



Technical Data Sheet for AvK-Alternators

FM 7.3-5

Date:	09/10/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	dig142d_4_50_11000

Object data:

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

Generator data:

Generator:	DIG 142 d/4	Poles:	4	Standards:	IEC 60034
Rated power:	4050 kVA	3240 kWe	3344 kWm		
Power factor:	0.80				
Power at pf 1,0	3265 kVA	3265 kWe	3344 kWm		
Rated voltage:	11 kV				
Speed:	1500 1/min				
Frequency:	50 Hz			Voltage range / frequency range:	
Rated current:	212.6 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.:	4.2 m³/s	Cooling water quantity:	n/a
Moment of inertia (I):	165 kgm²	Weight:	9850 Kg	Losses (environment):	104 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	96,72	96,88	96,93	96,59	94,84
Power factor 0.9	97,12	97,26	97,22	96,79	94,99
Power factor 1.0	97,52	97,64	97,51	96,98	95,14

Reactances and time constants

	unsaturated		saturated			unsaturated		saturated					
X_d	2.68	2.41	p.u.	X_q	1.34	1.31	p.u.	$T_{d0'}$	3.6	s	$T_{d0''}$	0.02795	s
X_d'	0.239	0.239	p.u.	X_q'	1.34	1.31	p.u.	$T_{d'}$	0.32	s	$T_{q0'}$	0.4	s
X_d''	0.188	0.171	p.u.	X_q''	0.188	0.188	p.u.	$T_{d''}$	0.02	s	$T_{q0''}$	0.28511	s
X_2	0.198	0.180	p.u.	X_0	0.056	0.051	p.u.	T_a	0.12	s	$T_{q'}$	0.4	s
X_{1s}	n.a.	0.103	p.u.								$T_{q''}$	0.04	s

Short circuit ratio saturated:	0.41	Z_n	29.877	Ohm
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Short circuit data:

Initial short circuit current (3-phase):	I_k''	1243 A	
Max. peak current (3-phase):	I_s	3164 A	
Sustained short circuit current:	I_k	638 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M_{k2}	196.0 kNm	
	M_{k3}	117.6 kNm	
Max. faulty synchron moment:	M_f	421.4 kNm	
Rated kVA torque:	M_{SN}	25.79 kNm	
Rated torque	M_N	20.63 kNm	
Shaft torque	M_{Sh}	21.29 kNm	

