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(54) **Title:** WIND TURBINE ROTOR BLADE WITH IMPROVED PERFORMANCE

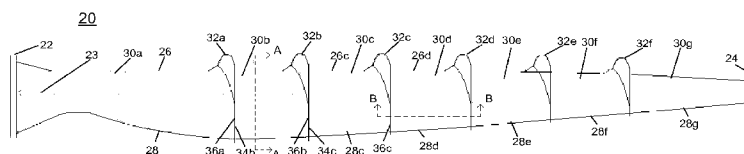


Figure 2

(57) **Abstract:** An improved wind turbine blade design is disclosed. The wind turbine blade (20) includes a plurality of pivotable blade segments (30). Each blade segment (30) has a leading edge segment (26) and a trailing edge segment (28). At least one sensor (40, 42) is configured to measure a performance condition associated with the blade segment (30). An actuator (46) is configured to pivot the blade segment (30) to change an angle of attack based on the performance condition.

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
INV. F03D7/02 F03D1/06
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

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

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

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 197 30 211 A1 (NIEDERKRUEGER WILHELM [DE]) 4 December 1997 (1997-12-04)	1-4, 7-15, 18-26
Y	column 1, line 32 - column 2, line 15; figures 1,2,7	5,6,16, 17
X	FR 2 864 175 A1 (AIRBUS [FR]) 24 June 2005 (2005-06-24)	14-21, 24-26
Y	page 3, line 30 - page 5, line 24 page 6, line 9 - page 7, line 5 page 8, line 1 - page 9, line 26; figures 1-5	1-7,9, 10,22,23
Y	US 2010/021296 A1 (NIELSEN DANIEL EVAN [DK]) 28 January 2010 (2010-01-28) cited in the application paragraphs [0019] - [0023]; figures 1-6 ----- -/-	1-7,9, 10,16, 17,23



Further documents are listed in the continuation of Box C.



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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	US 2009/016891 A1 (PARSANIA NISHANT [IN]	22
A	ET AL) 15 January 2009 (2009-01-15) paragraphs [0022] - [0025]; figure 2 -----	13

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 19730211	A1	04-12-1997	NONE
FR 2864175	A1	24-06-2005	FR 2864175 A1 24-06-2005
		WO 2005064156	A1 14-07-2005
US 2010021296	A1	28-01-2010	CA 2673159 A1 22-01-2010
		CN 101672247	A 17-03-2010
		EP 2148088	A1 27-01-2010
		JP 2010025116	A 04-02-2010
		US 2010021296	A1 28-01-2010
US 2009016891	A1	15-01-2009	CN 101344068 A 14-01-2009
		DE 102008002930	A1 15-01-2009
		US 2009016891	A1 15-01-2009