

# The Development of Industrial Waste Heat Power Generation

**Rakhi Biswas, Sunit Jana, Sayantika Baidya, Koushik Pal**

Department of Electronics & Communication Engineering  
Guru Nanak Institute of Technology, Kolkata, India

**Abstract:** *In recent years, the global emphasis has shifted towards addressing issues such as rapid economic growth, energy shortages, waste heat from internal combustion engines, and environmental concerns. Internal combustion engines typically convert only 30-40% of fuel energy into useful mechanical work, with the remainder being dissipated as heat into the atmosphere through cooling systems and exhaust gases. This results in entropy generation and significant environmental pollution. Technologies like thermoelectric generators (TEGs) offer a promising solution for capturing and converting this waste heat into usable energy.*

**Keywords:** Thermoelectric generators, waste heat recovery, environmental pollution, internal combustion engines