

## 가정용 목재 펠릿 보일러에 대한 부분부하 운전 특성

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### Part Load Performance Characteristics of Domestic Wood Pellet Boiler

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Recently domestic wood pellet boilers are installed in rural and forestry houses. The fuel price per lower heating value of wood pellet is about 20 % lower than that of heating oil on July 2010. In spite of lower price of wood pellet, a few users of wood pellet boiler complain expensive fuel cost. One of the reasons is inaccurate or improper air-fuel ratio setting of wood pellet boiler. O<sub>2</sub> concentration of flue gas of domestic wood pellet boiler is about 9.7 % and there are few domestic wood pellet boilers which can control air-fuel ratio automatically.

We tested a domestic wood pellet boiler in changing boiler thermal output and air-fuel ratio. The nominal boiler thermal output is 25 kW (21 500 kcal/h). We measured thermal efficiency and flue gas concentrations such as CO and NO<sub>x</sub> at each boiler thermal load with various air-fuel ratios. The results show that if air flow rate is the same as full load and part load, thermal efficiency of part load of 40 % drops about 7.7 % compared to boiler full load case.

**Key words** : Domestic Boiler(가정용 보일러), Efficiency(효율), Part Load(부분부하), Performance(성능), Wood Pellet(목재 펠릿)

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## 오리기름으로부터 합성된 바이오젤의 연료특성 연구

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### The Study of Fuel Properties for Biodiesel Derived from Duck's Oil

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Biodiesel was well known for eco-friendly alternative fuel for petrodiesel. But biodiesel has disadvantages such as it was derived from food resources which were high priced. In this study, we synthesized the biodiesel from duck's oil which was food waste via transesterification under base catalyst. After analytic results of density, kinematic viscosity, cold temperature characteristics, lubricity and cetane number which were main fuel characteristics, this duck's biodiesel has enough to meet specifications for except of domestic winter season.

**Key words** : Biodiesel(바이오디젤), Duck's oil(오리기름), Fuel properties(연료특성), Synthesis(합성), Food byproduct(음식 부산물)

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