



Technical Data Sheet for AvK-Alternators

FM 7.3-5

Date:	09/10/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	dig142d_4_60_6600

Object data:

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

Generator data:

Generator:	DIG 142 d/4	Poles:	4	Standards: IEC 60034
Rated power:	4600 kVA	3680 kWe	3789 kWm	
Power factor:	0.80			
Power at pf 1,0	3702 kVA	3702 kWe	3789 kWm	
Rated voltage:	6.6 kV			
Speed:	1800 1/min			
Frequency:	60 Hz			Voltage range / frequency range:
Rated current:	402.4 A			Zone A according IEC 60034-1 (dU = +/-5%, df = +/-2%)
Winding pitch:	ca. 5/6			
Insulation class:	Stator: Class F	Rotor: Class F		Temperature rise: F
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.:	5.0 m³/s	Cooling water quantity: n/a
Moment of inertia (I):	165 kgm²	Weight:	9850 Kg	Losses (environment): 109 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	96,99	97,13	97,06	96,56	94,51
Power factor 0.9	97,29	97,42	97,28	96,7	94,62
Power factor 1.0	97,6	97,71	97,49	96,84	94,73

Reactances and time constants

	unsaturated		saturated						
	unsaturated	saturated	unsaturated	saturated					
X_d	2.94	2.65 p.u.	X_q	1.47	1.44 p.u.	$T_{d0'}$	3.6 s	$T_{d0''}$	0.0282 s
X_d'	0.258	0.258 p.u.	X_q'	1.47	1.44 p.u.	$T_{d'}$	0.32 s	$T_{q0'}$	0.4 s
X_d''	0.201	0.183 p.u.	X_q''	0.201	0.201 p.u.	$T_{d''}$	0.02 s	$T_{q0''}$	0.29254 s
X_2	0.211	0.192 p.u.	X_0	0.061	0.055 p.u.	T_a	0.12 s	$T_{q'}$	0.4 s
X_{1s}	n.a.	0.110 p.u.						$T_{q''}$	0.04 s
Short circuit ratio saturated:	0.38		Z_n 9.470 Ohm						

Short circuit data:

Initial short circuit current (3-phase):	I_k''	2199 A	
Max. peak current (3-phase):	I_s	5598 A	
Sustained short circuit current:	I_k	1207 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M_{k2}	173.4 kNm	
	M_{k3}	104.0 kNm	
Max. faulty synchron moment:	M_f	372.8 kNm	
Rated kVA torque:	M_{SN}	24.41 kNm	
Rated torque	M_N	19.53 kNm	
Shaft torque	MSh	20.11 kNm	

