

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	30/09/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	DSG086L1_4_50_400

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

Generator data:					
Generator:	DSG 86 L1/4	Poles:	4	Standards: IEC 60034	
Rated power:	2840 kVA	2272 kWe	2364 kWm		
Power factor:	0.80				
Power at pf 1,0	2298 kVA	2298 kWe	2364 kWm		
Rated voltage:	0.4 kV				
Speed:	1500 1/min				
Frequency:	50 Hz	Voltage range / frequency range:			
Rated current:	4099.2 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.:	2.9 m³/s	Cooling water quantity:	n/a
Moment of inertia (I):	95 kgm²	Weight:	6500 Kg	Losses (environment):	92 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	96,3	95
Power factor 0.9	96,49	96,65	96,75	96,65	95,2
Power factor 1.0	97,06	97,2	97,2	97	95,4

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	0.056 Ohm					

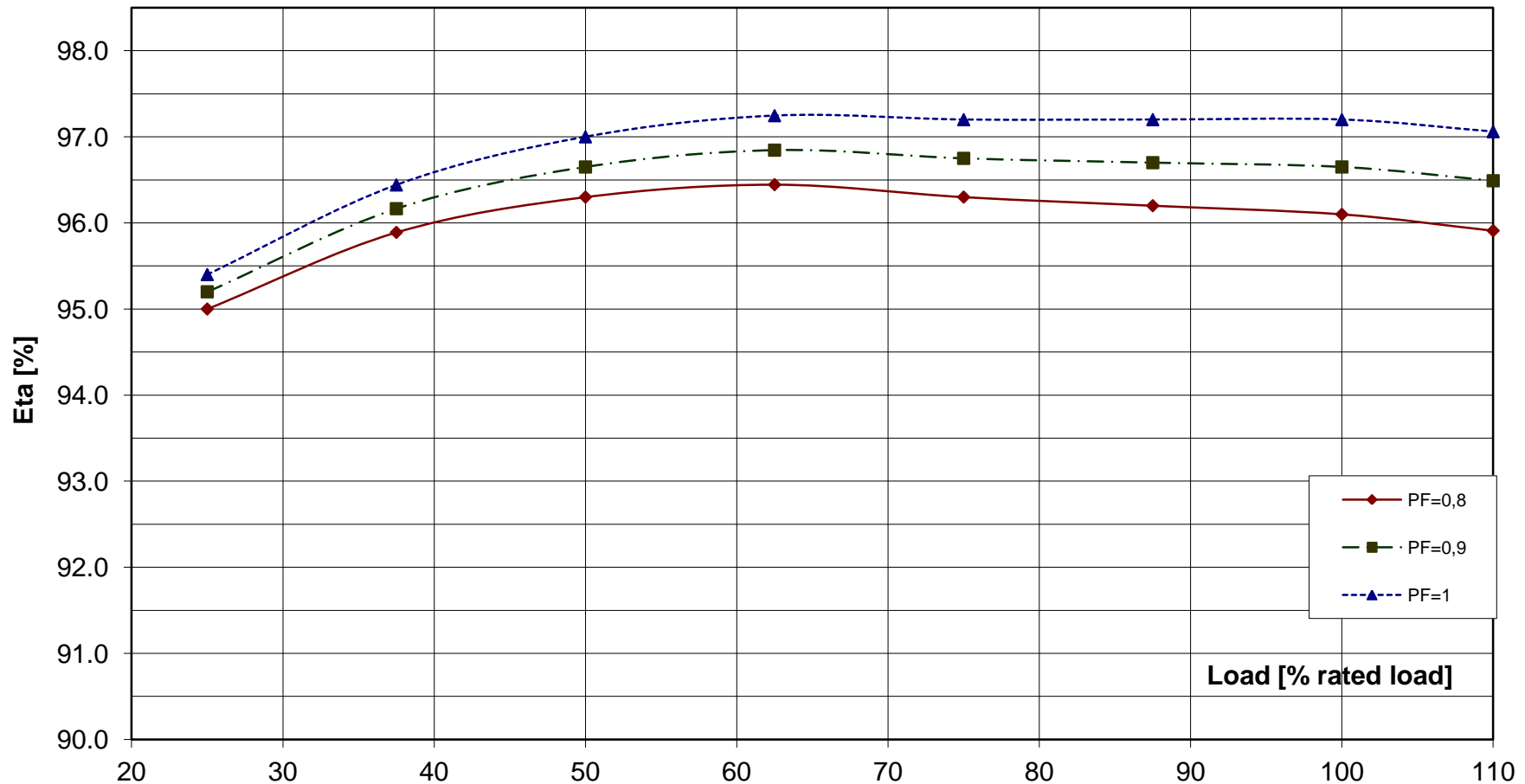
Short circuit data:			
Initial short circuit current (3-phase):	I_k''	28467 A	
Max. peak current (3-phase):	I_s	72465 A	
Sustained short circuit current:	I_k	12298 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M_{k2}	163.2 kNm	
	M_{k3}	97.9 kNm	
Max. faulty synchron moment:	M_f	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: 1725 kVA (corresponds to 60,73 % from 2840 kVA) for Power factor 0.4 15% transient voltage drop	Power: 2840 kVA Power factor: 0.8 transient voltage drop: -19.8 %

