

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	30/09/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	DSG086L1_4_60_480

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

Generator data:					
Generator:	DSG 86 L1/4	Poles:	4	Standards:	IEC 60034
Rated power:	3408 kVA	2726 kWe	2837 kWm		
Power factor:	0.80				
Power at pf 1,0	2758 kVA	2758 kWe	2837 kWm		
Rated voltage:	0.48 kV				
Speed:	1800 1/min				
Frequency:	60 Hz			Voltage range / frequency range:	
Rated current:	4099.2 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				
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.:	3.4 m³/s	Cooling water quantity:	n/a
Moment of inertia (I):	95 kgm²	Weight:	6500 Kg	Losses (environment):	111 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	95,91	96,1	96,3	96,1	94,2
Power factor 0.9	96,49	96,65	96,65	96,4	94,4
Power factor 1.0	97,06	97,2	97	96,7	94,6

Reactances and time constants											
	unsaturated		saturated			unsaturated		saturated			
X _d	2.40	2.16	p.u.	X _q	1.20	1.18	p.u.	T _{d0'}	3.56 s	T _{d0''}	0.02573 s
X _{d'}	0.247	0.247	p.u.	X _{q'}	1.20	1.18	p.u.	T _{d'}	0.37 s	T _{q0'}	0.3 s
X _{d''}	0.158	0.144	p.u.	X _{q''}	0.158	0.158	p.u.	T _{d''}	0.015 s	T _{q0''}	0.22785 s
X ₂	0.166	0.151	p.u.	X ₀	0.047	0.043	p.u.	T _a	0.0398 s	T _{q'}	0.3 s
X _{1s}	n.a.	0.086	p.u.							T _{q''}	0.03 s
Short circuit ratio saturated: 0.46					Z _n 0.068 Ohm						

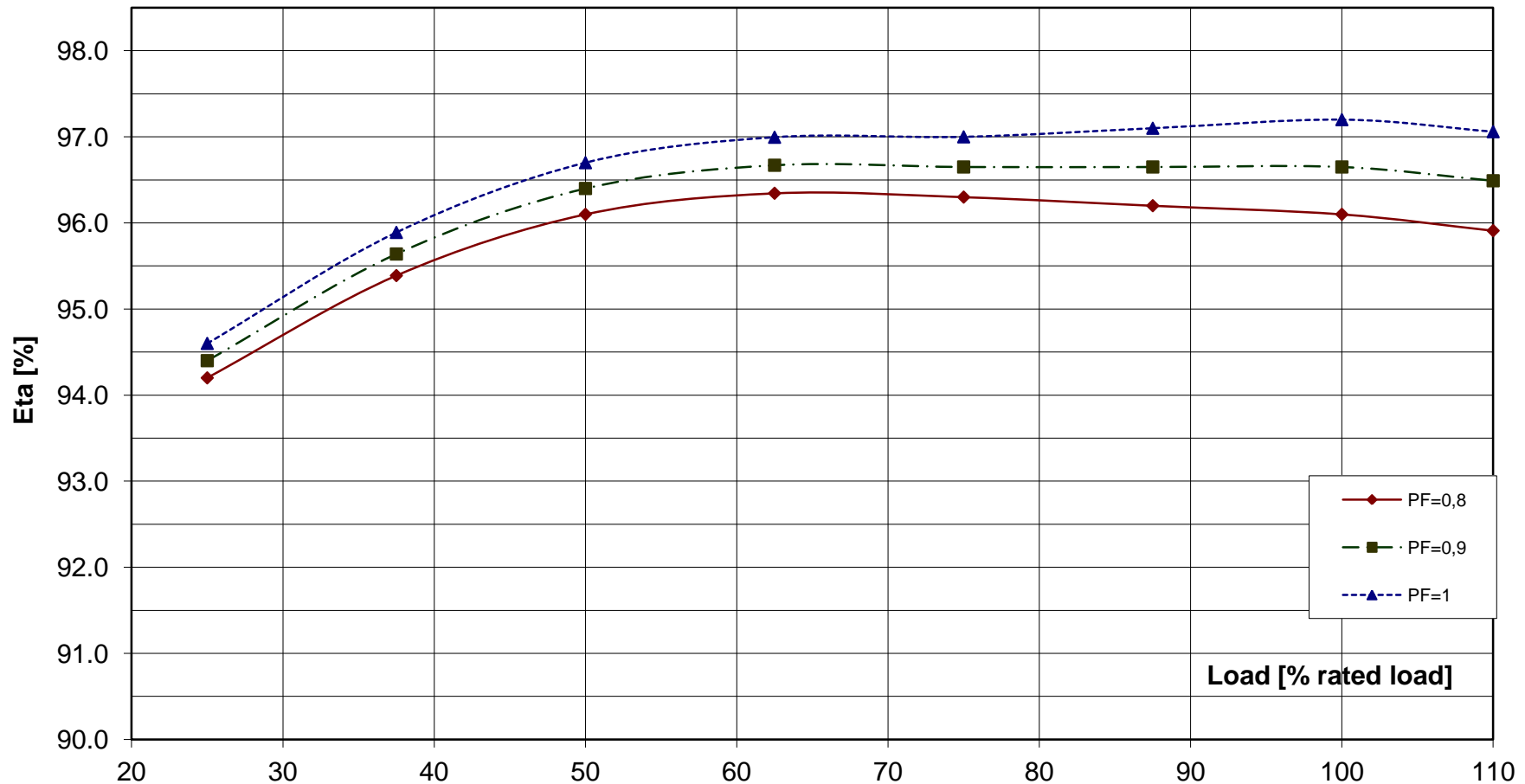
Short circuit data:			
Initial short circuit current (3-phase):	I _{k''}	28467 A	
Max. peak current (3-phase):	I _s	72465 A	
Sustained short circuit current:	I _k	12298 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M _{k2}	163.2 kNm	
	M _{k3}	97.9 kNm	
Max. faulty synchron moment:	M _f	350.9 kNm	
Rated kVA torque:	M _{SN}	18.08 kNm	
Rated torque	M _N	14.46 kNm	
Shaft torque	M _{Sh}	15.05 kNm	