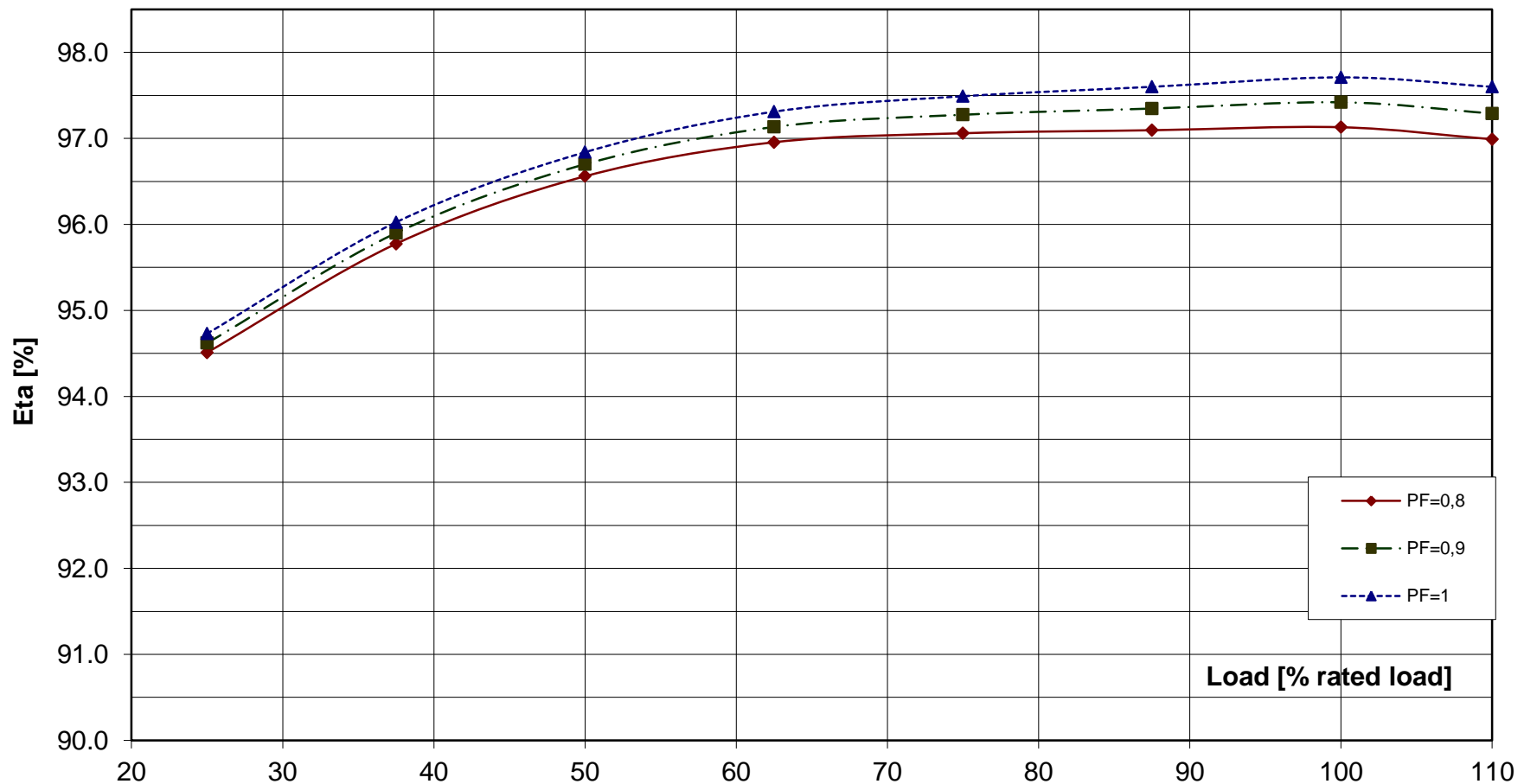
Load application:

max. load application: 2674 kVA (corresponds to 58,14 % from 4600 kVA) for Power factor 0.4 15% transient voltage drop	Power: 4600 kVA Power factor: 0.8 transient voltage drop: -20.5 %
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Remarks:

Alternator :	DIG 142 d/4		
Rated output [kVA]	4600	Rated power factor:	0.8
Rated frequency [Hz]	60	Rated speed [rpm]	1800
			Rated voltage [kV]: 6.6

