

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	30/09/13	Customer:	GENERIC DATSHEET only
Project No.:		AvK Reference:	DSG086K1_4_60_480

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

Generator data:				
Generator:	DSG 86 K1/4	Poles:	4	Standards: IEC 60034
Rated power:	2472 kVA	1978 kWe	2069 kWm	
Power factor:	0.80			
Power at pf 1,0	2003 kVA	2003 kWe	2069 kWm	
Rated voltage:	0.48 kV			
Speed:	1800 1/min			
Frequency:	60 Hz			Voltage range / frequency range:
Rated current:	2973.4 A			Zone A according IEC 60034-1 (dU = +/-5%, df = +/-2%)

Winding pitch:				
Insulation class:	Stator: Class H	Rotor: Class H	Temperature rise:	H
Ambient temperature:	40 ° C	Environment:	Standard environment	
Site altitude:	1000 m	Filter:		
Enclosure:	IP23			
Cooling:	IC 01 - Open-circuit ventilation			
Coolant:	Ambient Air	Temperature	40 ° C	Temperature Air inlet 40 ° C
		Coolant:		generator:
		Cooling air vol.:	3.4 m³/s	Cooling water quantity: n/a
Moment of inertia (I):	60 kgm²	Weight:	5250 Kg	Losses (environment): 91 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	95,3	93
Power factor 0.9	96,01	96,2	96,15	95,65	93,2
Power factor 1.0	96,64	96,8	96,6	96	93,4

Reactances and time constants										
	unsaturated		saturated			unsaturated		saturated		
X _d	2.45	2.21	p.u.	X _q	1.23	1.21	p.u.	T _{d0'}	3.15	s
X _{d'}	0.276	0.276	p.u.	X _{q'}	1.23	1.21	p.u.	T _{d'}	0.35	s
X _{d''}	0.161	0.146	p.u.	X _{q''}	0.161	0.161	p.u.	T _{d''}	0.0148	s
X ₂	0.168	0.153	p.u.	X ₀	0.048	0.044	p.u.	T _a	0.04	s
X _{1s}	n.a.	0.088	p.u.					T _{q'}	0.296	s
								T _{q''}	0.0296	s
Short circuit ratio saturated: 0.45					Z _n 0.093 Ohm					

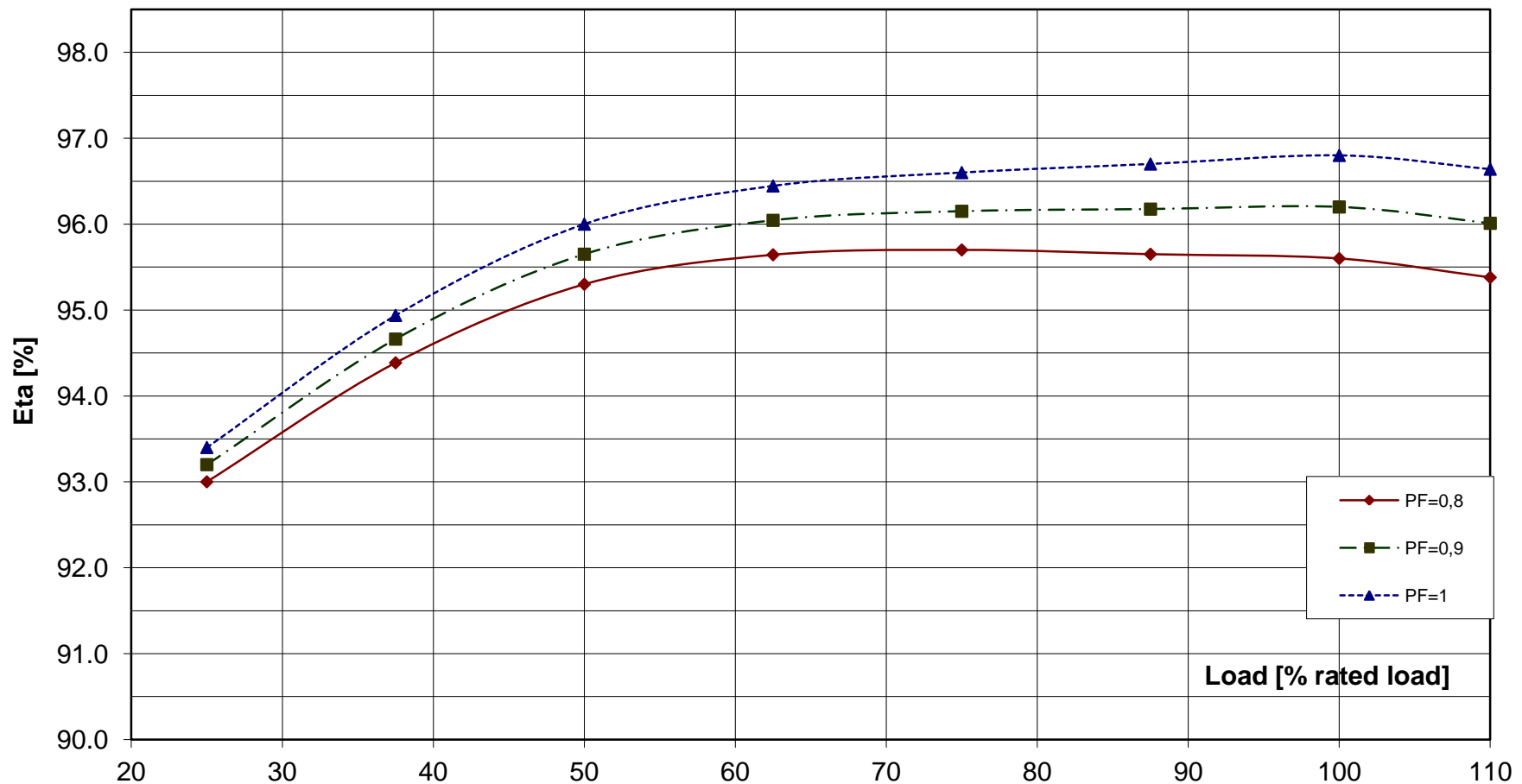
Short circuit data:			
Initial short circuit current (3-phase):	I _{k''}	20365 A	
Max. peak current (3-phase):	I _s	51841 A	
Sustained short circuit current:	I _k	8920 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M _{k2}	116.8 kNm	
	M _{k3}	70.1 kNm	
Max. faulty synchron moment:	M _f	251.1 kNm	
Rated kVA torque:	M _{SN}	13.12 kNm	
Rated torque	M _N	10.50 kNm	
Shaft torque	M _{Sh}	10.98 kNm	

