

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	30/09/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	DSG086M1_6_50_400

Object data:	
Site:	Prime Mover:
Application: Stationary Power Plant	Manufacturer:

Generator data:					
Generator:	DSG 86 M1/6	Poles:	6	Standards:	IEC 60034
Rated power:	1670 kVA	1336 kWe	1397 kWm		
Power factor:	0.80				
Power at pf 1,0	1352 kVA	1352 kWe	1397 kWm		
Rated voltage:	0.4 kV				
Speed:	1000 1/min				
Frequency:	50 Hz			Voltage range / frequency range:	
Rated current:	2410.4 A			Zone A according IEC 60034-1 (dU = +/-5%, df = +/-2%)	
Winding pitch:	ca. 5/6				
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.:	2.0 m³/s	Cooling water quantity:	n/a
Moment of inertia (I):	89 kgm²	Weight:	5500 Kg	Losses (environment):	61 KW
				Losses (cooling):	n/a

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

Electrical data: (acc. IEC)					
Efficiencies:	110%	100%	75%	50%	25%
Power factor 0.8	95,38	95,6	95,7	95,5	93,8
Power factor 0.9	96,01	96,2	96,25	95,9	94,05
Power factor 1.0	96,64	96,8	96,8	96,3	94,3

Reactances and time constants											
	unsaturated		saturated			unsaturated		saturated			
x_d	2.15	1.94	p.u.	x_q	1.08	1.06	p.u.	$T_{d0'}$	2.42 s	$T_{d0''}$	0.026 s
x_d'	0.260	0.260	p.u.	x_q'	1.08	1.06	p.u.	$T_{d'}$	0.29 s	$T_{q0'}$	0.3 s
x_d''	0.165	0.150	p.u.	x_q''	0.165	0.165	p.u.	$T_{d''}$	0.015 s	$T_{q0''}$	0.19636 s
x_2	0.174	0.158	p.u.	x_0	0.050	0.045	p.u.	T_a	0.045 s	$T_{q'}$	0.3 s
x_{1s}	n.a.	0.090	p.u.							$T_{q''}$	0.03 s
Short circuit ratio saturated: 0.52					Z_n 0.096 Ohm						

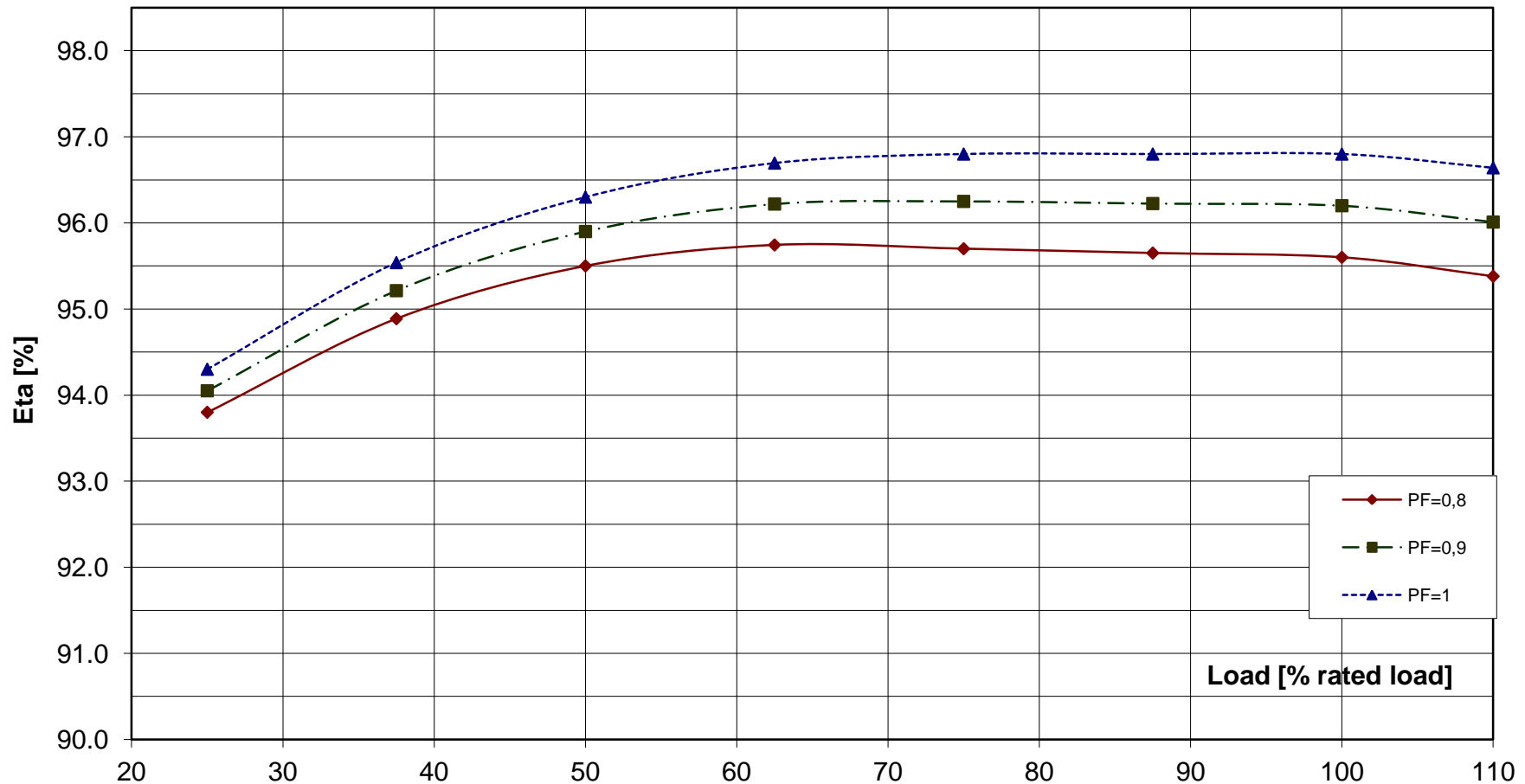
Short circuit data:		
Initial short circuit current (3-phase):	I_k''	16070 A
Max. peak current (3-phase):	I_s	40908 A
Sustained short circuit current:	I_k	7231 A
		Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M_{k2}	138.2 kNm
	M_{k3}	82.9 kNm
Max. faulty synchron moment:	M_f	297.1 kNm
Rated kVA torque:	M_{SN}	15.95 kNm
Rated torque	M_N	12.76 kNm
Shaft torque	M_{Sh}	13.35 kNm

