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(54) **HEAT EXCHANGER SYSTEM FOR OPERATING A FUEL CELL STACK**

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(57) **ABSTRACT**

The invention relates to a heat exchanger system for operating a fuel cell stack, comprising: a first compressor and a second compressor for the cathode gas fed to the fuel cell stack, the second compressor being fluidically downstream of the first compressor; a turbine, which is mechanically coupled to the second compressor and against which the cathode gas discharged from the fuel cell stack flows; a first heat exchanger, which is thermally coupled to the fed cathode gas between the first compressor and the second compressor; a second heat exchanger, which is thermally coupled to the fed cathode gas downstream of the second compressor; a fourth heat exchanger, which is thermally coupled to the discharged cathode gas downstream of the turbine; wherein the fourth heat exchanger is thermally variably coupled to the first heat exchanger and to the second heat exchanger in order to control a heat exchange for cooling the first heat exchanger and the second heat exchanger.