Remarks:

Alternator :	DSG 86 L1/4		
Rated output [kVA]	2840	Rated power factor:	0.8
Rated frequency [Hz]	50	Rated speed [rpm]	1500
			Rated voltage [kV]: 0.4

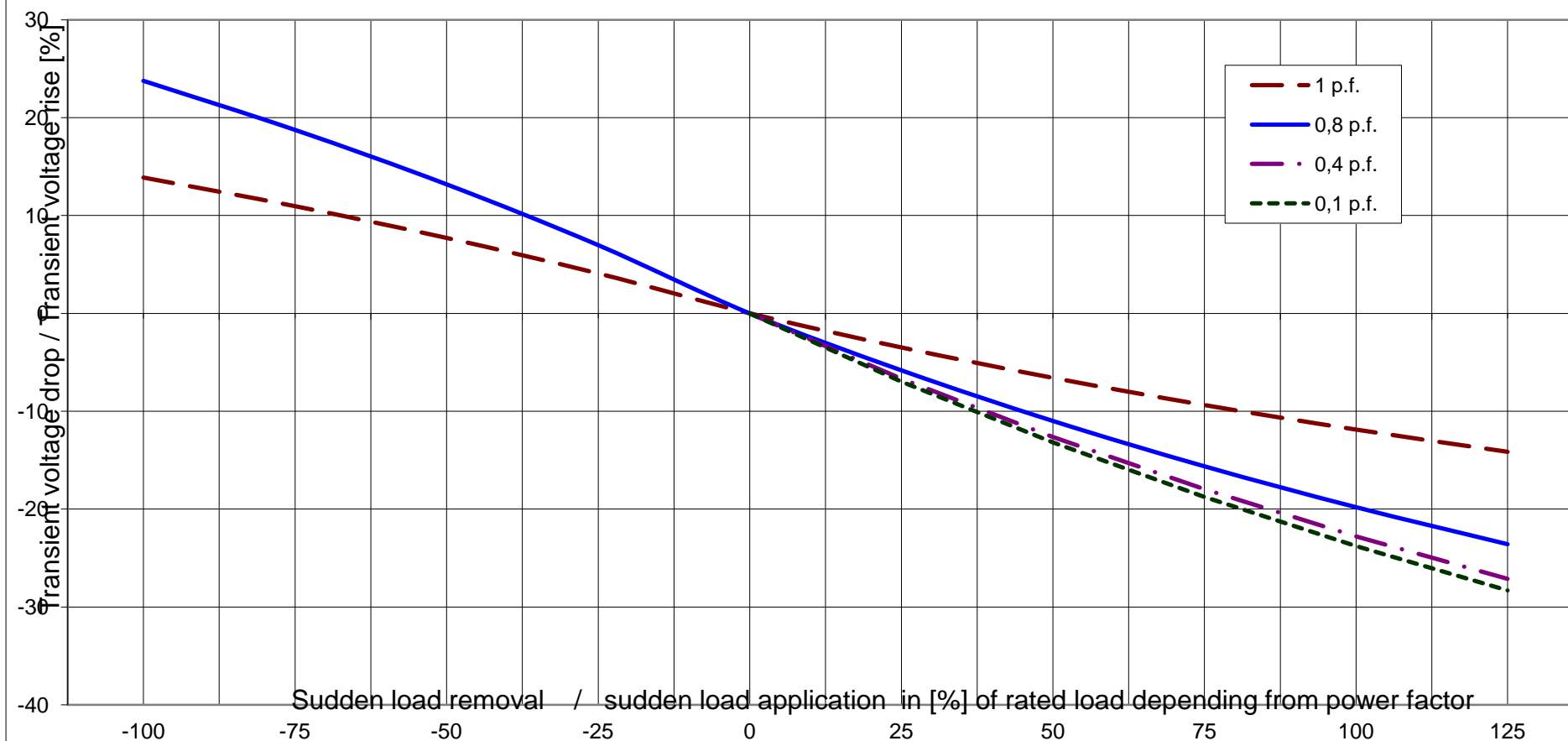
Wirkungsgrad-Kennlinie - Efficiency Curve



