

### Application of far infra-red radiative catalytic burner to industrial drying process

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Compared with ubiquitous flame combustion, catalytic combustion occurs at low temperature and that this can transfer combustion heat to drying material by far-infrared radiation. In order to applicate catalytic combustion technology for drying process, novel fiber mat catalytic burners were manufactured and combustion characteristics of them were investigated. It was seen that LPG (propane) could be almost completely combusted in a fully premixed fiber mat catalytic burner. The combustion intensity of catalytic burner can be controlled in the range of 0.2-2.0 kcal/cm<sup>2</sup>h by flow rate of LPG-air mixture and it's range was affected by the arrangement of catalyst in catalytic burners. To use of infrared technology in dehydration, drying tests carried out various material, such as wood chip, agricultural pallet, car interior material and incombustible material. The drying rate was significantly influenced by combustion intensity and the distance between burner surface and drying material. Although it differs to the samples, the maximum energy efficiency of catalytic burner reaches up 79.4% during dry of wood chips which have moisture content of 50%.