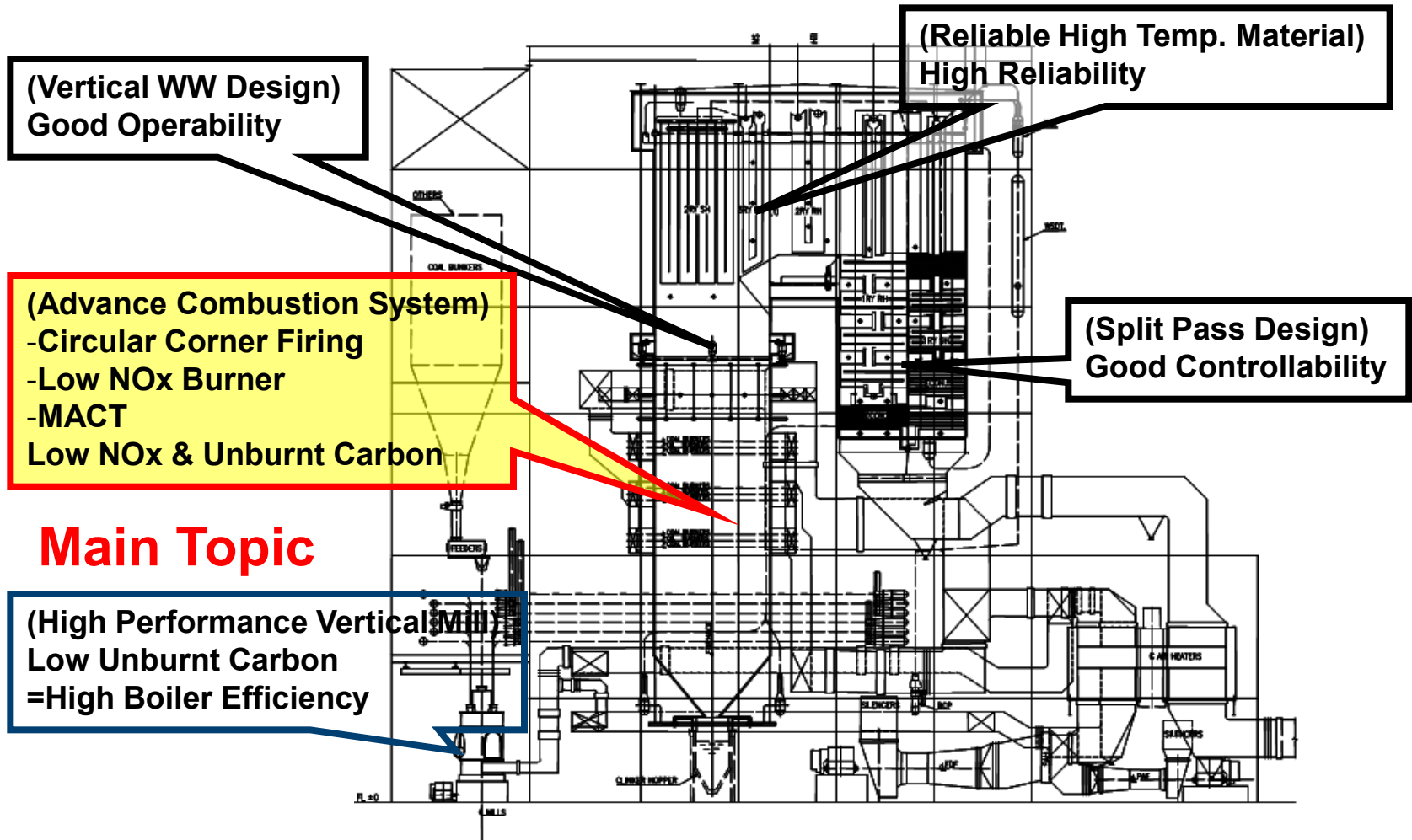


Manufacturing Facility, Hazira

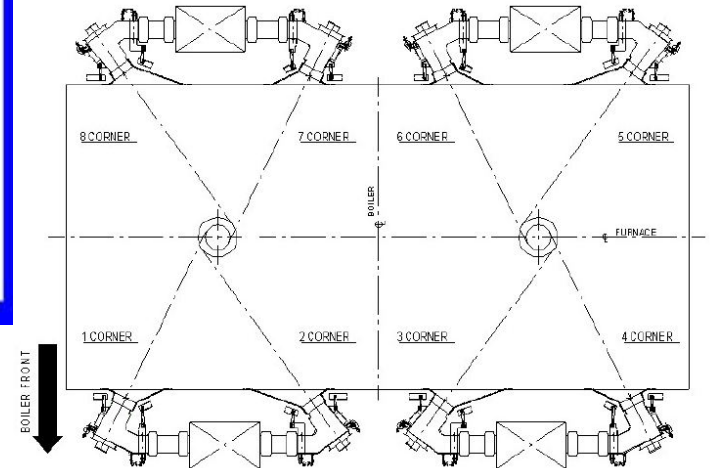
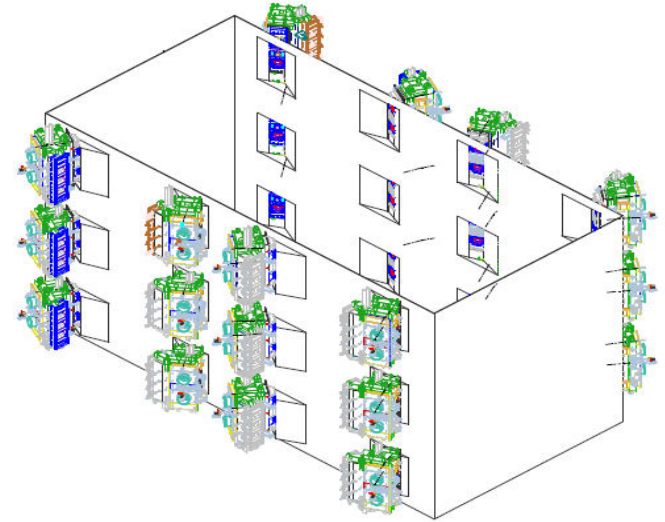
