

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	20/12/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	DSG074M1_4_50_690_A048M929

<b>Object data:</b>	
Site:	Prime Mover:
Application: Stationary Power Plant	Manufacturer:

<b>Generator data:</b>					
Generator:	DSG 74 M1/4	Poles:	4	Standards: IEC 60034	
Rated power:	1320 kVA	1056 kWe	1112 kWm		
Power factor:	0.80				
Power at pf 1,0	1072 kVA	1072 kWe	1112 kWm		
Rated voltage:	0.69 kV				
Speed:	1500 1/min				
Frequency:	50 Hz	Voltage range / frequency range:			
Rated current:	1104.5 A	Zone A according IEC 60034-1 (dU = +/-5%, df = +/-2%)			
Winding pitch:	2/3				
Insulation class:	Stator: Class H	Rotor: Class H	Temperature rise:	H	
Ambient temperature:	40 ° C	Environment:	Standard environment		
Site altitude:	1000 m				
Enclosure:	IP23	Filter:			
Cooling:	IC 01 - Open-circuit ventilation				
Coolant:	Ambient Air	Temperature	40 ° C	Temperature Air inlet	40 ° C
		Coolant:		generator:	
		Cooling air vol.:	2.4 m³/s	Cooling water quantity:	n/a
Moment of inertia (I):	36.7 kgm²	Weight:	3275 Kg	Losses (environment):	56 KW
				Losses (cooling):	n/a

Wires:	4 terminals, starpoint connected in terminal box
Operation mode:	Single mode
Regulators:	
Voltage regulator:	DECS 100

<b>Electrical data: (acc. IEC)</b>					
Efficiencies:	110%	100%	75%	50%	25%
Power factor 0.8	94,74	94,99	95,29	95,09	92,98
Power factor 0.9	95,47	95,69	95,84	95,49	93,22
Power factor 1.0	96,2	96,38	96,38	95,88	93,46

<b>Reactances and time constants</b>											
	unsaturated		saturated			unsaturated		saturated			
X <sub>d</sub>	2.73	2.45	p.u.	X <sub>q</sub>	1.27	1.24	p.u.	T <sub>d0'</sub>	3.12209 s	T <sub>d0''</sub>	0.02144 s
X <sub>d'</sub>	0.234	0.234	p.u.	X <sub>q'</sub>	1.27	1.24	p.u.	T <sub>d'</sub>	0.27 s	T <sub>q0'</sub>	0.2144 s
X <sub>d''</sub>	0.129	0.117	p.u.	X <sub>q''</sub>	0.146	0.146	p.u.	T <sub>d''</sub>	0.01072 s	T <sub>q0''</sub>	0.1865 s
X <sub>2</sub>	0.143	0.130	p.u.	X <sub>0</sub>	0.051	0.046	p.u.	T <sub>a</sub>	0.02301 s	T <sub>q'</sub>	0.2144 s
X <sub>1s</sub>	n.a.	0.070	p.u.							T <sub>q''</sub>	0.02144 s
Short circuit ratio saturated: 0.41					Z <sub>n</sub> 0.361 Ohm						

<b>Short circuit data:</b>			
Initial short circuit current (3-phase):	I <sub>k''</sub>	9440 A	
Max. peak current (3-phase):	I <sub>s</sub>	24030 A	
Sustained short circuit current:	I <sub>k</sub>	3313 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M <sub>k2</sub>	93.4 kNm	
	M <sub>k3</sub>	56.0 kNm	
Max. faulty synchron moment:	M <sub>f</sub>	200.8 kNm	
Rated kVA torque:	M <sub>SN</sub>	8.40 kNm	
Rated torque	M <sub>N</sub>	6.72 kNm	
Shaft torque	M <sub>Sh</sub>	7.07 kNm	

<b>Load application:</b>	
max. load application: 846 kVA (corresponds to 64,11 % from 1320 kVA) for Power factor 0.4 15% transient voltage drop	Power: 1320 kVA Power factor: 0.8 transient voltage drop: -19.0 %

**Remarks:**

**Alternator :** DSG 74 M1/4

Rated output [kVA]

1320

Rated power factor:

0.8

Rated voltage [kV]: 0.69

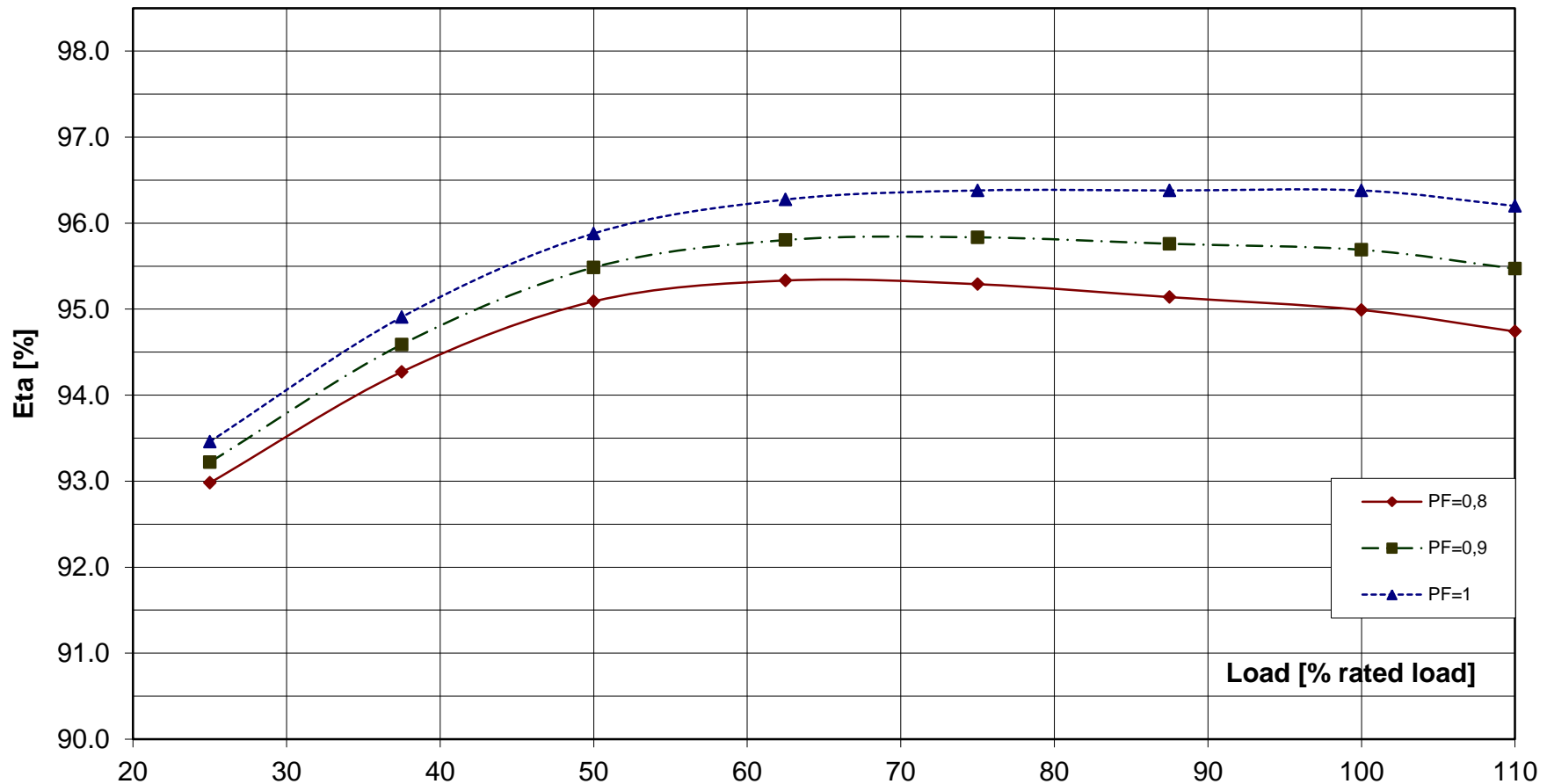
Rated frequency [Hz]

50

Rated speed [rpm]

