



Technical Data Sheet for AvK-Alternators

FM 7.3-5

Date:	30/09/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	DSG086L1_6_60_480

Object data:

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

Generator data:

Generator:	DSG 86 L1/6	Poles:	6	Standards:	IEC 60034
Rated power:	2292 kVA	1834 kWe	1912 kWm		
Power factor:	0.80				
Power at pf 1,0	1855 kVA	1855 kWe	1912 kWm		
Rated voltage:	0.48 kV				
Speed:	1200 1/min				
Frequency:	60 Hz			Voltage range / frequency range:	
Rated current:	2756.8 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.:	2.4 m³/s	Cooling water quantity:	n/a
Moment of inertia (I):	100 kgm²	Weight:	6100 Kg	Losses (environment):	78 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	95,7	95,9	96	95,8	93,9
Power factor 0.9	96,28	96,45	96,5	96,15	94,25
Power factor 1.0	96,85	97	97	96,5	94,6

Reactances and time constants

	unsaturated		saturated							
	unsaturated	saturated	unsaturated	saturated						
X_d	2.15	1.94 p.u.	X_q	1.08	1.06 p.u.	$T_{d0'}$	2.51 s	$T_{d0''}$	0.02679 s	
X_d'	0.250	0.250 p.u.	X_q'	1.08	1.06 p.u.	$T_{d'}$	0.29 s	$T_{q0'}$	0.3 s	
X_d''	0.154	0.140 p.u.	X_q''	0.154	0.154 p.u.	$T_{d''}$	0.015 s	$T_{q0''}$	0.21039 s	
X_2	0.162	0.147 p.u.	X_0	0.046	0.042 p.u.	T_a	0.045 s	$T_{q'}$	0.3 s	
X_{1s}	n.a.	0.084 p.u.						$T_{q''}$	0.03 s	
Short circuit ratio saturated:	0.52		Z_n 0.101 Ohm							

Short circuit data:

Initial short circuit current (3-phase):	I_k''	19692 A	
Max. peak current (3-phase):	I_s	50128 A	
Sustained short circuit current:	I_k	8271 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M_{k2}	169.4 kNm	
	M_{k3}	101.6 kNm	
Max. faulty synchron moment:	M_f	364.2 kNm	
Rated kVA torque:	M_{SN}	18.24 kNm	
Rated torque	M_N	14.59 kNm	
Shaft torque	M_{Sh}	15.21 kNm	

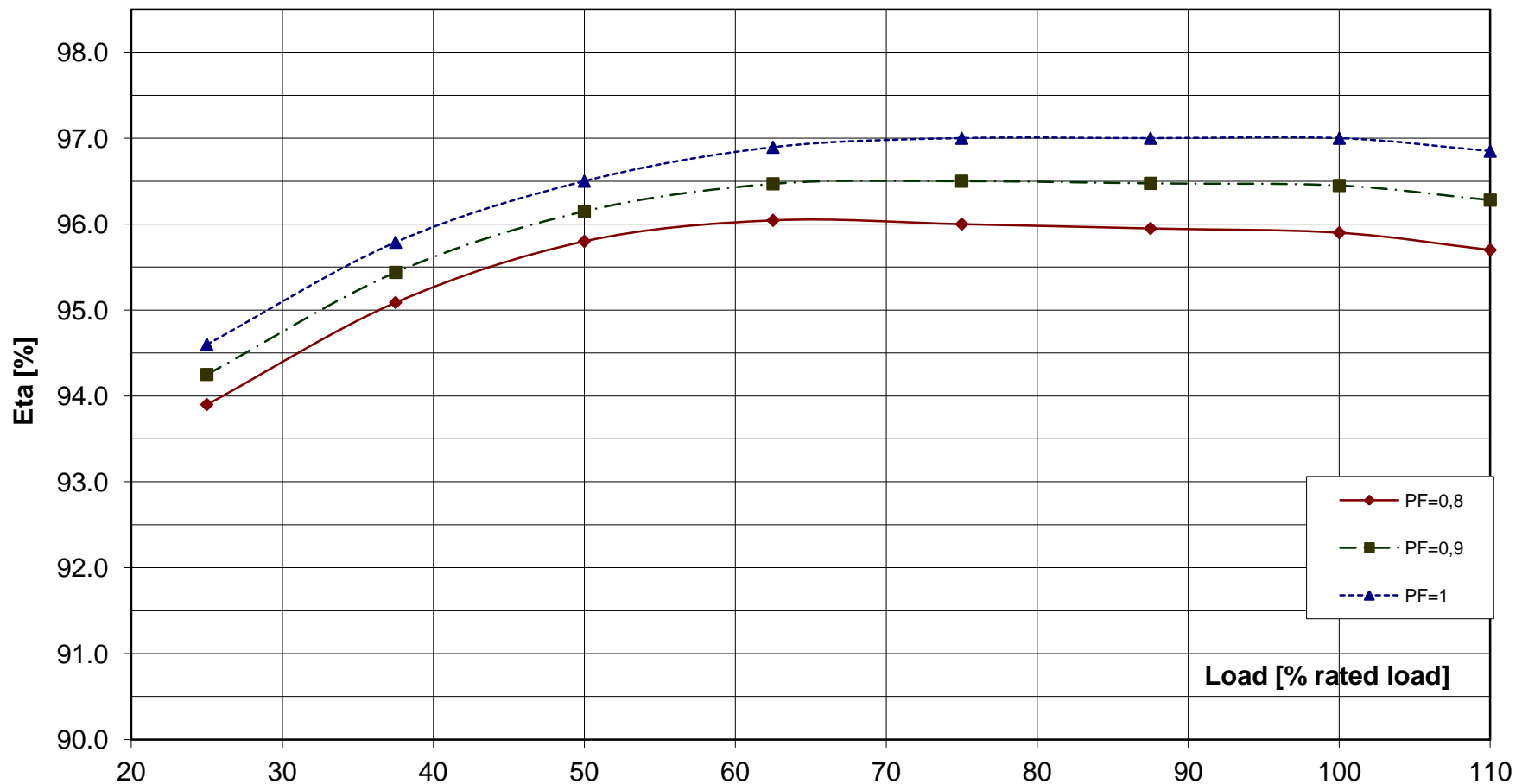
Load application:

max. load application: 1375 kVA (corresponds to 60 % from 2292 kVA) for Power factor 0.4 15% transient voltage drop	Power: 2292 kVA Power factor: 0.8 transient voltage drop: -20.0 %
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Remarks:

Alternator :	DSG 86 L1/6			
Rated output [kVA]	2292	Rated power factor:	0.8	Rated voltage [kV]: 0.48
Rated frequency [Hz]	60	Rated speed [rpm]	1200	

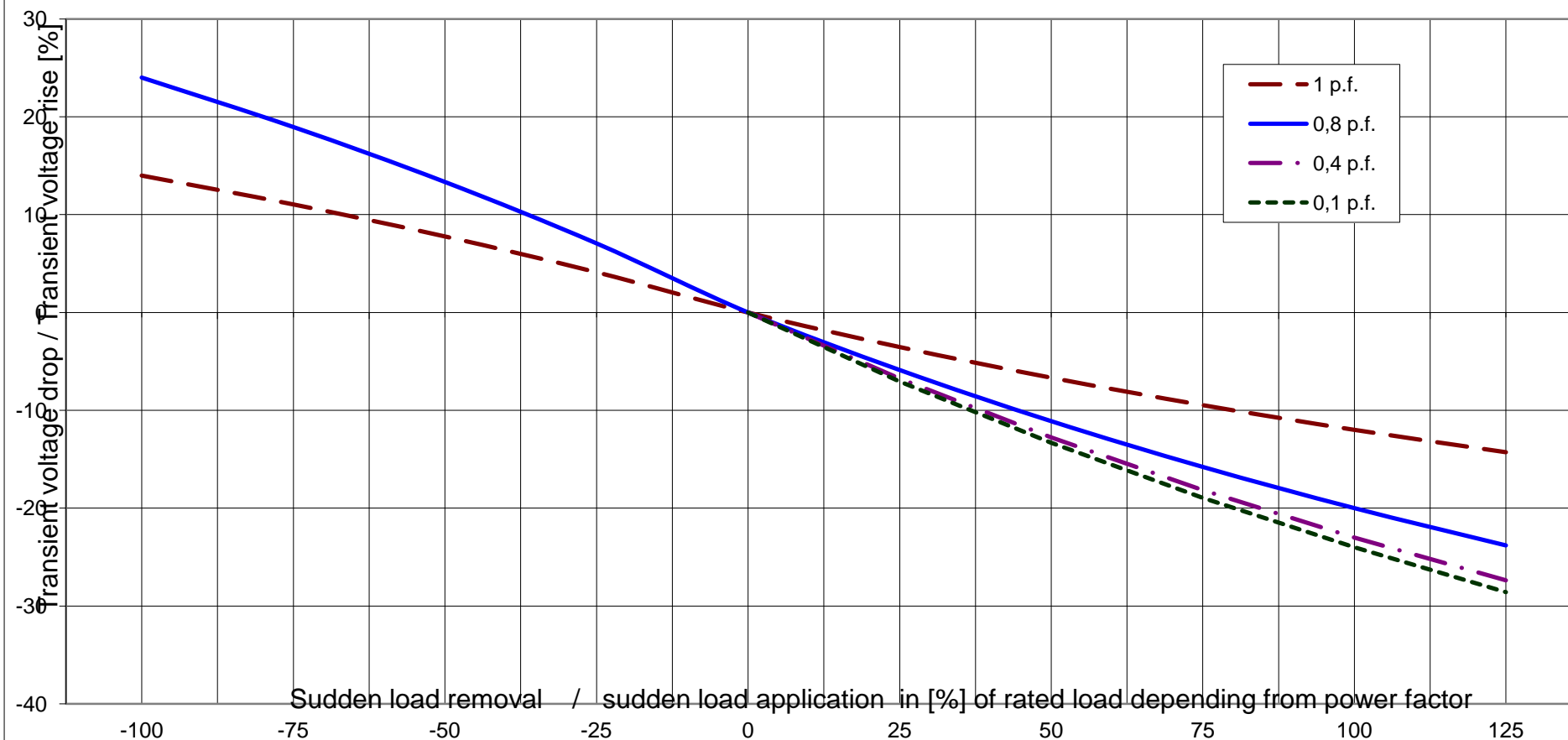
Wirkungsgrad-Kennlinie - Efficiency Curve