Alternator : DSG 86 L1/4

Rated output [kVA]	2840	Rated power factor:	0.8	Rated voltage [kV]:	0.4
Rated frequency [Hz]	50	Rated speed [rpm]	1500		

Transient Voltage rise or drop for sudden load removal or application



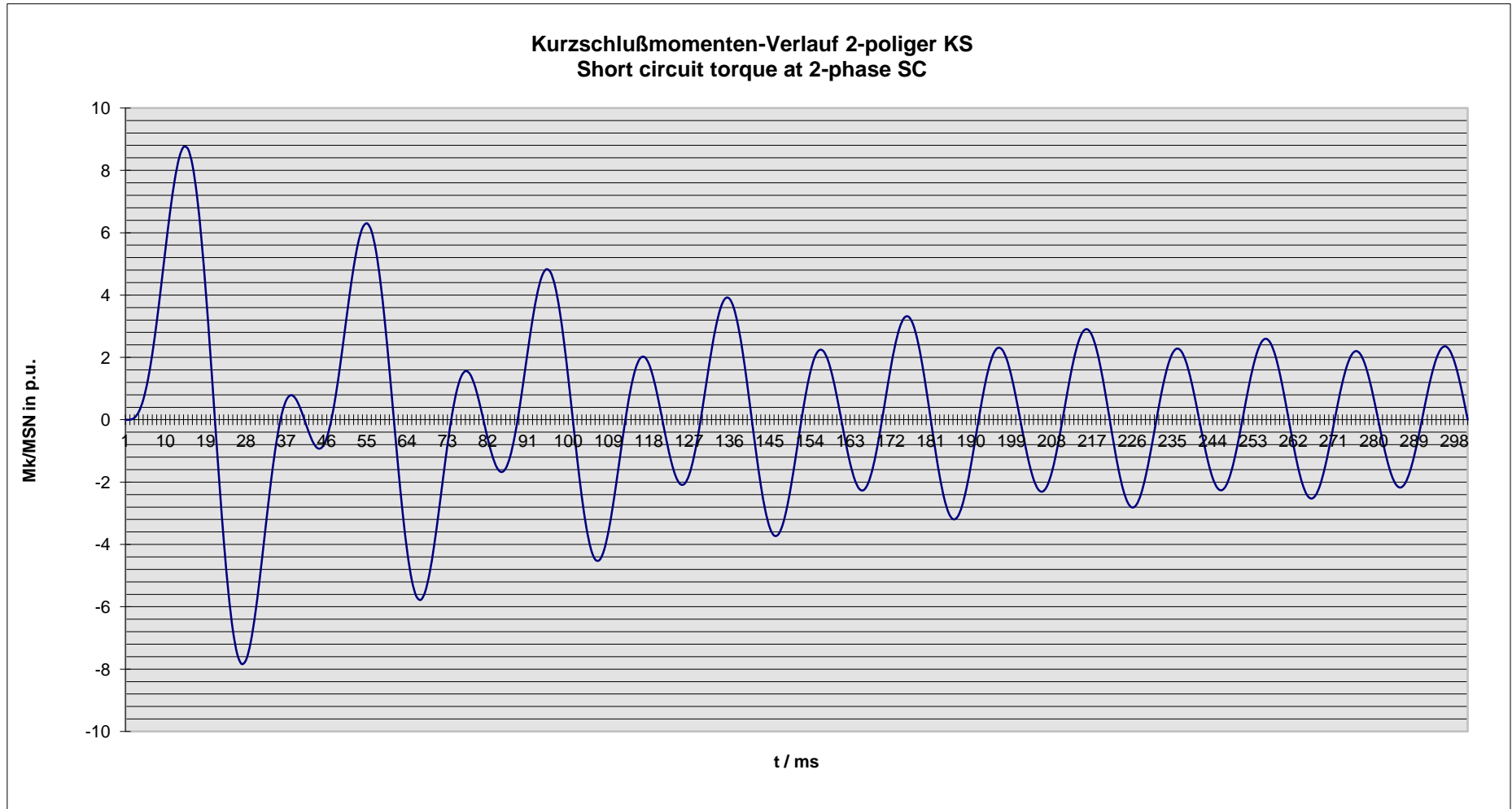


Technisches Datenblatt - Diagramme
Technical data sheet - Diagrams

ING-FCD-0112

Alternator :	DSG 86 L1/4			
Rated output [kVA]	2840	Rated power factor:	0.8	Rated voltage [kV]: 0.4
Rated frequency [Hz]	50	Rated speed [rpm]	1500	MSN related to kVA: 18.08 KNm

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



Nenn Daten / nominal data

DSG 86 L1/4

Leistung S_N : **2840 kVA**

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

Rating

p.f.