Load application:	
max. load application: 1344 kVA (corresponds to 54,35 % from 2472 kVA) for Power factor 0.4	Power: 2472 kVA
15% transient voltage drop	Power factor: 0.8
	transient voltage drop: -21.6 %

Remarks:

Alternator :	DSG 86 K1/4			
Rated output [kVA]	2472	Rated power factor:	0.8	Rated voltage [kV]: 0.48
Rated frequency [Hz]	60	Rated speed [rpm]	1800	

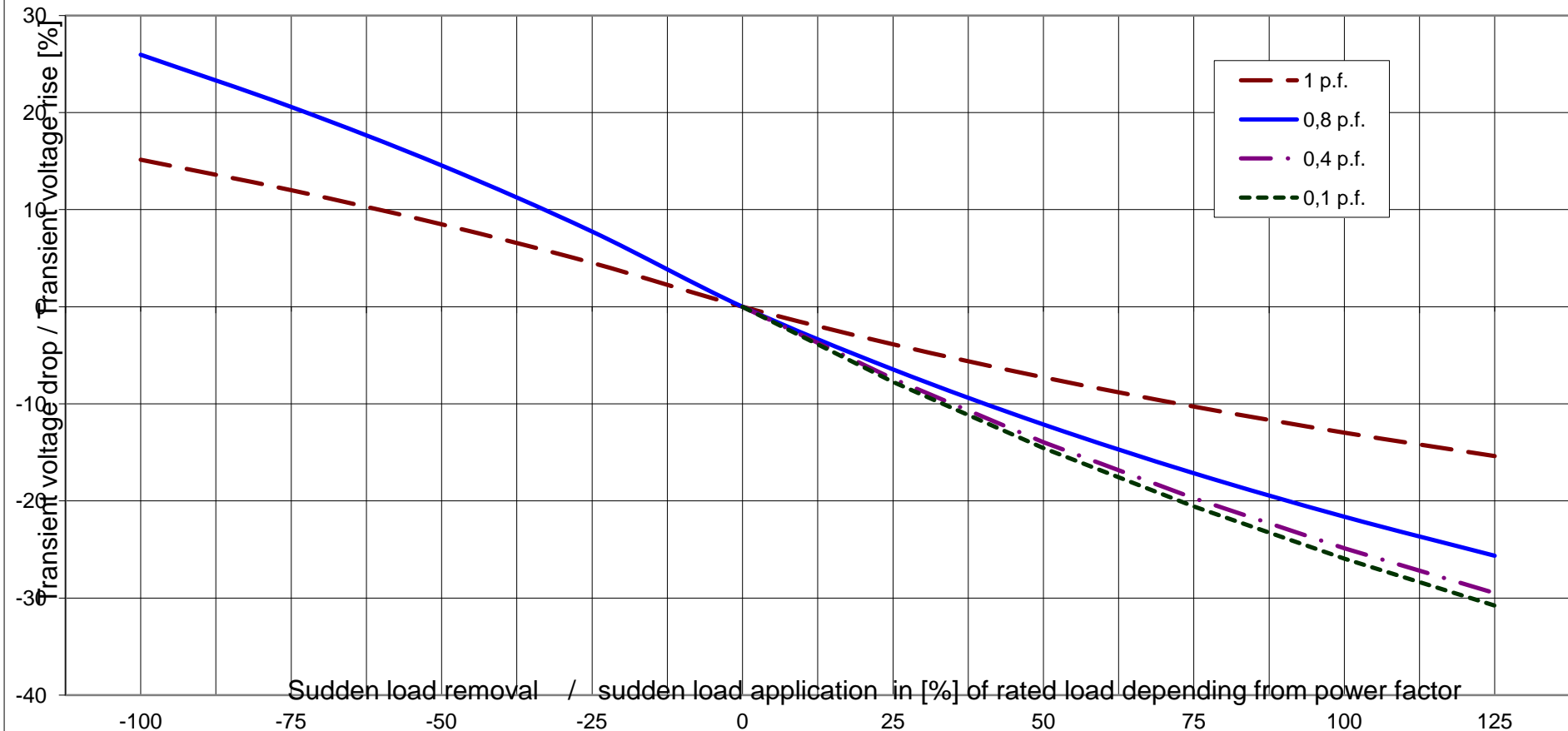
Wirkungsgrad-Kennlinie - Efficiency Curve