Load application:	
max. load application: 964 kVA (corresponds to 57,69 % from 1670 kVA) for Power factor 0.4 15% transient voltage drop	Power: 1670 kVA Power factor: 0.8 transient voltage drop: -20.6 %

Remarks:

Alternator :	DSG 86 M1/6			
Rated output [kVA]	1670	Rated power factor:	0.8	Rated voltage [kV]: 0.4
Rated frequency [Hz]	50	Rated speed [rpm]	1000	

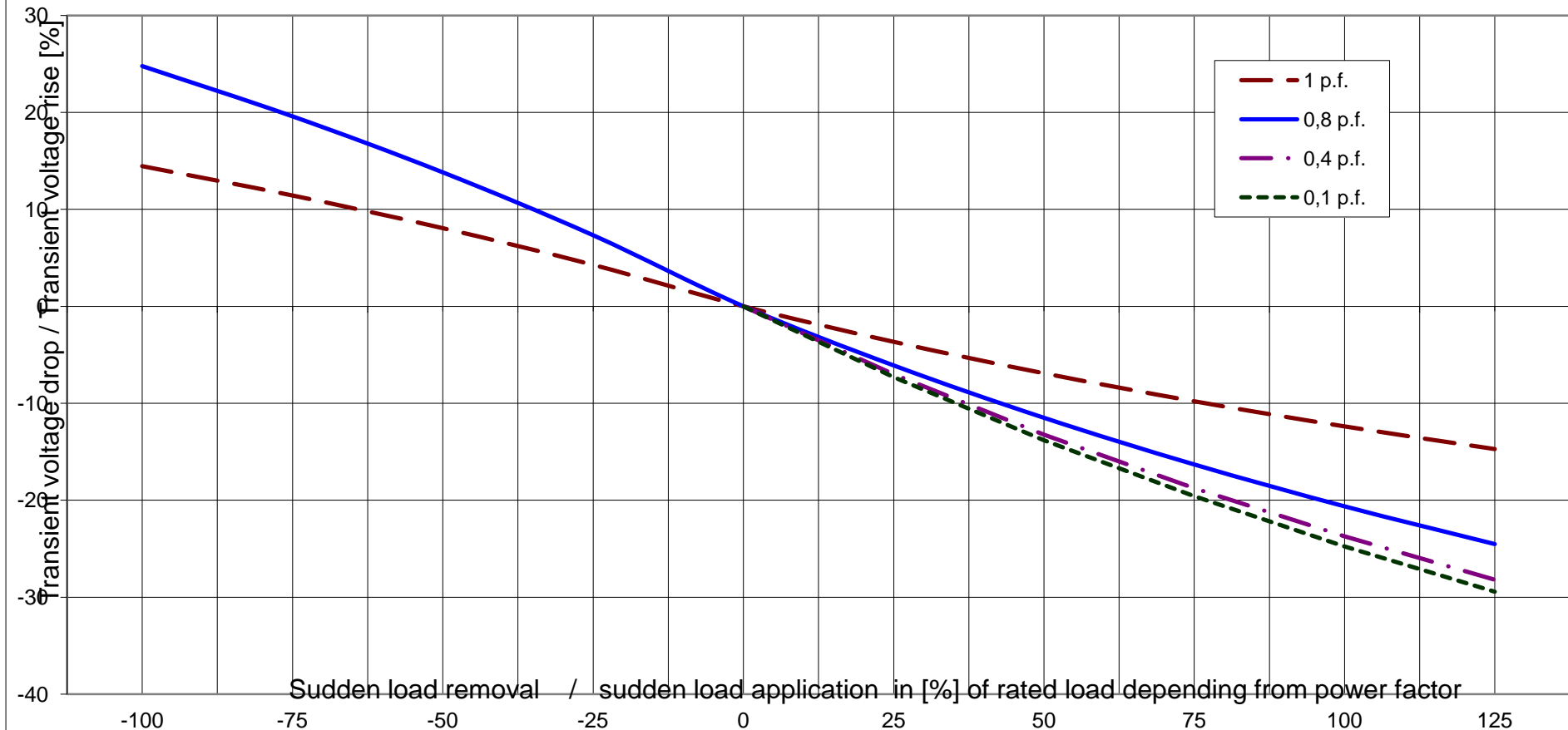
Wirkungsgrad-Kennlinie - Efficiency Curve



