

Unitel Technologies Evaluates Waste Heat Recovery System with NASA Glenn



TECHNOLOGY

NASA Glenn's Thermo-Mechanical Branch collaborated with Unitel Technologies to evaluate the effectiveness of a proprietary NEOGEN cycle in the conversion of low temperature waste heat from power generation smokestacks into usable electronic power.

COMMERCIAL APPLICATION

A NASA Illinois Commercialization Center (NICC) award to Unitel Technologies supported NASA's analysis of the thermodynamic efficiencies of the Unitel-designed NEOGEN system. The NEOGEN system uses a unique absorption bottoming cycle to tap into waste heat streams of 150°F to 450°F. NASA Glenn modeled the cycle efficiencies, optimized heat exchanger design, and provided operating cost data. NEOGEN performance was benchmarked against systems that

NASA has worked with in the past. The project delivered optimized system hardware and component design specifications for prototyping 50Kw units. Industries initially targeted as potential customers of the new cost effective technology for waste heat recovery systems include marine engines and computer/electronic systems.



"Working with NASA has enabled Unitel to expand the horizons of its heat recovery technology to the outer limits of the envelope." - Ravi Randhava, President, Unitel Technologies

SOCIAL/ECONOMIC BENEFIT

Unitel's partnership with NASA Glenn has saved the company over \$250,000 in development costs and expedited the addition of a new product line offering for the company. As a social benefit, power production from waste heat offers an environmentally-friendly alternative to traditional methods.

NASA APPLICATIONS

Thermodynamic analysis software developed for NASA to analyze the waste heat recovery of the Rankine Cycle Engine employed on M1 military tanks was adapted to analyze performance of Unitel's NEOGEN system. The NASA Glenn supercomputing center is interested in utilizing a pilot unit in harvesting waste heat to produce electric power.

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