

## Commissioning Report

<b>Anlage:</b> Plant:	Air Liquide Kosice	<b>Kunde:</b> Customer:	Air Liquide AGS
<b>Objekt:</b> Object:	3 ~ Asynchronous Motor	<b>Typ:</b> Type:	HKM-180 E04 L5C-06M
<b>Material-Nr.:</b> Material no.:	526020	<b>Fabrikations-Nr.:</b> Serial no.:	526020.05001

<b>Commissioning</b> (Inbetriebnahme) <sup>1</sup>	
<b>Inbetriebnahmebeginn</b> Start of commissioning	<b>21.04.2006</b>
<b>Inbetriebnehmer</b> Commissioning technician	<b>DI Y.Tehlivets</b>
<b>Firma</b> Commissioning company	<b>VA Tech Hydro GmbH. &amp; Co (ELIN)</b>

<b>Infrastructure</b> (Infrastruktur)		
<b>1. location and condition of site</b> (Aufstellungsort)		
		Outdoor Installation
<b>2. type of foundation</b> (Fundamentart)		
		Concrete Foundation
<b>3. working machine</b> (Arbeitsmaschine)		
		Radial Compressor MAN Turbo (MAC)
<b>4. type of coupling</b> (Kupplungsart): <input type="checkbox"/> rigid (starr) <input checked="" type="checkbox"/> flexible (flexibel)		
<b>5. fastening</b> (Befestigung, Verankerung)	Screwed down in accordance with regulations (Schrauben vorschriftsmäßig angezogen)	✓
	Foot rest bolted (Maschinenfüße verstiftet)	Yes

<b>Transportation Lock, Cover Plates</b> (Transportsicherungen, Abdeckplatten)		
<b>1. transportation lock, shock struts</b> (Transportsicherung, Stützstreben)	Provided (YES / NO) (Mitgeliefert (JA / NEIN))	✓
	Unfixed? (Gelöst?)	✓
<b>2. cover plates</b> (Abdeckplatten)	Shipping plates removed from fan casing? (Alle Transportabdeckplatten unter dem Kühlgehäuse entfernt?)	✓
	Cover plates fixed? Abdeckungen und Deckplatten wieder verschlossen?	✓



<b>Electrical Check</b> (Elektrische Kontrolle)								
<b>0. ambient temperature</b> (Umgebungstemperatur)		14,6 °C				✓		
<b>1. check of monitoring unit</b> (Kontrolle der Überwachungseinheit)		Terminal check (Klemmenüberprüfung)						✓
		<input type="checkbox"/> directly (direkt) <input checked="" type="checkbox"/> via control station (über Leitstand)						✓
PT 100, winding, pcs(Stk): 6 (PT 100, Wicklung)		°C	33	32	32	33	32	32
PT 100, AS-bearing, pcs: 1 (PT 100, AS-Lager)		°C						26
PT 100, BS-bearing, pcs: 1 (PT 100, BS-Lager)		°C						26
Other (andere): Oil inlet pcs: 1		°C						31
<b>2. insulation measurement</b> (I-Wert Messung)  1kV, DC, 1min  <input checked="" type="checkbox"/> at terminals (an Maschinenklemmen) <input type="checkbox"/> including feed lines (inkl. Zuleitungen)		collector ring resistance (Schleifringwiderstand) [ <u>      </u> Ω ]						-
		magnet wheel resistance (Polradwiderstand) [ <u>      </u> Ω ]						-
2a. insulation measurement Stator, neutral point closed  2b. insulation measurement Stator, neutral point open (Sternpunkt offen)		Rotor resistance (Rotorwiderstand) [ <u>      </u> MΩ ]						-
		Stator resistance [ > 500 MΩ ]						✓
		Stator resistance U-ground [ <u>      </u> Ω ]						-
		Stator resistance V-ground [ <u>      </u> Ω ]						-
		Stator resistance W-ground [ <u>      </u> Ω ]						-
<b>3. Stop period heating functional</b> (Stillstandsheizung funktionstüchtig)		Power (Leistung) [ ~ 2750W ]				Heater on!		
		Voltage (Spannung) [ 230 V ]				✓		
		Resistance measured (Widerstand gemessen) [ 65 Ω ]				✓		
<b>4. slip ring and brush lifting device</b> (Schleifring mit Bürstenabhebevorrichtung)		out of action (Kalttest)						-
		in operation (in Betrieb)						-
<b>5 starter</b> (Anlasser) oil cooled (Öl) <input type="checkbox"/> Soda <input type="checkbox"/>		fill level of cooling agent (Füllstand des Kühlmediums)						-