Alternator : DSG 86 L1/6

Rated output [kVA]	2292	Rated power factor:	0.8	Rated voltage [kV]:	0.48
Rated frequency [Hz]	60	Rated speed [rpm]	1200		

Transient Voltage rise or drop for sudden load removal or application



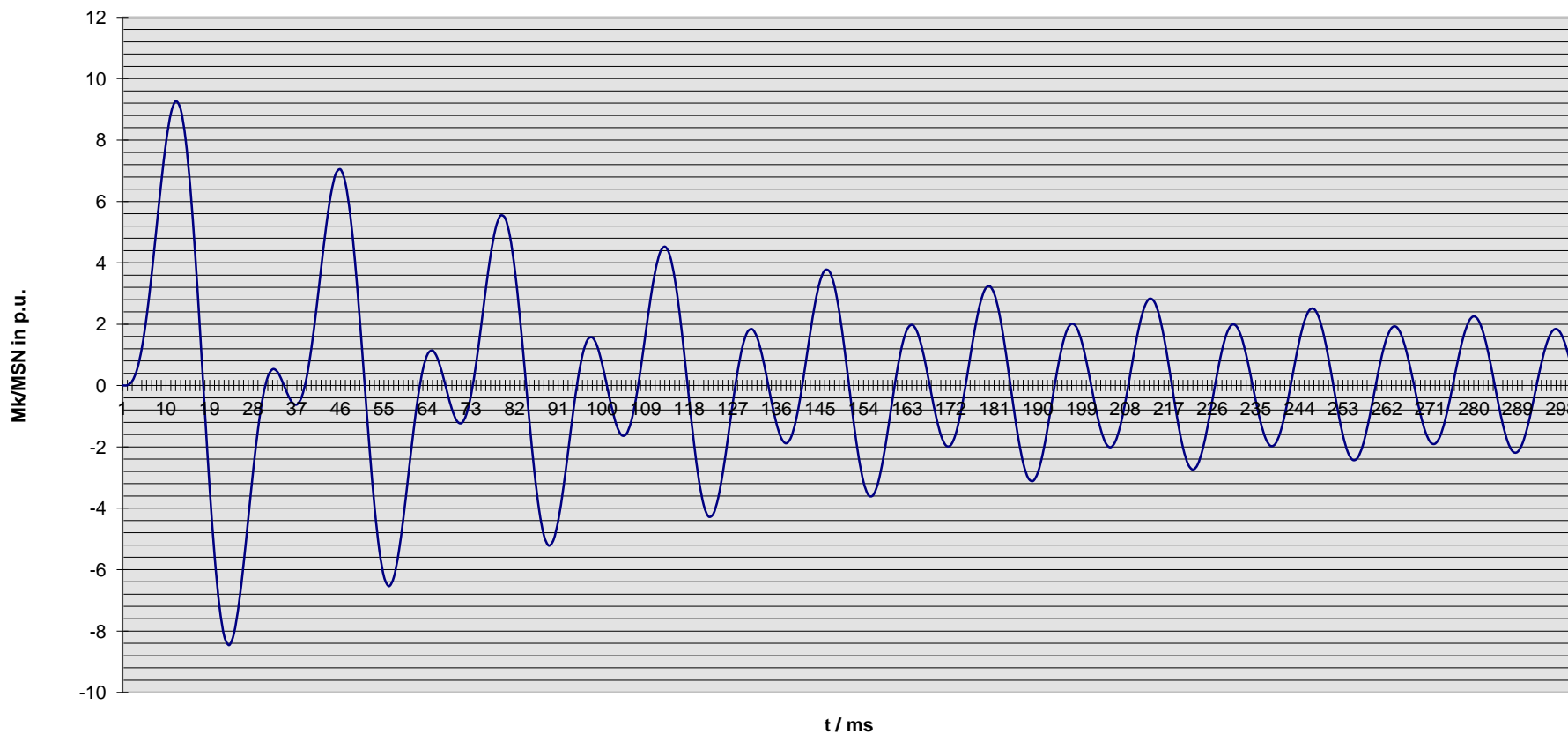


Technisches Datenblatt - Diagramme
Technical data sheet - Diagrams

ING-FCD-0112

Alternator :	DSG 86 L1/6			
Rated output [kVA]	2292	Rated power factor:	0.8	Rated voltage [kV]: 0.48
Rated frequency [Hz]	60	Rated speed [rpm]	1200	MSN related to kVA: 18.24 KNm

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



Nenndaten / nominal data

DSG 86 L1/6

Leistung S_N : **2292 kVA**

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

Rating

p.f.

