

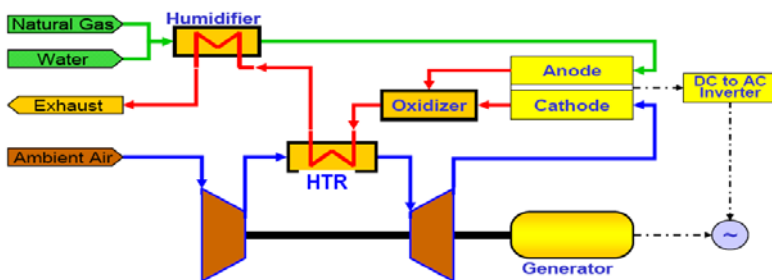
Program Fact Sheet

Microchannel Heat Recuperator for High Temperature Fuel Cell Systems

This DOE-funded program (Contract DE-EE0001111) seeks to advance Solid Oxide Fuel Cell (SOFC) system technology toward higher performance and lower cost by development and optimal use of microchannel high temperature recuperators (HTR's). These recuperators (heat exchangers) are utilized in advanced power generation cycles that integrate unfired gas turbines with high temperature fuel cells, extending the overall plant efficiency.

The Industrial Technologies Program project, administered by NETL, is focused on development of a microchannel HTR that recovers waste heat from high temperature solid oxide and carbonate fuel cell systems. The pathway of this three-year project encompasses activities ranging from materials screening and testing to multi-kW scale device fabrication and testing to design of MW-scale commercial recuperators. The program addresses key technical barriers and manufacturing costs as well as device scale-up issues.

The expert team of participants includes FuelCell Energy, Inc. (FCE), Pacific Northwest National Laboratory (PNNL), and Oregon State University (OSU). The objective of the project is the development of cost effective and durable high temperature recuperators, which are suitable for SOFC/GT hybrid systems. In response to the ever-growing market demand for ultra-high efficiency power generation systems, FCE has developed a unique concept for a combined cycle system comprised of the fuel cells and unfired gas turbines.



Schematic of a High Temperature Fuel Cell with a High Temperature Recuperator (HTR)

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