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(54) **LOCAL REPAIR OR REMANUFACTURE OF POLYMERIC EROSION COATINGS**

(57) A method including applying a Sol-Gel layer onto a substrate and applying an erosion coating onto the Sol-Gel layer.

EP 3 184 735 A3



EUROPEAN SEARCH REPORT

Application Number
EP 16 20 4796

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 814 137 A (BLOHOWIAK KAY Y [US] ET AL) 29 September 1998 (1998-09-29) * column 2, line 62 - column 3, line 31; figure 15 * * column 19, lines 1-15 *	1,6	INV. F01D5/00 F01D5/28 C23C18/12 C23C28/00
X	US 6 235 352 B1 (LEVERANT GERALD R [US] ET AL) 22 May 2001 (2001-05-22) * column 1, lines 57-61; claims 12-14; figure 1; table 1 * * column 2, lines 23-32 * * column 4, lines 11-13 *	1,2,6,7	
X	EP 2 236 648 A1 (ALSTOM TECHNOLOGY LTD [CH]) 6 October 2010 (2010-10-06) * paragraph [0001]; figures 1-5 * * paragraph [0025] - paragraph [0026] * * paragraph [0056] * * paragraph [0090] * * paragraph [0106] *	1,2	
			TECHNICAL FIELDS SEARCHED (IPC)
			F01D C23C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 25 April 2017	Examiner Telias, Gabriela
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03/82 (P04C01)



Application Number

EP 16 20 4796

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

2, 7(completely); 1, 6(partially)

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 16 20 4796

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 2, 7(completely); 1, 6(partially)

A method for applying a sol-gel coating and an erosion layer onto a local area of a substrate. Corresponding product.

2. claims: 3, 5, 9, 10(completely); 1, 6(partially)

A method for local repair of a fan blade. Corresponding product.

3. claims: 4, 8(completely); 1, 6(partially)

A method for coating a substrate comprising: applying a sol-gel layer, a paint primer and an erosion coating onto the substrate. Corresponding product.

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 16 20 4796

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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25-04-2017

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5814137	A	29-09-1998	NONE
US 6235352	B1	22-05-2001	NONE
EP 2236648	A1	06-10-2010	EP 2236648 A1 06-10-2010
		MY 156042 A	31-12-2015
		US 2010247740 A1	30-09-2010

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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82