

MARINE DIVISION

17 bis Place des Reflets - La Défense 2
92400 Courbevoie - France

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Certificate number: 05990/C0 BV

File number : ACE 04/840/02

Product code : 2584I

This certificate is not valid when presented without the full attached schedule composed of 7 sections

TYPE APPROVAL CERTIFICATE

as per Bureau Veritas Classification Rules

This certificate is issued to

VEM motors Thurm GmbH
Zwickau - GERMANY

for the type of product

ASYNCHRONOUS MACHINES

Squirrel Cage Motors Types: KPER - KPR

Regulations and standards :

BV Rules for the Classification of Steel Ships.
IEC 60092-301, IEC 60034 series.

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements of the Regulations and standards mentioned above.

This certificate is valid until : 25 Oct 2011

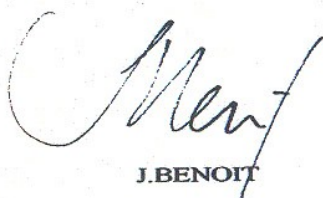
At Paris la Défense, on : 25 Oct 2006

For BUREAU VERITAS,
By order of the Secretary

Approval office

Local office : BV HAMBURG

Surveyor : D. Hoepfner


J. BENOIT



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with BUREAU VERITAS. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of BUREAU VERITAS Marine Division. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

THREE PHASE SQUIRREL-CAGE ASYNCHRONOUS MOTORS

Type: **KPER**
KPR

VARIANTS:

- thermal winding protection:	KPR...TPM, KPER...TPM..., KPR...TS., KPER...TS..
- built in motors:	KPR...E, KPER...E
- fanmotors:	YP..., YPE...
- unventilated motors:	KPO..., KPEO...
- motors with built-on brakes:	BPR..., BPER..., BPRK..., BPERK...
- motors with separately driven fan:	KPRF..., KPERF...
- motors with tachometer or IGR:	KPR..., KPER..., KPO..., KPEO...
- motors with anti-condensations heater:	KPR...STH, KPER...STH
- reluctance motors:	KPR...syn, KPER...syn
- motors with special retormaterials:	KPRW..., KPERW..., BPRKW..., BPERKW...
- single phase motors:	EBPR(W)..., EBPER(W)..., EDPR..., EDPER...

SHAFT HEIGHT

- KPER: 63 - 71 - 80 - 90 - 100 - 112
- KPR: 56 - 63 - 71 - 80 - 90 - 100

Number of poles: 2 - 4 - 6 - 8 - 4/2 - 8/4 - 6/4.

Duty cycle rating:	S1 (Continuous duty)
Protective degree:	IP 54 - IP 55 or IP 56
Insulation class:	F
Ambient temperature:	50°C
Rated voltage:	up to 690 V
Frequency:	50 Hz - 60 Hz

2. DOCUMENTS AND DRAWINGS :

Manufacturer's specifications / Drawing no. 05-0001: 04 (1) of 29 March 1994 and 13 January 1995 (assembly drawing). See file ACE 04/840/02.

3. TEST REPORTS :

3.1 - 45 test reports carried out between January 1991 and December 1992.

- 3.2 - A61480B0 issued by VEM on 05/04/2006 (for motors types KPER80G2)
- A61484B4 issued by VEM on 05/04/2006 (for motors types KPER100L4)
- A50739B8 issued by VEM on 05/04/2006 (for motors types KPER112M2)



4. APPLICATION / LIMITATION :

According to BV Rules for the Classification of Ships and IEC 60092 series.

5. PRODUCTION SURVEY REQUIREMENTS :

Arrangement should be made for a Society's Surveyor to inspect equipment of the type referred to in this certificate which is intended for use on BUREAU VERITAS registered ships at the Manufacturer's works.

6. MARKING OF PRODUCT :

- According to IEC 60034-1.
-  or  conformity marking, as relevant.

7. OTHERS :

7.1 - This approval is given on the understanding that the Society reserves the right to require check tests to be carried out on the units at any time and that **VEM motors Thurm GmbH (Zwickau - GERMANY)**, will accept full responsibility for informing shipbuilders, shipowners or their sub-contractors of the proper methods of use and general maintenance of the units and the conditions of this approval.

7.2 - This certificate supersedes the Type Approval Certificate N° 05990/B0 BV issued on 13/10/2000 by the Society

*** END OF CERTIFICATE ***

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Certificate number: 10424/B0 BV

File number : ACE 04/840/03

Product code : 2584I

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TYPE APPROVAL CERTIFICATE

as per Bureau Veritas Classification Rules

This certificate is issued to

VEM motors Thurm GmbH
Zwickau - GERMANY

for the type of product

ASYNCHRONOUS MACHINES

Three Phase Squirrel Cage Motors Types: KPER... EExe - KPR...EExe

Regulations and standards :

BV Rules for the Classification of Steel Ships.
IEC 60092-301, IEC 60034 series.