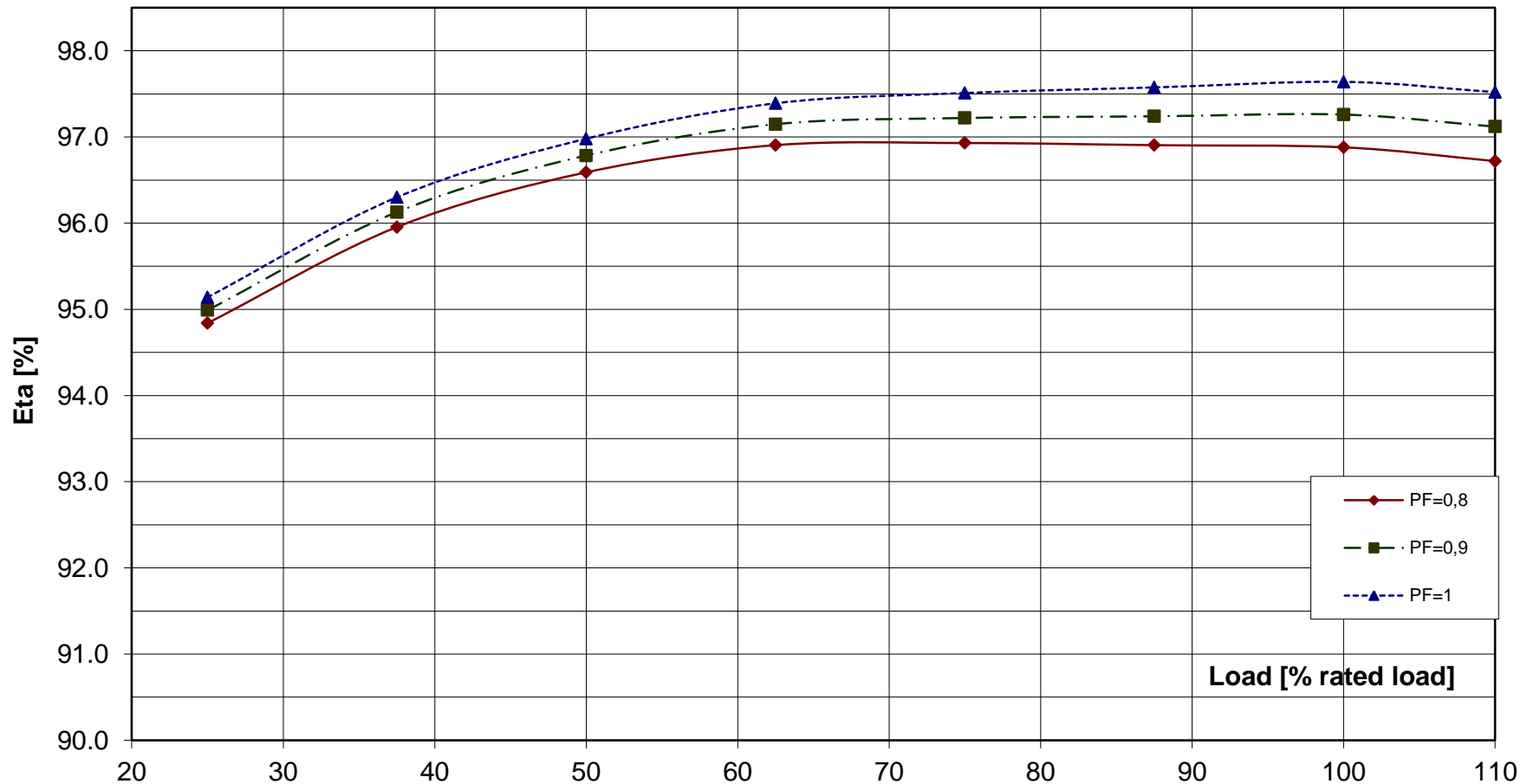
Load application:

max. load application: 2542 kVA (corresponds to 62,76 % from 4050 kVA) for Power factor 0.4 15% transient voltage drop	Power: 4050 kVA Power factor: 0.8 transient voltage drop: -19.3 %
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Remarks:

Alternator :	DIG 142 d/4			
Rated output [kVA]	4050	Rated power factor:	0.8	Rated voltage [kV]: 11
Rated frequency [Hz]	50	Rated speed [rpm]	1500	