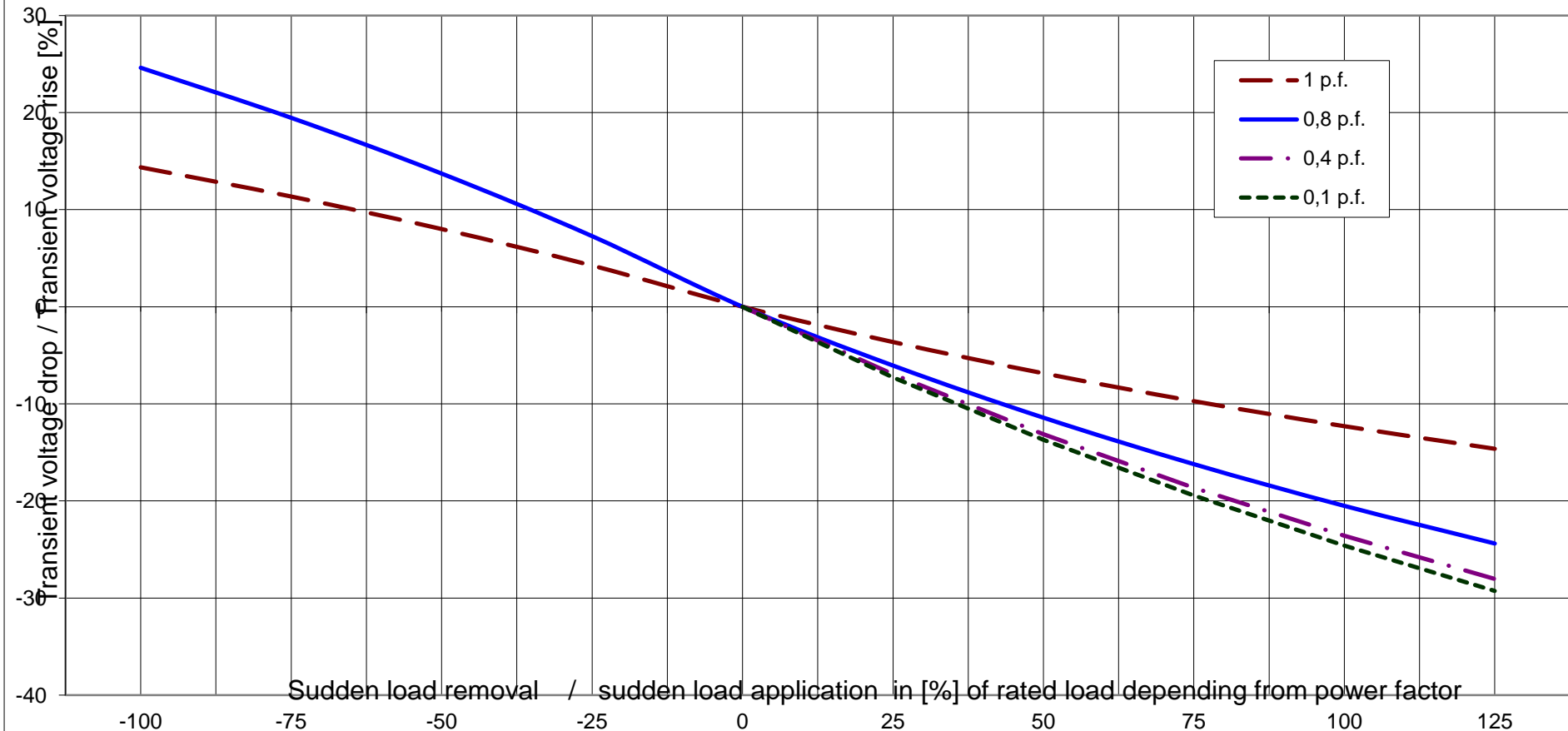
Wirkungsgrad-Kennlinie - Efficiency Curve



Alternator : DIG 142 d/4

Rated output [kVA]	4600	Rated power factor:	0.8	Rated voltage [kV]:	6.6
Rated frequency [Hz]	60	Rated speed [rpm]	1800		

