

Feature Article

The Field of Emission Gas Regulation in Korea, 2005

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This article covers the requirements and the relevant time periods of the stack emission gas regulations stated in the Atmospheric Environment Preservation Act in Korea and the efforts made by HORIBA Korea Ltd. (HK) in the Continuous Emission Monitoring System (CEMS) market there. To meet the demand of clients and the market, total solutions including installation of flow meters and dust meters need to be provided as well as gas analysis systems.

Introduction

The Stack Tele-Monitoring System (hereinafter referred to as TMS) in Korea is equivalent to the Continuous Emission Monitoring System (CEMS) used in other areas of the world. The TMS has been designed for these three purposes: 1) to constantly measure air pollutants emitted from large establishments (falls into 3-types: Type 1, Type 2, and Type 3), 2) to promote air pollutant emission reduction through process improvements, and eventually 3) to provide people with a more favorable environment by improving the atmosphere.

Regulation and Law

Korean Ministry of the Environment has revised the Atmospheric Environment Preservation Act several times since its enactment in 1990. In fiscal 1999, the government promulgated a law that strengthened the regulations

regarding the installation targets of measurement equipment at the establishments such as stack emission gas automatic measuring instrument, measurement components, and implementation periods. The aim of the law is to ensure an appropriate operation and management of emission facilities and pollution prevention facilities. The law 1) specifies the implementation periods (Table 1) according to the category of areas (air quality conservation designated areas^{*1}, air pollution control areas^{*2}, and others) and the size of the establishments, and 2) indicates the necessary measurement components according to the type of fuel or facilities (Table 2).

*1: Air quality conservation designated areas: areas specified as special areas for air quality conservation due to the existence of the industrial parks involved, such as petrochemical refining contributing to serious air pollution.

*2: Air pollution control areas: generally controlled areas except the air quality conservation designated areas.

Table 1 Implementation Periods

		1st Period (until December 31st, 2001)	2nd Period (until December 31st, 2003)	3rd Period (until December 31st, 2005)
Air quality conservation designated areas	Establishments Type 1	○	—	—
	Establishments Type 2	○	—	—
	Establishments Type 3	○	—	—
Air pollution control areas	Establishments Type 1	○	—	—
	Establishments Type 2	—	○	—
	Establishments Type 3	—	○	—
Others	Establishments Type 1	—	○	—
	Establishments Type 2	—	—	○
	Establishments Type 3	—	—	○

Table 2 Measurement Components

Measurement Equipment Installation Target (Emission Facilities)	Measurement Components
1. Common boiler (varies depending on the evaporation amount) 1) Liquid fuel 2) Solid fuel	1) Nitrogen oxide, oxygen 2) Dust, nitrogen oxide, sulfur oxide, oxygen
2. Power plant (varies depending on the evaporation amount and generation capacity) 1) Liquid fuel 2) Solid fuel	1) Nitrogen oxide, oxygen 2) Dust, nitrogen oxide, sulfur oxide, oxygen
3. Incinerator (including incinerating boiler) 1) Continuous waste incineration of 1 ton per hour, or waste incineration of 10 tons a day	1) Dust, nitrogen oxide, hydrogen chloride, oxygen, carbon monoxide
4. Sulfuric acid production facilities, nonferrous metal smelting facilities	Sulfur oxide
5. Heating facilities in petroleum processing facilities	Dust, nitrogen oxide, sulfur oxide
6. Desulfurization or sulfur collection facilities in petroleum processing facilities or cokes production facilities	Sulfur oxide
7. Hydrochloric acid production facilities, and chemical fertilizer production facilities where hydrochloric acid is used as a material or is produced.	Hydrogen chloride (HCl)
8. Nitrogenous fertilizer production facilities and NH ₃ synthesis facilities	NH ₃
9. Phosphoric acid production facilities, mineral phosphate burning facilities, hydrofluoric acid production facilities, or compound and mixed fertilizer production facilities	Hydrogen fluoride, NH ₃
10. Nitric acid production facilities, or fertilizer production facilities where nitric acid is used	Nitrogen oxide
11. Electric furnace, burning facilities in cement production facilities, melting in glass and glassware production facilities, melting facilities	Dust, Nitrogen oxide
12. Other than those above, facilities considered by governors of cities or provinces to be the implementation target facilities	Measurement components specified by governors of cities or provinces

The HK Response

Based on the law mentioned above, HORIBA Korea, Ltd. (HK) has been preparing to respond to the market, learning from the precedents of the Japanese market where environmental regulation has been advanced since 1998. On the Korean market where products imported from all around the world are available, the priorities for a competitive edge were: 1) cost, 2) quality, and 3) performance.

ENDA-600 Series

For the Korean market we started with improving the design of the Stack Gas Analysis System ENDA-600 Series (Figure 1), which is sold by HORIBA in Europe and the United States, Japan and China, and adopted onshore procurement as our policy to reduce costs.



Figure 1 ENDA-600 Series

In addition, we searched for partner companies who could provide us with necessary units required for the TMS other than the ENDA. In consideration of performance,

quality, and cost, we selected two or more partner companies in the following areas such as dust monitoring, flow, temperature, heat piping, data logging, and FEP. Our domestic partner companies also include the firms who handle installation operation and data logging.

Conclusion

Compared to the CEMS markets throughout the world, China and Korea are probably the most competitive markets in the world. In the growing Korean market, multitudinous products are brought by overseas and domestic manufacturers. In spite of having been under such tough competition, HORIBA Korea has achieved about 30% of the gas sampling system CEMS market share with ENDA-600 Series, adding the results of the 1st and 2nd half-year of 2003.

In this context, we will continue to keep playing an important role in the emission gas measurement industry in Korea by enhancing relationships of trust with our clients through responding to their needs swiftly, proposing performance-centered products, and expanding sales promotion with technical support services.



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