



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **E-10918**

This is to certify that the
Electric Motor

with type designation(s)
KPR, KPER, IE*-KPR and IE*-KPER

Manufactured by
VEM motors Thurm GmbH
ZWICKAU, Germany

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application
For installation non hazardous area (KPR, KPER, IE*-KPR and IE*-KPER).

Enclosure class	IP55, IP56, IP65 & IP66
Insulation class	F (H)
Temp. class (°C)	155 (180)
Voltage (V)	24 - 690
Power (kW)	0,06 - 7,5
Frequency (Hz)	50 - 60
Speed (RPM)	270 - 3600

Høvik, 2011-05-02
for **Det Norske Veritas AS**

Marit Laumann
Head of Section



DNV local office:
Essen

This Certificate is valid until
2014-12-31

Nicolay Horn
Surveyor

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.
If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



Certificate No.: E-10918
File No.: 821.20
Job Id.: 262.1-010587-1

Product description

Type KPR, KPER, IE*-KPR and IE*-KPER 3-phase induction motor:

Rated Voltage:	24V up to 690V
Rated Frequency:	50Hz, 60Hz
Number of poles:	2, 4, 6 and 8 (10, 12, 16, 18, 24 / 4-2, 8-4, 6-4, ...)
Duty type:	S1 (S2, S3, ...)
Enclosure class:	IP55, IP56, IP65 & IP66
Ambient air temp.:	45 (50, 55, 60) deg. C
Construction:	IM B3, IM B5, IM B14 and derived type IM B35..., IM V1...
Ex rating:	none
Insulation class:	F (H)

Data for 230/400V and 400/690V 50Hz Standard-types, 45 deg.C, S1

Types Frame Sizes		No of poles	Max.Power (kW)	Rated Current (230/400V)	Rated Current (400/690V)
KPR	KPER				
IE1-KPR	IE1-KPER				
-	56 K2	2	0,09	0,44 / 0,25	0,25 / 0,14
-	56 G2	2	0,12	0,57 / 0,32	0,32 / 0,18
56 K2	63 K2	2	0,18	0,89 / 0,51	0,51 / 0,30
56 G2	63 G2	2	0,25	1,29 / 0,74	0,74 / 0,43
63 K2	71 K2	2	0,37	1,63 / 0,94	0,94 / 0,54
63 G2	71 G2	2	0,55	2,30 / 1,32	1,32 / 0,77
71 K2	80 K2	2	0,75	2,99 / 1,72	1,72 / 1,0
71 G2	80 G2	2	1,1	4,45 / 2,55	2,55 / 1,48
80 K2	90 S2	2	1,5	5,4 / 3,1	3,1 / 1,8
80 G2	90 L2	2	2,2	7,9 / 4,55	4,55 / 2,65
90 L2	100 L2	2	3,0	10,7 / 6,15	6,15 / 3,60
100 S2	112 M2	2	4,0	14,6 / 8,4	8,4 / 4,85
100 L2	112 MX2	2	5,5	19,1 / 11,0	11,0 / 6,40
-	132 S2T	2	5,5	19,1 / 11,0	11,0 / 6,40
100 LV2	112 MV2	2	7,5	25,7 / 14,8	14,8 / 8,60
-	132 SX2T	2	7,5	25,7 / 14,8	14,8 / 8,60
-	56 K4	4	0,06	0,42 / 0,24	-
-	56 G4	4	0,09	0,54 / 0,31	0,31 / 0,18
56 K4	63 K4	4	0,12	0,77 / 0,44	0,44 / 0,26
56 G4	63 G4	4	0,18	1,13 / 0,65	0,65 / 0,38
63 K4	71 K4	4	0,25	1,36 / 0,78	0,78 / 0,45
63 G4	71 G4	4	0,37	1,84 / 1,06	1,06 / 0,62
71 K4	80 K4	4	0,55	2,80 / 1,60	1,60 / 0,93
71 G4	80 G4	4	0,75	3,65 / 2,1	2,10 / 1,22
80 K4	90 S4	4	1,1	4,55 / 2,62	2,62 / 1,52
80 G4	90 L4	4	1,5	5,90 / 3,40	3,40 / 1,97
90 L4	100 L4	4	2,2	8,6 / 4,95	4,95 / 2,87
100 S4	100 LX4	4	3,0	11,6 / 6,65	6,65 / 3,85
100 L4	112 M4	4	4,0	15,3 / 8,8	8,8 / 5,1
100 LX4	112 MX4	4	5,5	20,5 / 11,8	11,8 / 6,85
-	132 S4T	4	5,5	20,5 / 11,8	11,8 / 6,85
56 K6	63 K6	6	0,09	0,80 / 0,46	0,46 / 0,27
56 G6	63 G6	6	0,12	1,03 / 0,59	0,59 / 0,34



