**초록**

제목: Smart Combustion Technology for CO2 Reduction in Stationary Sectors

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California consumes about 2.5 Trillion Cubic Feet (TCF) of natural gas a year. The most of natural gas supply to CA is from the associated gas from the well, not from the evaporation of imported Liquified Natural Gas (LNG), which shows significant variation in the fuel quality,

From the fuel quality data posted by PG&E , 5% change of the “daily average” value of fuel quality can be observed. No one yet is able to report the “real-time” variation of the fuel quality.

Research team in Winston Chung Global Energy Center at University of California, Riverside successfully developed the prototype of “Natural Gas Fuel Quality Sensor”, which can measure the Wobbe Index (WI) of the fuel in “real-time”. This is the world first invention, also, it’s estimated production cost is estimated to easily meet the project target ($100 per sensor)

This sensor can be used for the “real-time optimization” of the boiler combustion by “smart combustion control”, which is a fast feed-forward control of combustion air by direct measurement of fuel WI. This will give a superior advantage to the conventional oxygen trimming method, which measures oxygen level in exhaust stream. Higher installation cost of oxygen analyzer prevents the widespread use in small and medium size boiler, also it provides the inferior control due to the nature of its slow feed-back control.

By adopting this real-time WI sensor technology to the natural gas boiler or even any device that combusts natural gas, a 10% of the efficiency increase is estimated.

Even with the 1% efficiency increase results in about 25,000 Million CF of natural gas saving, equivalent to 150 Million dollars saving and over 1 Million ton of GHG reduction in CA.