Gas Turbine Carries Load On Texas Lines

Regional utility finds gas turbine does excellent job in backing up transmission line and on peaking service*

► In May 1952, Texas Power & Light Co. placed its first gas turbine in service in its Dixon Street Station at Gainesville, Tex. The 3500-kw, regenerative, 2-shaft unit drives a 5000-kva generator. The gas turbine was installed in parallel with a 1000-kw dual-fuel internal-combustion engine.

These units were selected after an exhaustive economic study comparing various types and sizes of steam units, internal-combustion engines and gas turbines. With the station completed, the investment proved to be very close to the estimate, and fuel consumption less than expected. Other costs and factors fell close in line with the estimate.

The gas turbine has run over 1100 hours, being used almost daily for peaking service. Both units can be started quickly in transmission-line failure. It has been the practice to run the gas turbine when ice storms are expected. With a thermal efficiency over 23% (based on HHV of gas) the gas turbine competes with the system steam plants, considering the remoteness of Gainesville and unavoidable transmission-line losses.

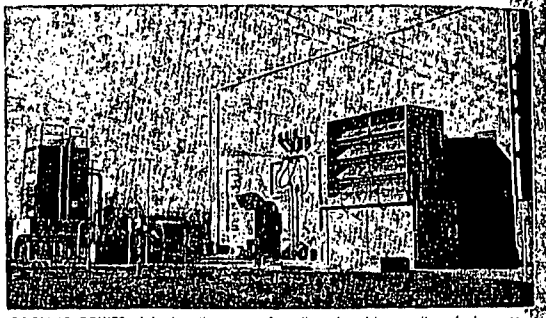
The 2-shaft unit has both turbine wheels in one casing. The single-stage high-pressure turbine drives the only 14-stage axial-flow compressor, while the single-stage low-pressure turbine drives

(*Continued on page* 230)

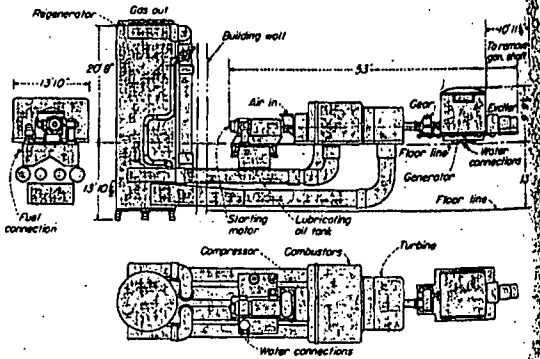
*Abstracted from "Regenerative Gas Turbine-Generator for Central Station Service," by H C Davis, Texas Power & Light Co, and R L Jackson, General Electric Co. Read before American Power Conference, Chicago, March 25-27, 1953.



3500-KW GAS TURBINE drives 5000-kva generator. Two-shaft unit has both turbine wheels in one casing, regenerator outside building wall, *left;* one compressor



COOLING TOWER, *left,* handles water for oil and turbine cooling, fuel-gas compressor pressurizes to 160 psig, evaporative inlet cooler, *right,* raises unit capacity



HOT AIR AND GAS DUCTS run under operating floor connecting gas turbine unit and outdoor regenerator. Combustors ahead of turbine are housed under large cover

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By TYLER HICKS, Associate Editor

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