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements of the Regulations and standards mentioned above.

This certificate is valid until : 25 Oct 2011

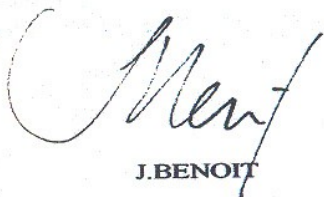
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THE SCHEDULE OF APPROVAL

1. PRODUCT DESCRIPTION :

THREE PHASE SQUIRREL-CAGE ASYNCHRONOUS MOTORS

Type: **KPER...EEx e II T1, T2, T3 or T4**
KPR...EEx e II T1, T2, T3 or T4

SHAFT HEIGHT

- KPER.....: 63 - 71 - 80 - 90 - 100 - 112
 - KPR.....: 56 - 63 - 71 - 80 - 90 - 100

Number of poles: 2 - 4 - 6 - 8 - 4/2 - 8/4 - 6/4.

Duty cycle rating: S1 (Continuous duty)
 Protective degree: IP 54
 Insulation class: F
 Ambient temperature: 50°C
 Rated voltage: up to 440 V
 Frequency: 50 Hz - 60 Hz

Type		Rated output
KPR	KPER	[kW]
56 K2	63 K2	0.18
56 G2	63 G2	0.25
-	63 GX2	0.25
63 KY2	-	0.25
63 K2	71 K2	0.37
63 G2	71 G2	0.55
71 KY2	-	0.55
71 K2	80 K2	0.75
71 G2	80 G2	1.10
80 KY2	-	1.10
80 K2	90 S2	1.30
80 G2	90 L2	1.85
90 L2	100 L2	2.50
100 S2	112 M2	3.30
100 L2	112 MX2	4.10
56 K4	63 K4	0.12
56 G4	63 G4	0.18
63 K4	71 K4	0.25
63 G4	71 G4	0.37
71 KY4	-	0.37
71 K4	80 K4	0.55
-	80 GY4	0.55
71 G4	80 G4	0.75
-	80 GX4	0.75
80 KY4	-	0.75
80 K4	90 S4	1.00
80 G4	90 L4	1.35
90 L4	100 L4	2.00
100 S4	100 LX4	2.50
100 L4	112 M4	3.60
-	112 MX4	3.60
71 K6	80 K6	0.37
71 G6	80 G6	0.55
80 K6	90 S6	0.65
80 G6	90 L6	0.95
90 L6	100 L6	1.40
100 L6	112 M6	1.90

71 K8	80 K8	0.18
71 G8	80 G8	0.25
80 K8	90 S8	0.37
80 G8	90 L8	0.55
90 L8	100 L8	0.65
100 S8	100 LX8	0.95
100 L8	112 M8	1.30

2. DOCUMENTS AND DRAWINGS :

Manufacturer's specifications:

- Pamphlet: VEM/04-042 D-03.00 HDW.
- Drawing no. ET-N 113 420. See file ACE 04/840/03.

3. TEST REPORTS :

Certificates for material used in hazardous areas issued by Physikalish - Technische Bundesanstalt (PTB) and referenced as follows:

- N° PTB 99 ATEX 3308 - EEx II T1, T2, T3 or T4 for motors types K..56... dated 25/10/99
- N° PTB 99 ATEX 3309 - EEx II T1, T2, T3 or T4 for motors types K..63... dated 25/10/99
- N° PTB 99 ATEX 3310 - EEx II T1, T2, T3 or T4 for motors types K..71... dated 25/10/99
- N° PTB 99 ATEX 3311 - EEx II T1, T2, T3 or T4 for motors types K..80... dated 30/11/99
- N° PTB 99 ATEX 3308 - EEx II T1, T2, T3 or T4 for motors types K..90... dated 06/12/99
- N° PTB 99 ATEX 3308 - EEx II T1, T2, T3 or T4 for motors types K..100...dated 07/12/99
- N° PTB 99 ATEX 3314 - EEx II T1, T2, T3 or T4 for motors types K..112...dated 10/12/99

Test reports N°s:

- 442 650 112 issued by VEM on 02/03/1992 (for motors types K..63...)
- 442 650 112 issued by VEM on 02/04/1992 (for motors types K..90...)
- 368 804 111 issued by VEM on 19/12/1991 (for motors types K..112...)
- K62268C0 issued by VEM on 05/04/2006 (for motors types KPER 90L2)
- K62272C1 issued by VEM on 05/04/2006 (for motors types KPER 100L2)
- K62273C2 issued by VEM on 05/04/2006 (for motors types KPE 112M2)



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6. MARKING OF PRODUCT :

- According to IEC 60034.1.
- **EEx e II T1, T2, T3 or T4**, as relevant.
-  or  conformity marking, as relevant.

7. OTHERS :

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7.2 - This certificate supersedes the Type Approval Certificate N° 10424/A0 BV issued on 22/12/2000 by the Society.

*** END OF CERTIFICATE ***