Spannung U_N : **0.48 kV**

Strom I_N : **2757 A**

Voltage

Current

Frequenz f : **60 Hz**

Drehzahl n : **1,200 min⁻¹**

Frequency

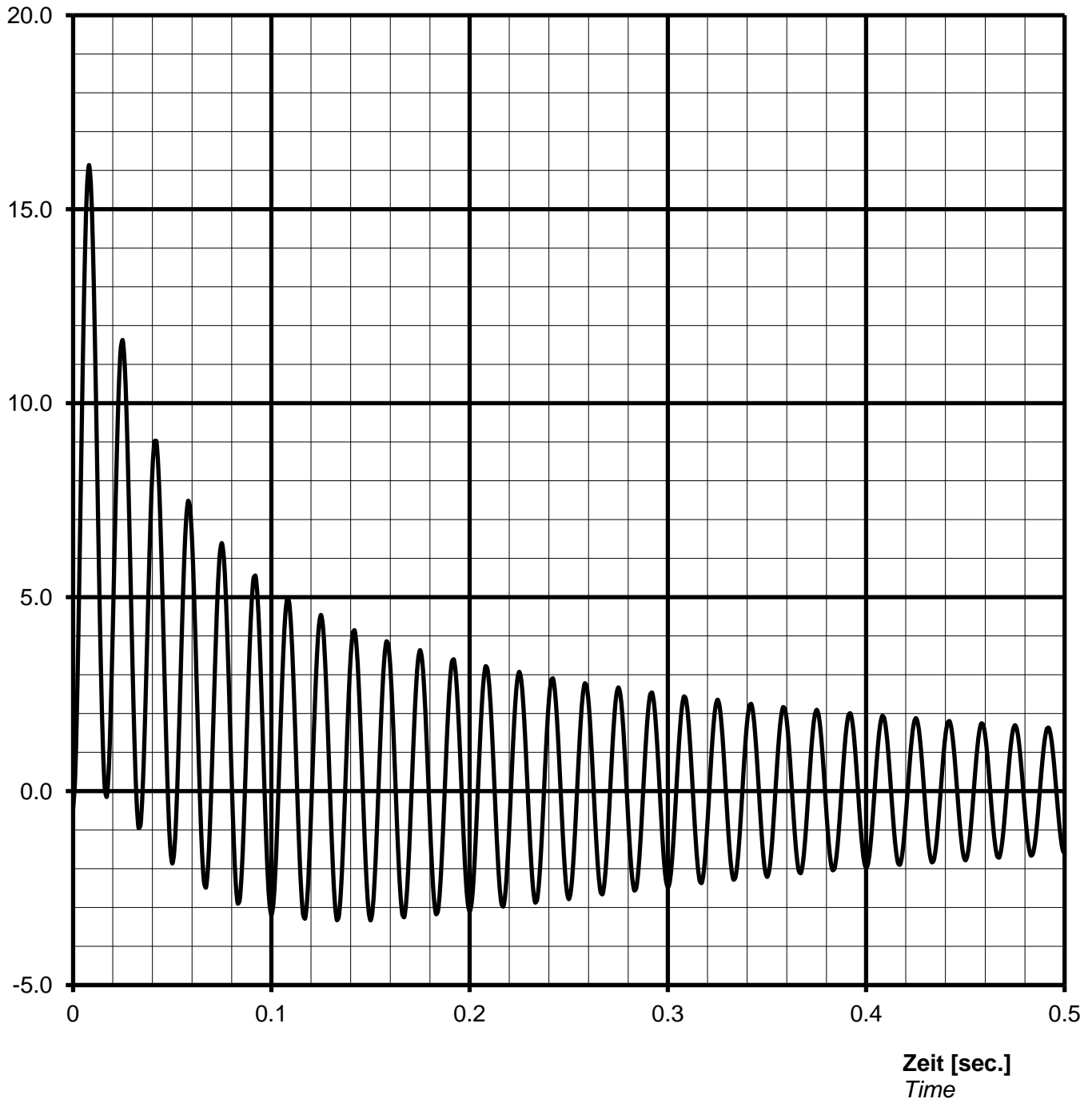
Speed

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 $I_{\text{peak}} =$ **44492 A** or **16.14 p.u.**

Nennwerten / nominal data

DSG 86 L1/6

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

Rating

p.f.

