

## Electricity Generation by Using Turbo-Expander in Natural Gas Pressure Reduction Stations in Republic of Korea

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Highly pressurized natural gas (68.7 Bar) should be reduced (from 23 Bar to 40 Bar) in pressure reduction stations prior to supply to consumer. Expansion valves have been employed for pressure reducing process in Republic of Korea. Internal energy of natural gas can be converted to mechanical energy by using turbo-expander instead of using expansion valve. Gas expansion causes a temperature drop which induces condensation and hydrate formation of natural gas. In order to prevent low temperature problems, pre-heating must be applied to natural gas. In this study, expectable energy was calculated based upon natural gas nationally produced in Republic of Korea in 2013. According to the calculation, work can be generated from 891 MW to 2 GW for pure methane natural gas. When it comes to mixture natural gas work can be generated from 818 MW to 1.9 GW.