

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	09/10/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	dig130i_4_60_4160

Object data:

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

Generator data:

Generator:	DIG 130 i/4	Poles:	4	Standards:	IEC 60034
Rated power:	3150 kVA	2520 kWe	2614 kWm		
Power factor:	0.80				
Power at pf 1,0	2541 kVA	2541 kWe	2614 kWm		
Rated voltage:	4.16 kV				
Speed:	1800 1/min				
Frequency:	60 Hz			Voltage range / frequency range:	
Rated current:	437.2 A			Zone A according IEC 60034-1 (dU = +/-5%, df = +/-2%)	

Winding pitch:	ca. 5/6
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Insulation class:	Stator: Class F	Rotor: Class F	Temperature rise:	F
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Ambient temperature:	40 ° C	Environment:	Standard environment
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Site altitude:	1000 m		
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Enclosure:	IP23	Filter:	
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Cooling:	IC 01 - Open-circuit ventilation
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Coolant:	Ambient Air	Temperature	40 ° C	Temperature Air inlet	40 ° C
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		Coolant:		generator:	
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		Cooling air vol.:	3.6 m³/s	Cooling water quantity:	n/a
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Moment of inertia (I):	97 kgm²	Weight:	6900 Kg	Losses (environment):	94 KW
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				Losses (cooling):	n/a
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Wires:	4 terminals, starpoint connected in terminal box
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Operation mode:	Single mode
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Regulators:	
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Voltage regulator:	DECS 100
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Electrical data: (acc. IEC)

Efficiencies:	110%	100%	75%	50%	25%
Power factor 0.8	96,22	96,4	96,2	95,4	92,8
Power factor 0.9	96,64	96,8	96,5	95,65	92,95
Power factor 1.0	97,06	97,2	96,8	95,9	93,1

Reactances and time constants

	unsaturated	saturated		unsaturated	saturated				
X_d	2.50	2.25 p.u.	X_q	1.25	1.23 p.u.	$T_{d0'}$	3 s	$T_{d0''}$	0.02464 s
X_d'	0.299	0.299 p.u.	X_q'	1.25	1.23 p.u.	$T_{d'}$	0.36 s	$T_{q0'}$	0.3 s
X_d''	0.200	0.182 p.u.	X_q''	0.200	0.200 p.u.	$T_{d''}$	0.015 s	$T_{q0''}$	0.1875 s
X_2	0.210	0.191 p.u.	X_0	0.061	0.055 p.u.	T_a	0.09 s	$T_{q'}$	0.3 s
X_{1s}	n.a.	0.109 p.u.						$T_{q''}$	0.03 s

Short circuit ratio saturated: 0.44	Z_n 5.494 Ohm
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Short circuit data:

Initial short circuit current (3-phase):	I_k''	2402 A	
Max. peak current (3-phase):	I_s	6114 A	
Sustained short circuit current:	I_k	1312 A	Minimum 3 x rated current for max.10 s