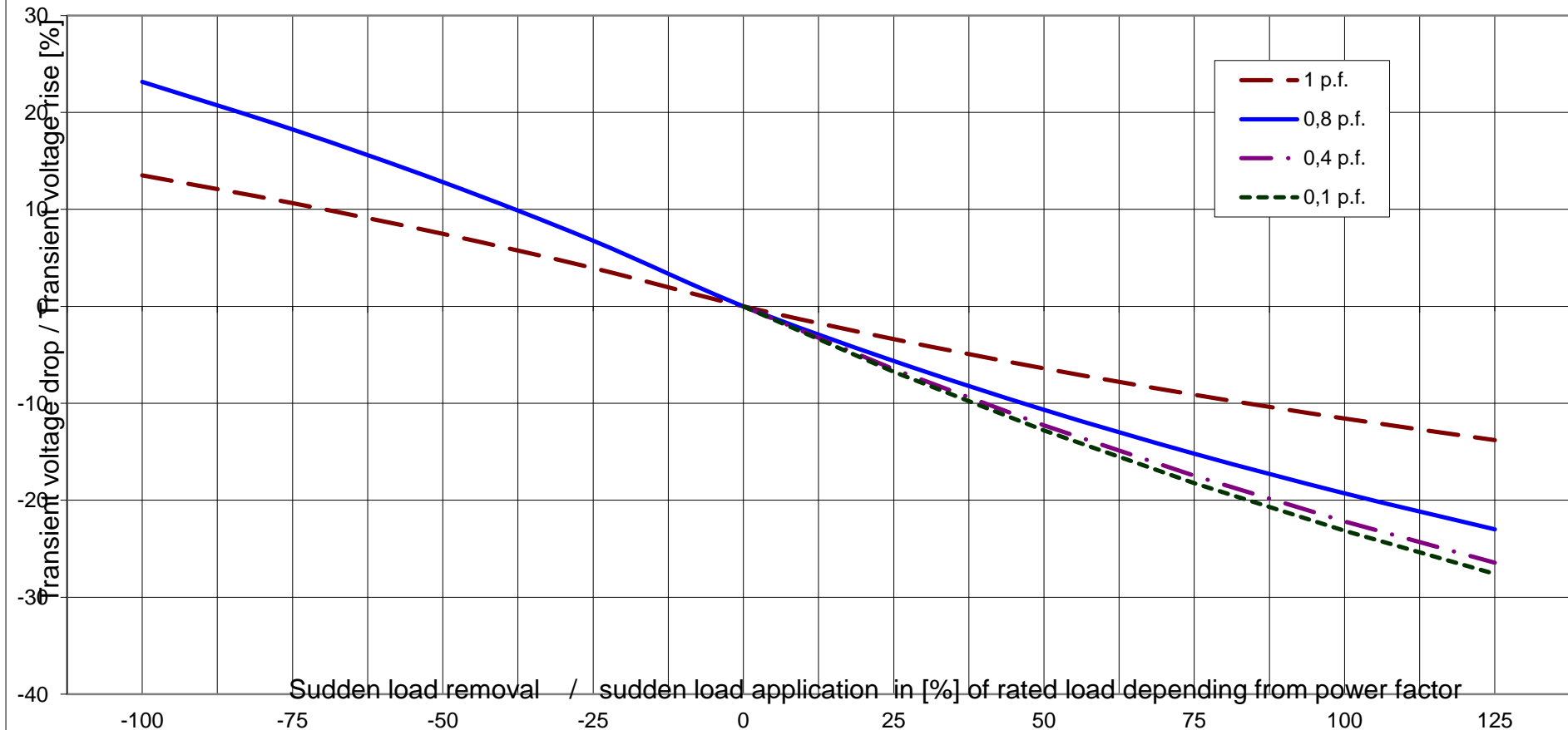
Wirkungsgrad-Kennlinie - Efficiency Curve



Alternator : DIG 142 d/4

Rated output [kVA]	4050	Rated power factor:	0.8	Rated voltage [kV]:	11
Rated frequency [Hz]	50	Rated speed [rpm]	1500		