1500

### Wirkungsgrad-Kennlinie - Efficiency Curve



**Alternator : DSG 74 M1/4**

Rated output [kVA] 1320

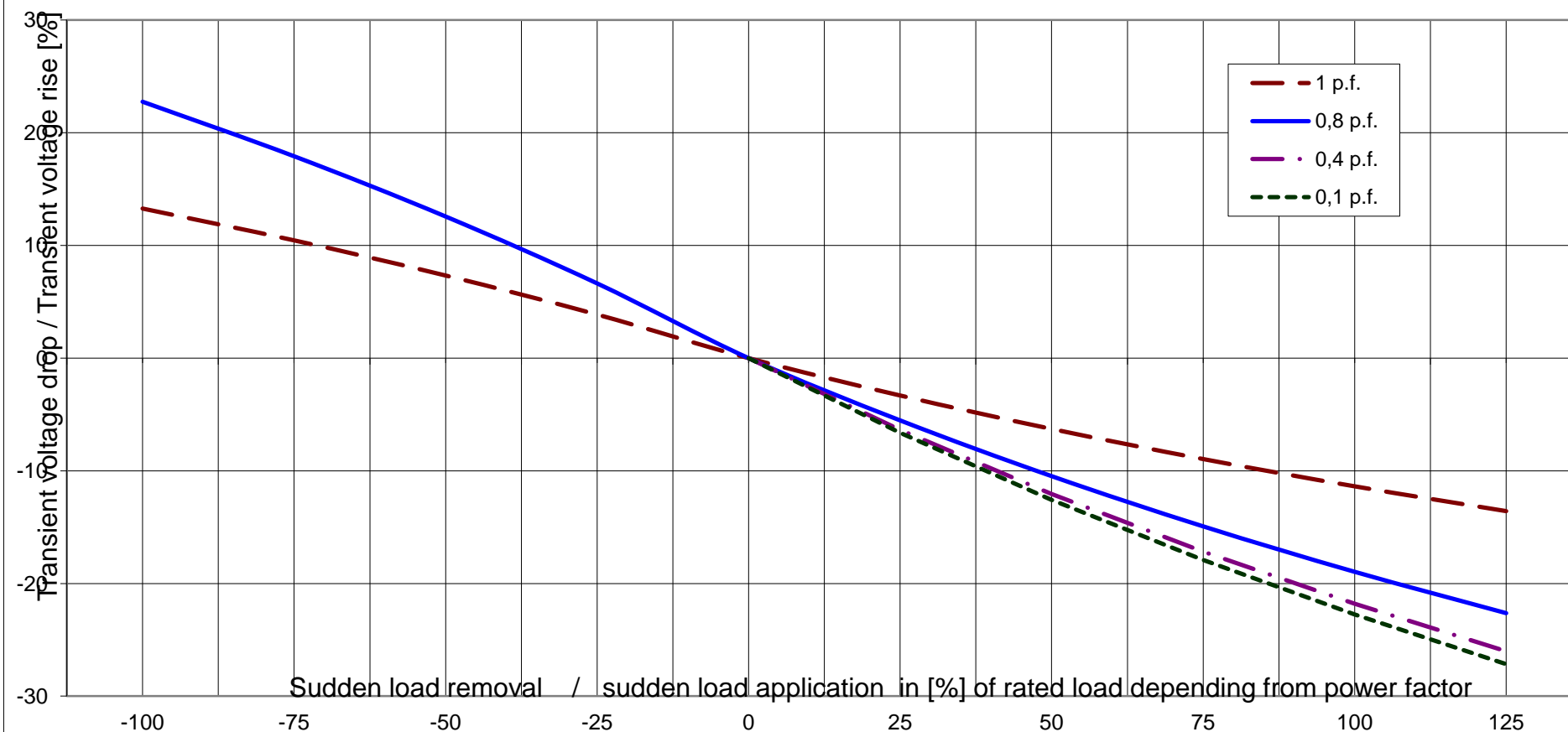
Rated power factor: 0.8

Rated voltage [kV]: 0.69

Rated frequency [Hz] 50

Rated speed [rpm] 1500

**Transient Voltage rise or drop for sudden load removal or application**



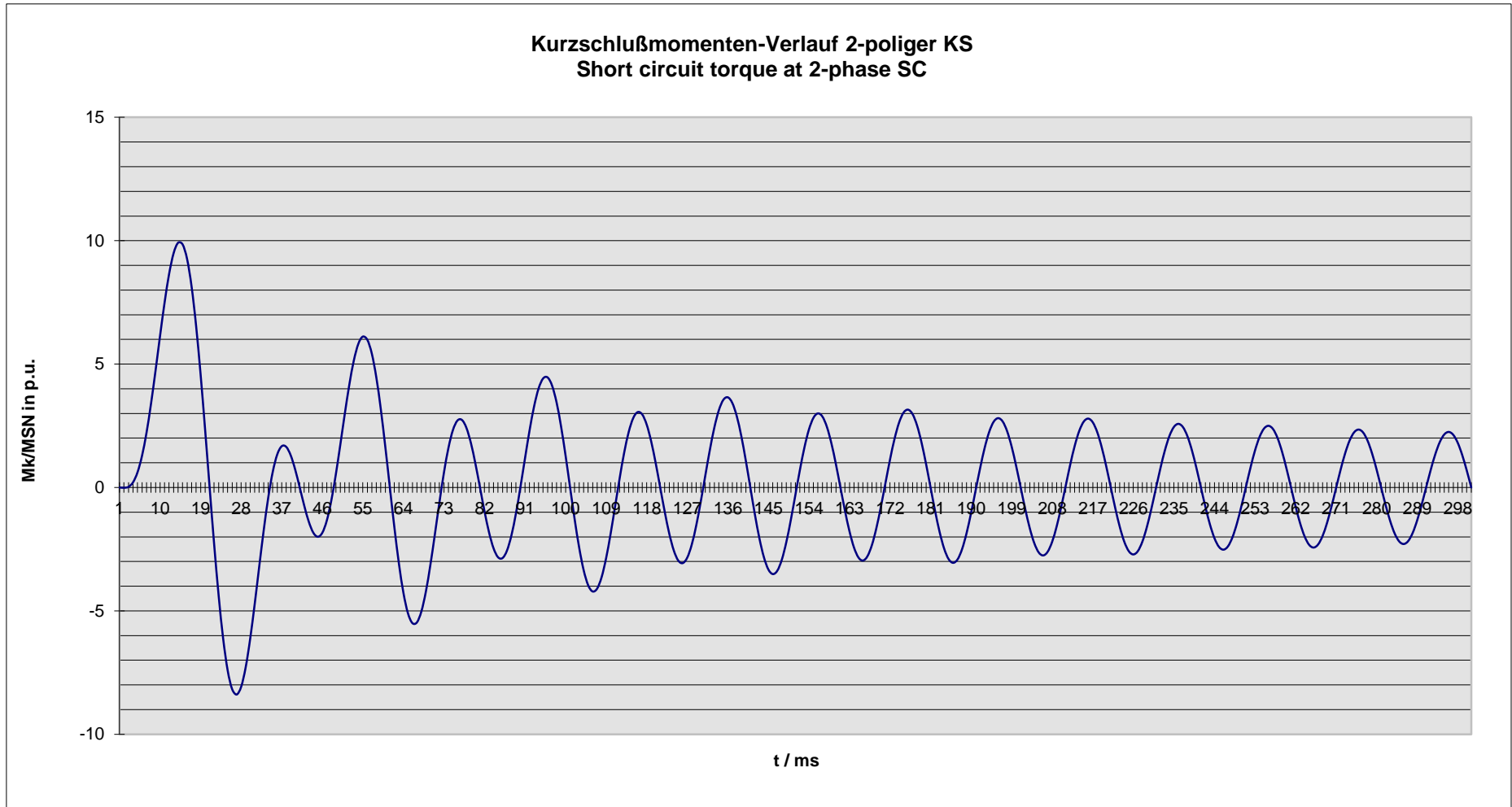


Technisches Datenblatt - Diagramme  
Technical data sheet - Diagrams

ING-FCD-0112

<b>Alternator :</b>	<b>DSG 74 M1/4</b>			
Rated output [kVA]	1320	Rated power factor:	0.8	Rated voltage [kV]: 0.69
Rated frequency [Hz]	50	Rated speed [rpm]	1500	MSN related to kVA: 8.4 KNm

Kurzschlußmomenten-Verlauf 2-poliger KS  
Short circuit torque at 2-phase SC



#### Nenn Daten / nominal data

DSG 74 M1/4

Leistung  $S_N$ : **1320** kVA

$\cos \varphi$ : **0.80**

Rating

p.f.

