

Development of Post-Combustion CO₂ Capture
Technology Using Dry Sorbents

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Korea Institute of Energy Research (KIER) has developed dry-sorbent CO₂ capture process for post-combustion CO₂ capture (PCCC) since 2002. Through process scale-up, 10 MWe-scale (35,000 Nm³/h of flue gas treatment) dry-sorbent CO₂ capture pilot plant was installed in 2014 beside 500 MWe coal-fired power plant in Southern Power Company. The pilot plant has now been operated in order to get track-records for commercialization as well as obtain optimal conditions for both process and operation. In the meantime, KIER has developed next generation dry-sorbent CO₂ capture technology, which could reduce the regeneration energy. KIER has evaluated two kinds of polyethyleneimine-based dry sorbents (one is from Korea Advanced Institute of Science and Technology and the other from University of Nottingham) on 100 kg scale fluidized-bed continuous unit. KIER has also developed a continuous moving-bed CO₂ capture process, which could handle new materials which are bad for well fluidization. We plan to develop next generation dry-sorbent CO₂ capture technology for PCCC on a pilot scale in the near future.