Transient Voltage rise or drop for sudden load removal or application

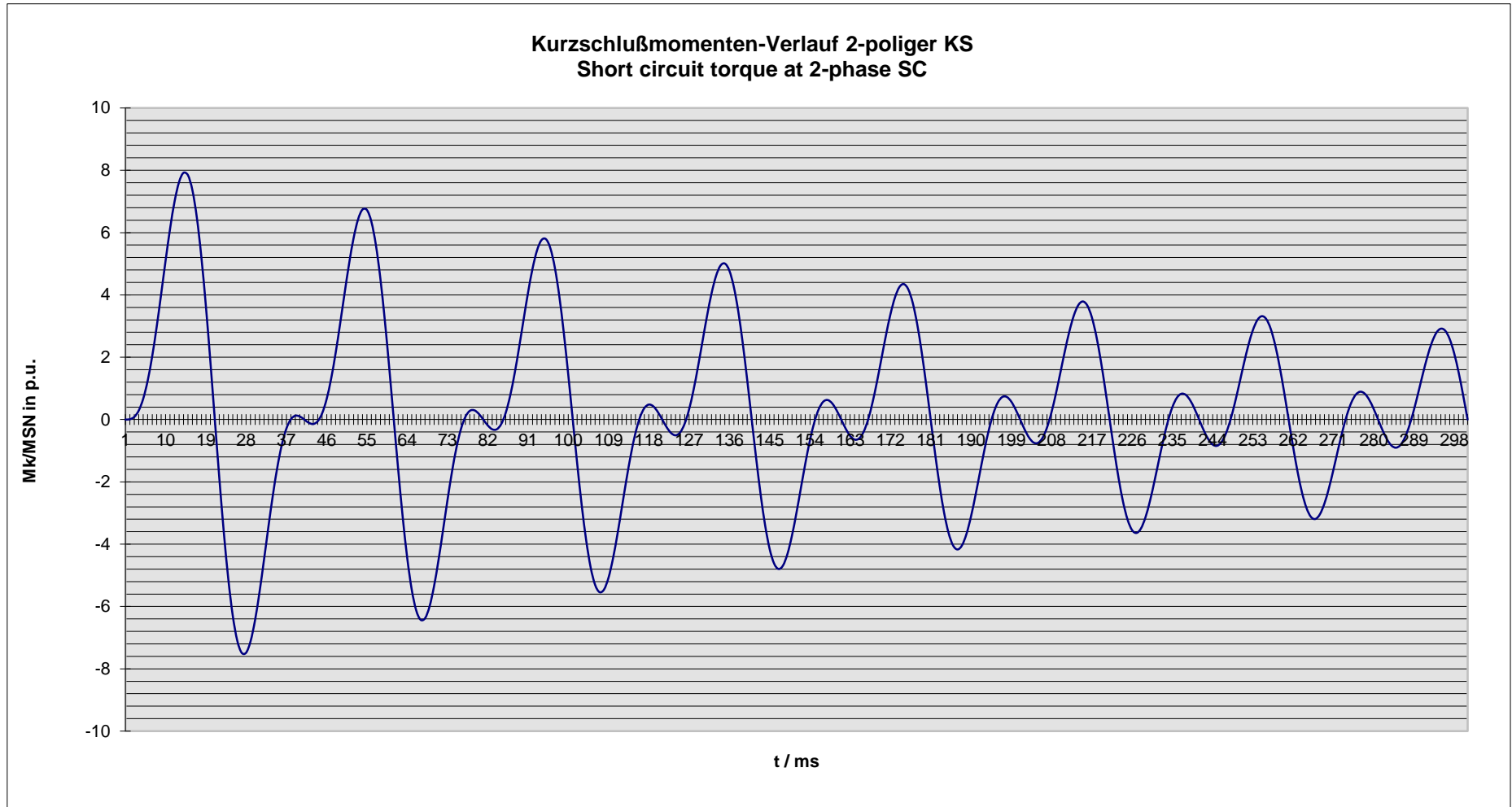




Technisches Datenblatt - Diagramme
Technical data sheet - Diagrams

ING-FCD-0112

Alternator :	DIG 142 d/4			
Rated output [kVA]	4050	Rated power factor:	0.8	Rated voltage [kV]: 11
Rated frequency [Hz]	50	Rated speed [rpm]	1500	MSN related to kVA: 25.78 KNm



Nenn Daten / nominal data

DIG 142 d/4

Leistung S_N : **4050 kVA**

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

Rating

p.f.