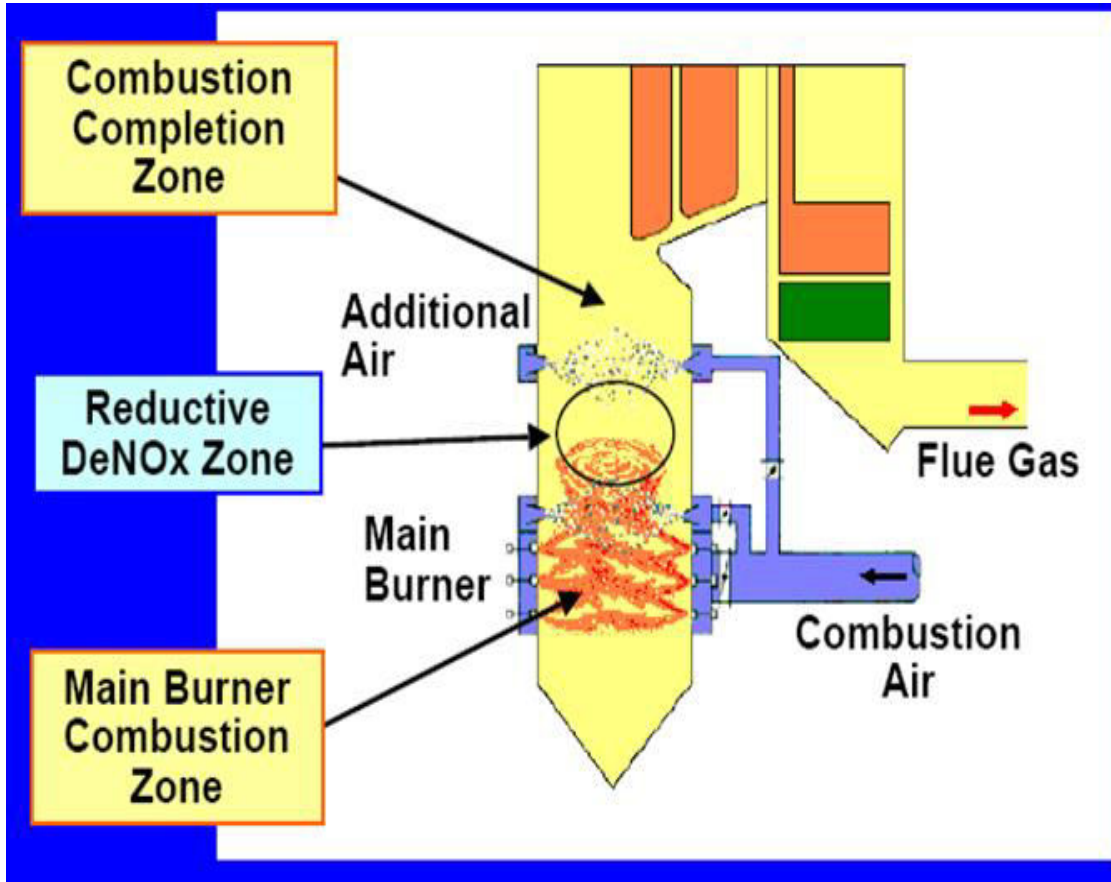
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KEY FEATURES OF LMB BOILERS