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Types Frame Sizes		No of poles	Max.Power (kW)	Rated Current (230/400V)	Rated Current (400/690V)
63 K6	71 K6	6	0,18	1,53 / 0,88	0,88 / 0,51
63 G6	71 G6	6	0,25	1,91 / 1,1	1,1 / 0,64
71 K6	80 K6	6	0,37	2,12 / 1,22	1,22 / 0,71
71 G6	80 G6	6	0,55	3,0 / 1,73	1,73 / 1,0
80 K6	90 S6	6	0,75	4,2 / 2,43	2,43 / 1,41
80 G6	90 L6	6	1,1	5,5 / 3,15	3,15 / 1,83
90 L6	100 L6	6	1,5	6,8 / 3,9	3,9 / 2,26
100 L6	112 M6	6	2,2	9,3 / 5,35	5,35 / 3,1
100 LX6	112 MX6	6	3,0	12,3 / 7,05	7,05 / 4,1
-	132 S6T	6	3,0	12,3 / 7,05	7,05 / 4,1
63 K8	71 K8	8	0,09	0,97 / 0,56	0,56 / 0,32
63 G8	71 G8	8	0,12	1,27 / 0,73	0,73 / 0,42
71 K8	80 K8	8	0,18	1,36 / 0,78	0,78 / 0,45
71 G8	80 G8	8	0,25	1,95 / 1,12	1,12 / 0,65
80 K8	90 S8	8	0,37	2,78 / 1,6	1,6 / 0,93
80 G8	90 L8	8	0,55	3,55 / 2,04	2,04 / 1,18
90 L8	100 L8	8	0,75	4,70 / 2,70	2,70 / 1,57
100 S8	100 LX8	8	1,1	5,65 / 3,25	3,25 / 1,88
100 L8	112 M8	8	1,5	7,15 / 4,1	4,1 / 2,38
100 LX8	112 MX8	8	2,2	11,0 / 6,3	6,3 / 3,65
-	132 S8T	8	2,2	11,0 / 6,3	6,3 / 3,65

Types Frame Sizes		No of poles	Max.Power (kW)	Rated Current (230/400V)	Rated Current (400/690V)
IE2-KPR	IE2-KPER				
80 K2	-	2	0,75	2,6 / 1,48	1,48 / 0,85
80 G2	-	2	1,1	3,75 / 2,15	2,15 / 1,24
90 S2	-	2	1,5	5,05 / 2,9	2,9 / 1,68
90 L2	-	2	2,2	7,35 / 4,25	4,25 / 2,45
100 L2	-	2	3	11,4 / 6,55	6,55 / 3,8
-	112MX2	2	4	13,7 / 7,9	7,9 / 4,55
-	112MV2	2	5,5	17,9 / 10,3	10,3 / 5,95
-	132 S..T2	2	5,5	17,9 / 10,3	10,3 / 5,95
80 G4	-	4	0,75	2,87 / 1,65	1,65 / 0,96
90 S4	-	4	1,1	4,2 / 2,42	2,42 / 1,4
90 L4	-	4	1,5	5,8 / 3,35	3,35 / 1,94
100 L4	-	4	2,2	8,4 / 4,8	4,8 / 2,78
100 LX4	-	4	3	11,3 / 6,5	6,5 / 3,75
-	112MZ4	4	4	14,4 / 8,3	8,3 / 4,8
90 S6	-	6	0,75	3,4 / 1,95	1,95 / 1,13
90 L6	-	6	1,1	4,8 / 2,75	2,75 / 1,6
100 LX6	-	6	1,5	6,0 / 3,45	3,45 / 2,0
-	112 MV6	6	2,2	8,95 / 5,15	5,15 / 3,0



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Types Frame Sizes		No of poles	Max.Power (kW)	Rated Current (230/400V)	Rated Current (400/690V)
IE3-KPR	IE3-KPER				
80 K2	-	2	0,75	2,55 / 1,46	1,46 / 0,85
80 G2	-	2	1,1	3,75 / 2,15	2,15 / 1,25
90 G2	-	2	1,5	5,05 / 2,9	2,9 / 1,68
100 LZ4	-	4	3	11,1 / 6,4	6,4 / 3,7
90 S6	-	6	0,75	3,25 / 1,87	1,87 / 1,08

Modifications list:

- 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 rotormaterials KPRW..., KPERW..., BPRKW..., BPERKW...
- single phase motors EBPR(W)...., EBPER(W)...., EDPR..., EDPER...