Load application:	
max. load application: 2070 kVA (corresponds to 60,73 % from 3408 kVA) for Power factor 0.4 15% transient voltage drop	Power: 3408 kVA Power factor: 0.8 transient voltage drop: -19.8 %

Remarks:

Alternator :	DSG 86 L1/4			
Rated output [kVA]	3408	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 L1/4

Rated output [kVA] 3408

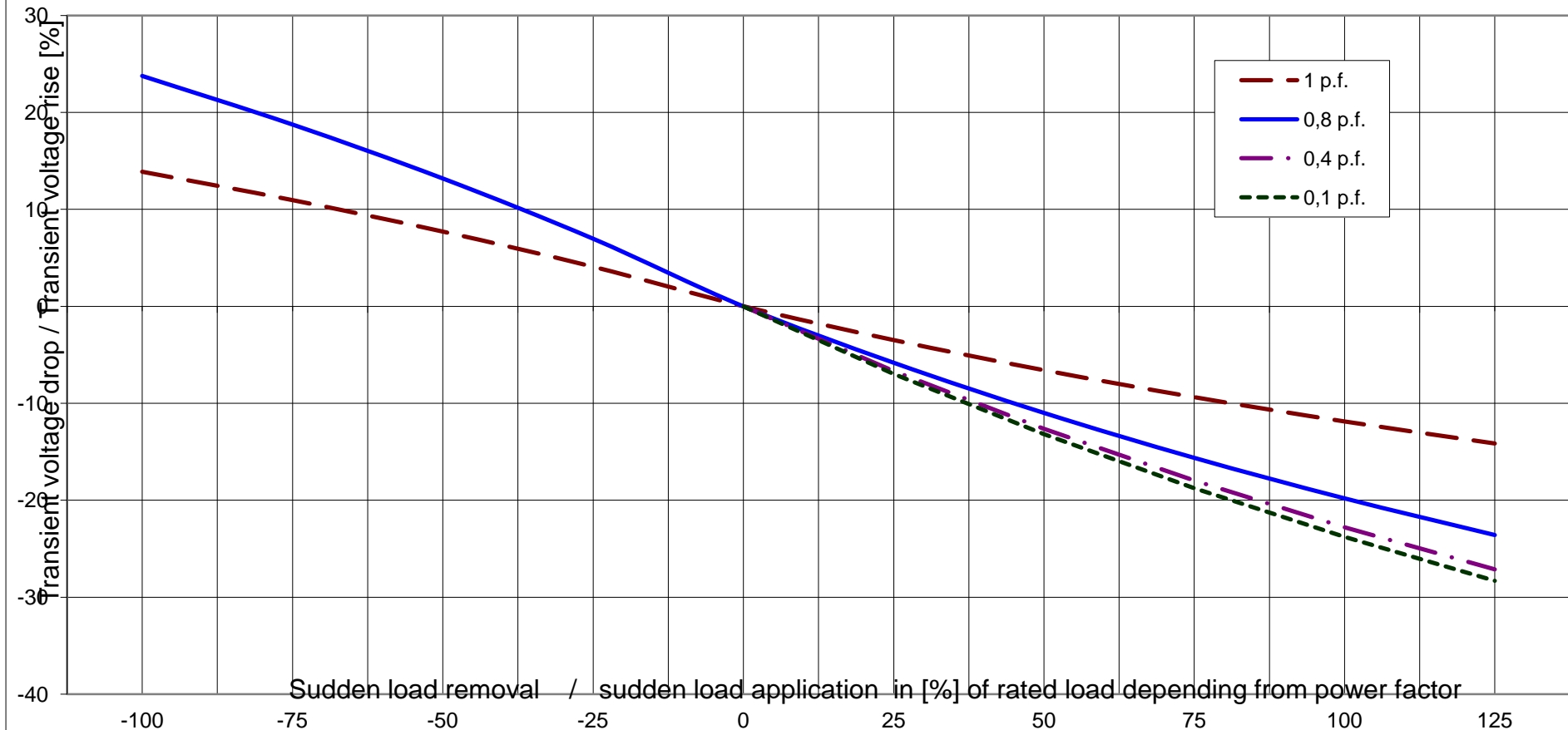
Rated power factor: 0.8

Rated voltage [kV]: 0.48

Rated frequency [Hz] 60

Rated speed [rpm] 1800