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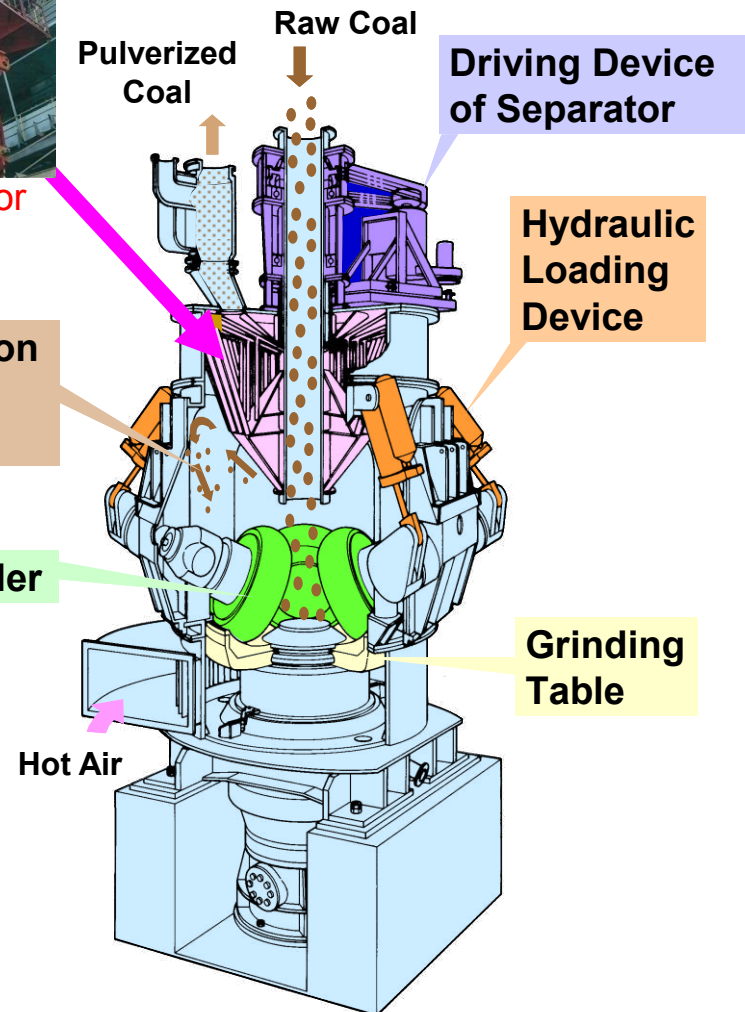
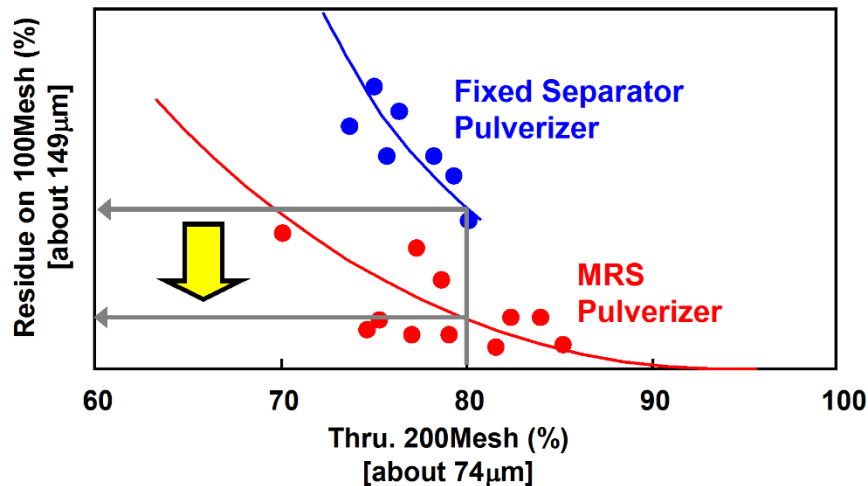
- Effective Classification of Coarse Particles

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Good Ignition & Combustion
(Low Unburnt Carbon)