Spannung U_N : **0.40 kV**

Strom I_N : **4099 A**

Voltage

Current

Frequenz f : **50 Hz**

Drehzahl n : **1,500 min⁻¹**

Frequency

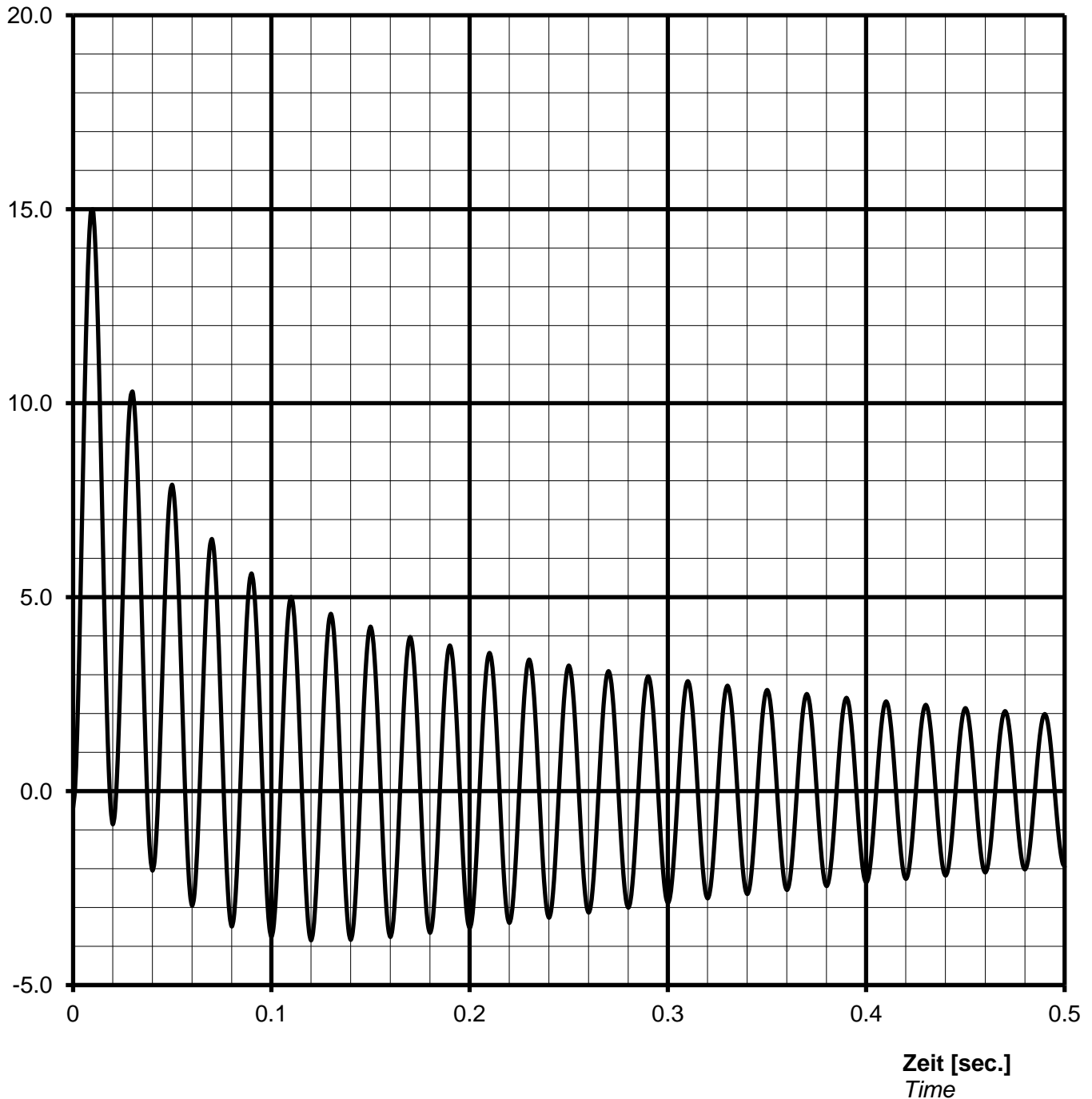
Speed

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

$I_{\text{peak}} =$ **61456 A** or **14.99 p.u.**

Nennwerten / nominal data

DSG 86 L1/4

Leistung S_N : **2840 kVA**

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

Rating

p.f.