Transient Voltage rise or drop for sudden load removal or application

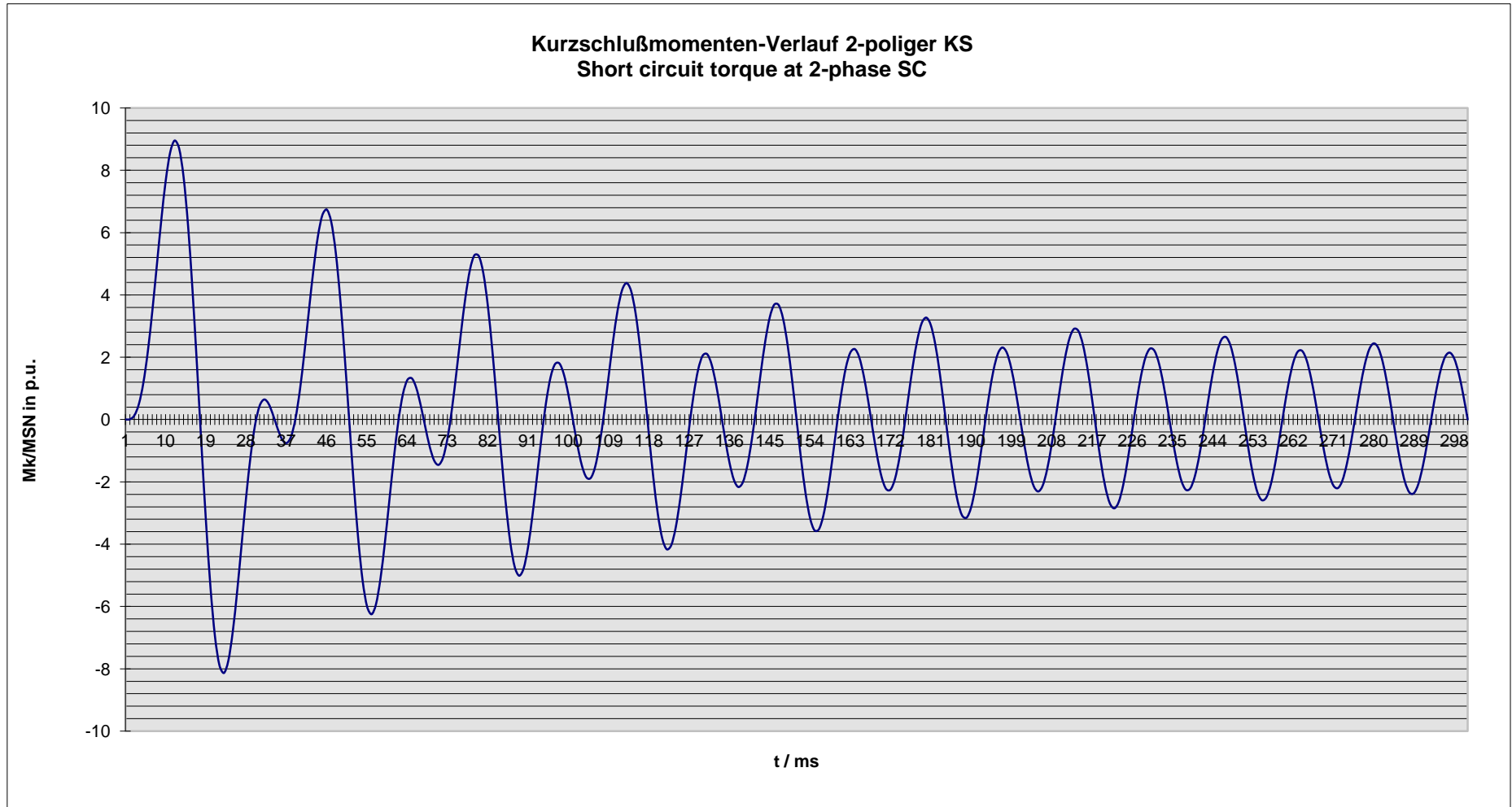




Technisches Datenblatt - Diagramme
Technical data sheet - Diagrams

ING-FCD-0112

Alternator :	DSG 86 L1/4			
Rated output [kVA]	3408	Rated power factor:	0.8	Rated voltage [kV]: 0.48
Rated frequency [Hz]	60	Rated speed [rpm]	1800	MSN related to kVA: 18.08 KNm



Nenndaten / nominal data

DSG 86 L1/4

Leistung S_N : **3408 kVA**

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

Rating

p.f.