Alternator : DSG 86 M1/6

Rated output [kVA]	1670	Rated power factor:	0.8	Rated voltage [kV]:	0.4
Rated frequency [Hz]	50	Rated speed [rpm]	1000		

Transient Voltage rise or drop for sudden load removal or application

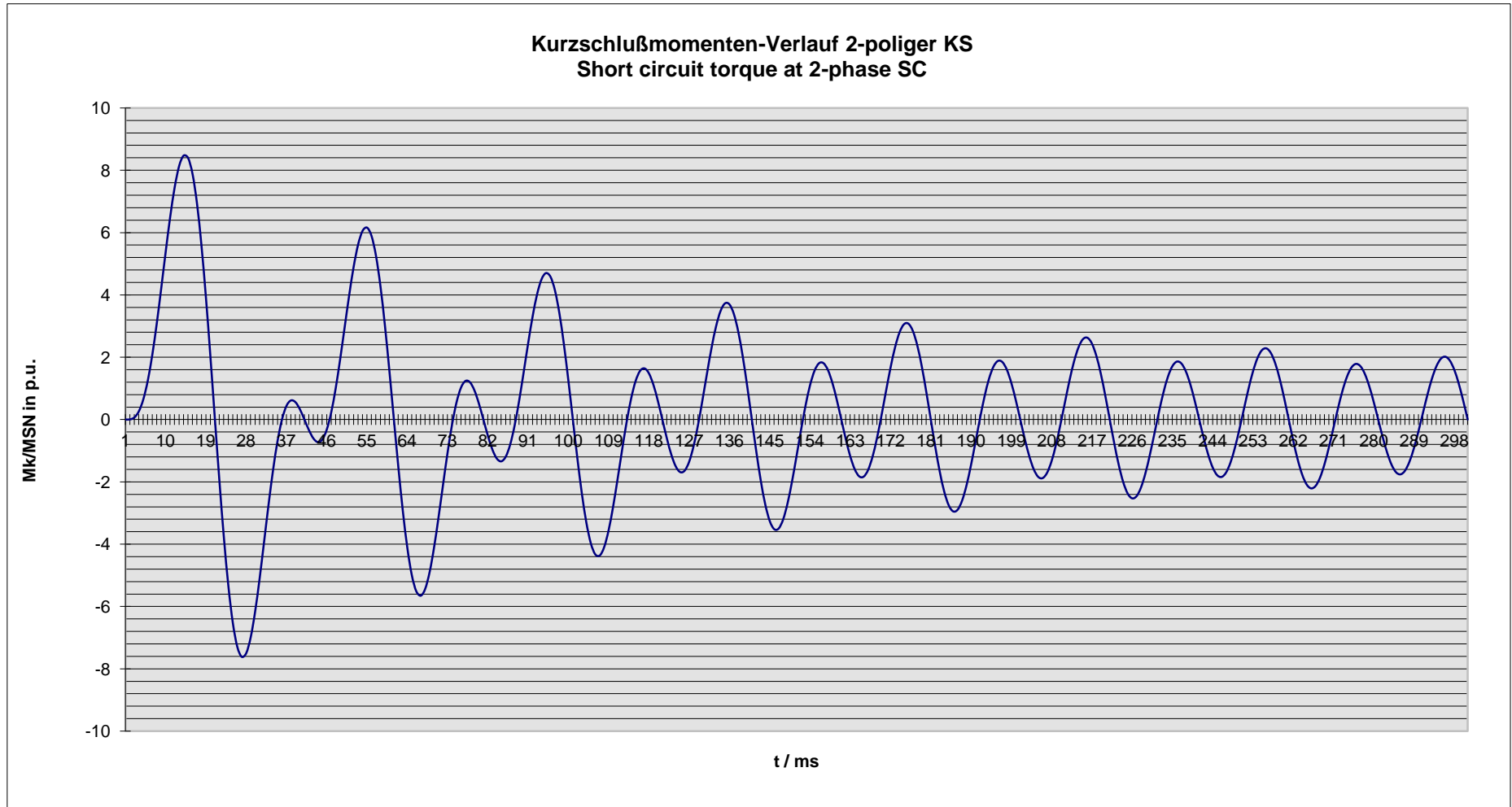




Technisches Datenblatt - Diagramme
Technical data sheet - Diagrams

ING-FCD-0112

Alternator :	DSG 86 M1/6			
Rated output [kVA]	1670	Rated power factor:	0.8	Rated voltage [kV]: 0.4
Rated frequency [Hz]	50	Rated speed [rpm]	1000	MSN related to kVA: 15.95 KNm



Nenn Daten / nominal data

DSG 86 M1/6

Leistung S_N : **1670 kVA**

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

Rating

p.f.