Initial short circuit torque:	M_{k2}	119.4 kNm
	M_{k3}	71.6 kNm

Max. faulty synchron moment:	M_f	256.7 kNm
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Rated kVA torque:	M_{SN}	16.71 kNm
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Rated torque	M_N	13.37 kNm
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Shaft torque	M_{Sh}	13.87 kNm
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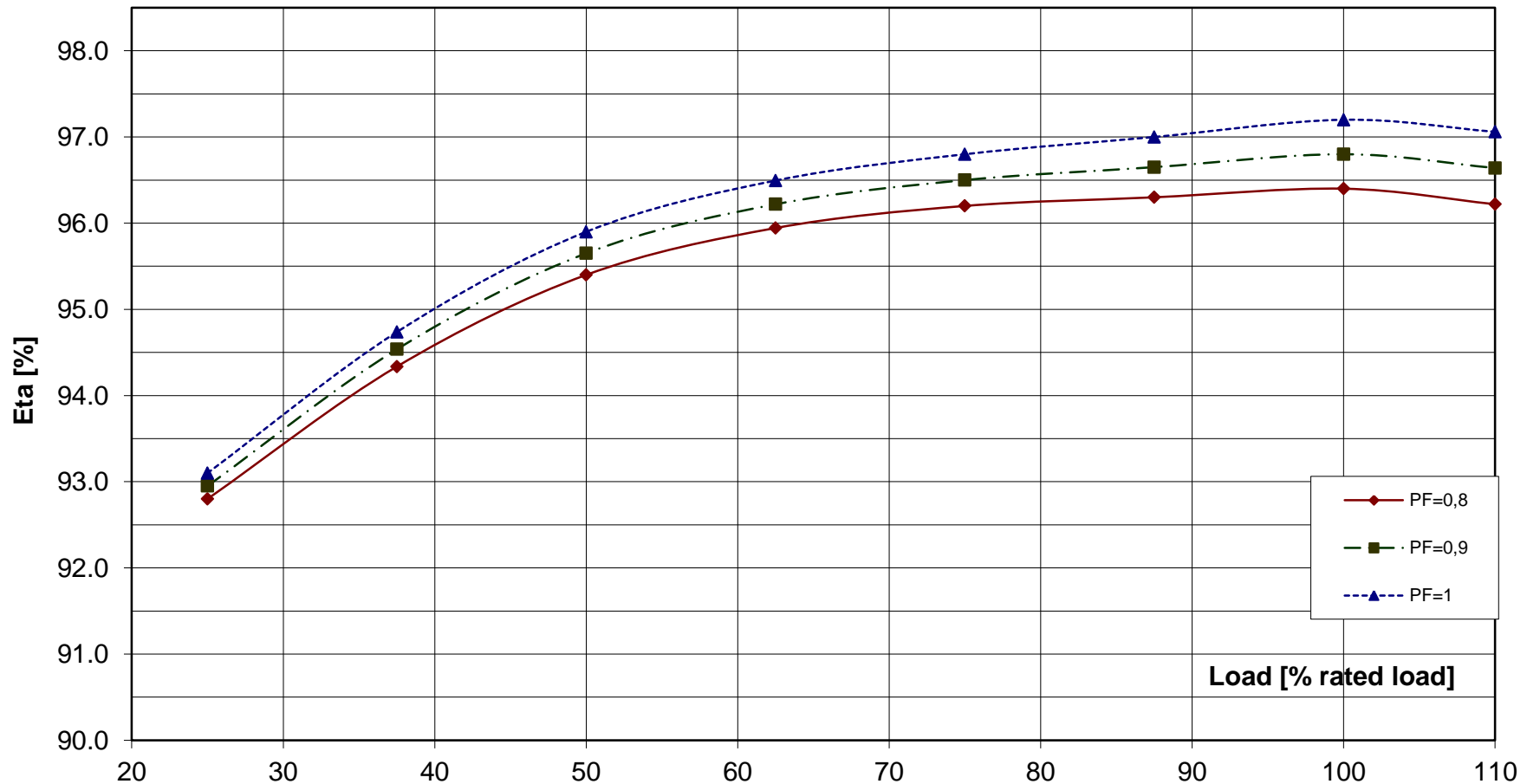
Load application:

max. load application: 1580 kVA (corresponds to 50,17 % from 3150 kVA) for Power factor 0.4 15% transient voltage drop	Power: 3150 kVA Power factor: 0.8 transient voltage drop: -23.0 %
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Remarks:

Alternator :	DIG 130 i/4			
Rated output [kVA]	3150	Rated power factor:	0.8	Rated voltage [kV]: 4.16
Rated frequency [Hz]	60	Rated speed [rpm]	1800	