Spannung  $U_N$ : **0.69** kV

Strom  $I_N$ : **1104** A

Voltage

Current

Frequenz  $f$ : **50** Hz

Drehzahl  $n$ : **1,500** min<sup>-1</sup>

Frequency

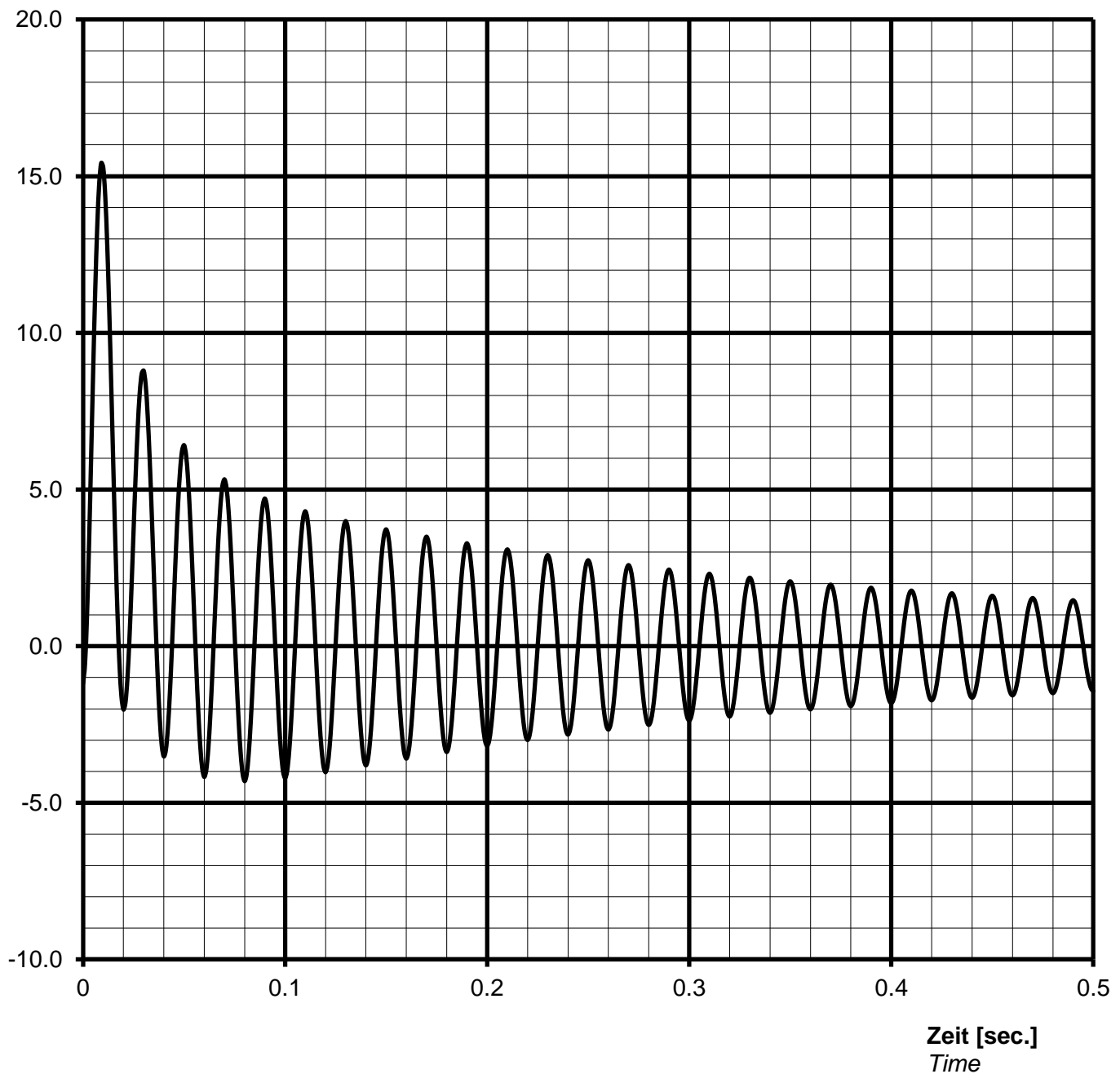
Speed

Schutzart **IP23**

Protection

Kurzschlussstrom  $I_{k3\text{phasig}} / I_N$  [p.u.]  
Short-circuit current  $I_{k3\text{phase}} / I_N$  [p.u.]

#### Stosskurzschluss-Strom, 3-phasig, asymmetrisch / Sudden short circuit current, 3-phase, asymmetrical



#### Notizen / remarks:

Maximum asymmetric peak value

$I_{\text{speak}} =$  **17034** A or **15.42** p.u.

#### Nenn Daten / nominal data

DSG 74 M1/4

Leistung  $S_N$ : **1320 kVA**

$\cos \varphi$ : **0.80**

Rating

p.f.