Type Approval documentation

Drawing "Name plate data" no. ET – N 111751.01, issued 1996-01-16.
Drawing "Name plate data" no. ET – N 113651.02, issued 2000-01-17.
Drawing "Summary Energy saving motors IE2 no. ET N 111153.03, issued 2010-08-10
Drawing "Summary Energy saving motors IE3 no. ET N 111153.04, issued 2010-08-10
Assembly drawing no. 05-0001:04 version 02, issued 2002-04-08.
Assembly drawing no. 05-0001:93 issued 2010-06-03.
Test protocols for motors KPER71G4, KPER90L4 and KPER112M4 issued 2002-04-30.
Test report IB-00-083 (IP65) dated 2002-10-23.
VDE "Prüfbericht" (IP 55) dated 1993-11-18.
VEM "Prüfbericht" (IP 56) dated 1993-08-20.
DMT certificate (IP65).

Tests carried out

Temperature, Overload, Overspeed, Insulation resistance, Winding resistance, No load.

Marking of product

VEM motors Thurm GmbH – Type designation – Technical data

Certificate Retention Survey

The scope of the retention/renewal survey is to verify that the conditions stipulated for the type are complied with, and that no alterations are made to the product design or choice of systems/components/materials.

The main elements of the survey are:

- Inspection of factory samples, selected at random from the production line (where practicable)