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<b>Mechanical Check</b> (Mechanische Kontrolle)		
<b>1. sliding contact bearing with ring lubrication</b> (Gleitlager mit Ringschmierung)	bearing check (Lager ausgebaut und kontrolliert)	-
	type of lubricant (Öltype)	-
	lubricant quantity (Ölmenge) [L]	-
	revolving lubrication ring (Schmiering funktionstüchtig)	-
<b>2. sliding contact bearing with forced feed lubrication</b> (Gleitlager mit Druckumlaufschmierung)  oil feed (Ölversorgung): <input type="checkbox"/> separate for engine (separat für die Maschine) <input checked="" type="checkbox"/> combined oil feed (Gesamtölanlage)	bearing check (Lager ausgebaut und kontrolliert)	-
	piping (Leitungen gespült?)	04.04.2006 MAN
	free from leakage (keine Ölleckagen sichtbar)	✓
	type of lubricant (Öltype)	ISO VG 46
	lubricant quantity (Ölmenge) [L]	Not indicated
	oil pressure (Öldruck) [bar]	0,05 DE 0,04 NDE
	revolving lubrication ring (Schmiering funktionstüchtig)	✓
<b>3. rolling contact bearing</b> (Wälzlager)  <input type="checkbox"/> regreasing yes (nachgeschmiert ja) <input type="checkbox"/> regreasing no (nachgeschmiert nein)	check on noises (auf Geräusche überprüft)	-
	dust protection check (Optische Kontrolle von Lagerstaubschutz (V-Ring))	-
	type of lubricant (Fetttype)	-
	temperature AS bearing (AS Temperatur) [°C]	-
	temperature BS bearing (BS Temperatur) [°C]	-
<b>4. brush check</b> (Bürstenüberprüfung)	pressure (Druck) [N]	-
<b>5. cooling agent piping</b> (Kühlanschlüsse, Zu- und Ablauf)	free from leakage (keine Leckagen sichtbar)	Not in operation
<b>6. alignment check</b> (Ausrichtkontrolle lt. QC2-EMG56-006)		Protocol

<b>Idling Check (no load operation, declutched)</b> Leerlaufkontrolle (Drehrichtung, ohne Last, ungekuppelt)		
<b>1. check on direction of rotation</b> (Drehrichtungskontrolle)	declutched (ungekuppelt)	VUW ←
	according to clutching report (lt. Kupplungsprotokoll)	VUW ←
<b>2. magnetic centre</b> (Magnetisches Mittel)		
<b>3. vibration test</b> (Schwingungsmessung)	AS_X, [mm/s]	0,90
	AS_Y, [mm/s]	0,65
	AS_Z, [mm/s]	0,82
	BS_X, [mm/s]	0,45
	BS_Y, [mm/s]	0,52
	BS_Z, [mm/s]	0,50
<b>4. SPM</b>	AS [dBi]	
	AS [dBc]	
	AS [dBm]	
	BS [dBi]	
	BS [dBc]	
	BS [dBm]	

<b>Load Operation</b> (Lastlauf)	<ul style="list-style-type: none"> <li>See attachment 1 (page 6) and / or other attachments e.g control station print out ... (Siehe Anhang 1 (Seite 6) und / oder Beilagen)</li> <li>Recomendation: Data collection every 15 – 20 minutes Exception: vibration measurement hourly (Empfehlung: Aufnahme der Werte etwa alle 15-20 Minuten, Ausnahme Schwingungsmessung: Aufzeichnung der Werte etwa stündlich)</li> </ul>
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**Remarks / Reservations** (Anmerkungen / Vorbehalte)

**1. Customer** (Kunde)


**2. Technician** (Monteur)

Visual Check of the Motor:

The cover of the motor is very dirty ( Dust, sand and concrete).

The flushing of the coolers was made by Air Liquide (Mr. Van Kolck), MAN has checked the complete cooling water system for water leaks during the running test.

The shaft of the motor is coupled with the compressor. There is an alignment protocol.

All running tests were made with cooling water. Two times the machine was started for app. 10 sec and shut down because of logic misworking. The reason for that was found. At the third time the motor was started up to rated speed and was running for app. 2,5 hours. The vibrations during the test were ok (see protocol). The temperature of winding and bearing were stabilized according to the load.

The oil pressure has been adjusted under load.

The Installation of the transformer with the com no.: 128767 has been checked and the transformer was successfully tested in the course of the commissioning.

Above data are confirmed by my signature.

(Mit meiner Unterschrift bestätige ich die Richtigkeit der obigen Angaben.)

Customer (Kunde)

  
Air Liquide AGS GmbH  
Füllingsweg 34  
D-47805 Krefeld

date, signature (Datum, Unterschrift)

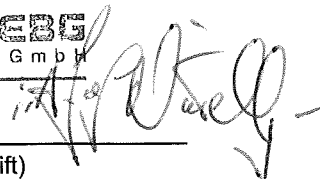
Technician (Monteur)

 **ELIN EBG**  
Motoren GmbH

ELIN EBG Motoren GmbH

Elingasse 3, A-8160 Weiz

date, signature (Datum, Unterschrift)



## Load Operation with cooling water !

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