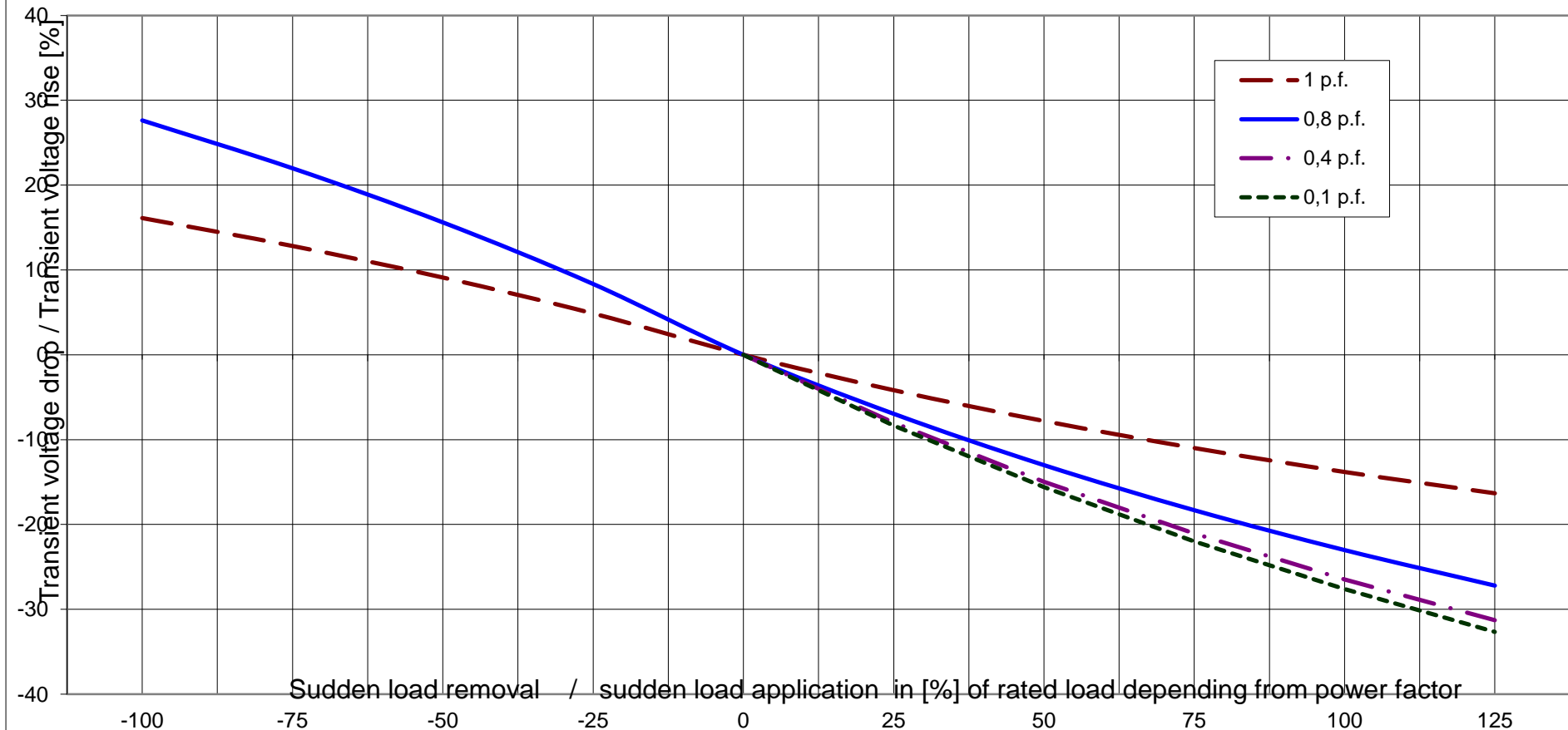
Wirkungsgrad-Kennlinie - Efficiency Curve



Alternator : DIG 130 i/4

Rated output [kVA]	3150	Rated power factor:	0.8	Rated voltage [kV]:	4.16
Rated frequency [Hz]	60	Rated speed [rpm]	1800		