Rotary Separator



NEW ENVIRONMENTAL NORMS

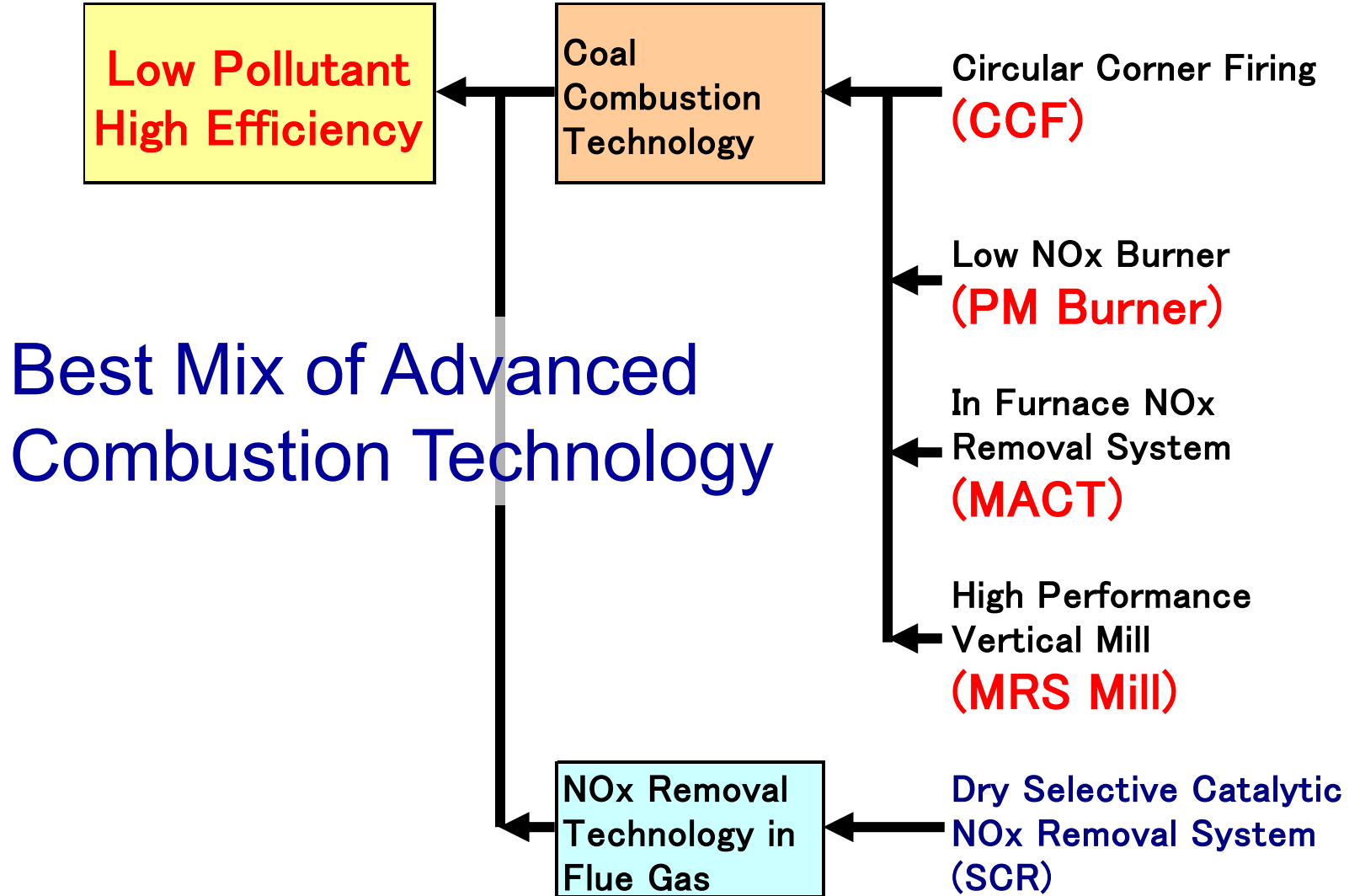
NEW ENVIRONMENT NORMS

As per Ministry of Environment, Forest and Climate Change Notification dated Dec 7, 2015