Spannung U_N : **0.48 kV**

Strom I_N : **4099 A**

Voltage

Current

Frequenz f : **60 Hz**

Drehzahl n : **1,800 min⁻¹**

Frequency

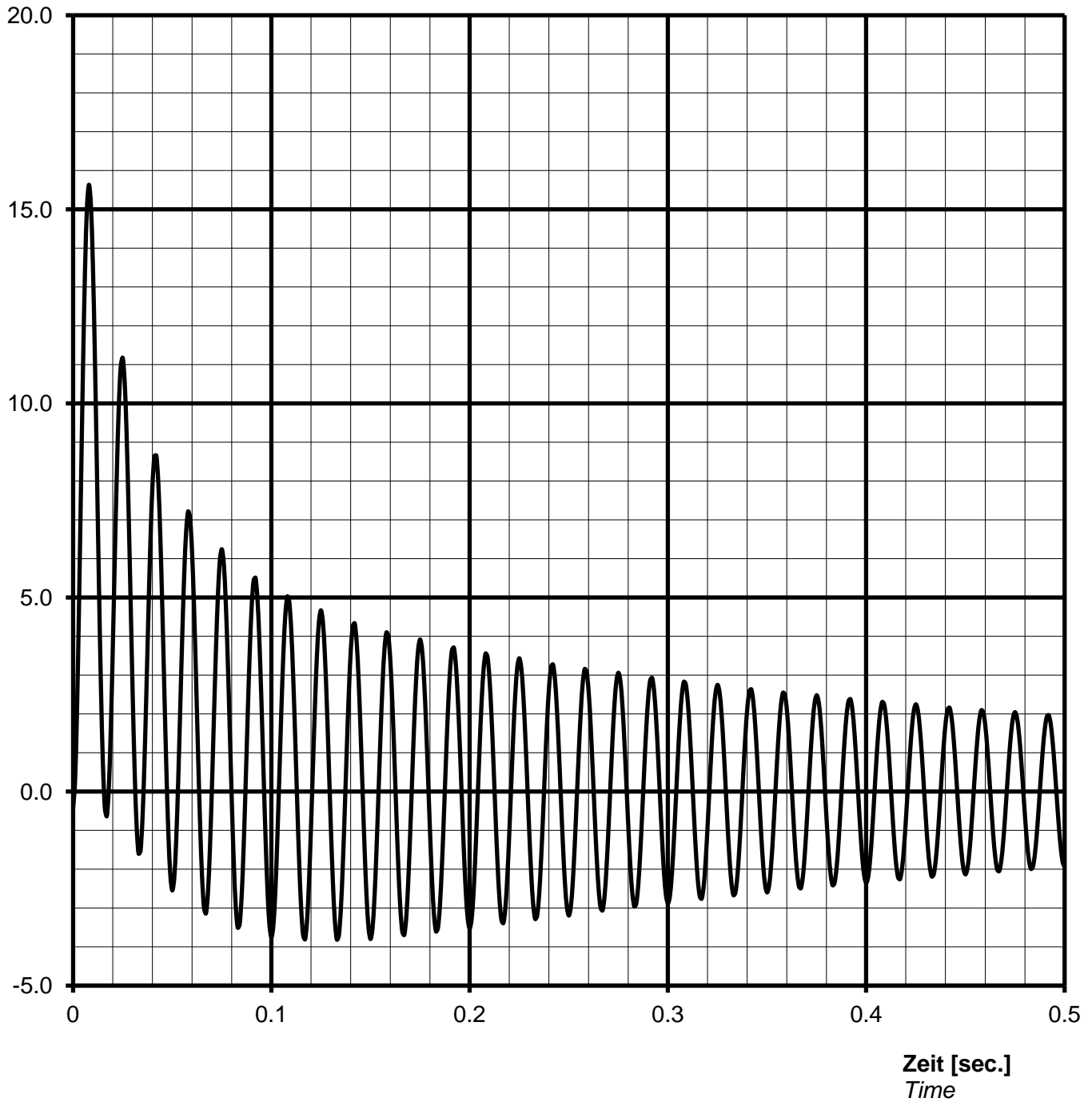
Speed

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 $I_{\text{peak}} = 64079 \text{ A}$ or 15.63 p.u.

Nennwerte / nominal data

DSG 86 L1/4

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p.f.