Transient Voltage rise or drop for sudden load removal or application



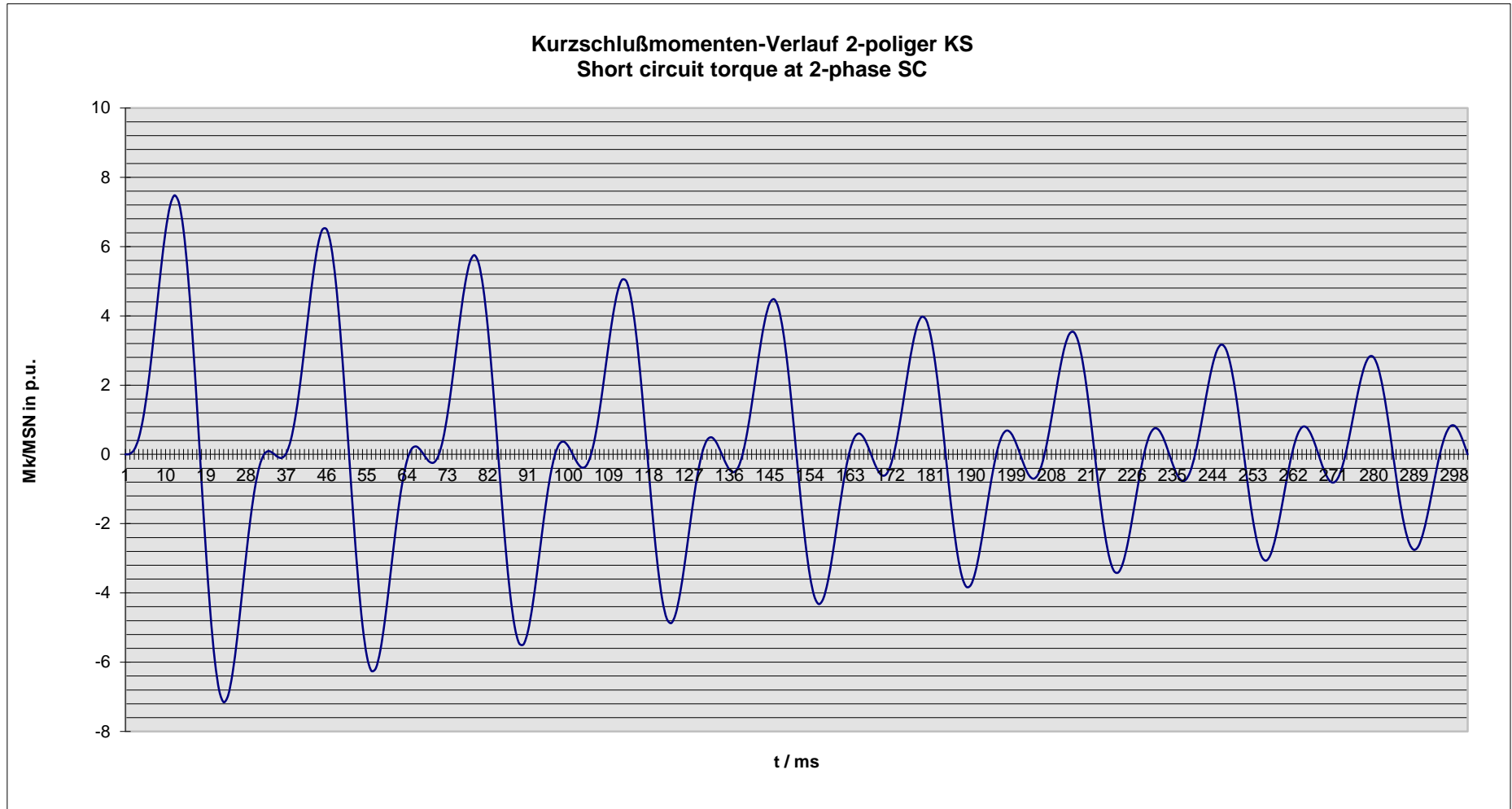


Technisches Datenblatt - Diagramme
Technical data sheet - Diagrams

ING-FCD-0112

Alternator :	DIG 142 d/4			
Rated output [kVA]	4600	Rated power factor:	0.8	Rated voltage [kV]: 6.6
Rated frequency [Hz]	60	Rated speed [rpm]	1800	MSN related to kVA: 24.4 KNm

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



Nenndaten / nominal data

DIG 142 d/4

Leistung S_N : **4600** kVA

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

Rating

p.f.