Spannung U_N : **0.48 kV**

Strom I_N : **2757 A**

Voltage

Current

Frequenz f: **60 Hz**

Drehzahl n: **1200 min⁻¹**

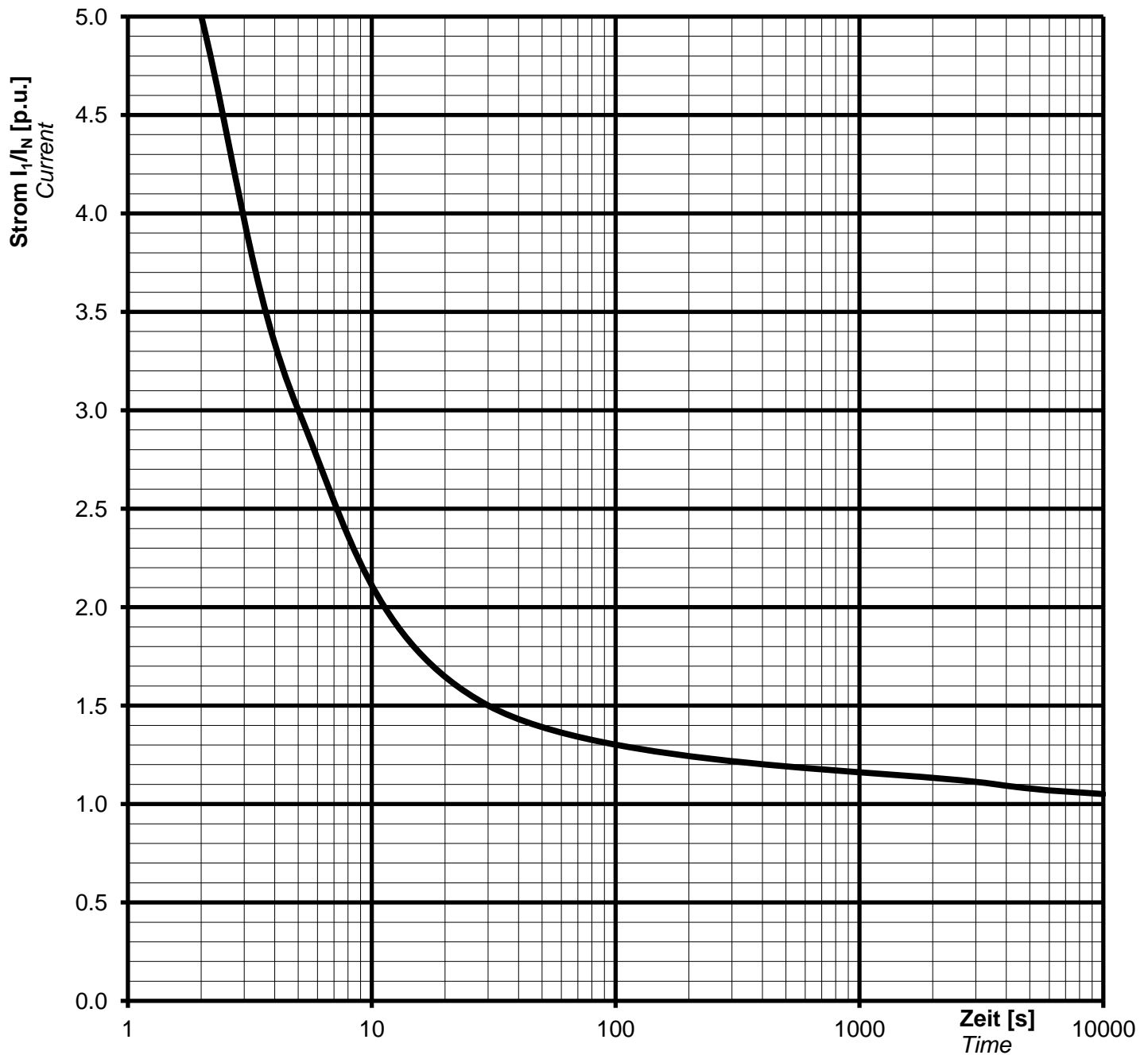
Frequency

Speed

Schutzart **IP23**

Protection

Überlast Kennlinie Overload capability



Notizen / remarks:

Strom / Zeit Kriterien:

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

Current/time characteristics:

$$1,5 \cdot I_N \text{ for } 30 \text{ s}$$

$$1,1 \cdot I_N \text{ for } 1 \text{ h in } 6 \text{ h}$$

Nenndaten / nominal data

DSG 86 L1/6

Rating S_N : **2292 kVA**

p.f. **0.80**

Bemessungsleistung

Leistungsfaktor $\cos \varphi$:

Nominal voltage U_N : **0.48 kV**

Nominal current I_N : **2757 A**

Bemessungsspannung

Bemessungsstrom

Frequency f_N : **60 Hz**

Speed n : **1200 min⁻¹**

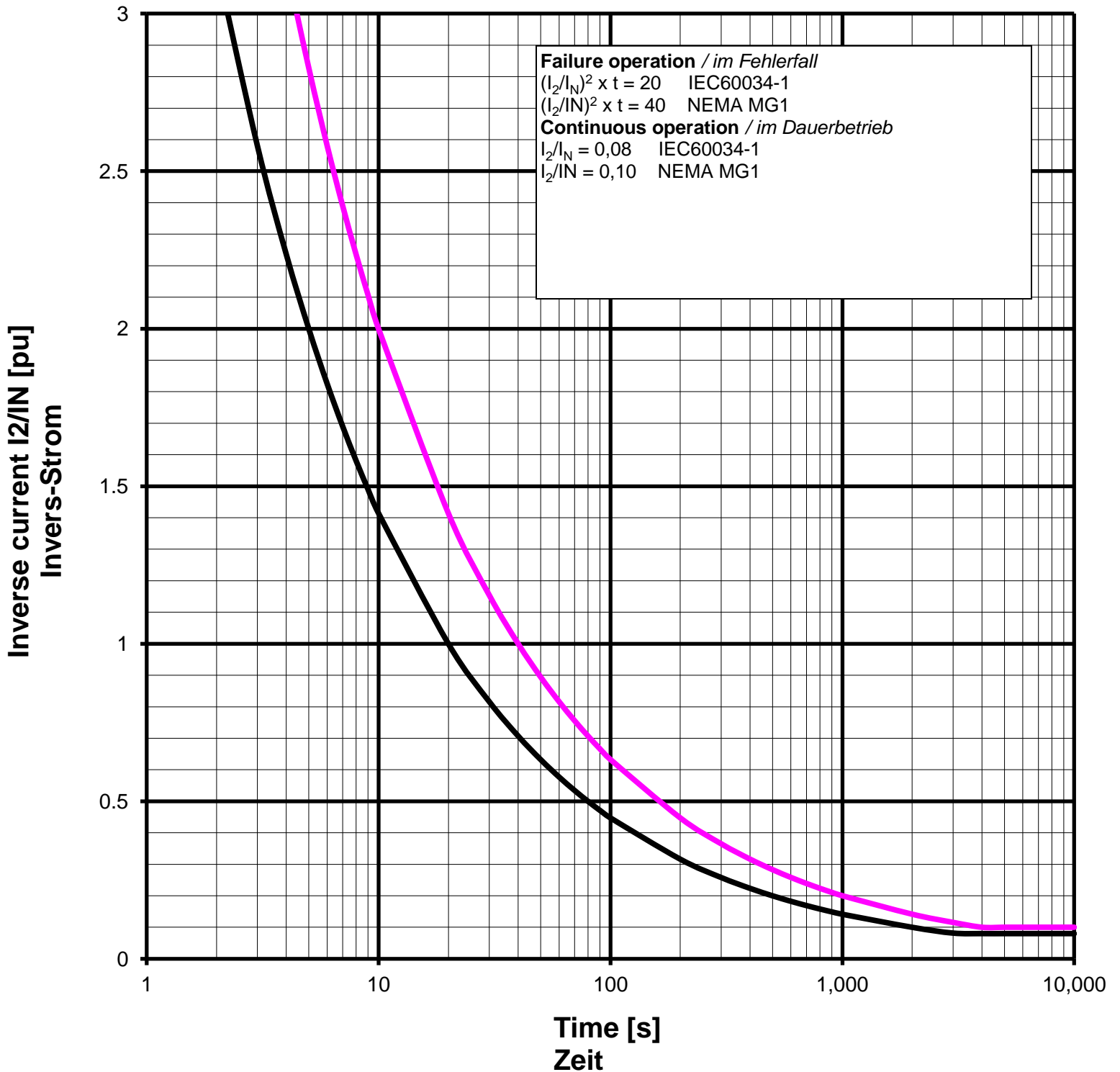