Spannung U_N : **0.48 kV**

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Voltage

Current

Frequenz f: **60 Hz**

Drehzahl n: **1800 min⁻¹**

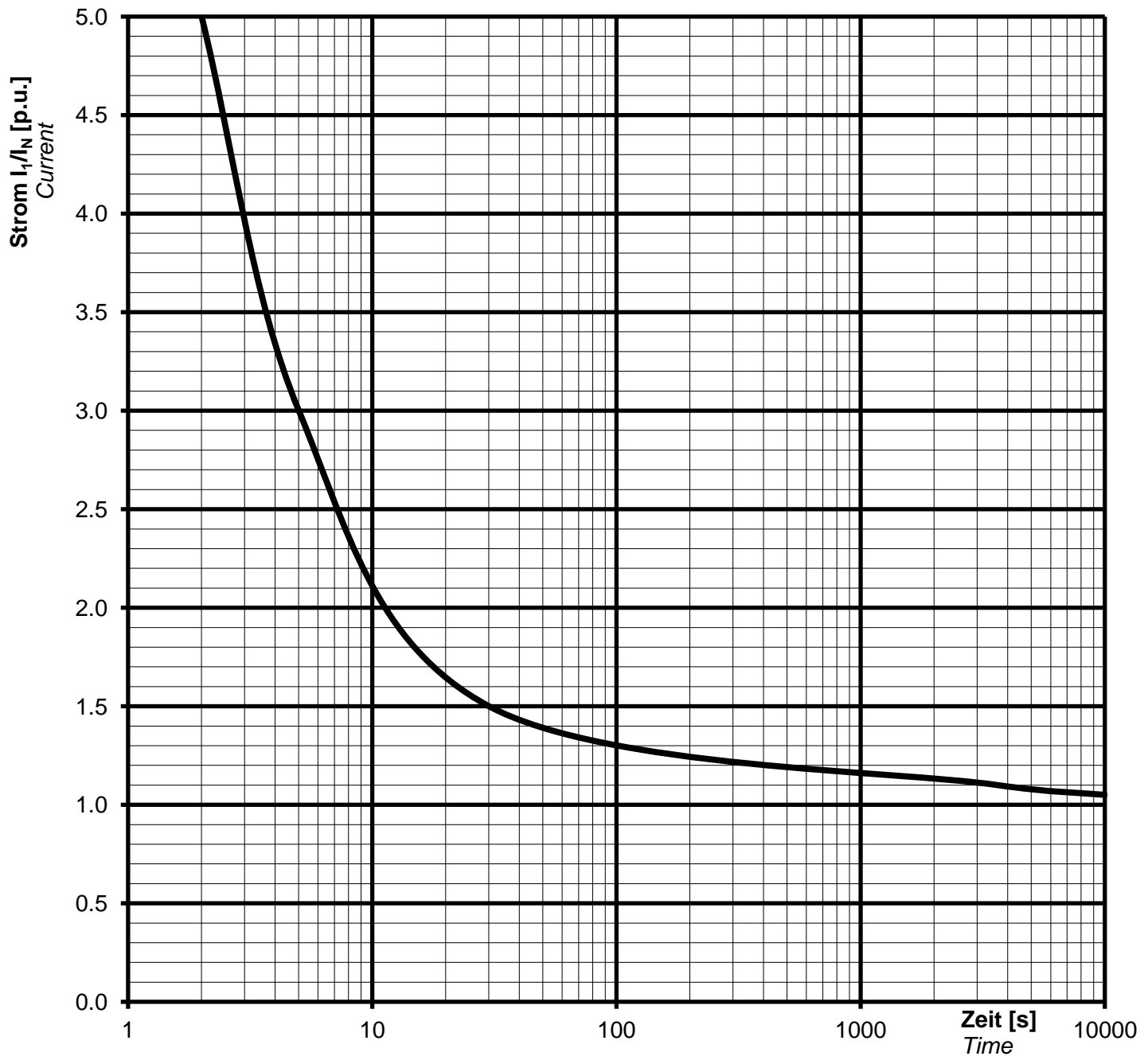
Frequency

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

Nennwerten / nominal data

DSG 86 L1/4

Rating S_N : **3408 kVA**

p.f. **0.80**

Bemessungsleistung

Leistungsfaktor $\cos \varphi$:

Nominal voltage U_N : **0.48 kV**

Nominal current I_N : **4099 A**

Bemessungsspannung

Bemessungsstrom

Frequency f_N : **60 Hz**

Speed n : **1800 min⁻¹**

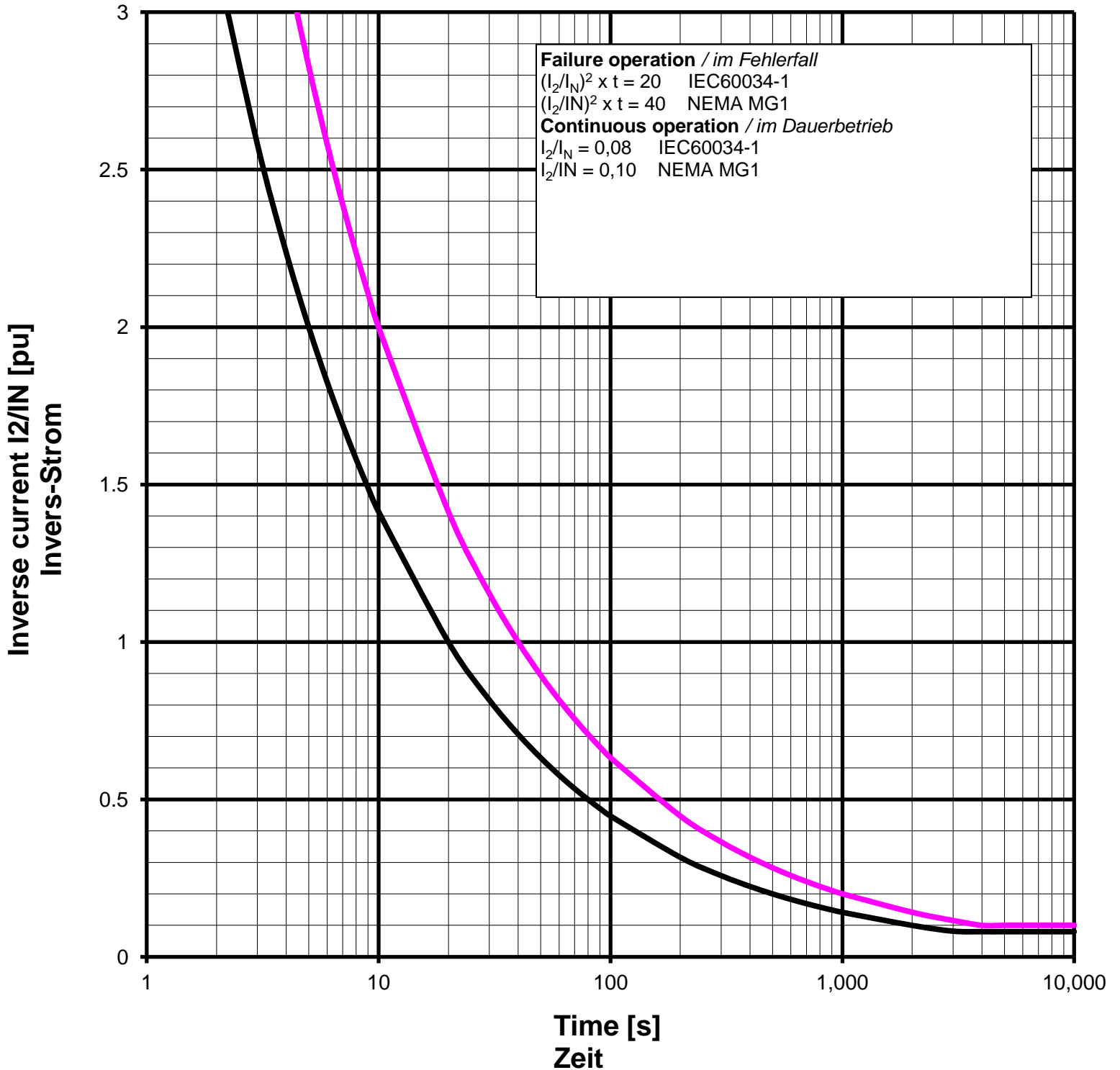
Frequenz

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

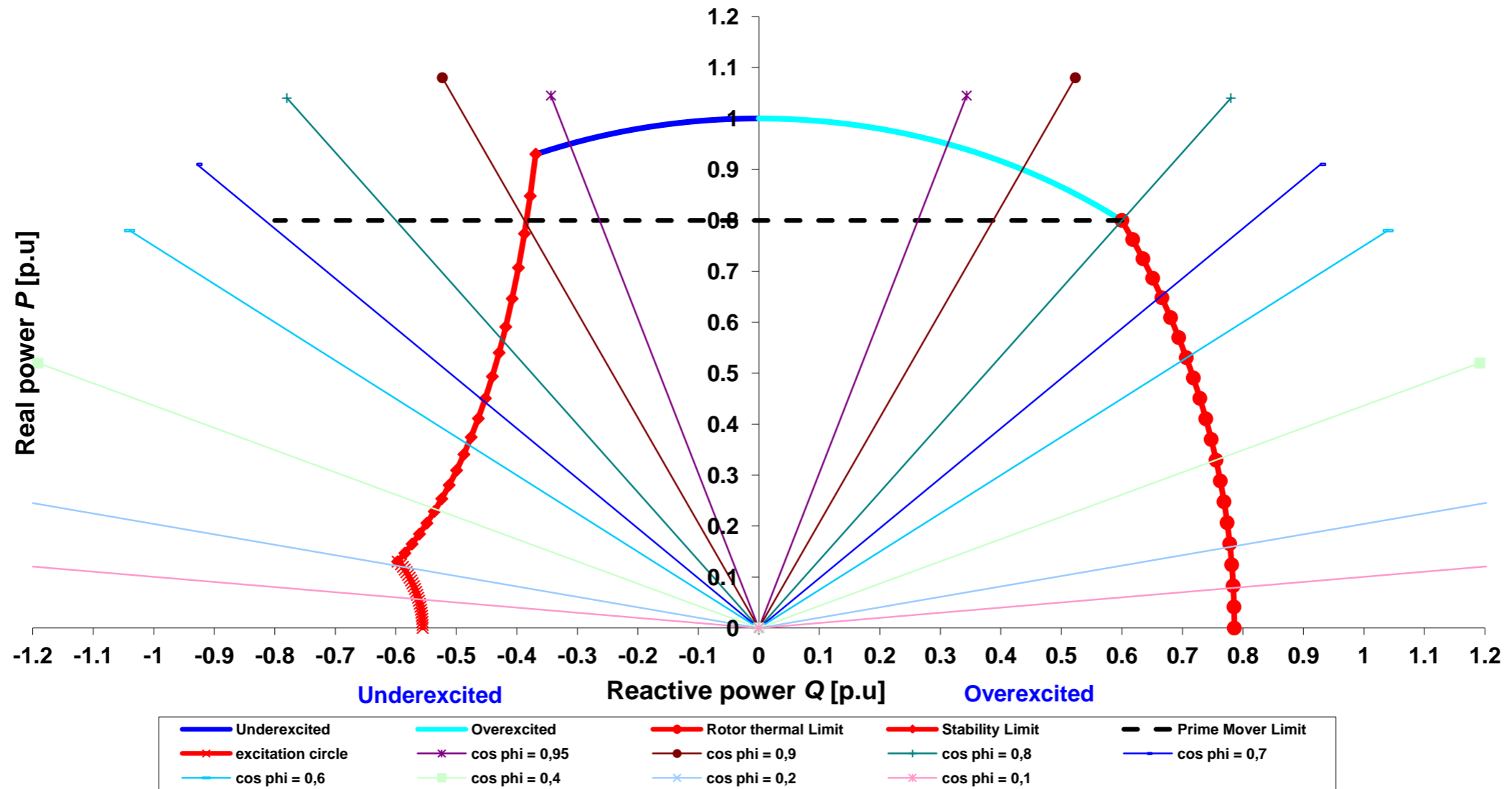
TYPE

DSG 86 L1/4

Projekt:

Order Nr.:

Capability (P-Q) Diagram

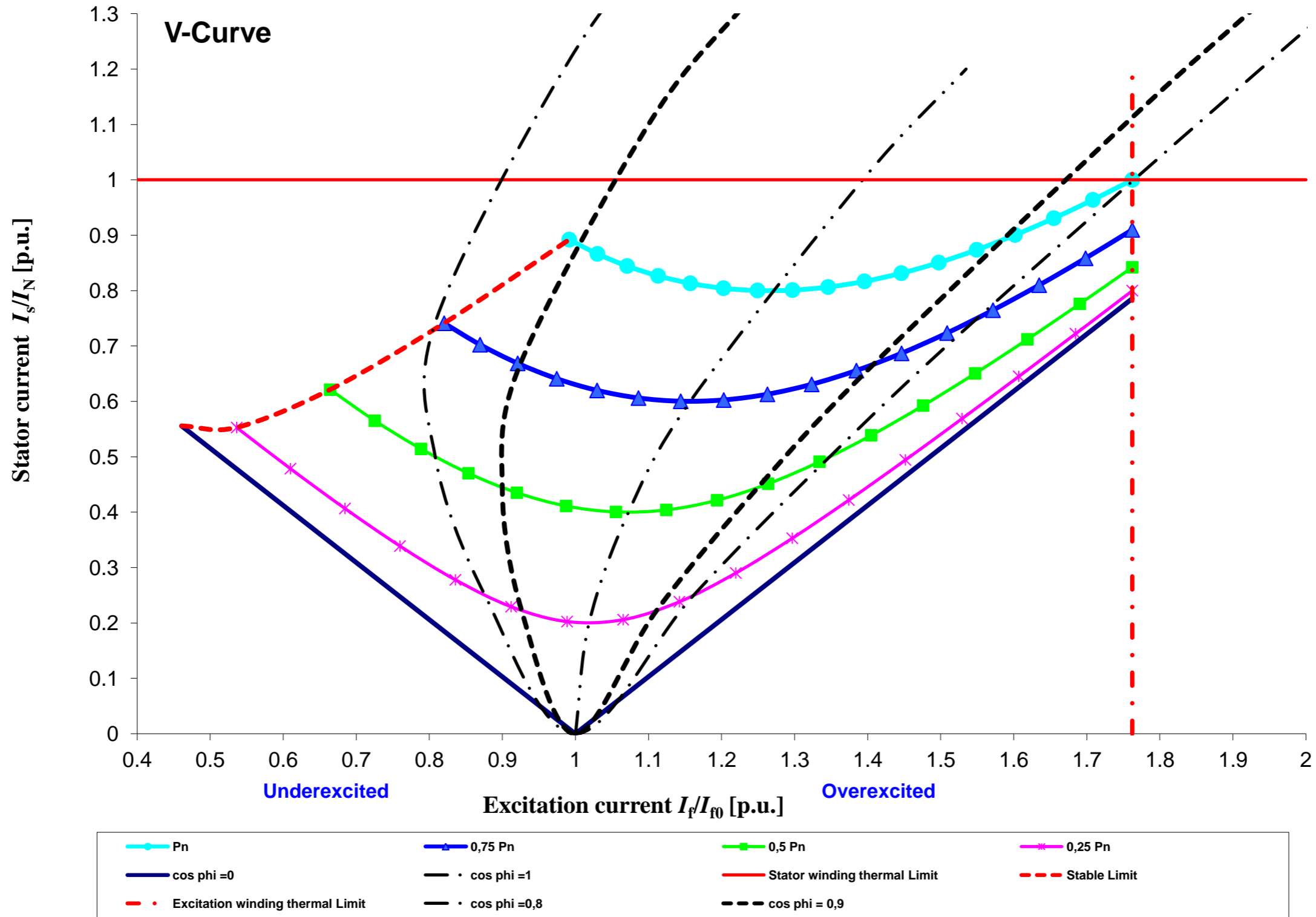


Cummins Generator Technologies

Datum / date:

30/09/2013

TYPE	DSG 86 L1/4	Projekt:		Order Nr.:	
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