Spannung U_N : **6.60** kV

Strom I_N : **402** A

Voltage

Current

Frequenz f : **60** Hz

Drehzahl n : **1,800** min⁻¹

Frequency

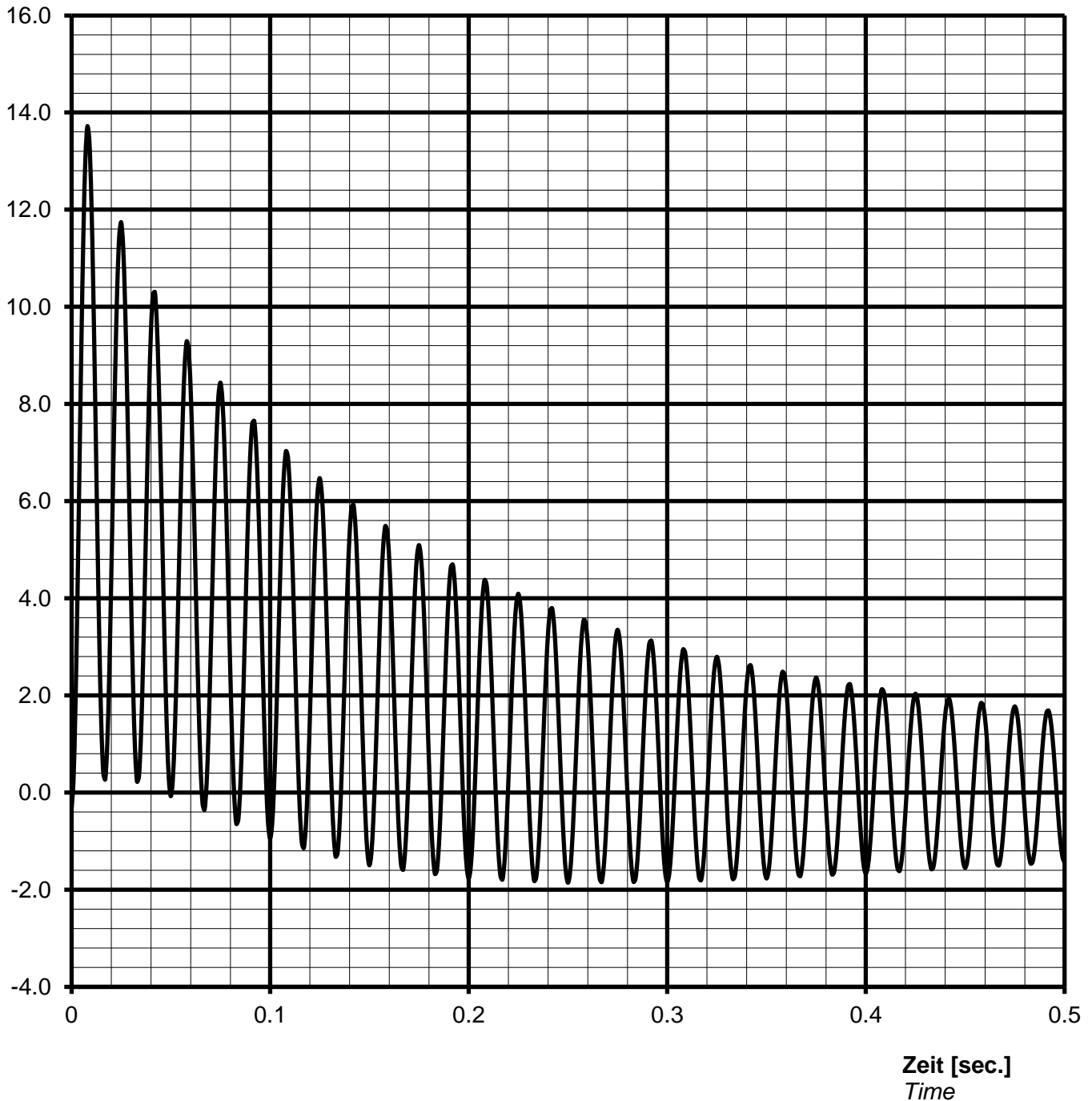
Speed

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 $I_{\text{peak}} =$ **5519 A** or **13.72 p.u.**

Nennwerten / nominal data

DIG 142 d/4

Leistung S_N : **4600** kVA

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

Rating

p.f.