Spannung  $U_N$ : **0.69 kV**

Strom  $I_N$ : **1104 A**

Voltage

Current

Frequenz  $f$ : **50 Hz**

Drehzahl  $n$ : **1500 min<sup>-1</sup>**

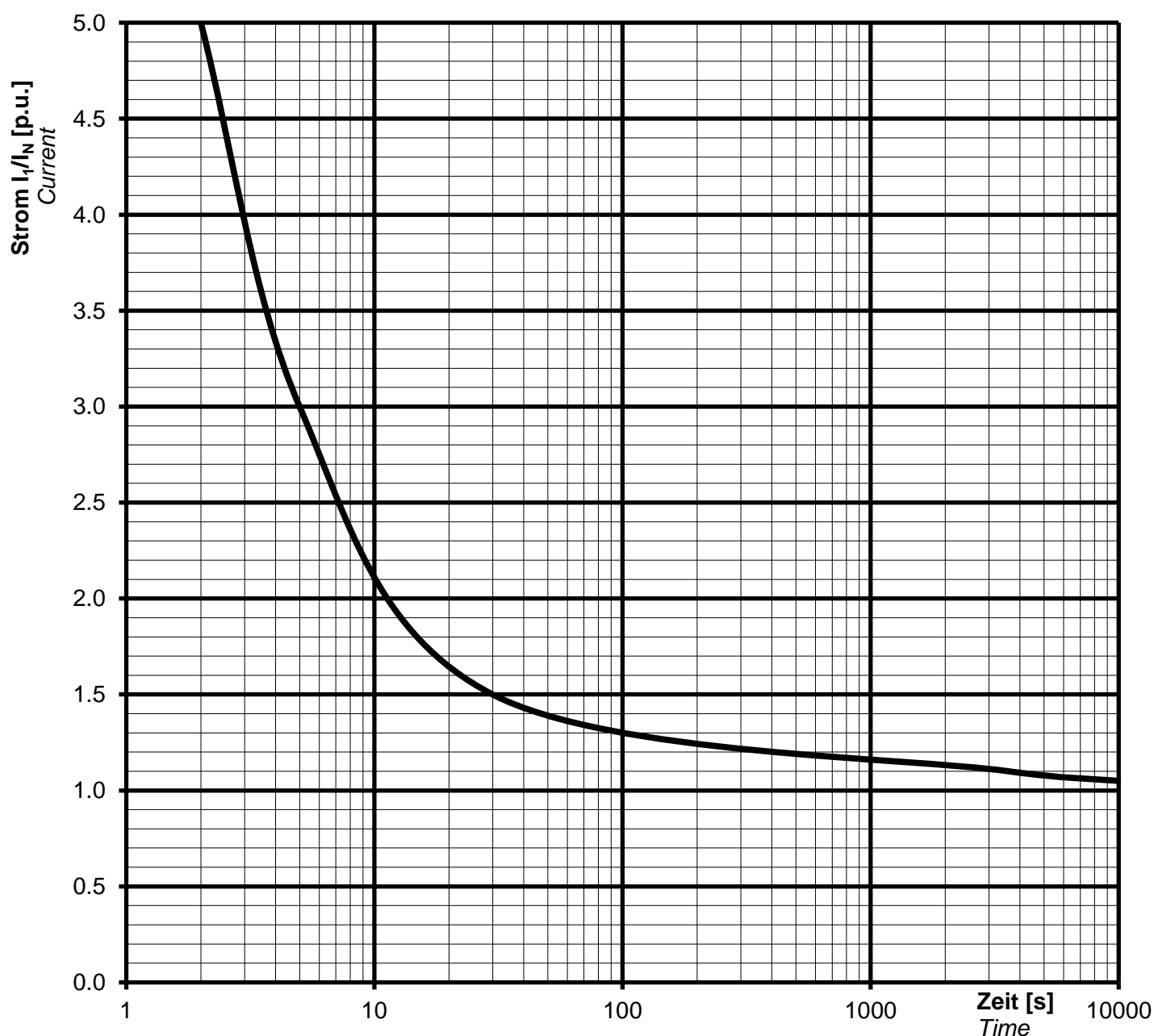
Frequency

Speed

Schutzart **IP23**

Protection

#### Überlast Kennlinie Overload capability



#### Notizen / remarks:

Strom / Zeit Kriterien:

$$(I / I_N)^{2+t} = 45s$$

Current/time characteristics:

1,5 \*  $I_N$  for 30 s

1,1 \*  $I_N$  for 1 h in 6h

#### Nenndaten / nominal data

DSG 74 M1/4

Rating  $S_N$ : **1320 kVA**

$p.f.$  **0.80**

Bemessungsleistung

Leistungsfaktor  $\cos \varphi$ :

Nominal voltage  $U_N$ : **0.69 kV**

Nominal current  $I_N$ : **1104 A**

Bemessungsspannung

Bemessungsstrom

Frequency  $f_N$ : **50 Hz**

Speed  $n$ : **1500 min<sup>-1</sup>**

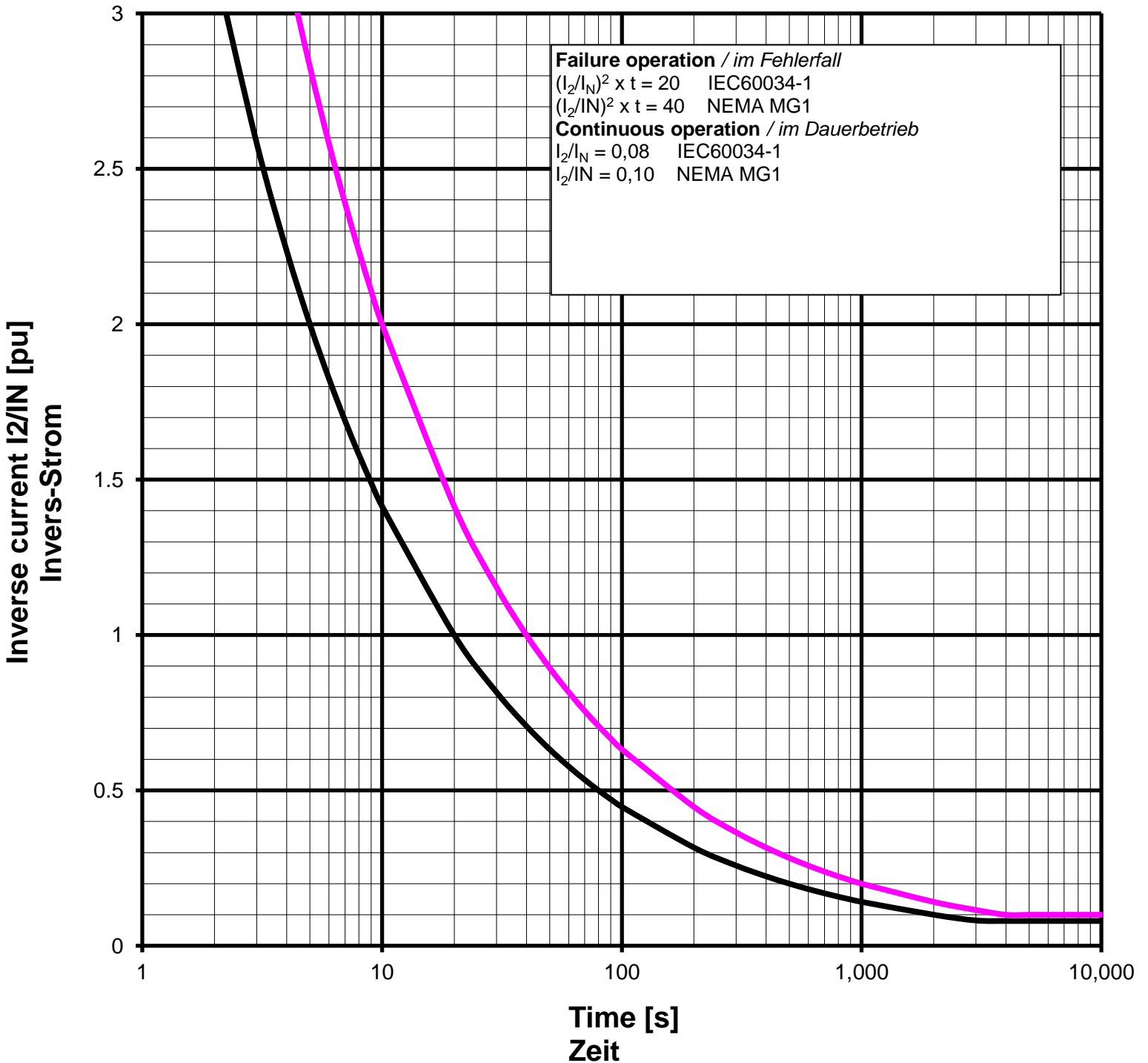
Frequenz

Drehzahl

Protection: **IP23**

Schutzart

#### Inverse current or unbalanced negative sequence current



Remarks / Notizen:



Technische Daten selbstregelnden Drehstrom-Synchrongenerator  
technical data for self regulating three phase alternator

ING-FCD-0112

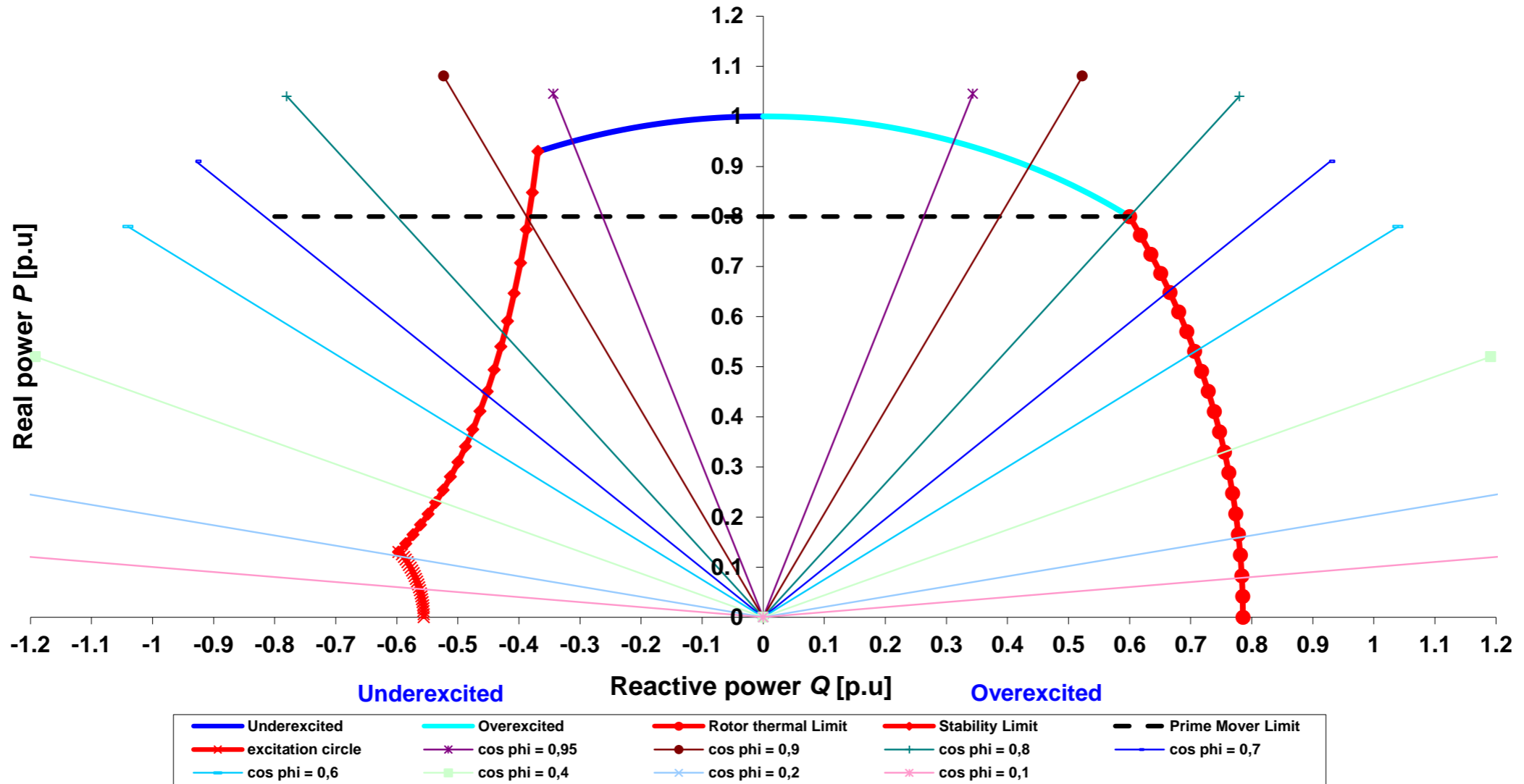
TYPE

DSG 74 M1/4

Projekt:

Order Nr.:

Capability (P-Q) Diagram



Cummins Generator Technologies

Datum / date:

20/12/2013



