Faculty of Engineering
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Development of Monitoring and Control Technologies of Industrial Systems Using Advanced Laser Diagnostics

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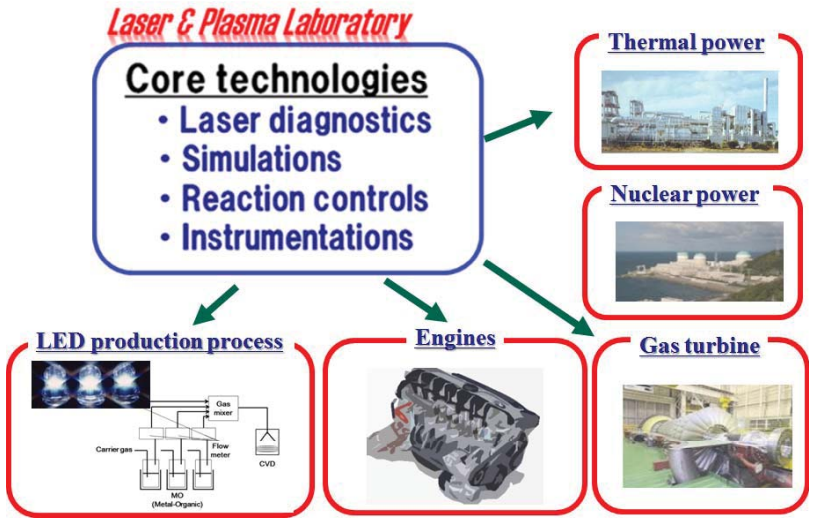

Fig.1 Application diagram of core technology

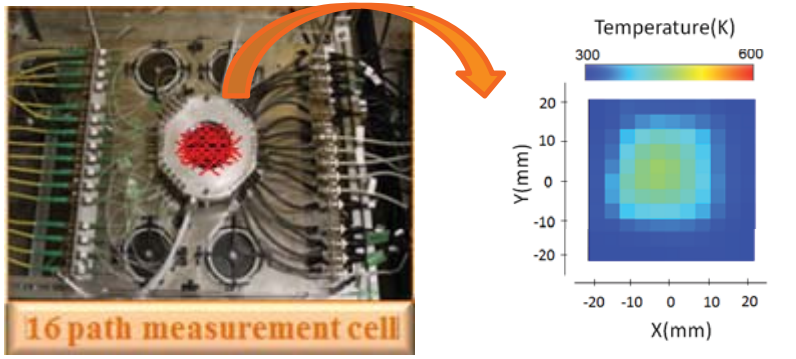

Fig.2 2D temperature and concentration measurement using CT-TDLAS (Application to engine, boiler and gas turbine)

➢ Background

It is becoming more important to reduce anthropogenic carbon dioxide emissions and improve the efficiency of industrial systems. Considering the situation mentioned above, detailed measurement techniques using advanced laser diagnostics have been developed to monitor and control the industrial systems such as engines, boilers, and gas turnines.

➢ Merit of laser diagnostics

	Conventional method	Laser Diagnostics
Physical Probe	Necessary	Unnecessary
Response	Slow (sec.～day)	Fast (ms～min.)
Measurement	One point	Multi-point(2D, 3D)
Sensitivity	Low	High

➢ Applications

1) Combustion systems : Exhaust gas, Combustion control
2) Plants(thermal, nuclear) : Process monitor and control
3) Semiconductor : Raw material monitor, Trace species
4) Medical application : Visualization of live

Keywords : Laser Diagnostics
Real-time Monitoring
Industrial Applications

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