Transient Voltage rise or drop for sudden load removal or application



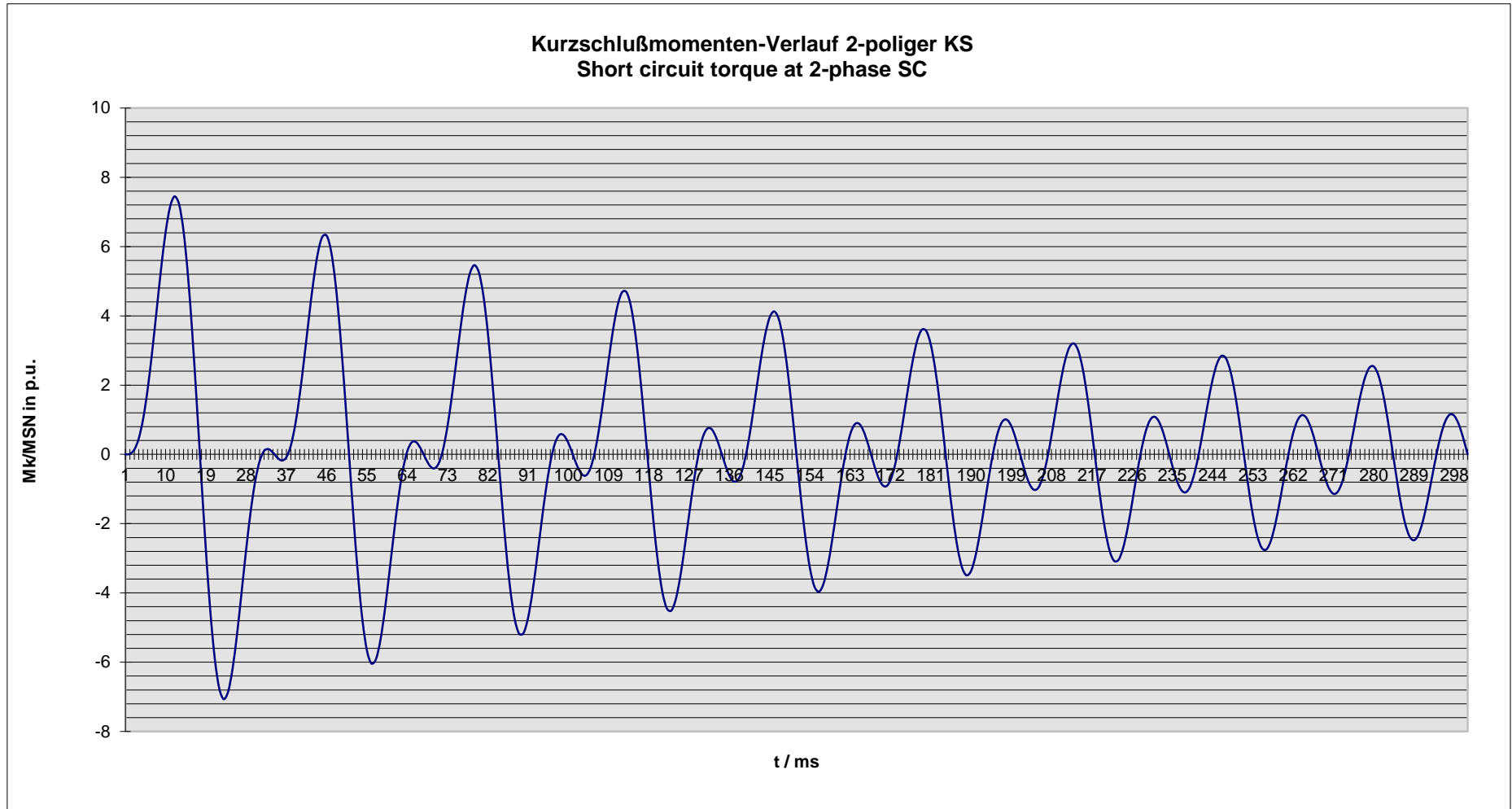


Technisches Datenblatt - Diagramme
Technical data sheet - Diagrams

ING-FCD-0112

Alternator :	DIG 130 i/4			
Rated output [kVA]	3150	Rated power factor:	0.8	Rated voltage [kV]: 4.16
Rated frequency [Hz]	60	Rated speed [rpm]	1800	MSN related to kVA: 16.71 KNm

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



Nenndaten / nominal data

DIG 130 i/4

Leistung S_N : **3150 kVA**

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

Rating

p.f.