Alternator : DSG 86 K1/4

Rated output [kVA]	2472	Rated power factor:	0.8	Rated voltage [kV]:	0.48
Rated frequency [Hz]	60	Rated speed [rpm]	1800		

Transient Voltage rise or drop for sudden load removal or application



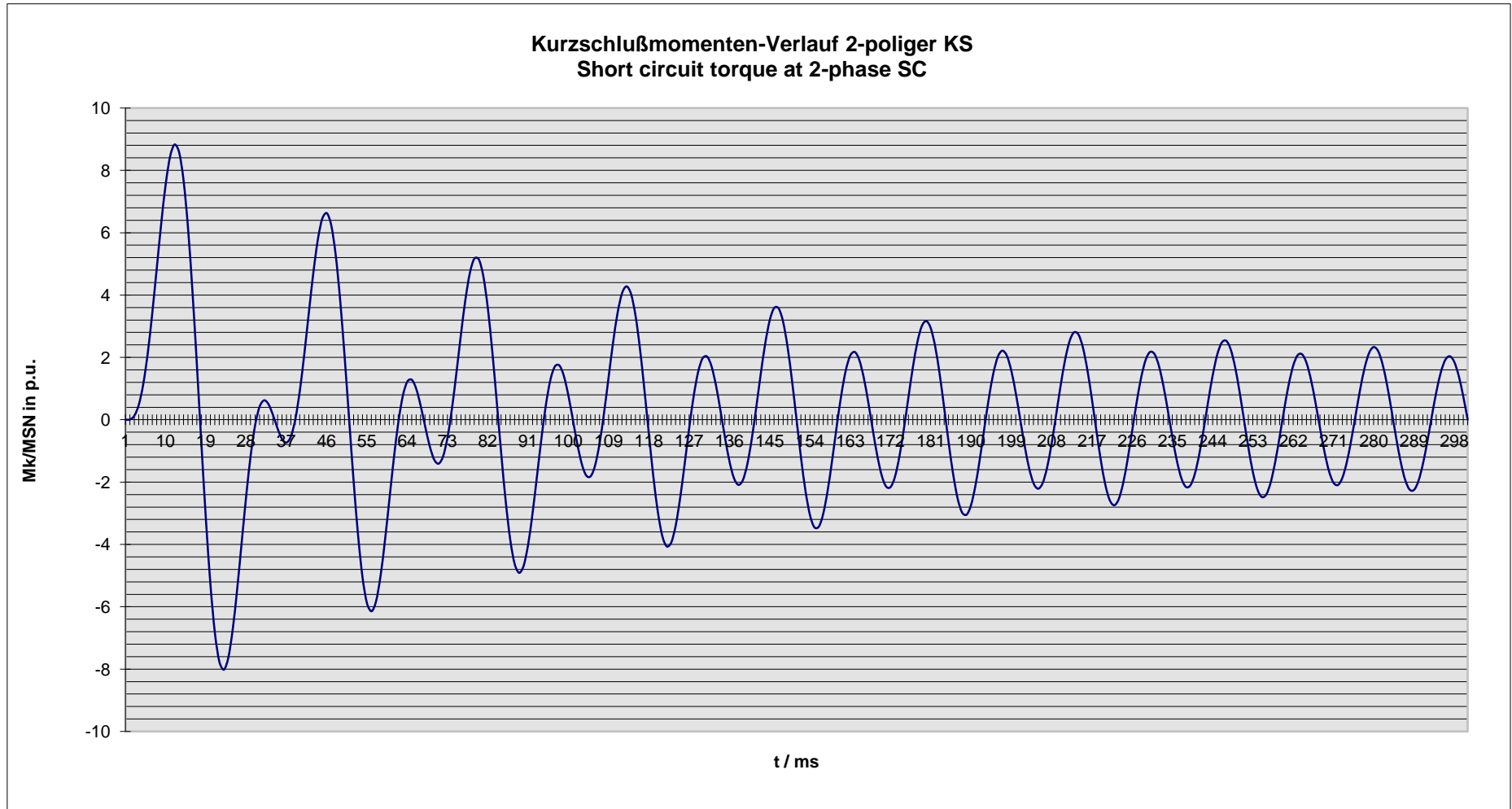


Technisches Datenblatt - Diagramme
Technical data sheet - Diagrams

ING-FCD-0112

Alternator :	DSG 86 K1/4			
Rated output [kVA]	2472	Rated power factor:	0.8	Rated voltage [kV]: 0.48
Rated frequency [Hz]	60	Rated speed [rpm]	1800	MSN related to kVA: 13.11 KNm

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



Nenn Daten / nominal data

DSG 86 K1/4

Leistung S_N : **2472 kVA**

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

Rating

p.f.