Frequenz

Drehzahl

Protection: **IP23**

Schutzart

Inverse current or unbalanced negative sequence current



Remarks / Notizen:



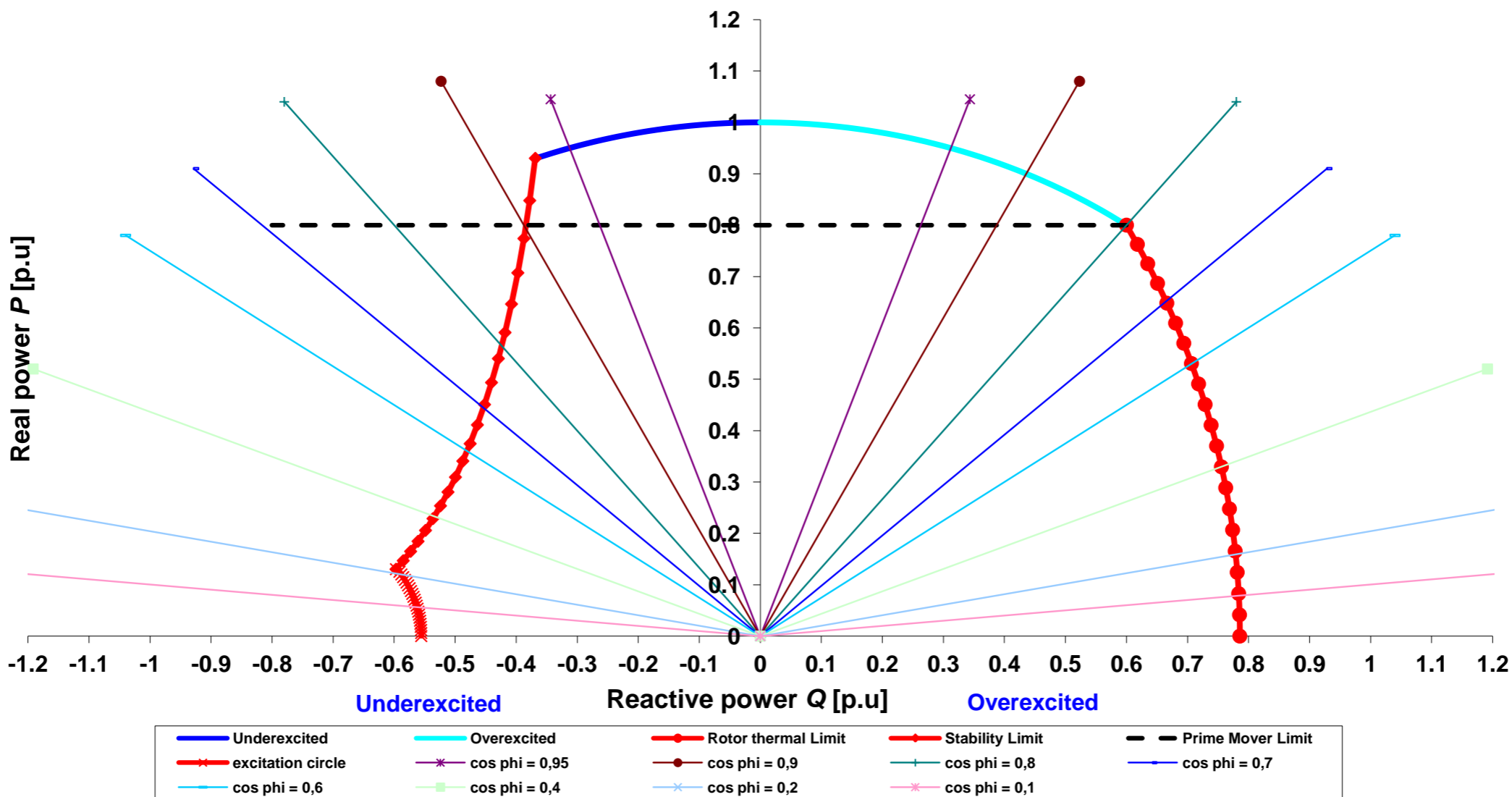
TYPE

DSG 86 L1/6

Projekt:

Order Nr.:

Capability (P-Q) Diagram

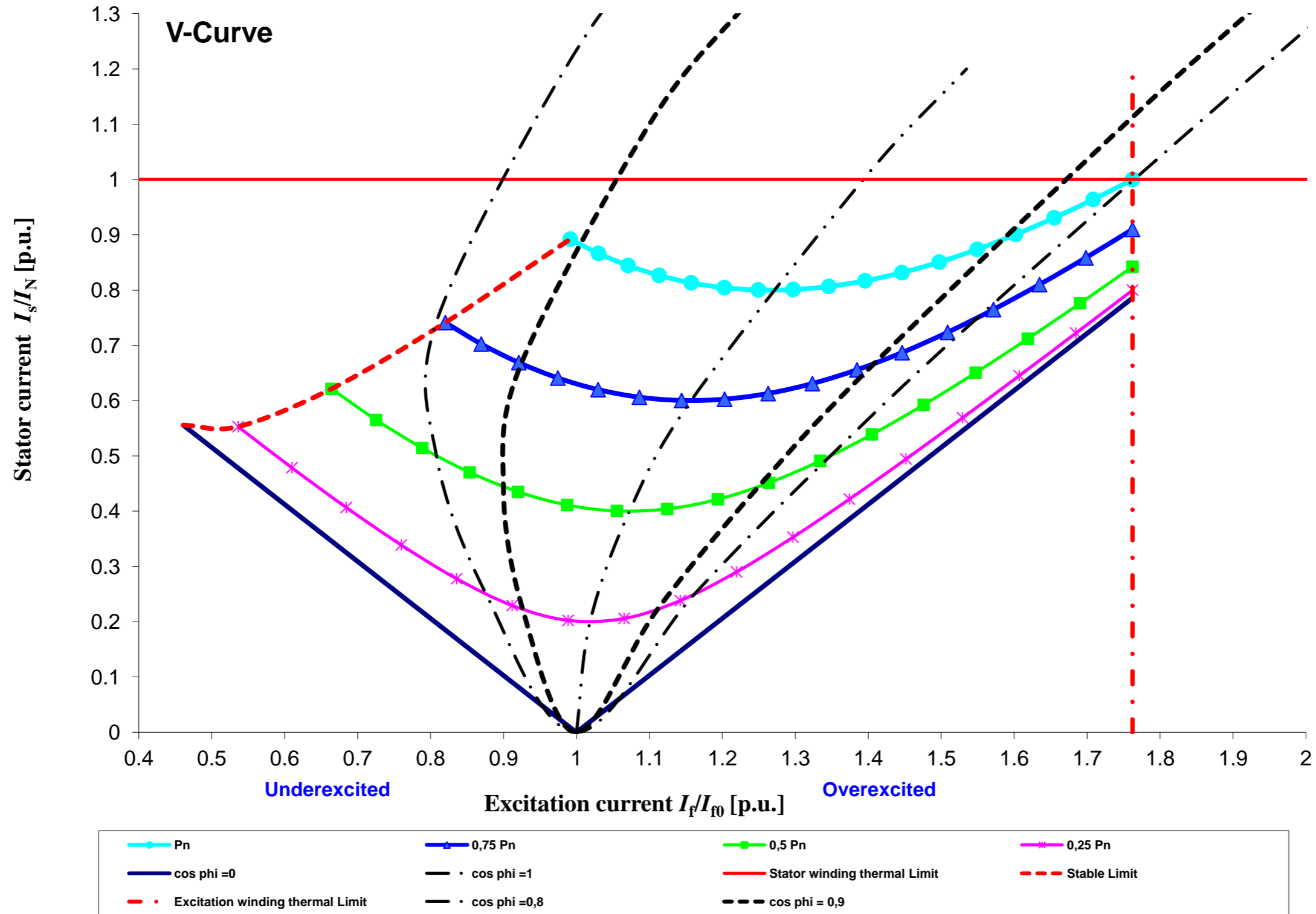


Cummins Generator Technologies

Datum / date:

30/09/2013

TYPE	DSG 86 L1/6	Projekt:		Order Nr.:	
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