Spannung U_N : **4.16 kV**

Strom I_N : **437 A**

Voltage

Current

Frequenz f : **60 Hz**

Drehzahl n : **1,800 min⁻¹**

Frequency

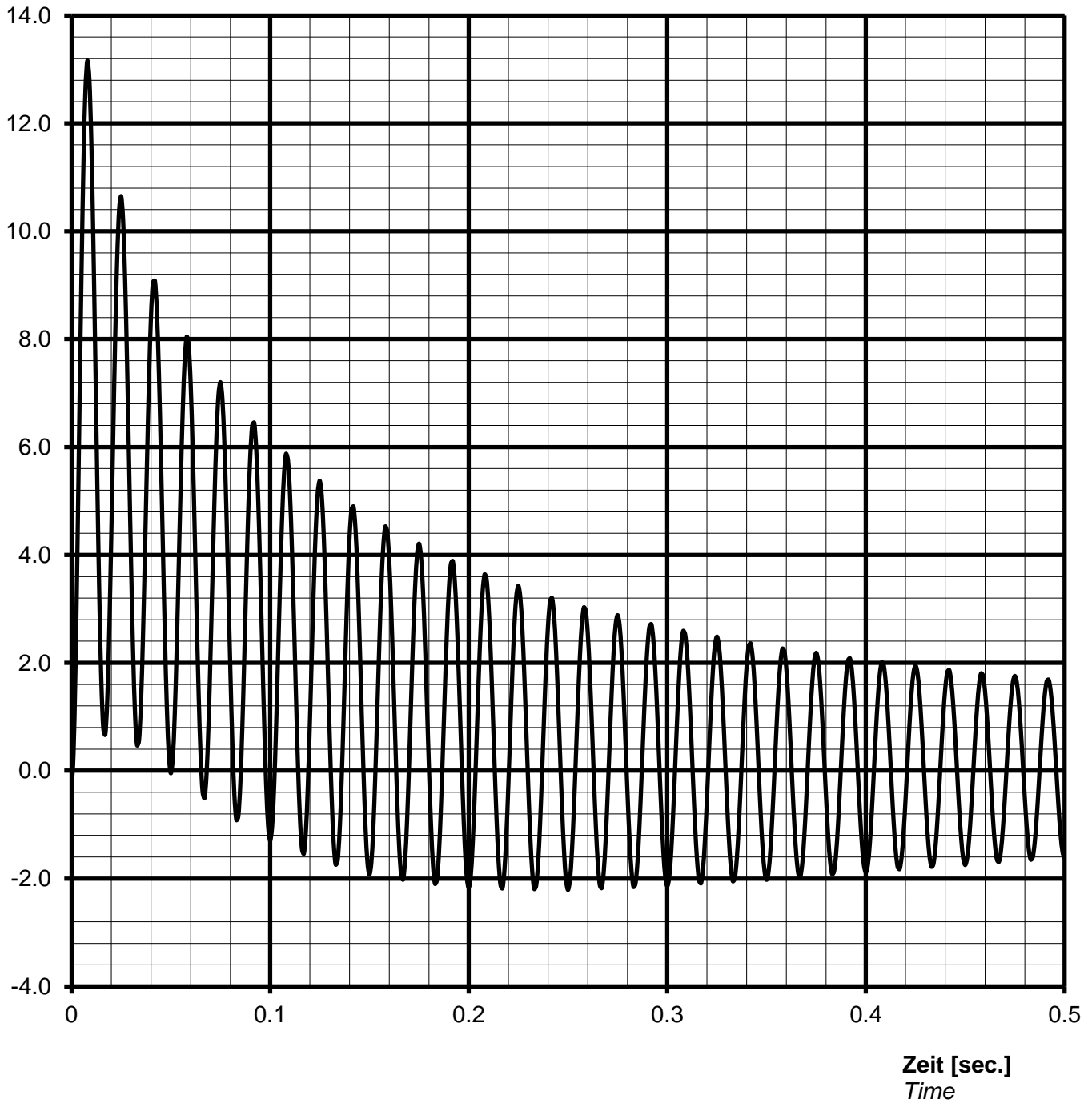
Speed

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 $I_{\text{speak}} =$ **5754 A** or **13.16 p.u.**

Nennwerten / nominal data

DIG 130 i/4

Leistung S_N : **3150 kVA**

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

Rating

p.f.

Spannung U_N : **4.16 kV**

Strom I_N : **437 A**

Voltage

Current

Frequenz f: **60 Hz**

Drehzahl n: **1800 min⁻¹**

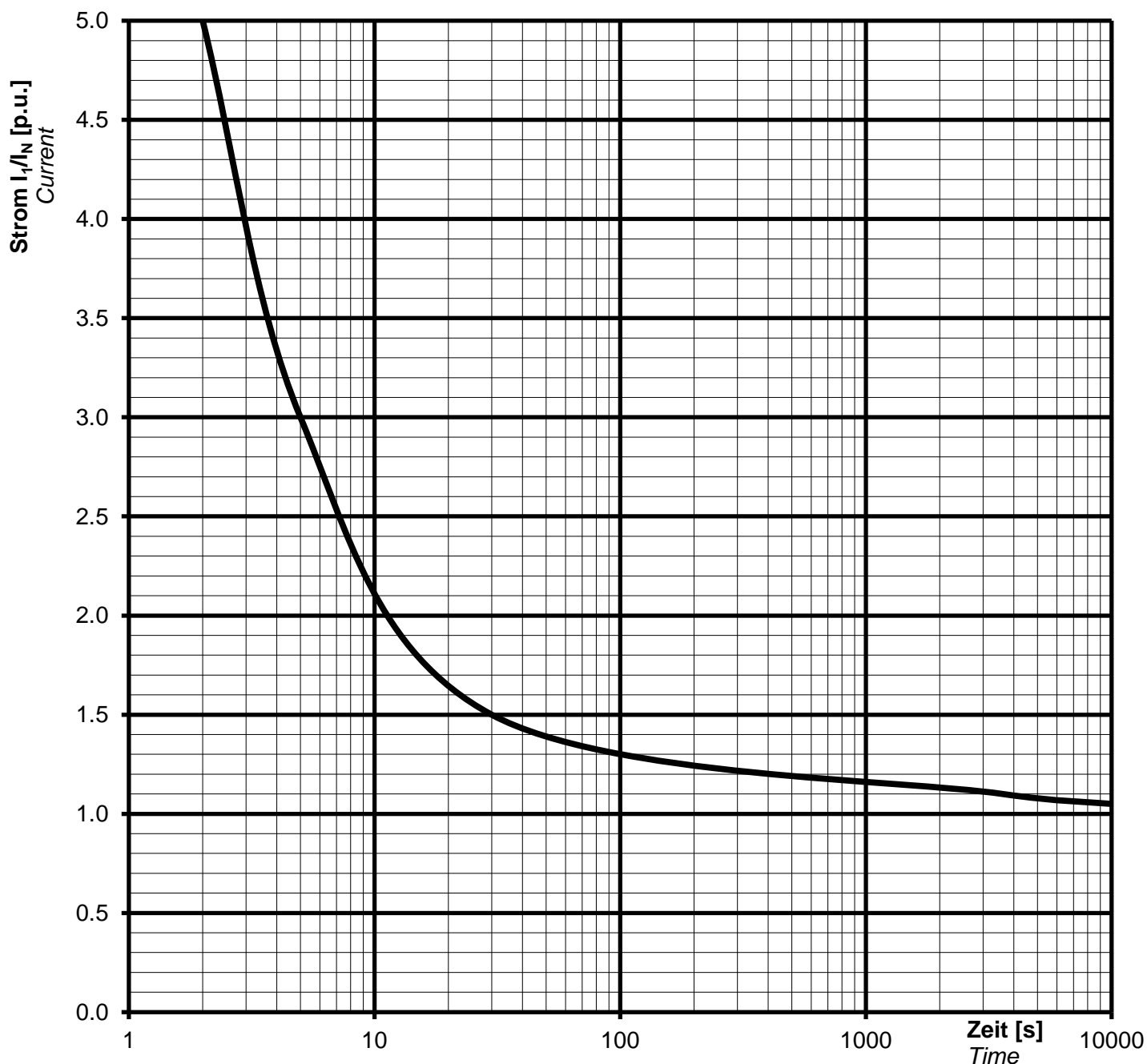
Frequency

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 130 i/4

Rating S_N : **3150 kVA**

p.f. **0.80**

Bemessungsleistung

Leistungsfaktor $\cos \varphi$:

Nominal voltage U_N : **4.16 kV**

Nominal current I_N : **437 A**

Bemessungsspannung

Bemessungsstrom

Frequency f_N : **60 Hz**

Speed n : **1800 min⁻¹**

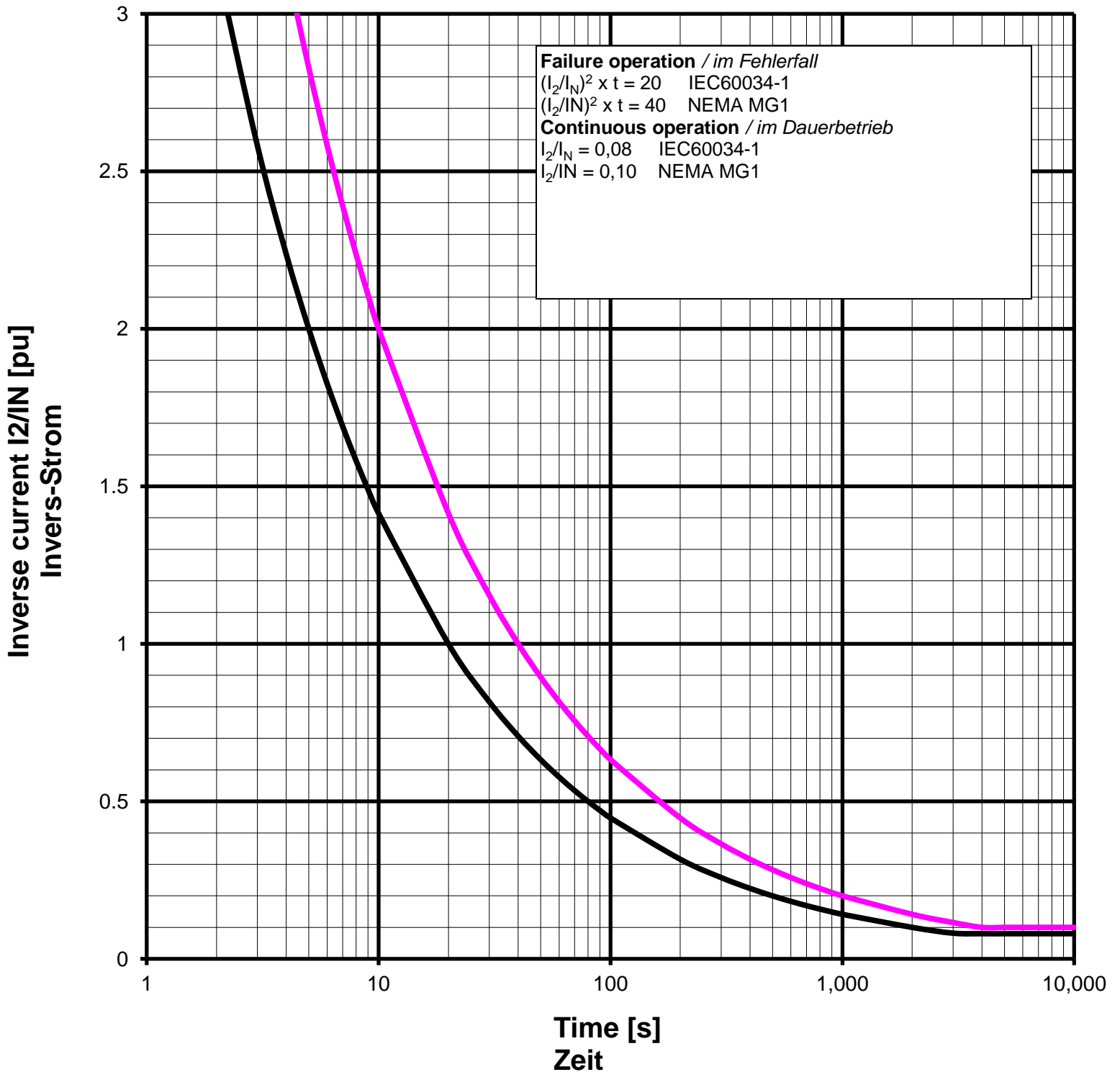
Frequenz

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

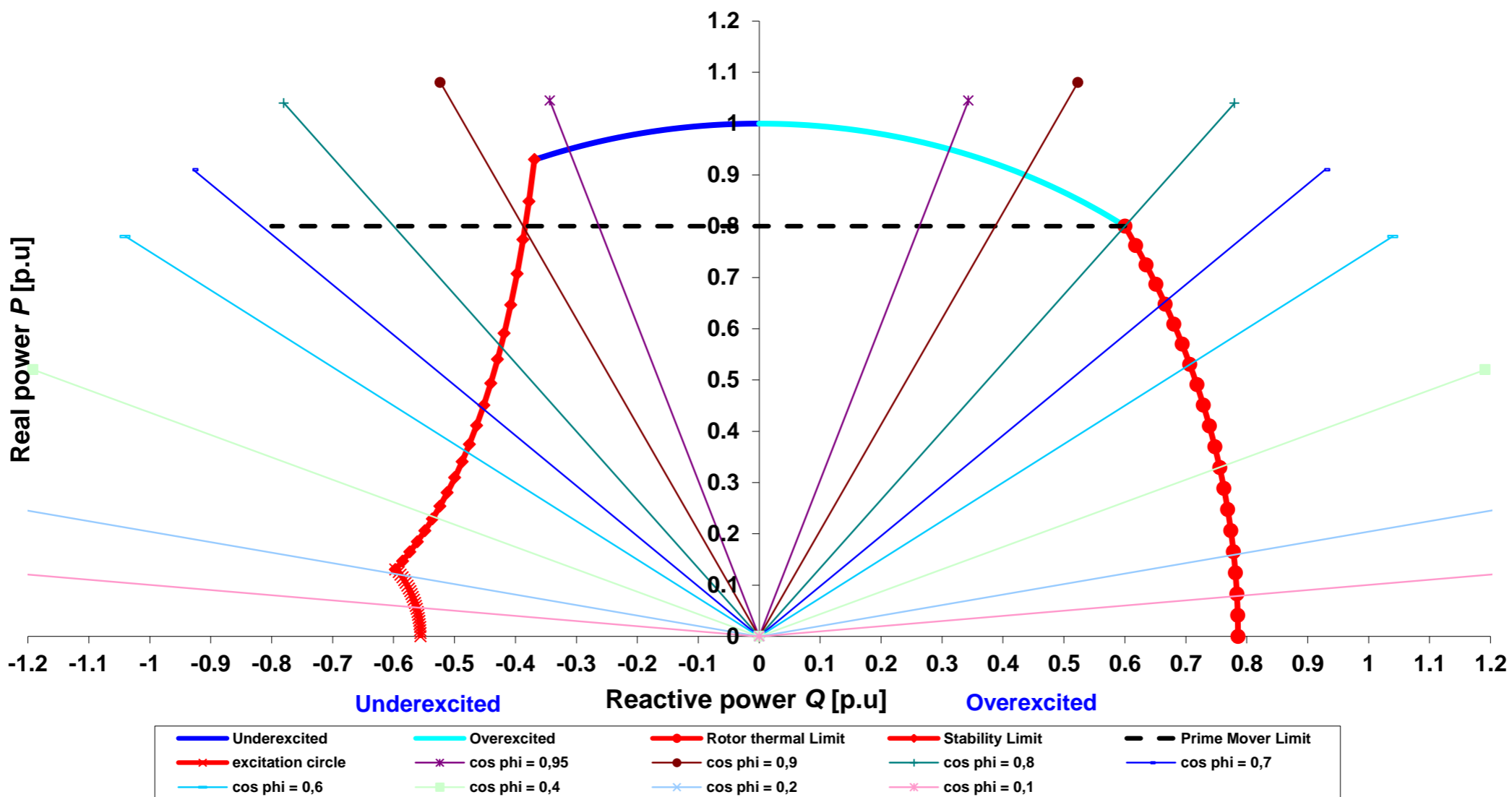
TYPE

DIG 130 i/4

Projekt:

Order Nr.:

Capability (P-Q) Diagram

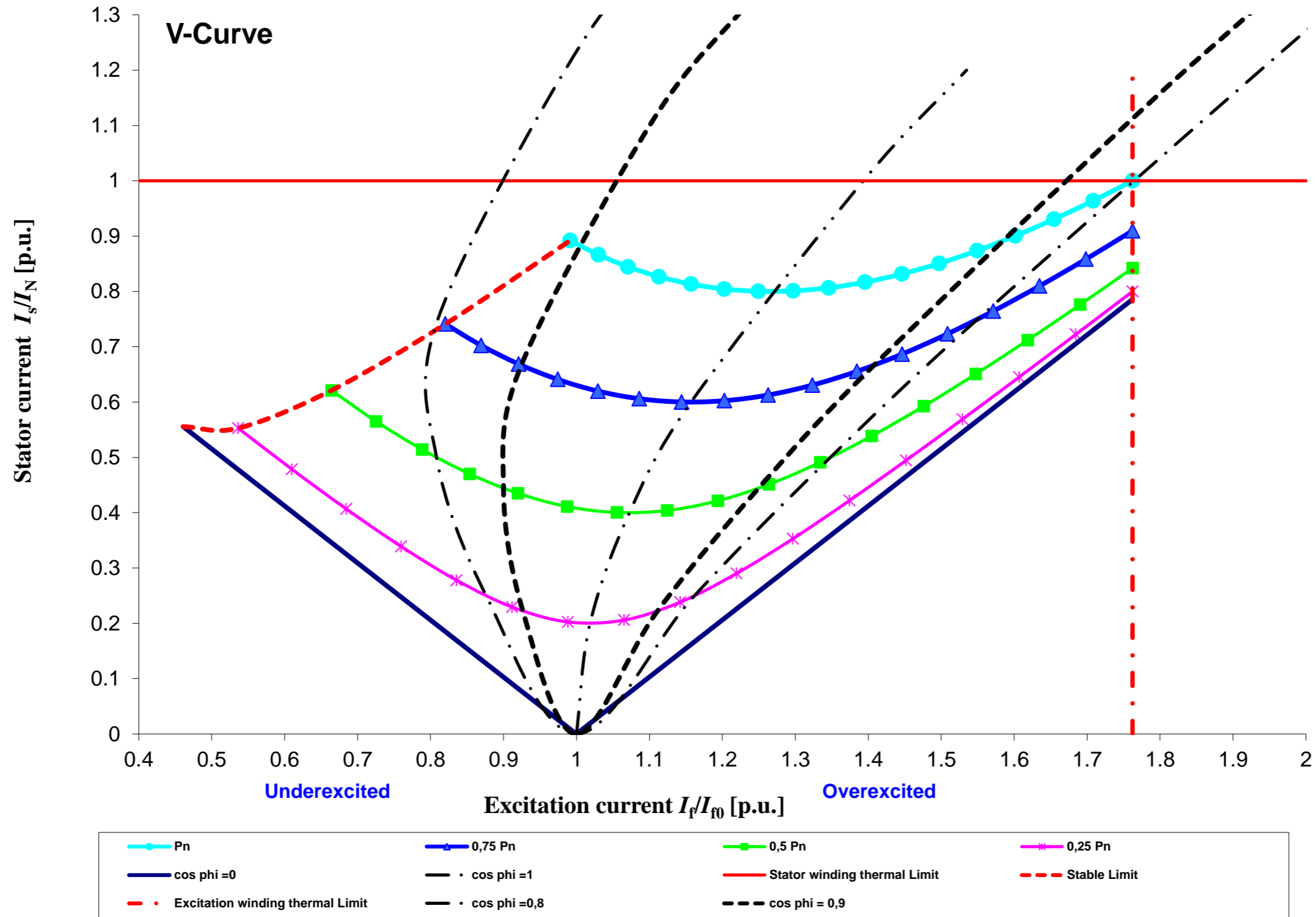


Cummins Generator Technologies

Datum / date:

11/10/2013

TYPE	DIG 130 i/4	Projekt:		Order Nr.:	
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Cummins Generator Technologies	Datum / date:	
	11/10/2013	