Spannung U_N : **0.48 kV**

Strom I_N : **2973 A**

Voltage

Current

Frequenz f : **60 Hz**

Drehzahl n : **1,800 min⁻¹**

Frequency

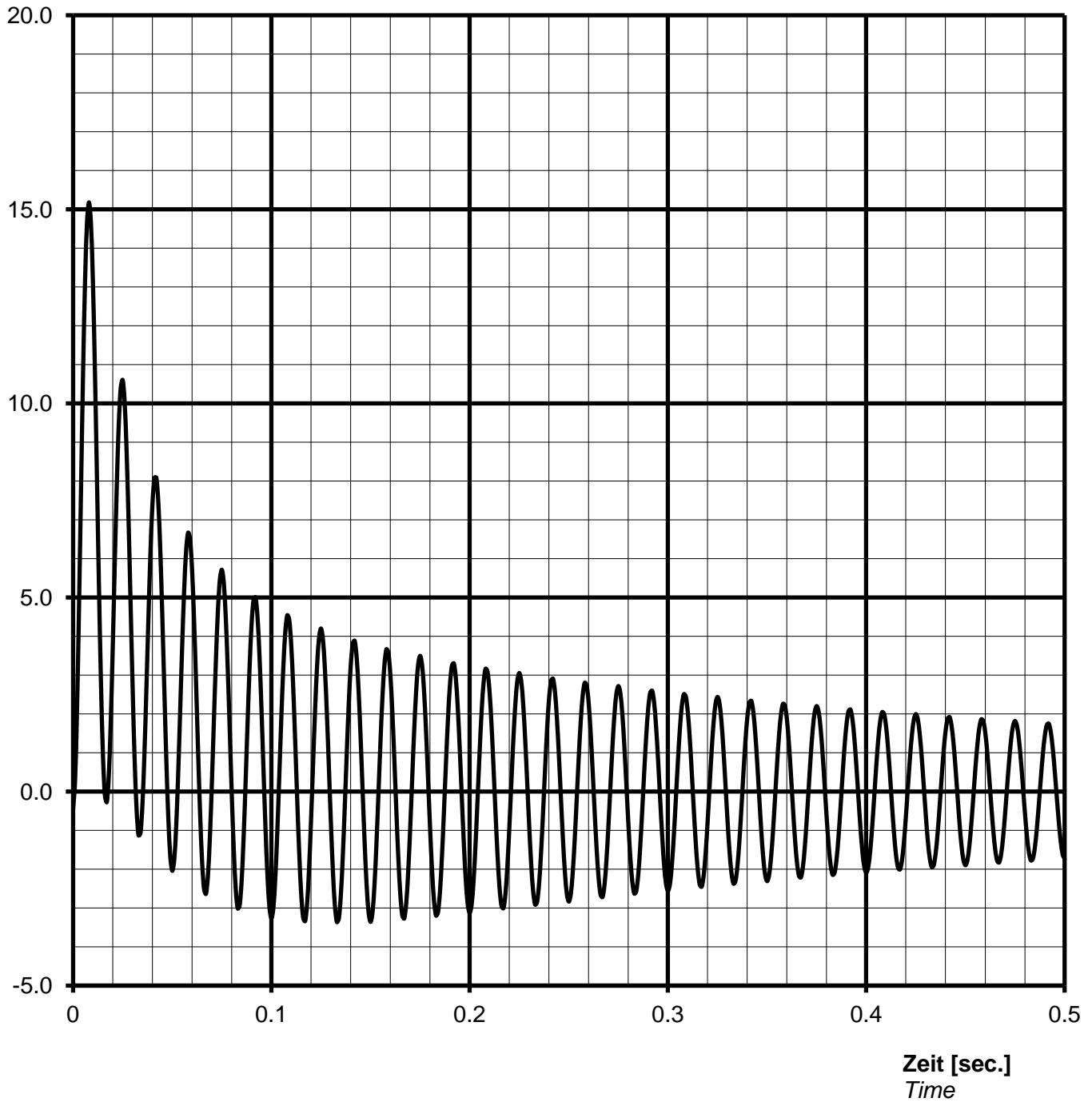
Speed

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 $I_{\text{peak}} =$ **45141 A** or **15.18 p.u.**

Nennwerten / nominal data

DSG 86 K1/4

Leistung S_N : **2472 kVA**

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

Rating

p.f.