Spannung U_N : **11.00 kV**

Strom I_N : **213 A**

Voltage

Current

Frequenz f : **50 Hz**

Drehzahl n : **1,500 min⁻¹**

Frequency

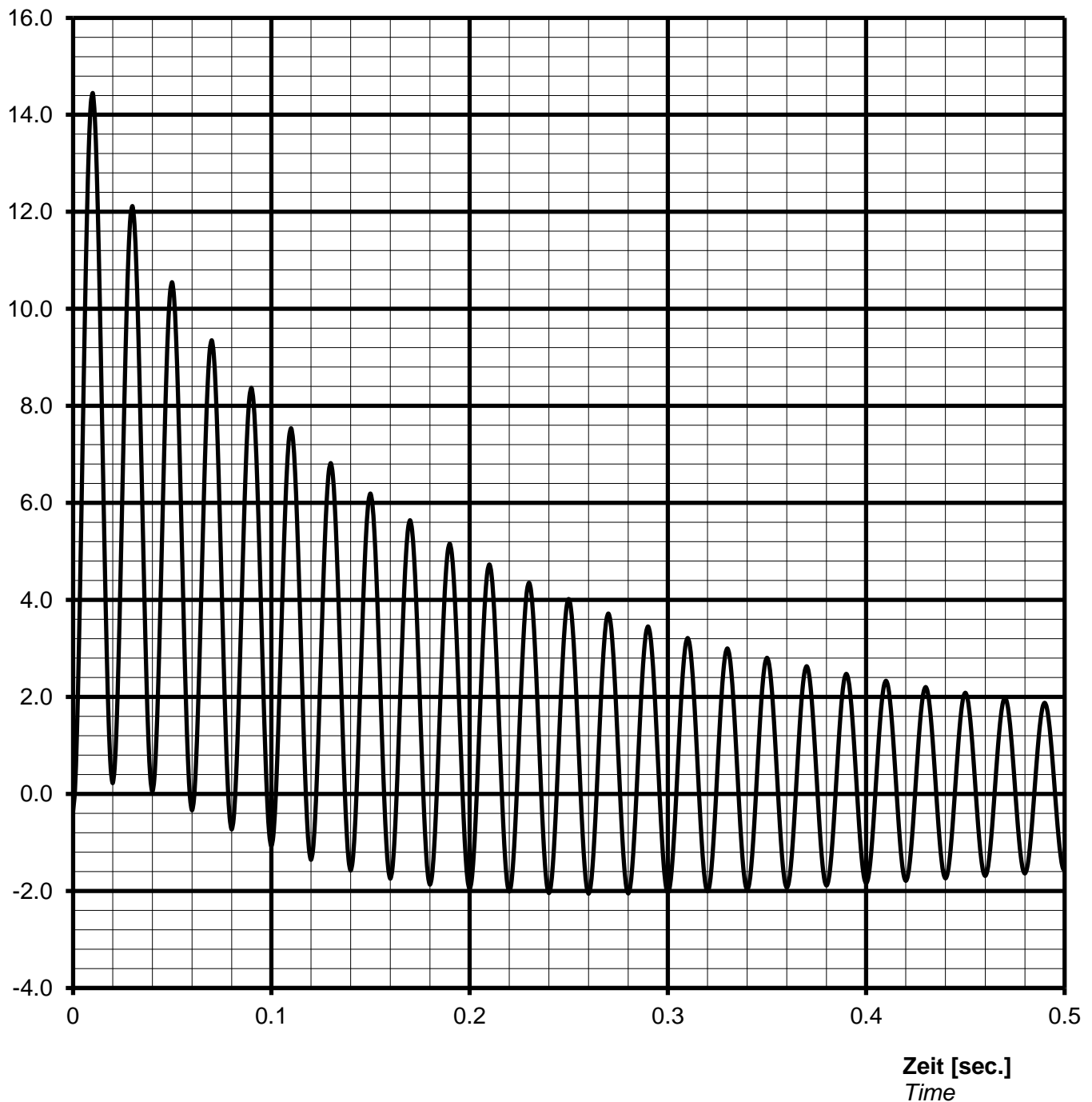
Speed

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

$I_{\text{peak}} =$ **3071 A** or **14.45 p.u.**

Nennwerten / nominal data

DIG 142 d/4

Leistung S_N : **4050 kVA**

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

Rating

p.f.