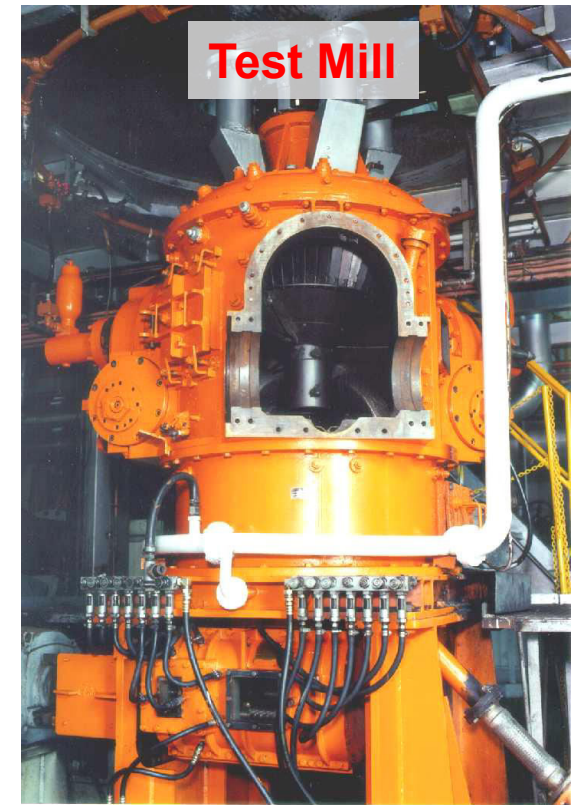
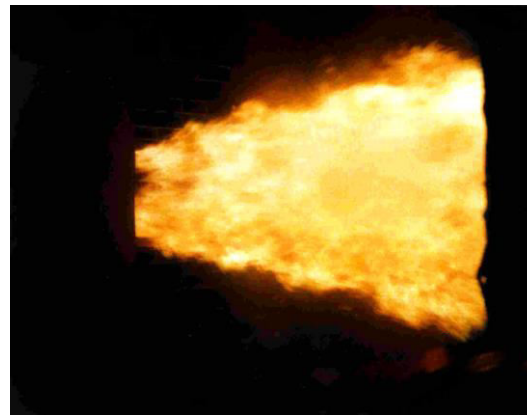
S.N.	TPP Installation Period	NOx requirement	Deadline
1	Before Dec 31, 2003	600 mg/Nm ³	Within 2 year from notification
2	Between Jan 01, 2004 to Dec 31, 2016	300 mg/Nm ³	Within 2 year from notification
3	From Jan 01, 2017	100 mg/Nm ³	Must meet upon completion

HISTORY OF DEVELOPMENT OF COMBUSTION TECHNOLOGY

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- Advance combustion technologies have been proved in R & D center before actual PJ.



HISTORY OF DEVELOPMENT OF COMBUSTION TECHNOLOGY

Process from development to actual boiler application



100kg/h single burner test furnace
- Concept verification



500kg/h single burner test furnace
- Burner shape design

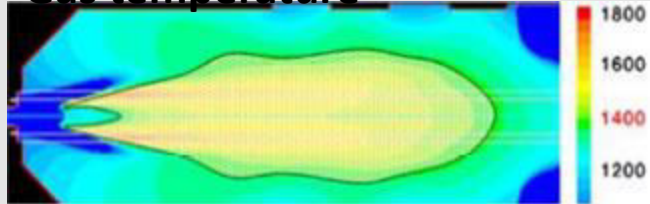


4t/h single burner test furnace
- burner performance confirmation

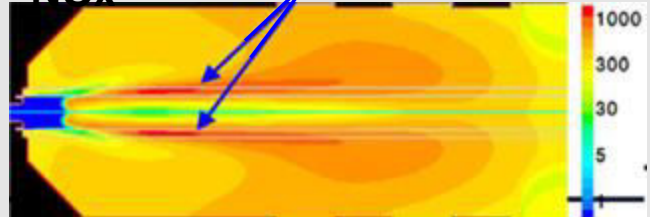
Concept

Large scale Combustion simulation

Gas temperature



NOx

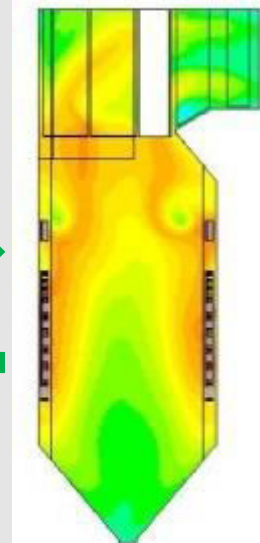


Verification and Feedback

Actual boiler performance evaluation

Feedback of actual boiler operation result

Install to Actual boiler



Renewed test furnace



Advanced Flame Measurement

- Matrix measurement of inside of flame
- Optical temperature
- Infrared camera
- Flame
- Particle
- Unburned carbon
- Heat flux
- Online monitoring
- Laser Doppler velocimeter (LDV:in future)
- Laser Induced Fluorescence (LIF:in future)

HISTORY OF DEVELOPMENT OF COMBUSTION TECHNOLOGY

- Developed burner with almost the same size of actual size was tested with 4t/h single burner test furnace.



HISTORY OF DEVELOPMENT OF COMBUSTION TECHNOLOGY