Spannung U_N : **0.48 kV**

Strom I_N : **2973 A**

Voltage

Current

Frequenz f: **60 Hz**

Drehzahl n: **1800 min⁻¹**

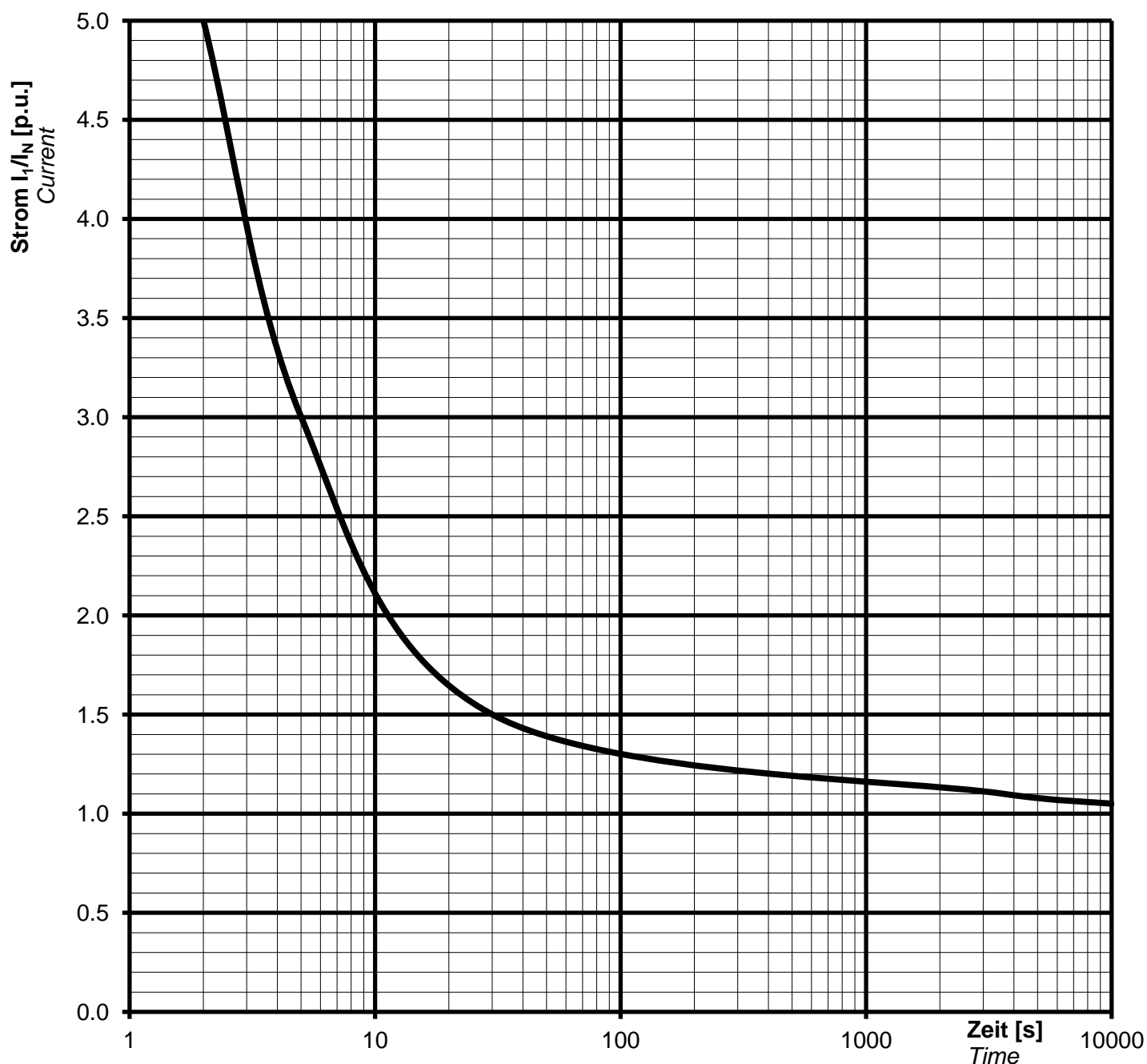
Frequency

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 K1/4

Rating S_N : **2472 kVA**

p.f. **0.80**

Bemessungsleistung

Leistungsfaktor $\cos \varphi$:

Nominal voltage U_N : **0.48 kV**

Nominal current I_N : **2973 A**

Bemessungsspannung

Bemessungsstrom

Frequency f_N : **60 Hz**

Speed n : **1800 min⁻¹**

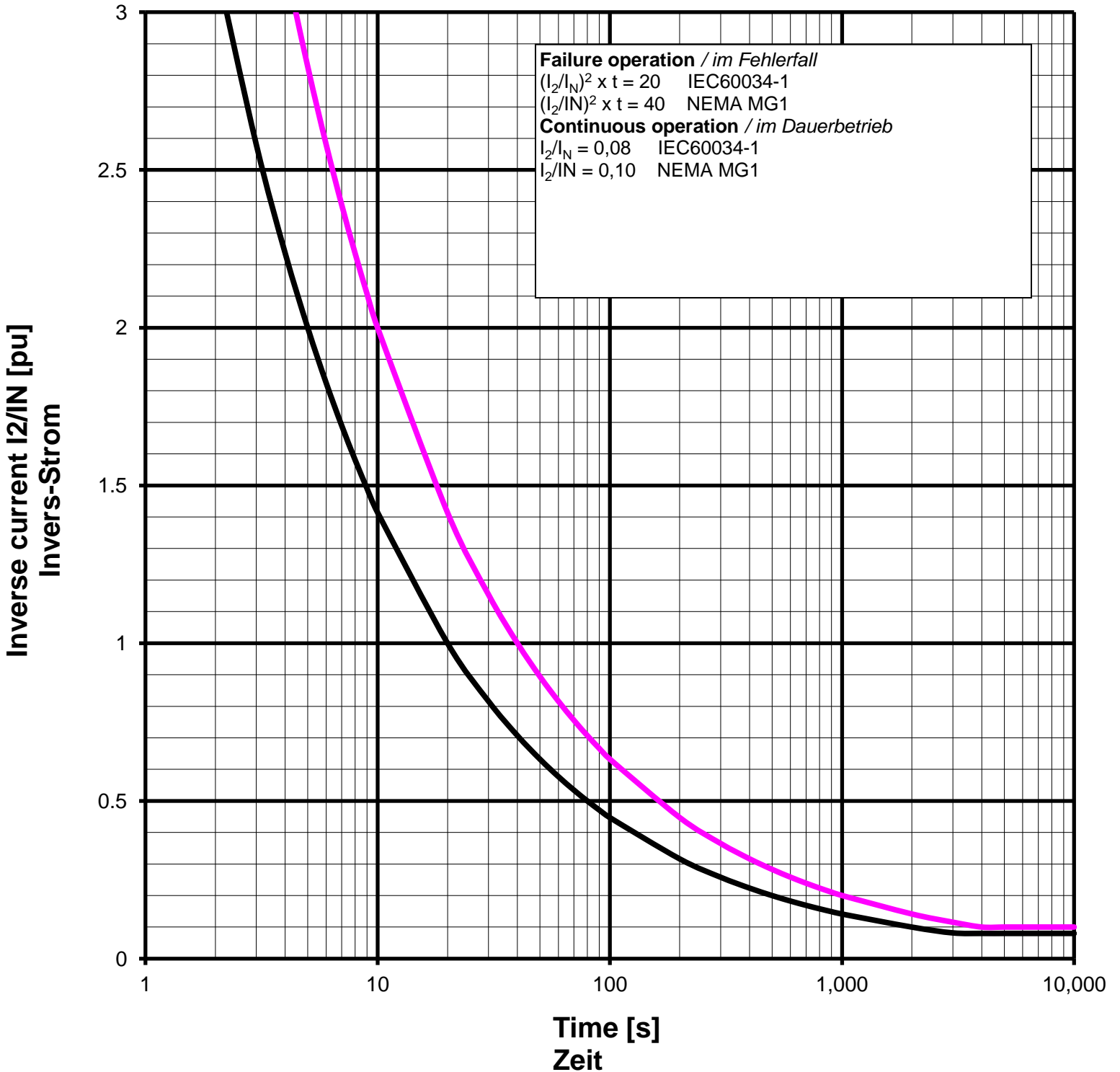
Frequenz

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

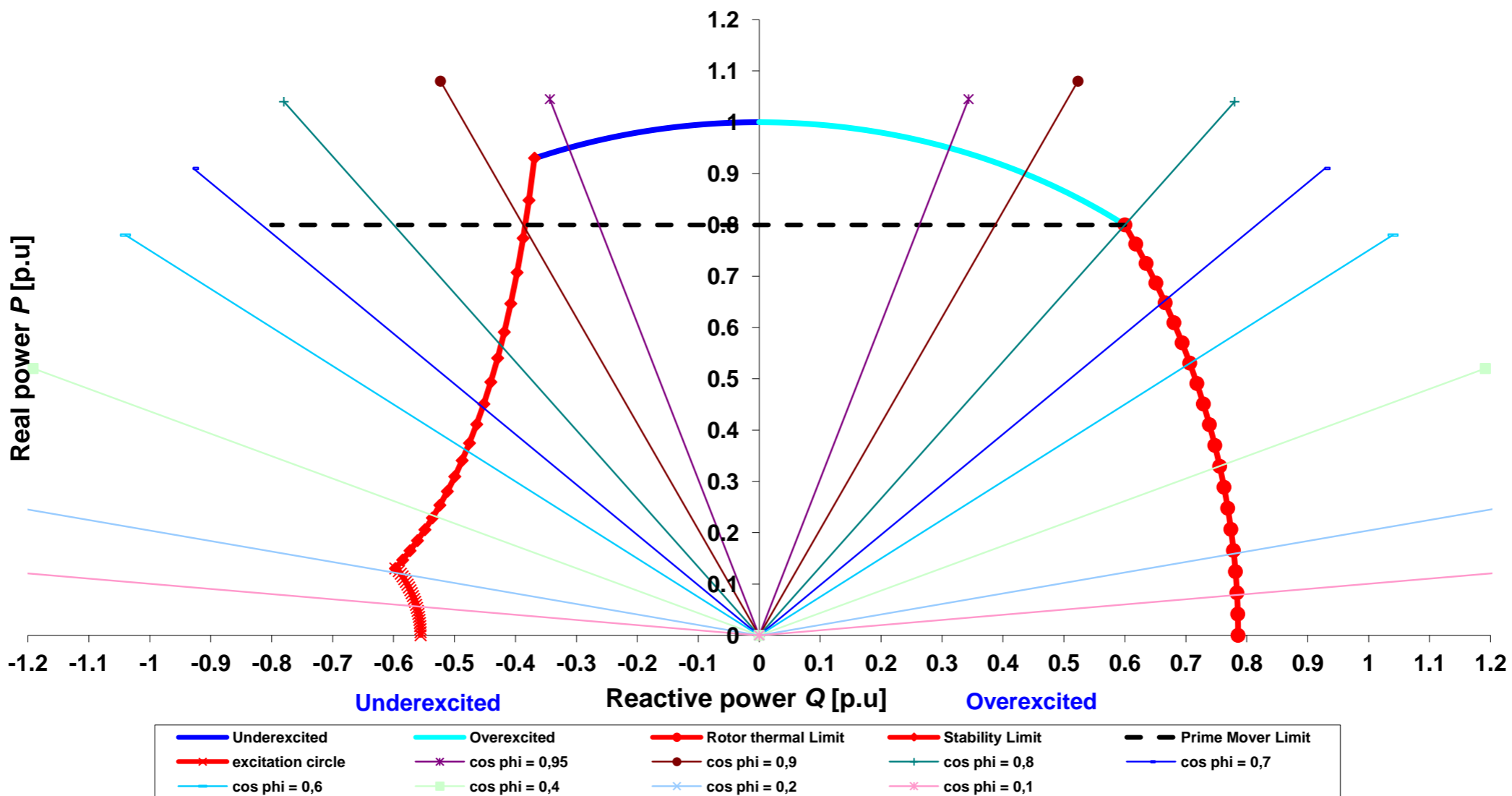
TYPE

DSG 86 K1/4

Projekt:

Order Nr.:

Capability (P-Q) Diagram

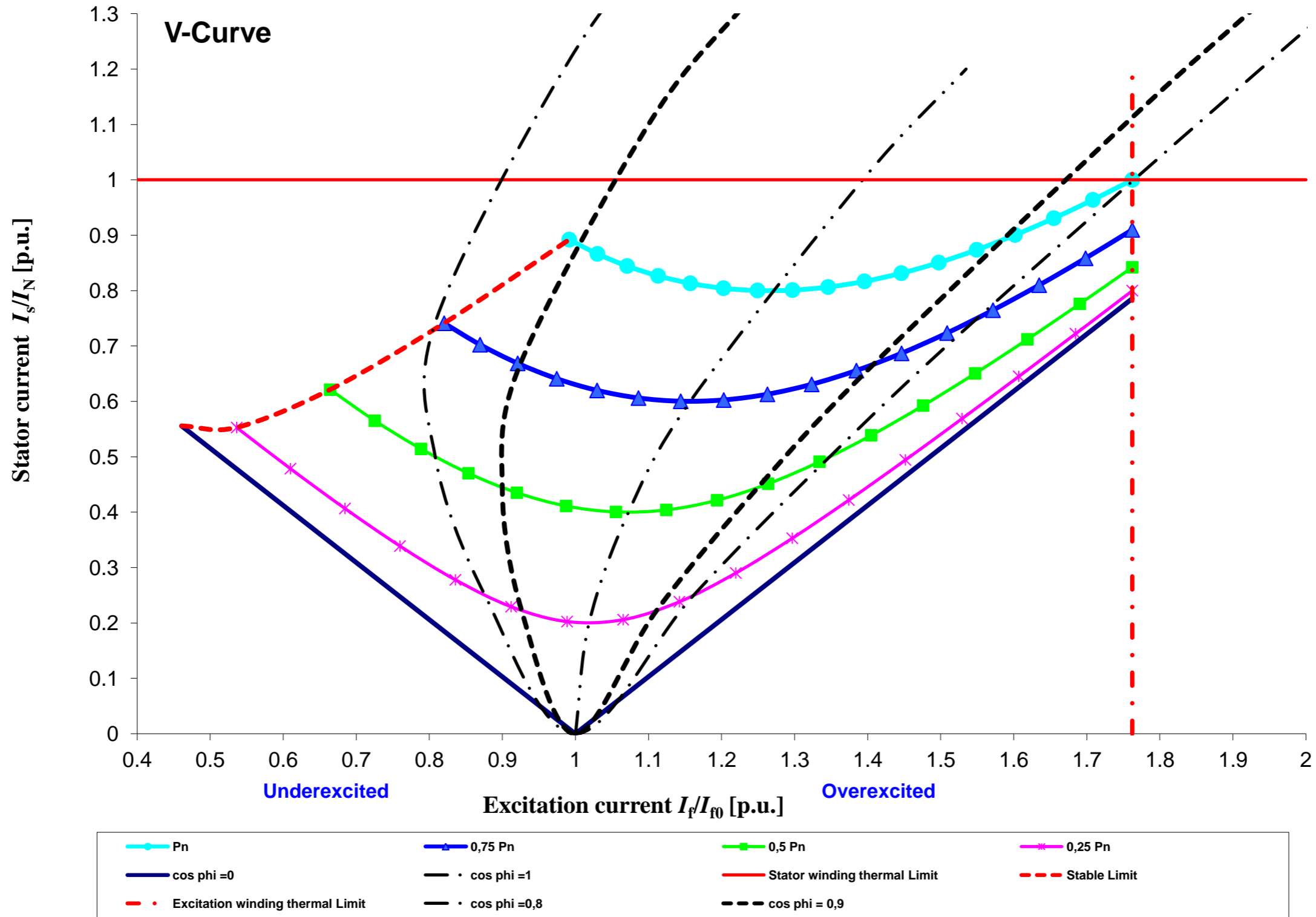


Cummins Generator Technologies

Datum / date:

30/09/2013

TYPE	DSG 86 K1/4	Projekt:		Order Nr.:	
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