Spannung U_N : **0.40 kV**

Strom I_N : **4099 A**

Voltage

Current

Frequenz f: **50 Hz**

Drehzahl n: **1500 min⁻¹**

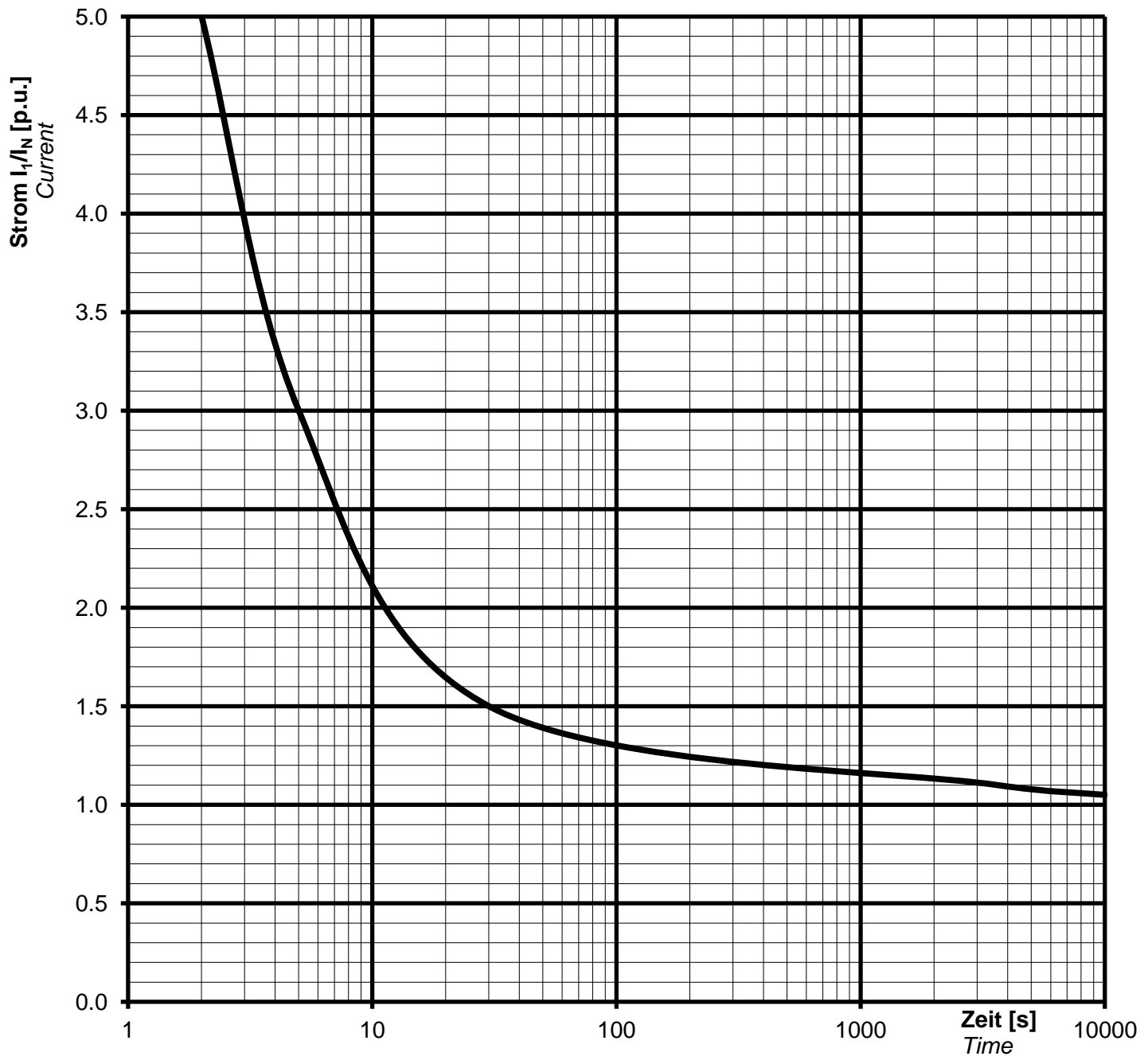
Frequency

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 : **2840 kVA**

p.f. **0.80**

Bemessungsleistung

Leistungsfaktor $\cos \varphi$:

Nominal voltage U_N : **0.40 kV**

Nominal current I_N : **4099 A**

Bemessungsspannung

Bemessungsstrom

Frequency f_N : **50 Hz**

Speed n : **1500 min⁻¹**

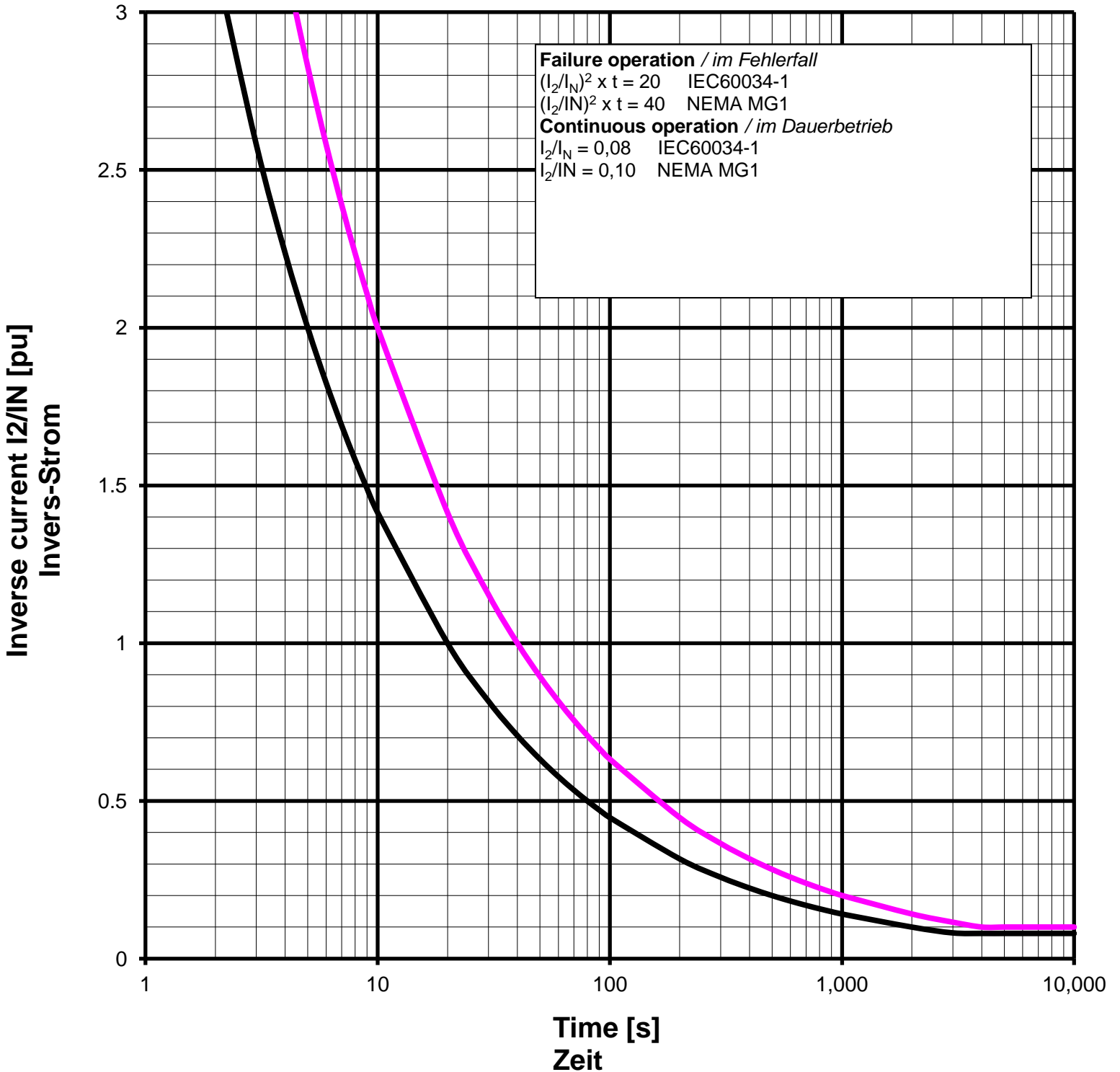
