

PROCEEDINGS INDONESIAN PETROLEUM ASSOCIATION
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**INCREASED GAS TURBINE THERMAL EFFICIENCY THROUGH
WASTE HEAT UTILIZATION**

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ABSTRACT

P.T. Caltex Pacific Indonesia (CPI) is the largest oil producer in Indonesia with its major operations in Riau Province, Central Sumatra. The PSC contracts cover an area of 200 kms by 200 kms. To support its oil production, CPI operates 21 gas turbine generator units with a total installed capacity of 396 MW. Five of these units are located at Central Duri, six at the Duri Power Plant and ten at the Minas Power Plant. Most of the power generated by these units is used to lift oil production. CPI's oil production is 730,000 BPOD.

To maintain oil production and increase recovery, CPI initiated the Duri Steam Flood project in 1985 to inject steam into the Duri reservoirs through injection wells. The project development covered the installation of hundreds of steam generators (fired boilers) in the Duri Field and five gas turbine units at the Central Duri Power Plant which are equipped with Waste Heat Recovery Steam Generator (WHRS) units. These WHRS units convert water into 75% quality steam by utilizing the waste heat from the exhaust gas of the turbines.

By having WHRS units in operation, the extensive application of co-generation technology offered the economically attractive possibility to increase thermal efficiency of gas turbine units. The exhaust gas from the gas turbines, which was originally vented to the atmosphere, is used to generate steam. The steam produced by WHRS units, combined with steam produced from the steam generators, is sent to the Duri fields through integrated steam lines. These WHRS units contribute around 5% of total steam production required for the Duri Steam Flood which is the largest steamflood project in the world.

This exhibit presents a layout, P & ID, photographs, technical and performance data of the WHRS units installed at the Central Duri Power Plant.

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