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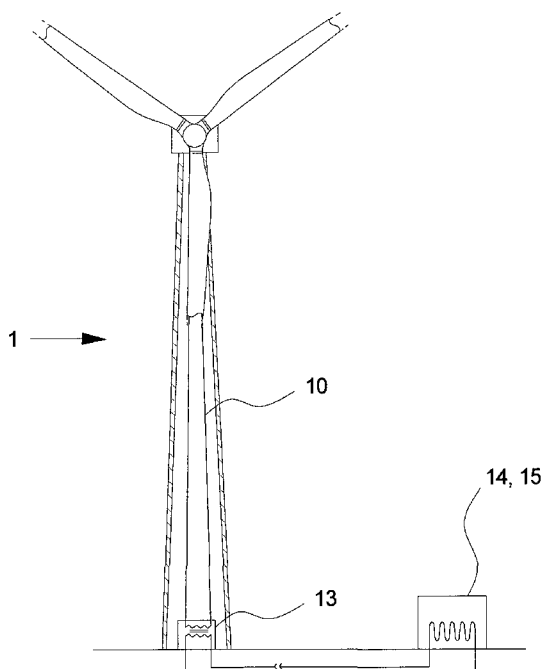
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(54) **Title:** HEATING SYSTEM, WIND TURBINE OR WIND PARK, METHOD FOR UTILIZING SURPLUS HEAT OF ONE OR MORE WIND TURBINE COMPONENTS AND USE HEREOF



(57) **Abstract:** The invention relates to a heating system comprising at least one wind turbine, one or more wind turbine components producing surplus heat, and one or more cooling systems for removal of said surplus heat from said wind turbine components. The heating system also comprises means for transporting at least a part of said surplus heat to heating processes in at least one location external to said at least one wind turbine. The invention also relates to a wind turbine or wind park as well as a method for utilizing surplus heat of one or more wind turbine components. Furthermore the invention also relates to use of a method for utilizing surplus heat of one or more wind turbine components in at least one wind turbine.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. REIDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F03D

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 practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	WO 01/77526 A (AERODYN ENG GMBH [DE]; SIEGFRIEDSEN SOENKE [DE]) 18 October 2001 (2001-10-18) the whole document	1-22
X	WO 03/014629 A (WOBLEN ALOYS [DE]) 20 February 2003 (2003-02-20) page 3, line 30 - page 5, line 1; figure 2	1-22
X	DE 103 52 023 A1 (RITTAL RCS COMM SYSTEMS GMBH & [DE]) 16 June 2005 (2005-06-16) the whole document	1-22
X	WO 00/68570 A (NEG MICON AS [DK]; FISCHER TORSTEN [DK]; VILSBOELL NIELS [DK]) 16 November 2000 (2000-11-16) abstract; figures 1,2	1-22
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
X	DE 103 24 228 A1 (RITTAL GMBH & CO KG [DE]) 23 December 2004 (2004-12-23) the whole document -----	1-22
X	WO 01/06121 A (WOBLEN ALOYS [DE]) 25 January 2001 (2001-01-25) cited in the application the whole document -----	1-22
P,X	US 7 168 251 B1 (JANSSEN WILHELM [DE]) 30 January 2007 (2007-01-30) abstract; figures 1,2 -----	1-22
P,X	WO 2007/110718 A (CLIPPER WINDPOWER TECHNOLOGY I [US]; ERDMAN WILLIAM [US]; COUSINEAU KE) 4 October 2007 (2007-10-04) abstract; figures 1,2 -----	1-22

INTERNATIONAL SEARCH REPORT

Information on patent family members

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PCT/DK2007/000477

Patent document cited in search report		Publication date	Patent family member(s)			Publication date			
WO 0177526	A	18-10-2001	AU	5819501	A	23-10-2001			
			DE	10016913	AI	18-10-2001			
WO 03014629	A	20-02-2003	AT	326669	T	15-06-2006			
			AT	386909	T	15-03-2008			
			BR	0211718	A	21-09-2004			
			CA	2455744	AI	20-02-2003			
			CN	1539072	A	20-10-2004			
			DE	10139556	AI	27-02-2003			
			DK	1419350	T3	04-09-2006			
			DK	1647779	T3	02-06-2008			
			EP	1419350	AI	19-05-2004			
			EP	1647779	A2	19-04-2006			
			ES	2261774	T3	16-11-2006			
			ES	2298952	T3	16-05-2008			
			JP	2004537006	T	09-12-2004			
			NZ	530850	A	30-11-2006			
			PT	1419350	T	31-07-2006			
			US	2008124212	AI	29-05-2008			
			US	2005002787	AI	06-01-2005			
DE 10352023	AI	16-06-2005	NL	1027423	C2	03-10-2005			
			NL	1027423	AI	10-05-2005			
WO 0068570	A	16-11-2000	AT	280902	T	15-11-2004			
			AU	4286700	A	21-11-2000			
			CA	2373156	AI	16-11-2000			
			DE	60015327	DI	02-12-2004			
			EP	1185790	AI	13-03-2002			
			ES	2231183	T3	16-05-2005			
			US	6520737	BI	18-02-2003			
			US	6520737	BI	18-02-2003			
DE 10324228	AI	23-12-2004	JP	4041474	B2	30-01-2008			
			JP	2004353671	A	16-12-2004			
			US	2005006905	AI	13-01-2005			
WO 0106121	A	25-01-2001	AT	250721	T	15-10-2003			
			AU	758953	B2	03-04-2003			
			AU	4403200	A	05-02-2001			
			BR	0012432	A	02-04-2002			
			CA	2379161	AI	25-01-2001			
			DK	1200733	T3	26-01-2004			
			EP	1200733	AI	02-05-2002			
			ES	2204573	T3	01-05-2004			
			JP	3715238	B2	09-11-2005			
			JP	2003504562	T	04-02-2003			
			KR	20070037654	A	05-04-2007			
			NZ	516566	A	30-05-2003			
			PT	1200733	T	27-02-2004			
			TR	200200020	T2	21-06-2002			
			US	6676122	BI	13-01-2004			
			US 7168251	BI	30-01-2007	CN	1982702	A	20-06-2007
						EP	1798414	AI	20-06-2007
WO 2007110718	A	04-10-2007	NONE						