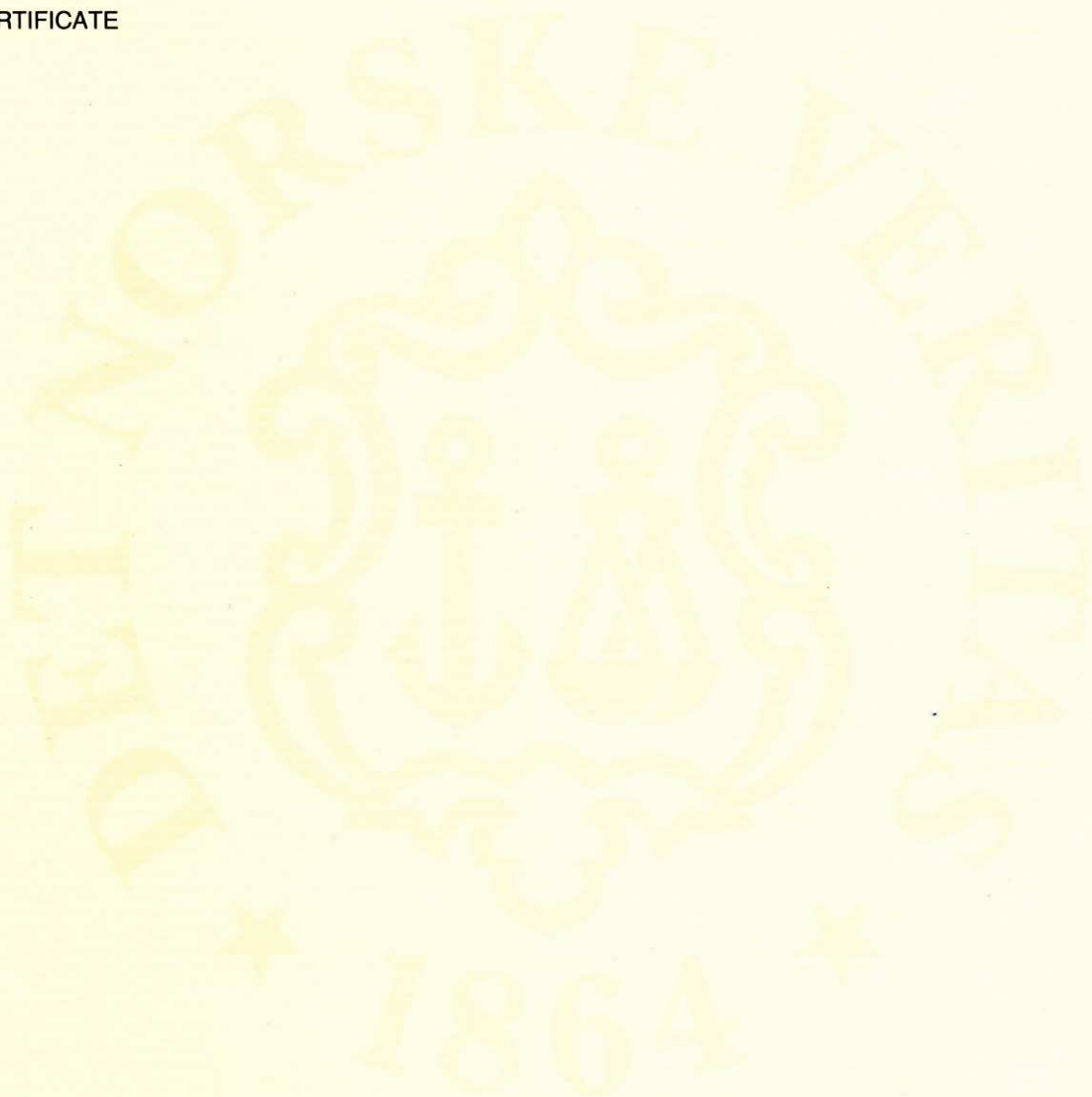
DNV

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- Review of production and inspection routines, including test records from product sample tests and control routines.
- Ensuring that systems/components/materials used comply with type approved documents and/or referenced system/component/material specifications.
- Review of possible changes in design of systems/components/materials, software version and performance, and make sure that such changes do not affect the type approval given.
- Ensuring traceability between manufacturer's product type marking and the type approval certificate.
- Ensuring that type approved documentation is available.

Survey to be performed at least every second year.

END OF CERTIFICATE





DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **E-10919**

This is to certify that the
Electric Motor

with type designation(s)
KPER, IE*-KPR and IE*-KPER

Manufactured by
VEM motors Thurm GmbH
ZWICKAU, Germany

is found to comply with
Det Norske Veritas' Rules for Classification of Ships, High Speed & Light Craft and Det Norske Veritas' Offshore Standards

Application
For installation hazardous area (KPER, IE*-KPR and IE*-KPER).

Enclosure class	IP55, IP56, IP65 & IP66
Insulation class	F (H)
Temp. class (°C)	155 (180)
Voltage (V)	127 - 725
Power (kW)	0,12 - 5,5
Frequency (Hz)	50 - 60
Speed (RPM)	660 - 3600

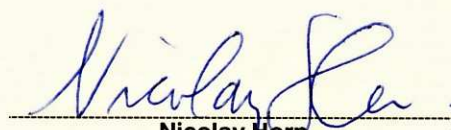
Høvik, 2011-05-02
for Det Norske Veritas AS

This Certificate is valid until
2014-12-31


Marit Laumann
Head of Section



DNV local office:
Essen


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File No.: 821.20
Job Id.: 262.1-010587-1

Product description

Type KPER, IE*-KPR & IE*-KPER 3-phase induction motor (ATEX):

Rated Voltage:	127V up to 725V
Rated Frequency:	50Hz, 60Hz
Number of poles:	2, 4, 6 and 8 (4-2, 8-4, ...)
Duty type:	S1
Enclosure class:	IP55, IP56, IP65 & IP66
Ambient air temp.:	45 (50, 55, 60) deg. C
Construction:	IM B3, IM B5, IM B14 and derived type IM B35..., IM V1...
Ex rating:	Ex II 2G, Ex II 3G, Ex II 2D, Ex II 3 D
Insulation class:	F (H)