Spannung U_N : **0.40 kV**

Strom I_N : **2410 A**

Voltage

Current

Frequenz f : **50 Hz**

Drehzahl n : **1,000 min⁻¹**

Frequency

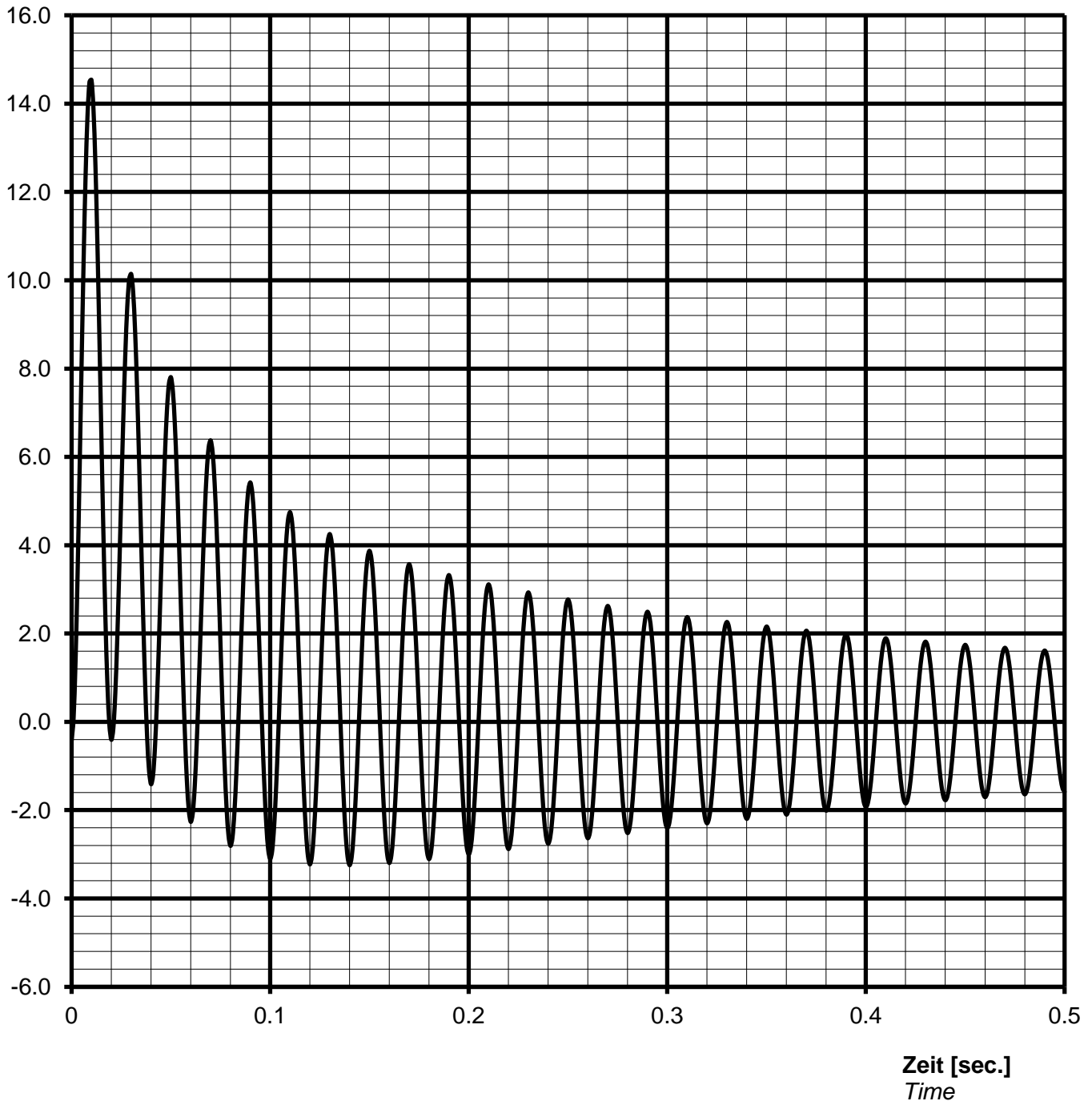
Speed

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 $I_{\text{peak}} =$ **35036 A** or **14.54 p.u.**

Nennwerte / nominal data

DSG 86 M1/6

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

Rating

p.f.