Spannung U_N : **6.60** kV

Strom I_N : **402** A

Voltage

Current

Frequenz f: **60** Hz

Drehzahl n: **1800** min⁻¹

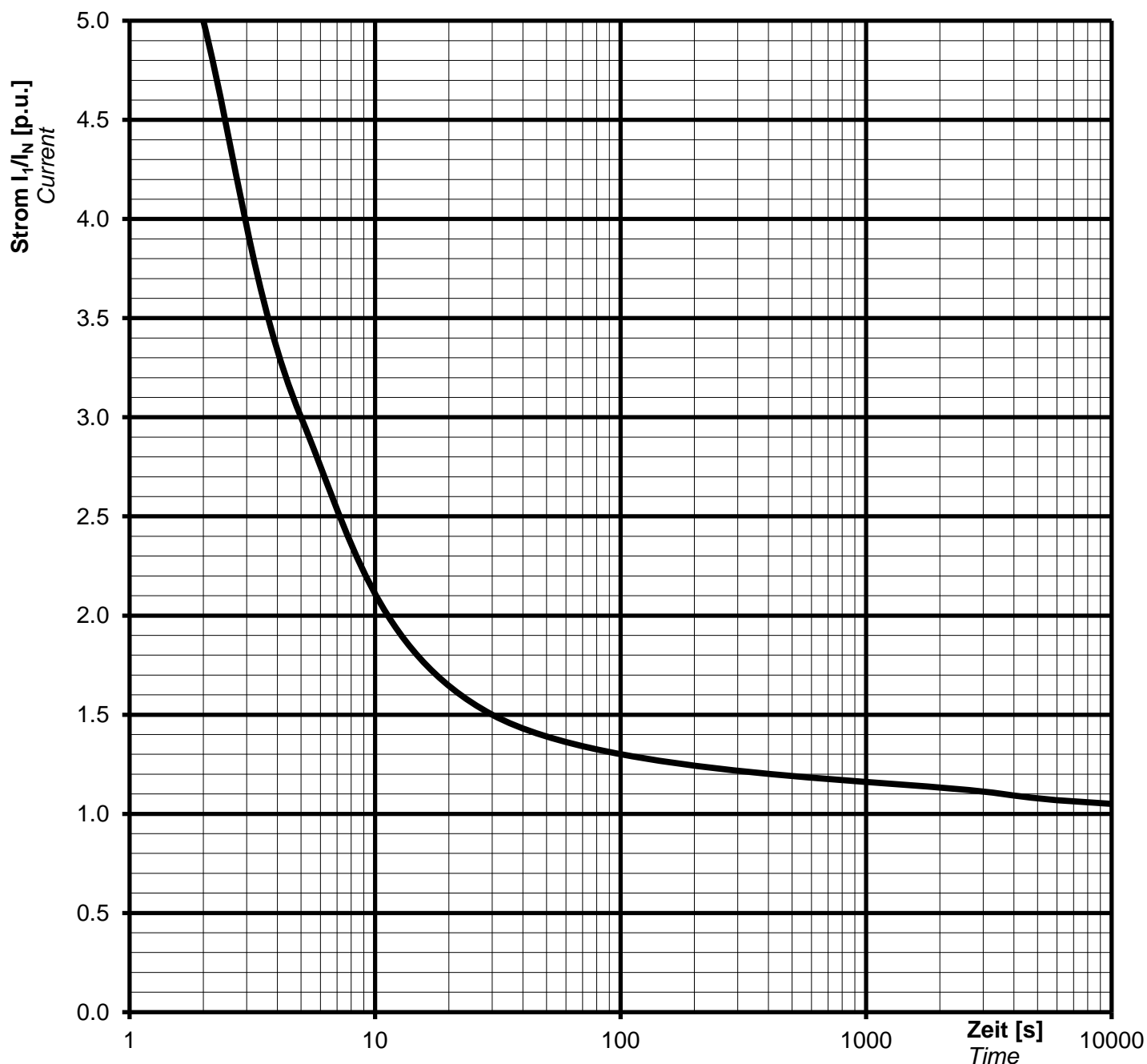
Frequency

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

DIG 142 d/4

Rating S_N : **4600 kVA**

p.f. **0.80**

Bemessungsleistung

Leistungsfaktor $\cos \varphi$:

