



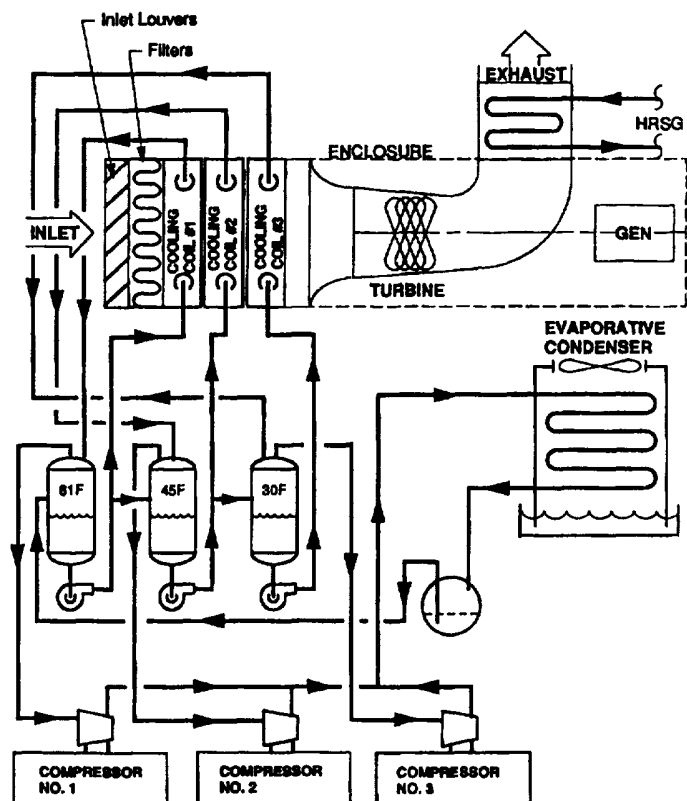
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>6</sup> : <b>F02C 7/12, 7/18, F01D 25/08, G01H 3/00, 7/00, G05D 9/02</b></p>	<p>A3</p>	<p>(11) International Publication Number: <b>WO 97/09578</b> (43) International Publication Date: 13 March 1997 (13.03.97)</p>
<p>(21) International Application Number: PCT/US96/14183 (22) International Filing Date: 22 August 1996 (22.08.96) (30) Priority Data: 08/519,073 24 August 1995 (24.08.95) US (71)(72) Applicant and Inventor: KOHLENBERGER, Charles, R. [US/US]; 611 South Euclid Street, Fullerton, CA 92832 (US). (74) Agent: THEODORE, Marcus, G.; 466 South 500 East, Salt Lake City, UT 84102 (US).</p>	<p>(81) Designated States: AU, AZ, BB, BR, CA, CN, CZ, GE, HU, IS, JP, KG, KP, KR, LK, LT, LV, MK, MX, NO, NZ, PL, RO, RU, SG, SI, SK, TJ, TM, TR, UA, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). <b>Published</b> <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 01 May 1997 (01.05.97)</p>	

(54) Title: METHOD AND APPARATUS FOR COOLING THE INLET AIR OF GAS TURBINE AND INTERNAL COMBUSTION ENGINE PRIME MOVERS

(57) Abstract

A multi-stage method and apparatus for cooling the inlet air of internal combustion engine and gas turbine prime movers associated with various load applications comprising: a multi-stage refrigerated cooling system (10) associated with the air inlet (18) of internal combustion engine and gas turbine prime movers (42) which provides thermodynamic efficiencies in accordance with a divided psychrometric inlet air cooling path enthalpy curve; cascading the cooled refrigerant from stage to stage to cool primary or secondary refrigerant from a first cooling stage (12) as a precooling heat transfer coolant to exchange against and subcool subsequent stages (14, 16) of primary or secondary refrigerant for cooling to the desired temperature; energizing power means to drive the prime mover (42) and refrigerant cooling system (1); and adjusting the power means (42) based on current energy costs to optimize net revenues to produce electricity or useful work from the prime mover application.



GTIAC Flow Diagram  
3-Stage Cooling (Primary Refrigerant)

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INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US96/14183

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) : F02C 7/12, 7/18; F01D 25/08; G01H 3/00, 7/00; G05D 9/02  
US CL : 364/431.05, 431.02, 431.01, 558, 508; 415/178, 175, 118; 60/39.75  
According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 364/431.05, 431.02, 431.01, 558, 508; 415/178, 175, 118; 60/39.75

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
APS

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A,P	US, A, 5,594,665 (WALTER ET AL.) 14 January 1997	1-11
A	US, A, 4,849,895 (KERVISTIN) 18 July 1989	1-11
A	US, A, 5,012,420 (WALKER ET AL.) 30 April 1991	1-11

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