Data for 230/400V and 400/690V 50Hz, Ex II 2G Exell T3 -Types, 45 deg.C, S1

Types Frame Sizes	No of poles	Max.Power (kW)	Rated Current (230/400V)	Rated Current (400/690V)
KPER IE1-KPER				
63 K2	2	0,18	0,91 / 0,52	-
63 G2	2	0,25	1,30 / 0,75	-
71 K2	2	0,37	1,69 / 0,97	0,97 / 0,56
71 G2	2	0,55	2,50 / 1,43	1,43 / 0,83
80 K2	2	0,75	3,0 / 1,76	1,76 / 1,02
80 G2	2	1,1	4,50 / 2,60	2,60 / 1,50
90 S2	2	1,3	4,8 / 2,75	2,75 / 1,59
90 L2	2	1,85	6,7 / 3,85	3,85 / 2,25
100 L2	2	2,5	9,0 / 5,2	5,2 / 3,0
112 M2	2	3,3	12,0 / 6,9	6,9 / 4,0
112 MX2	2	4,1	14,1 / 8,1	8,1 / 4,7
63 K4	4	0,12	-	-
63 G4	4	0,18	1,10 / 0,63	-
71 K4	4	0,25	1,37 / 0,79	-
71 G4	4	0,37	1,87 / 1,08	1,08 / 0,62
80 K4	4	0,55	2,75 / 1,59	1,59 / 0,92
80 G4	4	0,75	3,50 / 2,0	2,0 / 1,17
90 S4	4	1,0	4,15 / 2,4	2,4 / 1,4
90 L4	4	1,35	5,4 / 3,1	3,1 / 1,79
100 L4	4	2,0	8,1 / 4,65	4,65 / 2,70
100 LX4	4	2,5	9,7 / 5,6	5,6 / 3,2
112 M4	4	3,6	14,1 / 8,1	8,1 / 4,7
80 K6	6	0,37	2,25 / 1,30	1,30 / 0,75
80 G6	6	0,55	3,05 / 1,75	1,75 / 1,01
90 S6	6	0,65	3,4 / 1,95	1,95 / 1,13
90 L6	6	0,95	4,7 / 2,7	2,7 / 1,57
100 L6	6	1,4	6,6 / 3,75	3,75 / 2,2
112 M6	6	1,9	8,2 / 4,7	4,7 / 2,7
80 K8	8	0,18	1,36 / 0,78	-
80 G8	8	0,25	1,73 / 1,0	1,0 / 0,58
90 S8	8	0,37	2,80 / 1,61	1,61 / 0,93
90 L8	8	0,55	3,75 / 2,15	2,15 / 1,25
100 L8	8	0,65	3,9 / 2,25	2,25 / 1,30
100 LX8	8	0,95	4,75 / 2,75	2,75 / 1,59
112 M8	8	1,3	6,8 / 3,9	3,9 / 2,25



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Types Frame Sizes		No of poles	Max.Power (kW)	Rated Current (230/400V)	Rated Current (400/690V)
IE2-KPR	IE2-KPER				
90 S2	-	2	1,3	4,50 / 2,60	2,60 / 1,50
90 L2	-	2	1,85	6,6 / 3,8	3,80 / 2,20
100 L2	-	2	2,5	8,5 / 4,90	4,90 / 2,85
-	112MX2	2	3,3	11,3 / 6,5	6,5 / 3,75
80 G4	-	4	0,75	2,95 / 1,70	1,70 / 0,98
90 L4	-	4	1,35	5,6 / 3,20	3,20 / 1,85
100 L4	-	4	2,0	7,5 / 4,30	4,30 / 2,50
100 LX4	-	4	2,5	9,2 / 5,3	5,3 / 3,05
-	112MZ4	4	3,6	13,0 / 7,5	7,5 / 4,35
-	90 L6	6	0,95	4,60 / 2,65	2,65 / 1,53
-	112 MV6	6	1,9	8,9 / 5,1	5,1 / 2,95

modifications list:

- 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.....
- explosion-proof motors KPR...Exe, KPER...Exe, KPR...Exn..., KPER...Exn..., KPR.../KPER... ExII2G, KPR.../KPER... ExII3G, KPR.../KPER... ExII2D, KPR.../KPER... ExII3D
- 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 rotormaterials KPRW..., KPERW..., BPRKW..., BPERKW...
- single phase motors EBPR(W)...., EBPER(W)...., EDPR..., EDPER...

Type Approval documentation

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Drawing "Summary Energy saving motors IE2 no. ET N 111153.03, issued 2010-08-10.
Drawing "Summary Energy saving motors IE3 no. ET N 111153.04, issued 2010-08-10.
Assembly drawing no. 05-0001:04 version 02, issued 2002-04-08.
Assembly drawing no. 05-0001:93 issued 2010-06-03.
Test protocols for motors KPER71G4, KPER90L4 and KPER112M4 issued 2002-04-30.
Ex certificates DMT 00 ATEX E 012 (IP65), issued 2000-03-15 and PTB 99 ATEX 3303 issued 1999-10-25.
Test report IB-00-083 (IP65) dated 2002-10-23.
VDE "Prüfbericht" (IP 55) dated 1993-11-18.
VEM "Prüfbericht" (IP 56) dated 1993-08-20.
DMT certificate (IP65).

Tests carried out

Temperature, Overload, Overspeed, Insulation resistance, Winding resistance, No load.

Marking of product

VEM motors Thurm GmbH – Type designation – Technical data



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Certificate Retention Survey

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The main elements of the survey are:

- Inspection of factory samples, selected at random from the production line (where practicable)
- Review of production and inspection routines, including test records from product sample tests and control routines.
- Ensuring that systems/components/materials used comply with type approved documents and/or referenced system/component/material specifications.
- Review of possible changes in design of systems/components/materials, software version and performance, and make sure that such changes do not affect the type approval given.
- Ensuring traceability between manufacturer's product type marking and the type approval certificate.
- Ensuring that type approved documentation is available.

Survey to be performed at least every second year.

END OF CERTIFICATE