Spannung U_N : **0.40 kV**

Strom I_N : **2410 A**

Voltage

Current

Frequenz f: **50 Hz**

Drehzahl n: **1000 min⁻¹**

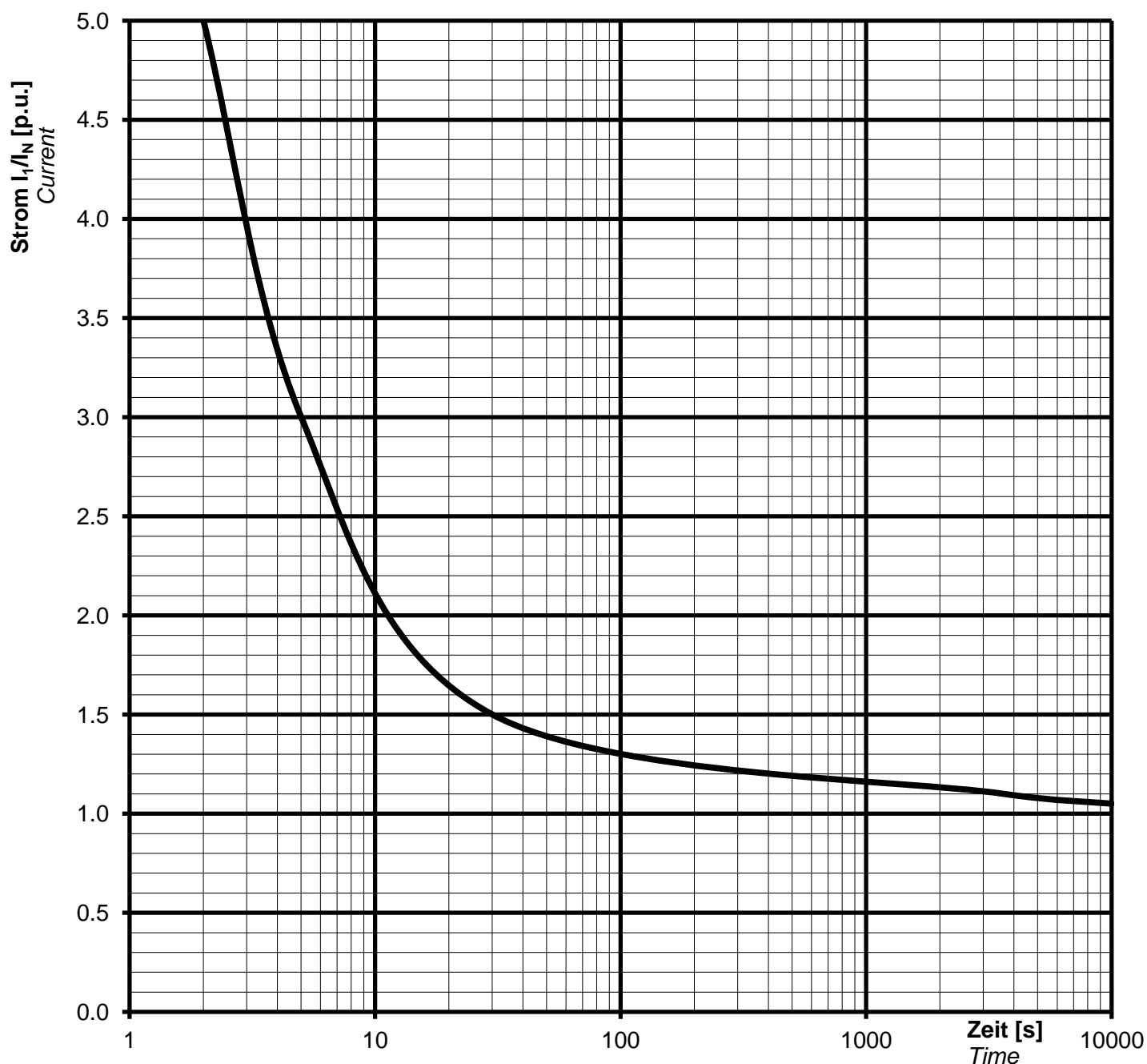
Frequency

Speed

Schutzart **IP23**

Protection

Überlast Kennlinie
Overload capability



Notizen / remarks:

Strom / Zeit Kriterien:

$$(I / I_N)^2 \cdot t = 45s$$

Current/time characteristics:

1,5 * I_N for 30 s

1,1 * I_N for 1 h in 6h

Nenndaten / nominal data

DSG 86 M1/6

Rating S_N : **1670 kVA**

p.f. **0.80**

Bemessungsleistung

Leistungsfaktor $\cos \varphi$:

Nominal voltage U_N : **0.40 kV**

Nominal current I_N : **2410 A**

Bemessungsspannung

Bemessungsstrom

Frequency f_N : **50 Hz**

Speed n : **1000 min⁻¹**

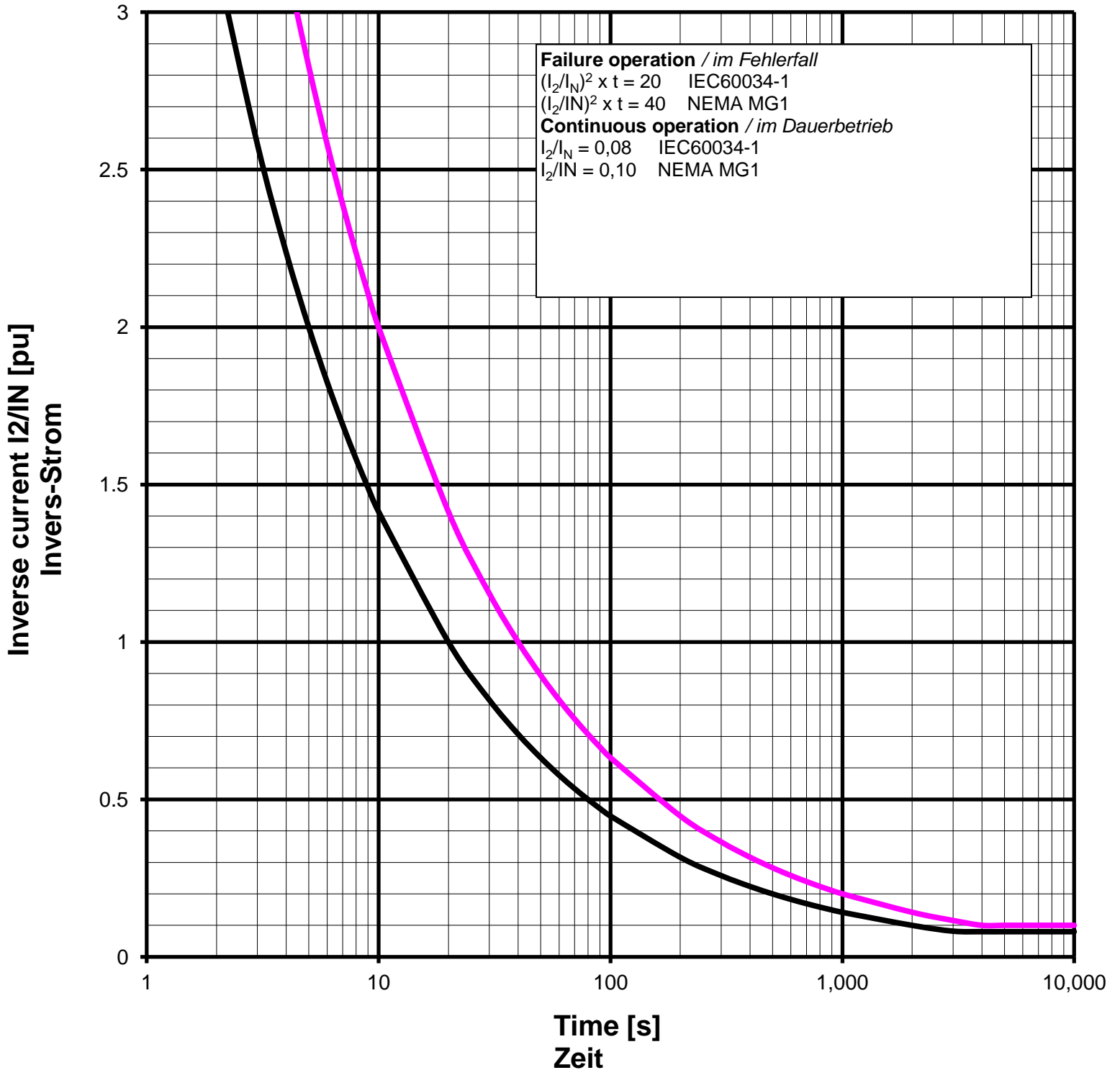
Frequenz

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

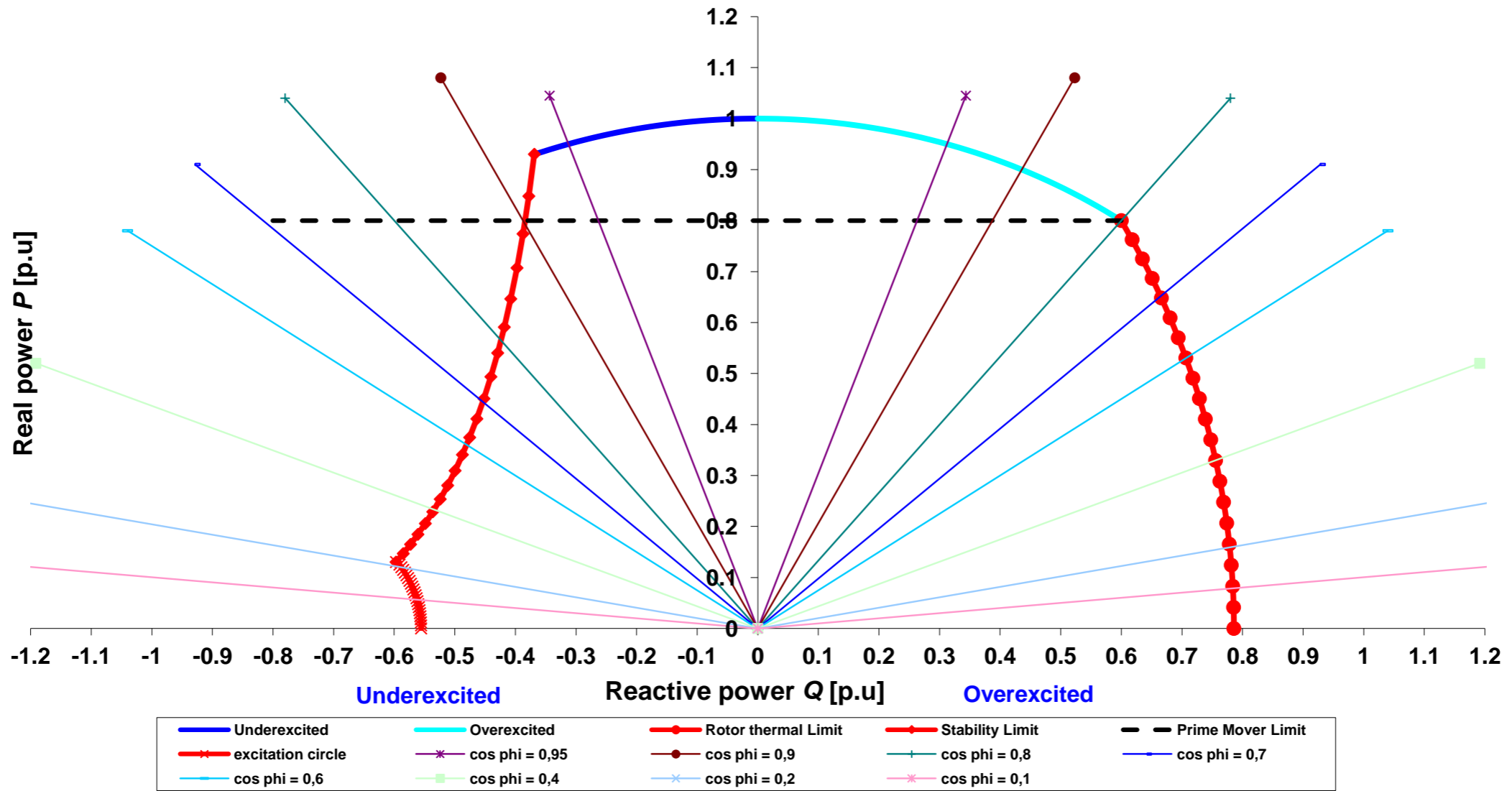
TYPE

DSG 86 M1/6

Projekt:

Order Nr.:

Capability (P-Q) Diagram

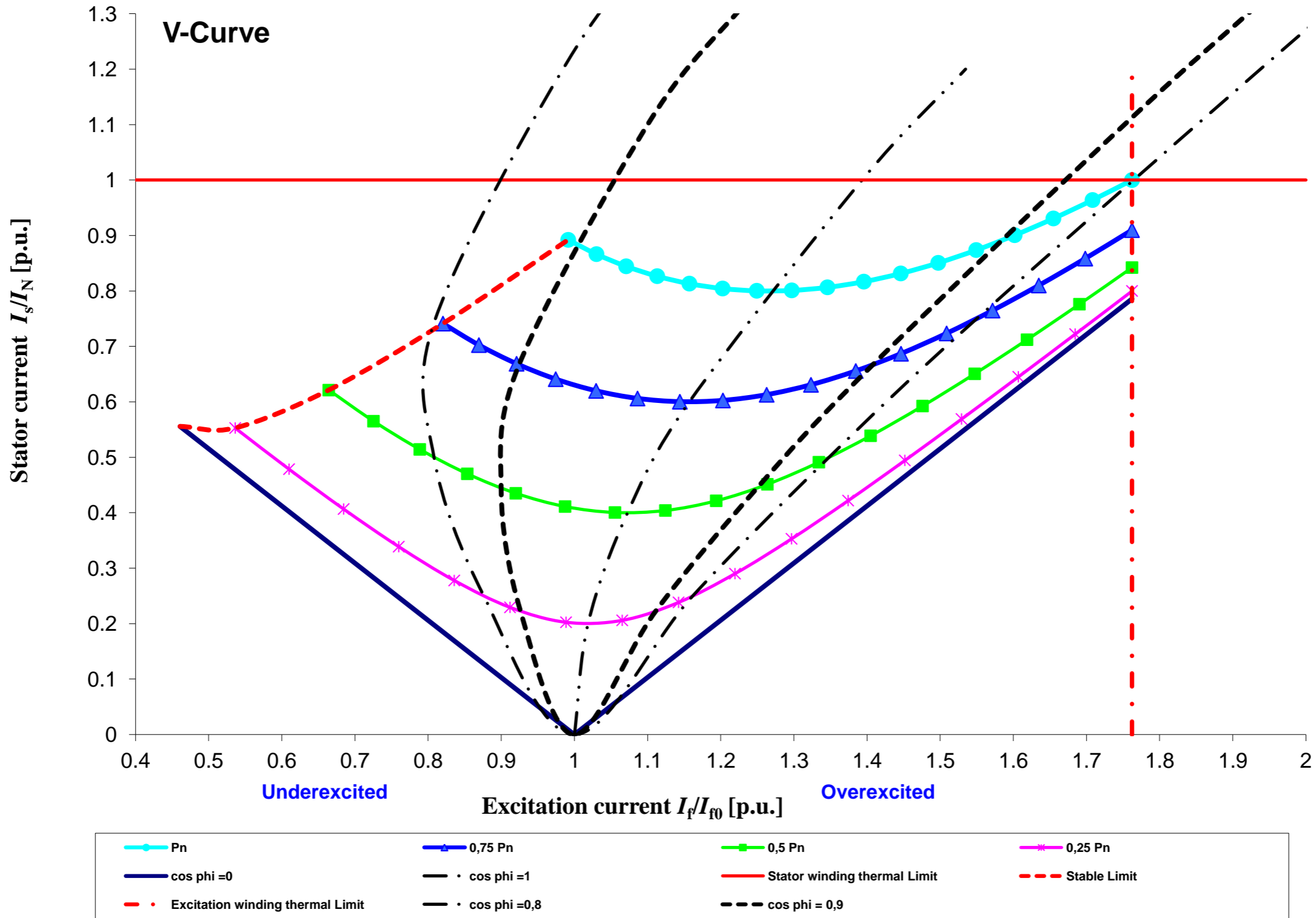


Cummins Generator Technologies

Datum / date:

30/09/2013

TYPE	DSG 86 M1/6	Projekt:		Order Nr.:	
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Cummins Generator Technologies	Datum / date:	
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