Nominal voltage U_N : **6.60 kV**

Nominal current I_N : **402 A**

Bemessungsspannung

Bemessungsstrom

Frequency f_N : **60 Hz**

Speed n : **1800 min⁻¹**

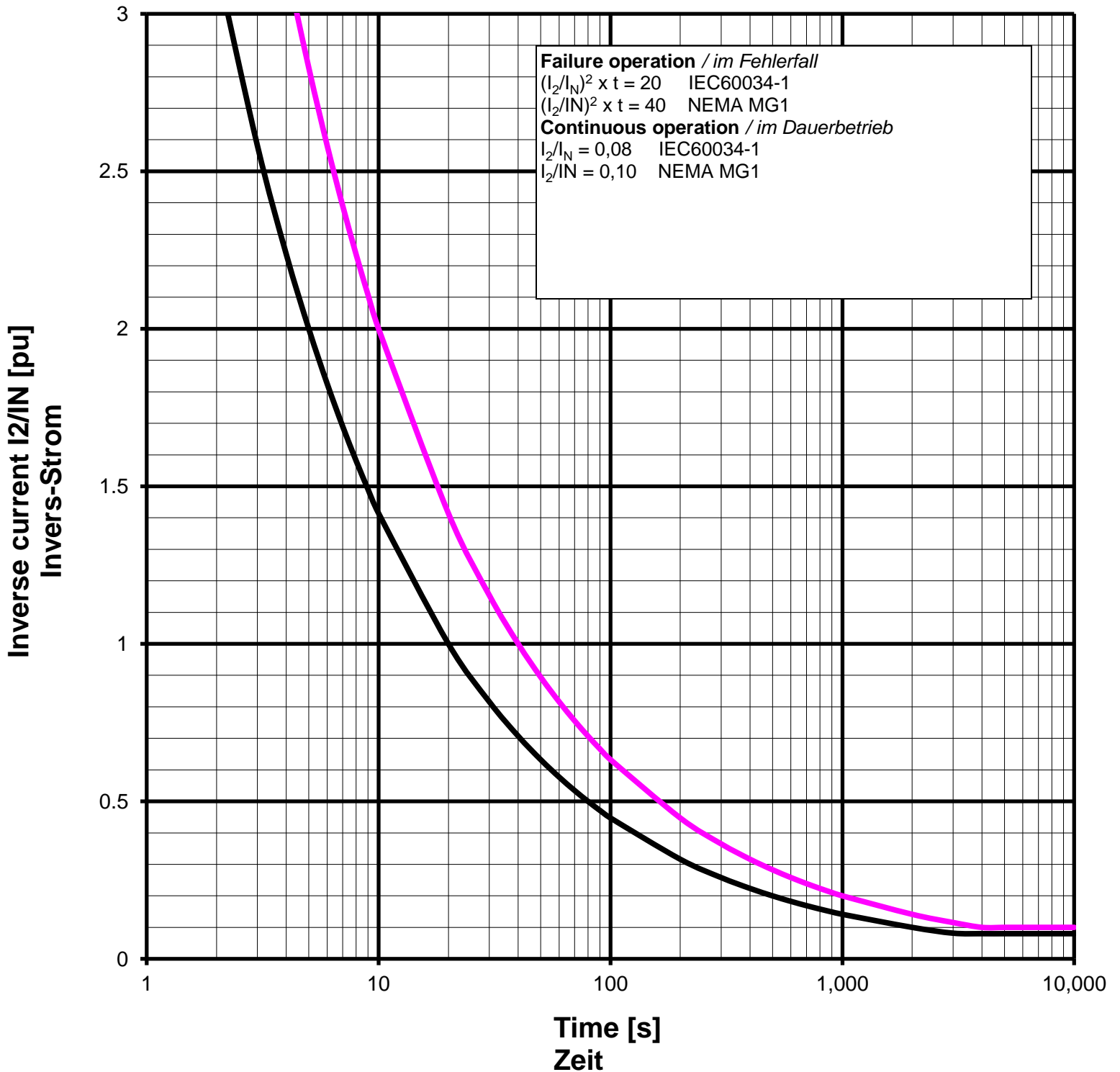
Frequenz

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

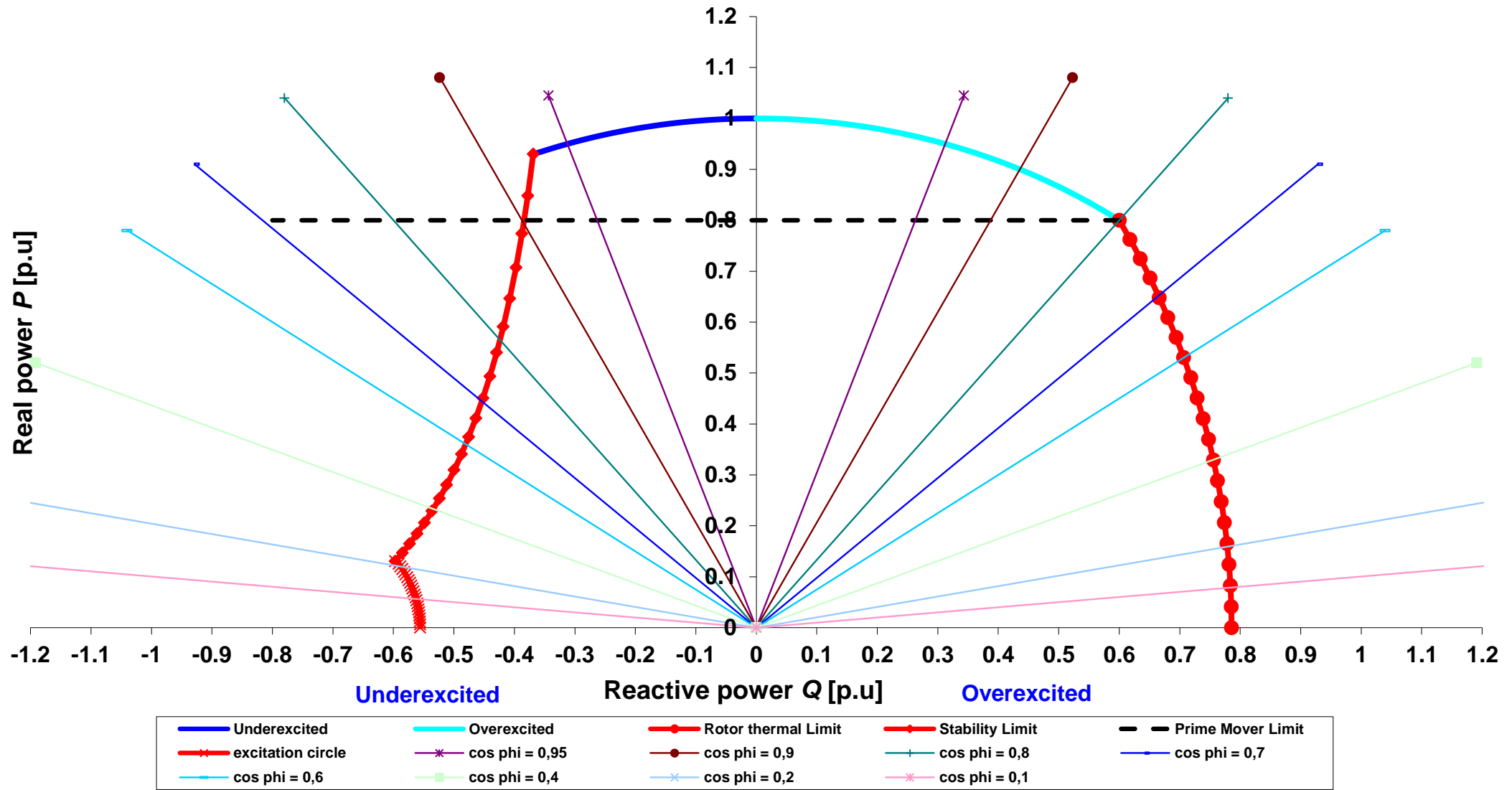
TYPE

DIG 142 d/4

Projekt:

Order Nr.:

Capability (P-Q) Diagram



Cummins Generator Technologies

Datum / date:

17/10/2013