Spannung U_N : **11.00 kV**

Strom I_N : **213 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

Nenndaten / nominal data

DIG 142 d/4

Rating S_N : **4050 kVA**

p.f. **0.80**

Bemessungsleistung

Leistungsfaktor $\cos \varphi$:

Nominal voltage U_N : **11.00 kV**

Nominal current I_N : **213 A**

Bemessungsspannung

Bemessungsstrom

Frequency f_N : **50 Hz**

Speed n : **1500 min⁻¹**

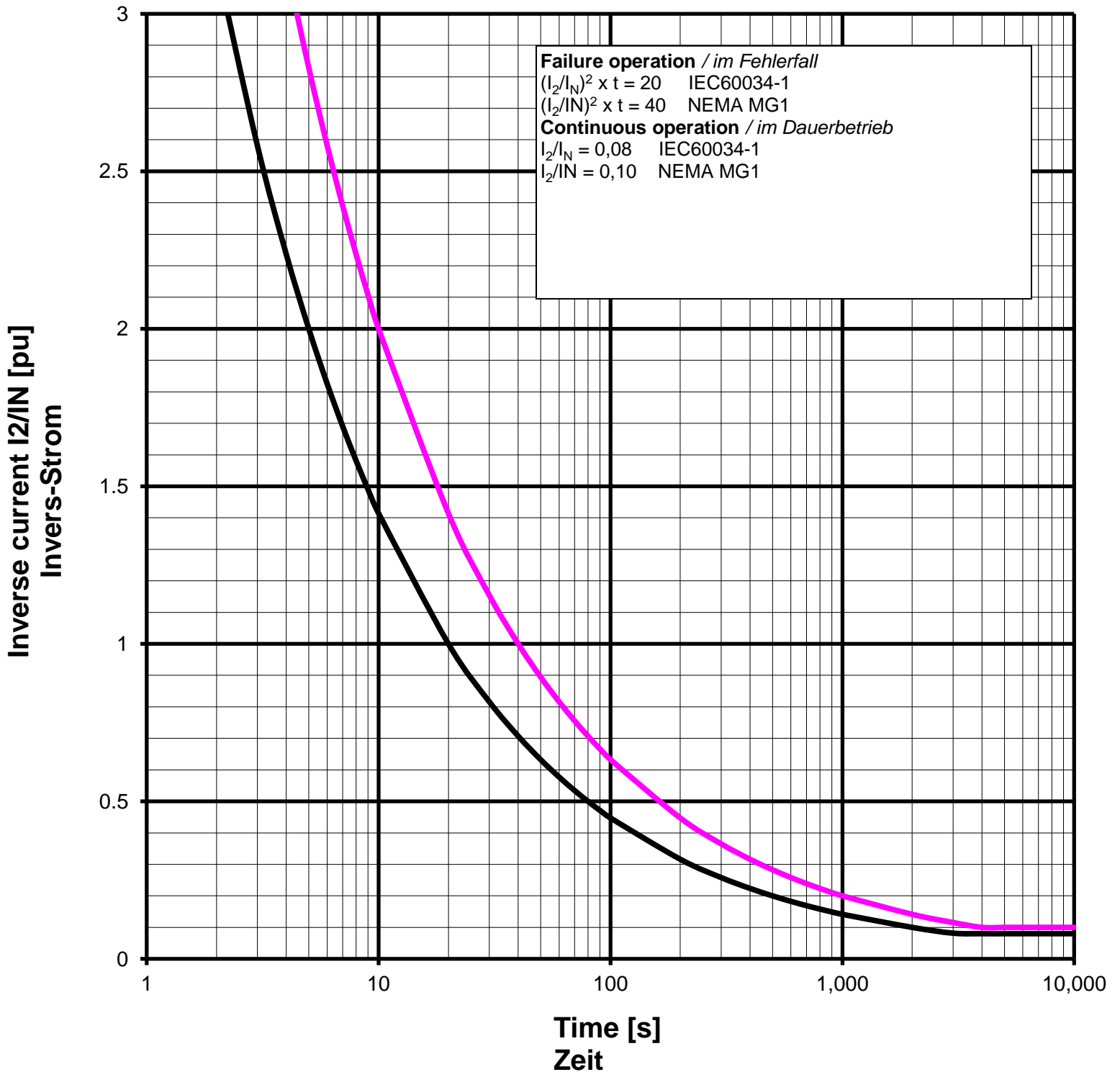
Frequenz

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

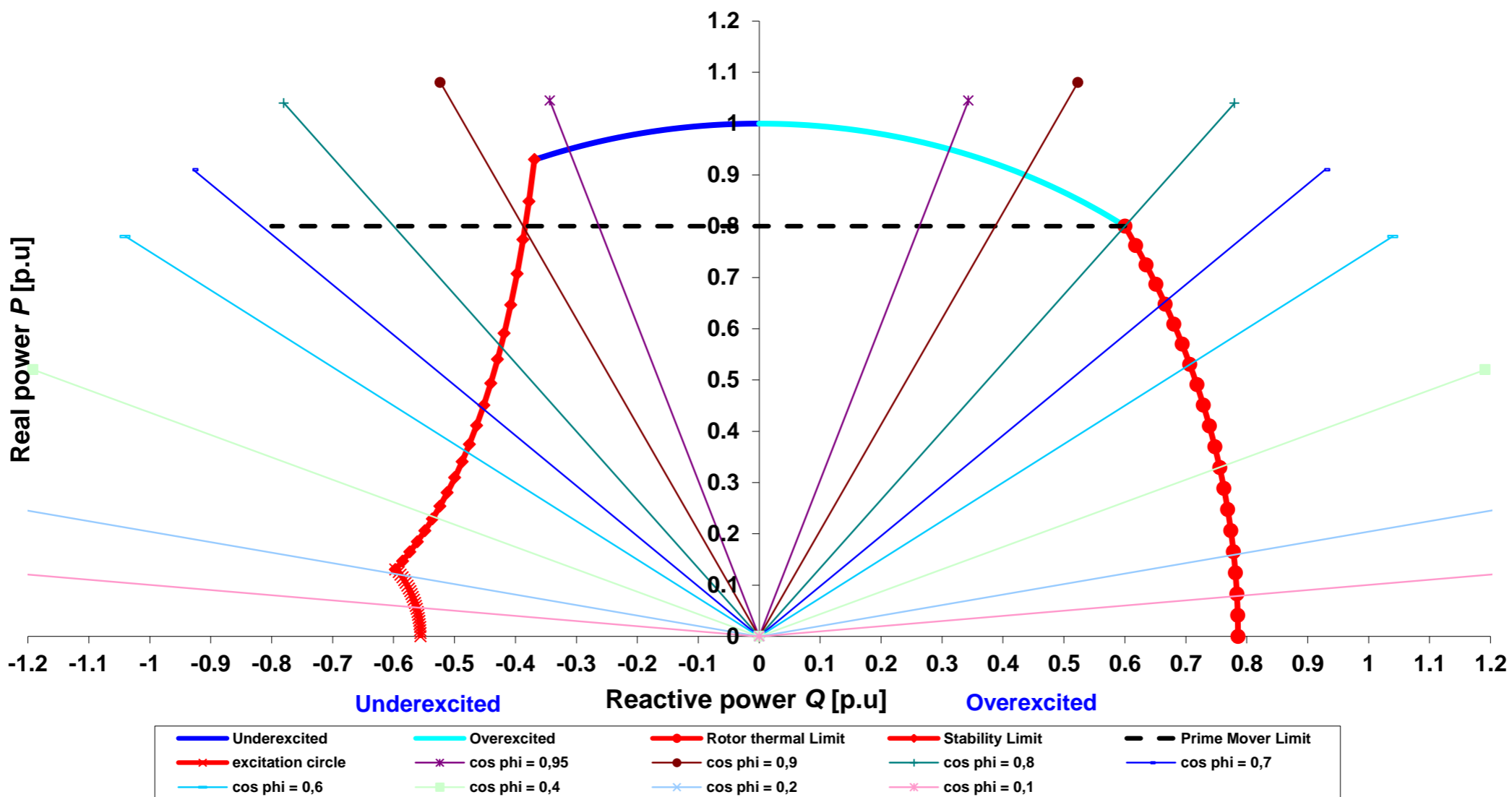
TYPE

DIG 142 d/4

Projekt:

Order Nr.:

Capability (P-Q) Diagram

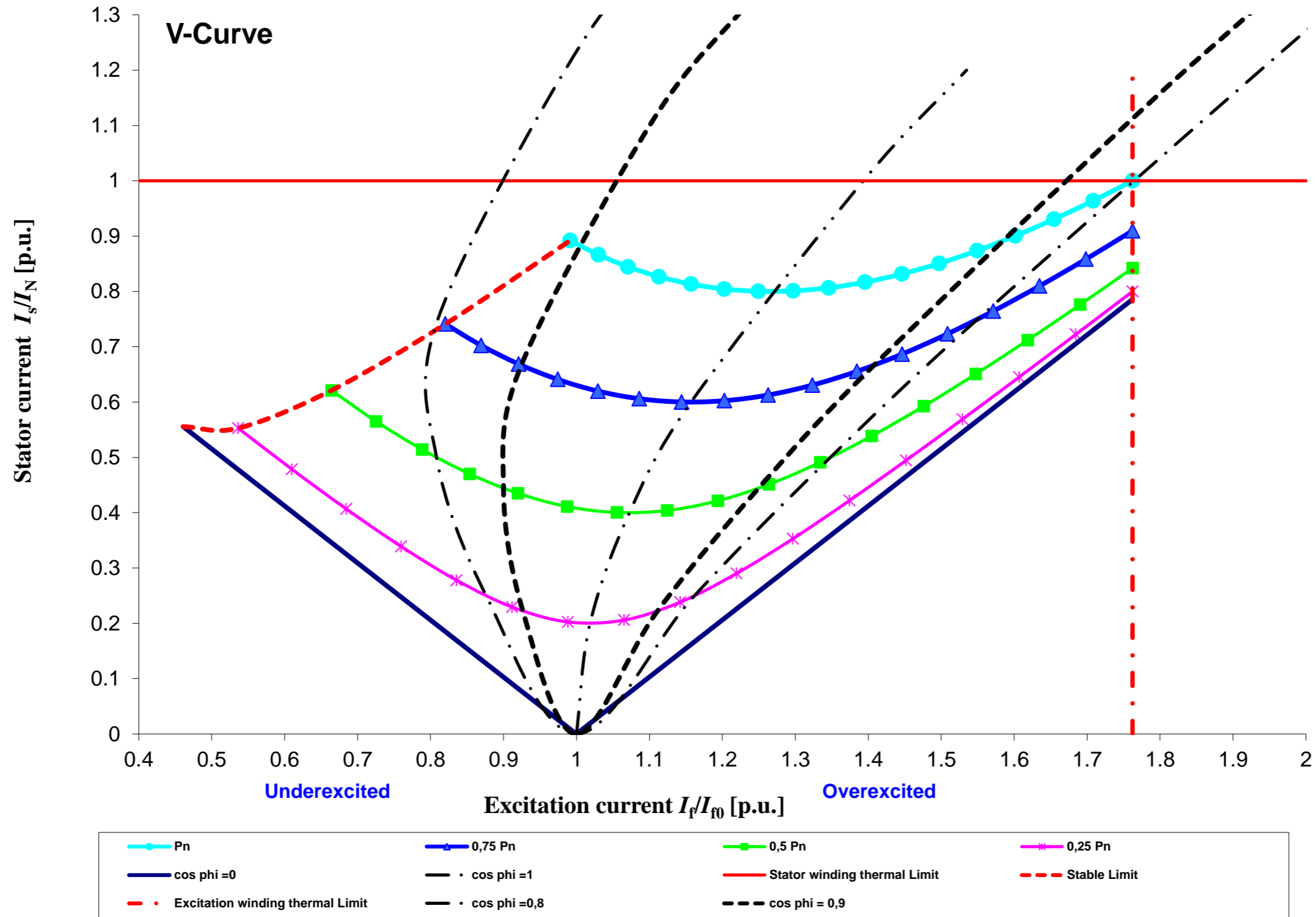


Cummins Generator Technologies

Datum / date:

17/10/2013

TYPE	DIG 142 d/4	Projekt:		Order Nr.:	
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Cummins Generator Technologies	Datum / date:	
	17/10/2013	