Frequenz

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

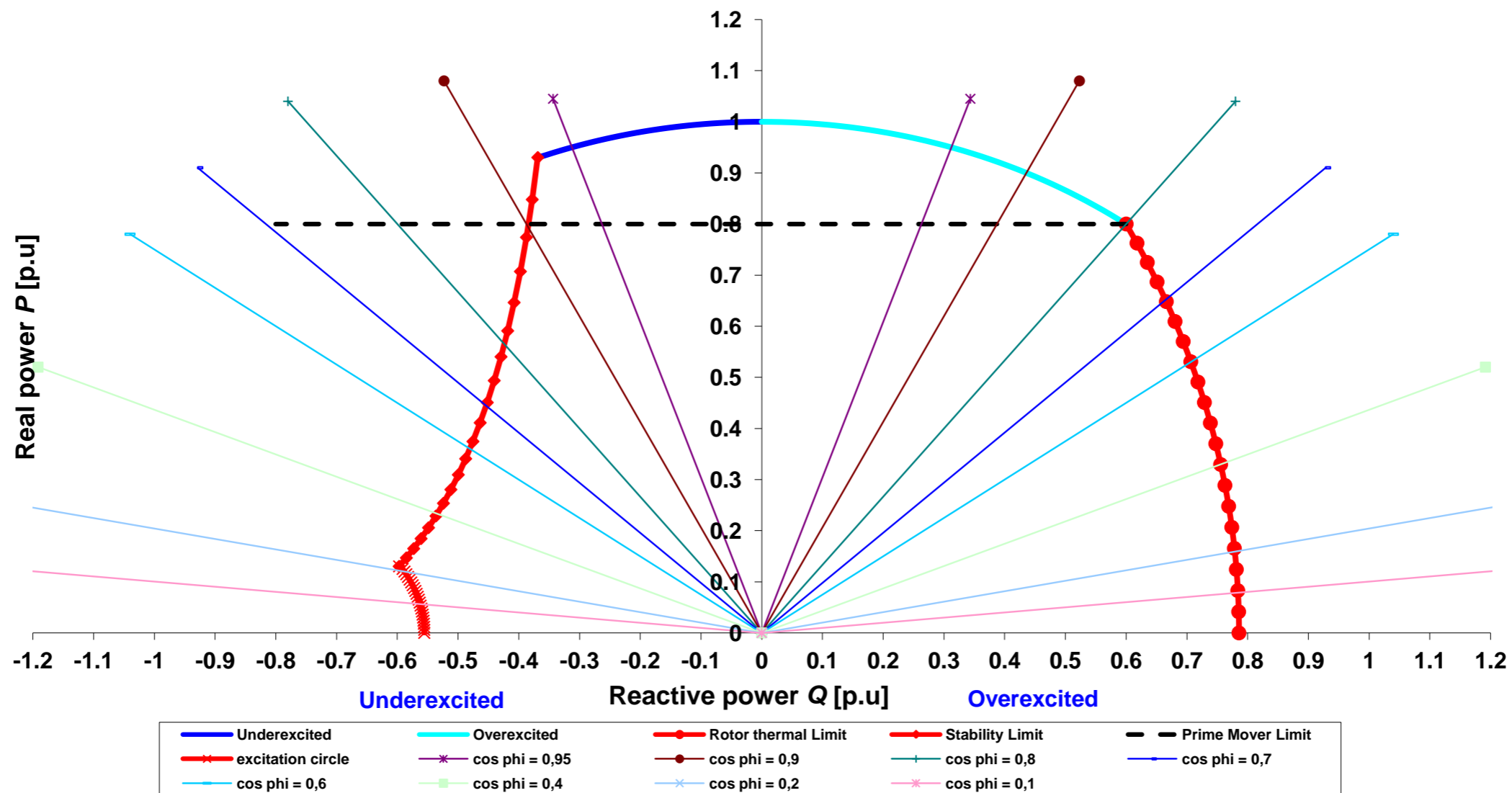
TYPE

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.:

