

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	09/10/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	dig156o_8_60_13800

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

Generator data:					
Generator:	DIG 156 o/8	Poles:	8	Standards:	IEC 60034
Rated power:	7000 kVA	5600 kWe	5773 kWm		
Power factor:	0.80				
Power at pf 1,0	5646 kVA	5646 kWe	5773 kWm		
Rated voltage:	13.8 kV				
Speed:	900 1/min				
Frequency:	60 Hz			Voltage range / frequency range:	
Rated current:	292.9 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.:	5.5 m³/s	Cooling water quantity:	n/a
Moment of inertia (I):	1110 kgm²	Weight:	21400 Kg	Losses (environment):	173 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	96,85	97	97	96,4	94,3
Power factor 0.9	97,27	97,4	97,3	96,6	94,45
Power factor 1.0	97,69	97,8	97,6	96,8	94,6

Reactances and time constants											
	unsaturated		saturated			unsaturated		saturated			
X _d	1.80	1.62	p.u.	X _q	0.90	0.88	p.u.	T _{d0'}	3.2 s	T _{d0''}	0.04703 s
X _{d'}	0.290	0.290	p.u.	X _{q'}	0.90	0.88	p.u.	T _{d'}	0.52 s	T _{q0'}	0.6 s
X _{d''}	0.204	0.185	p.u.	X _{q''}	0.204	0.204	p.u.	T _{d''}	0.03 s	T _{q0''}	0.26471 s
X ₂	0.213	0.194	p.u.	X ₀	0.062	0.056	p.u.	T _a	0.095 s	T _{q'}	0.6 s
X _{1s}	n.a.	0.111	p.u.							T _{q''}	0.06 s
Short circuit ratio saturated: 0.62					Z _n 27.206 Ohm						

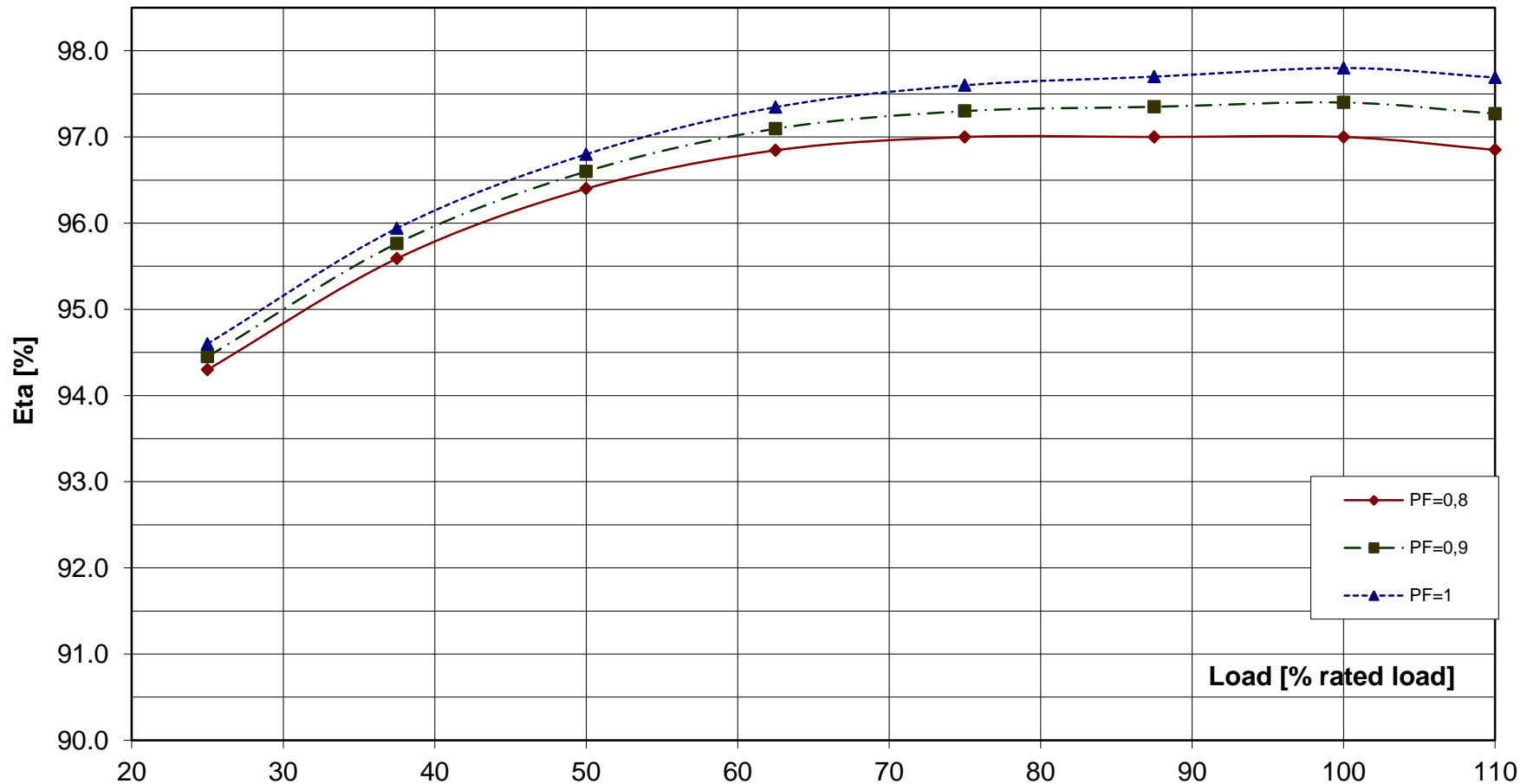
Short circuit data:		
Initial short circuit current (3-phase):	I _{k''}	1583 A
Max. peak current (3-phase):	I _s	4030 A
Sustained short circuit current:	I _k	879 A
		Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M _{k2}	521.9 kNm
	M _{k3}	313.1 kNm
Max. faulty synchron moment:	M _f	1122.1 kNm
Rated kVA torque:	M _{SN}	74.28 kNm
Rated torque	M _N	59.42 kNm
Shaft torque	M _{Sh}	61.26 kNm

Load application:	
max. load application: 3621 kVA (corresponds to 51,72 % from 7000 kVA) for Power factor 0.4 15% transient voltage drop	Power: 7000 kVA Power factor: 0.8 transient voltage drop: -22.5 %

Remarks:

Alternator :	DIG 156 o/8		
Rated output [kVA]	7000	Rated power factor:	0.8
Rated frequency [Hz]	60	Rated speed [rpm]	900
			Rated voltage [kV]: 13.8

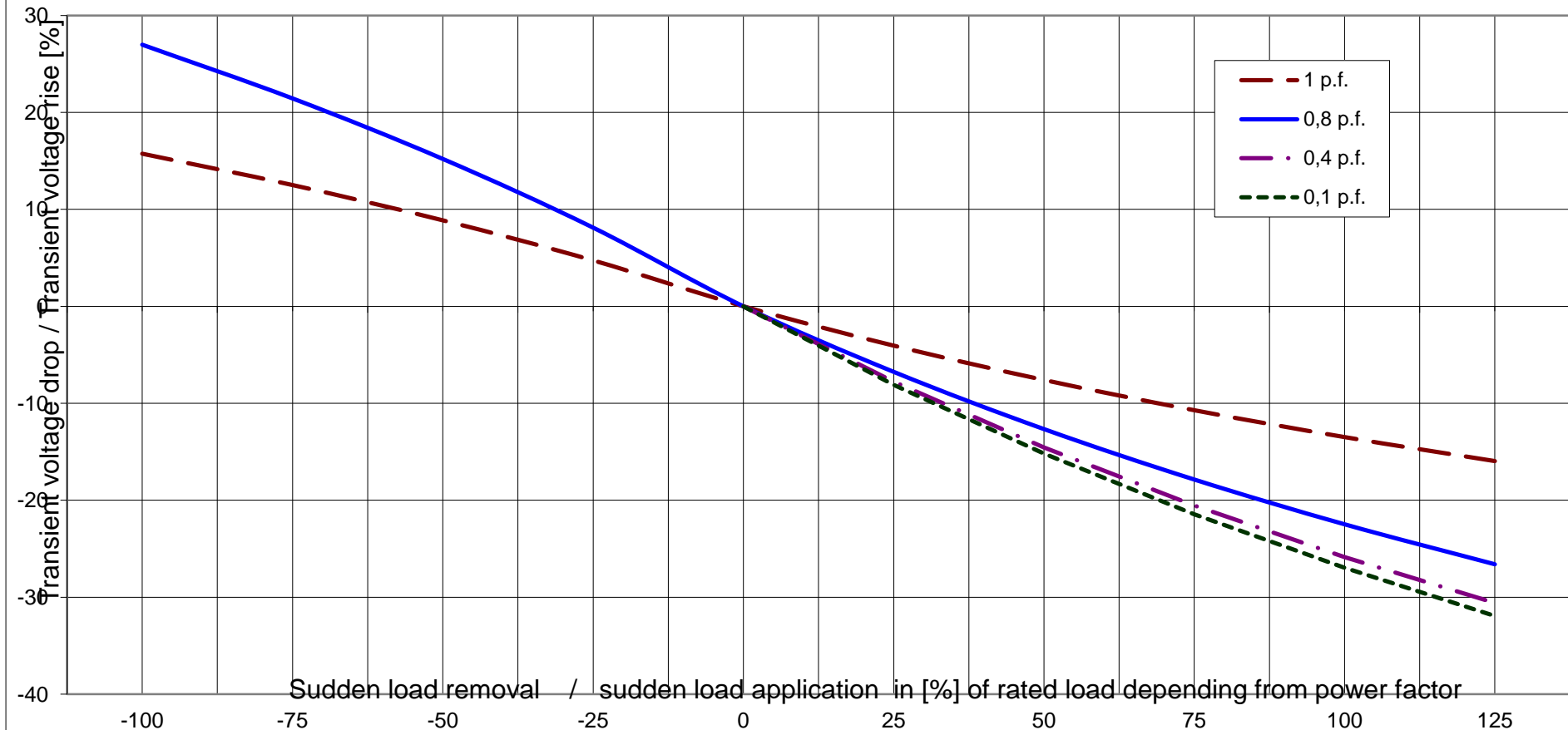
Wirkungsgrad-Kennlinie - Efficiency Curve



Alternator : DIG 156 o/8

Rated output [kVA]	7000	Rated power factor:	0.8	Rated voltage [kV]:	13.8
Rated frequency [Hz]	60	Rated speed [rpm]	900		

Transient Voltage rise or drop for sudden load removal or application



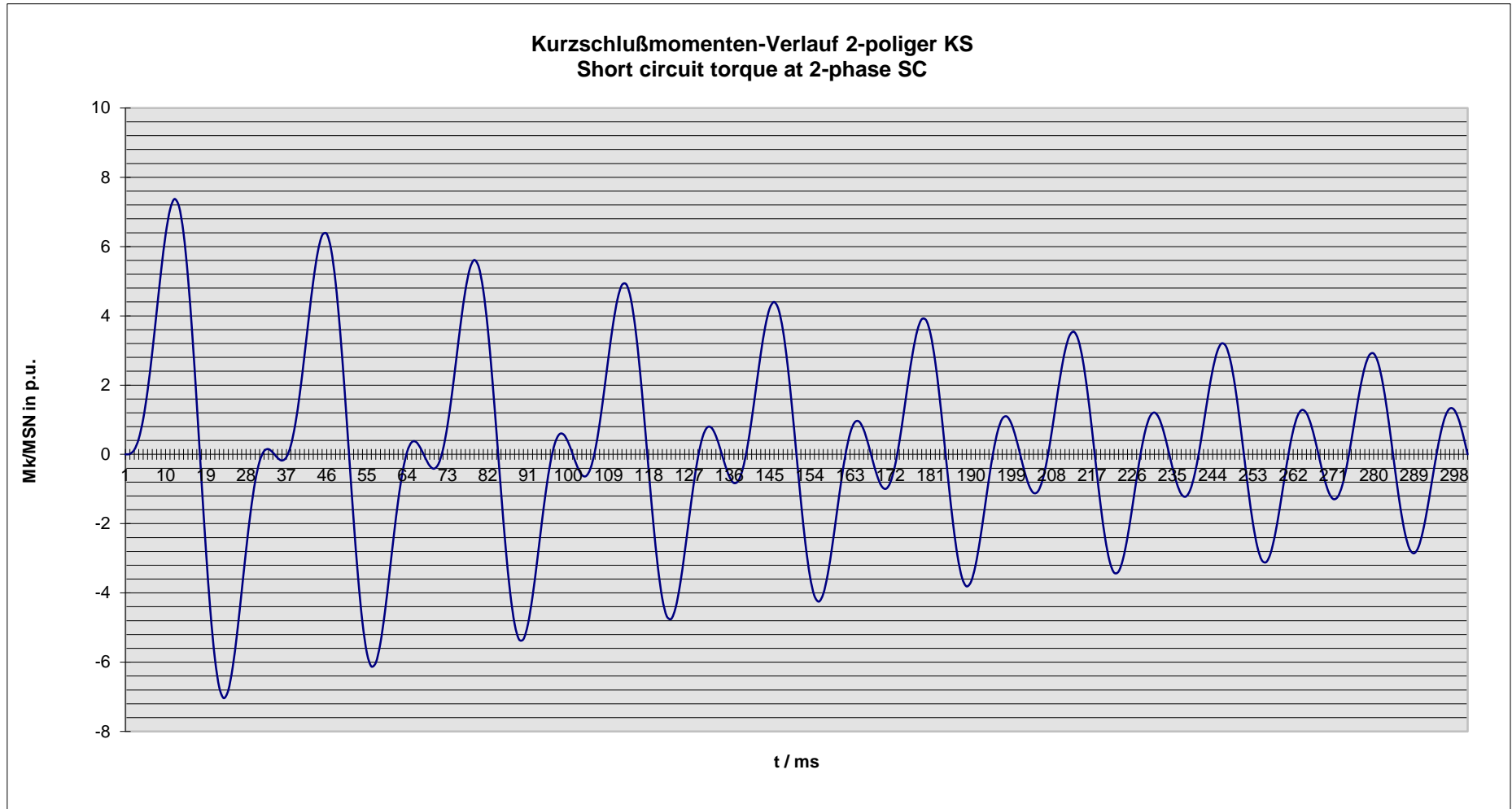


Technisches Datenblatt - Diagramme
Technical data sheet - Diagrams

ING-FCD-0112

Alternator :	DIG 156 o/8			
Rated output [kVA]	7000	Rated power factor:	0.8	Rated voltage [kV]: 13.8
Rated frequency [Hz]	60	Rated speed [rpm]	900	MSN related to kVA: 74.27 KNm

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



Nenndaten / nominal data

DIG 156 o/8

Leistung S_N : **7000** kVA

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

Rating

p.f.

Spannung U_N : **13.80** kV

Strom I_N : **293** A

Voltage

Current

Frequenz f : **60** Hz

Drehzahl n : **900** min^{-1}

Frequency

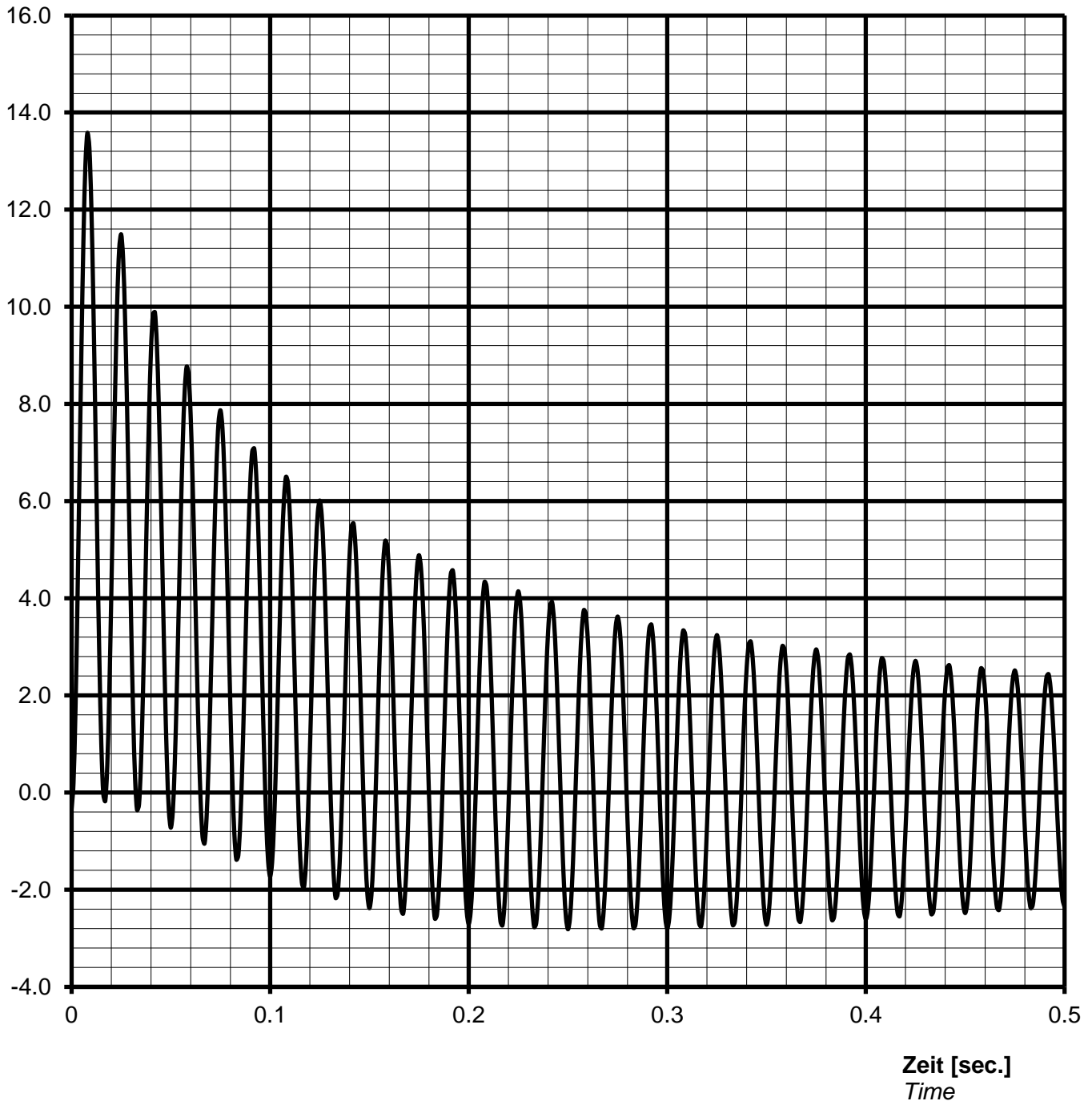
Speed

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 $I_{\text{peak}} =$ **3977 A** or **13.58 p.u.**

Nennwerten / nominal data

DIG 156 o/8

Leistung S_N : **7000** kVA

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

Rating

p.f.

Spannung U_N : **13.80** kV

Strom I_N : **293** A

Voltage

Current

Frequenz f: **60** Hz

Drehzahl n: **900** min⁻¹

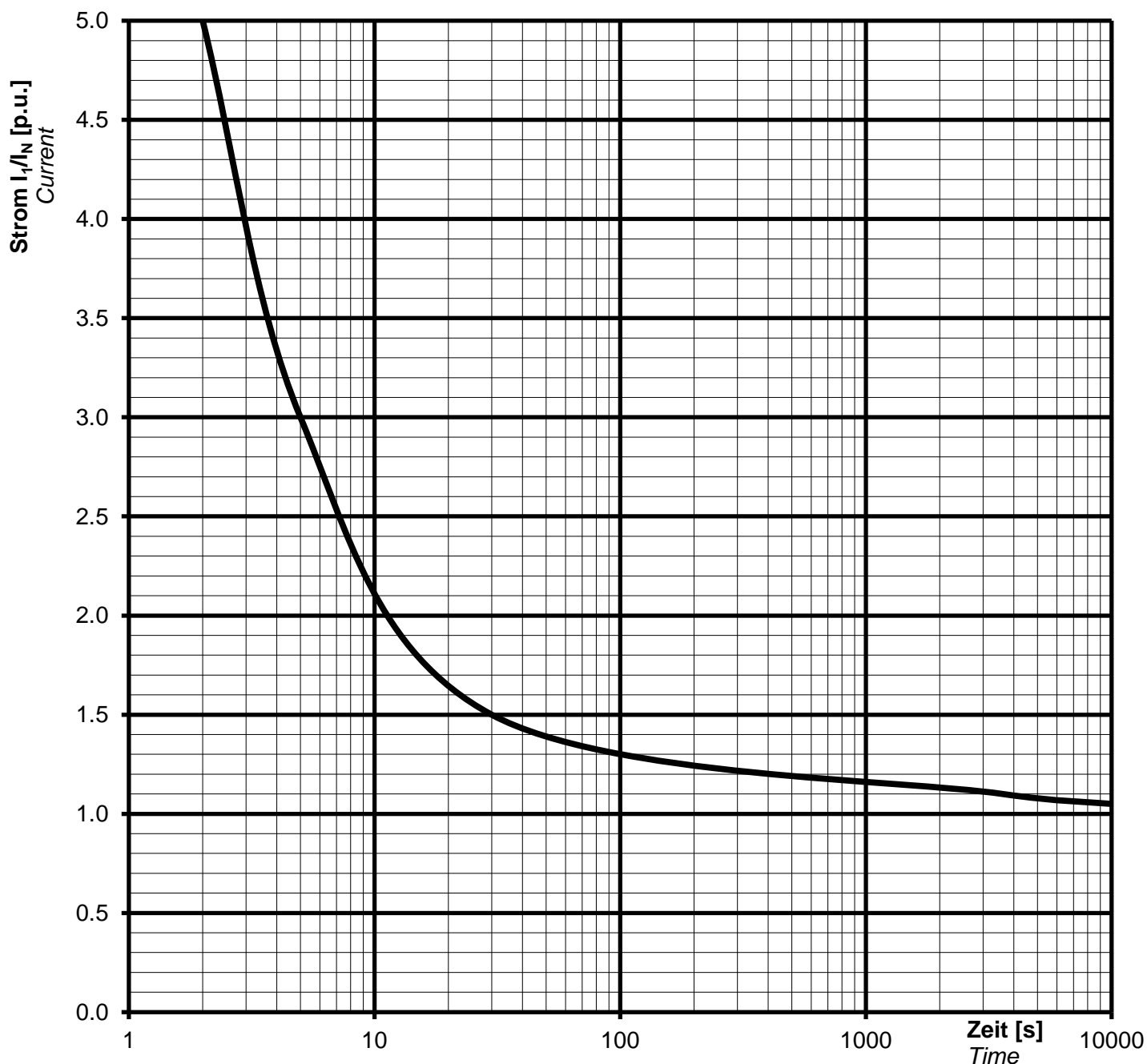
Frequency

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

DIG 156 o/8

Rating S_N : **7000 kVA**

p.f. **0.80**

Bemessungsleistung

Leistungsfaktor $\cos \varphi$:

Nominal voltage U_N : **13.80 kV**

Nominal current I_N : **293 A**

Bemessungsspannung

Bemessungsstrom

Frequency f_N : **60 Hz**

Speed n : **900 min⁻¹**

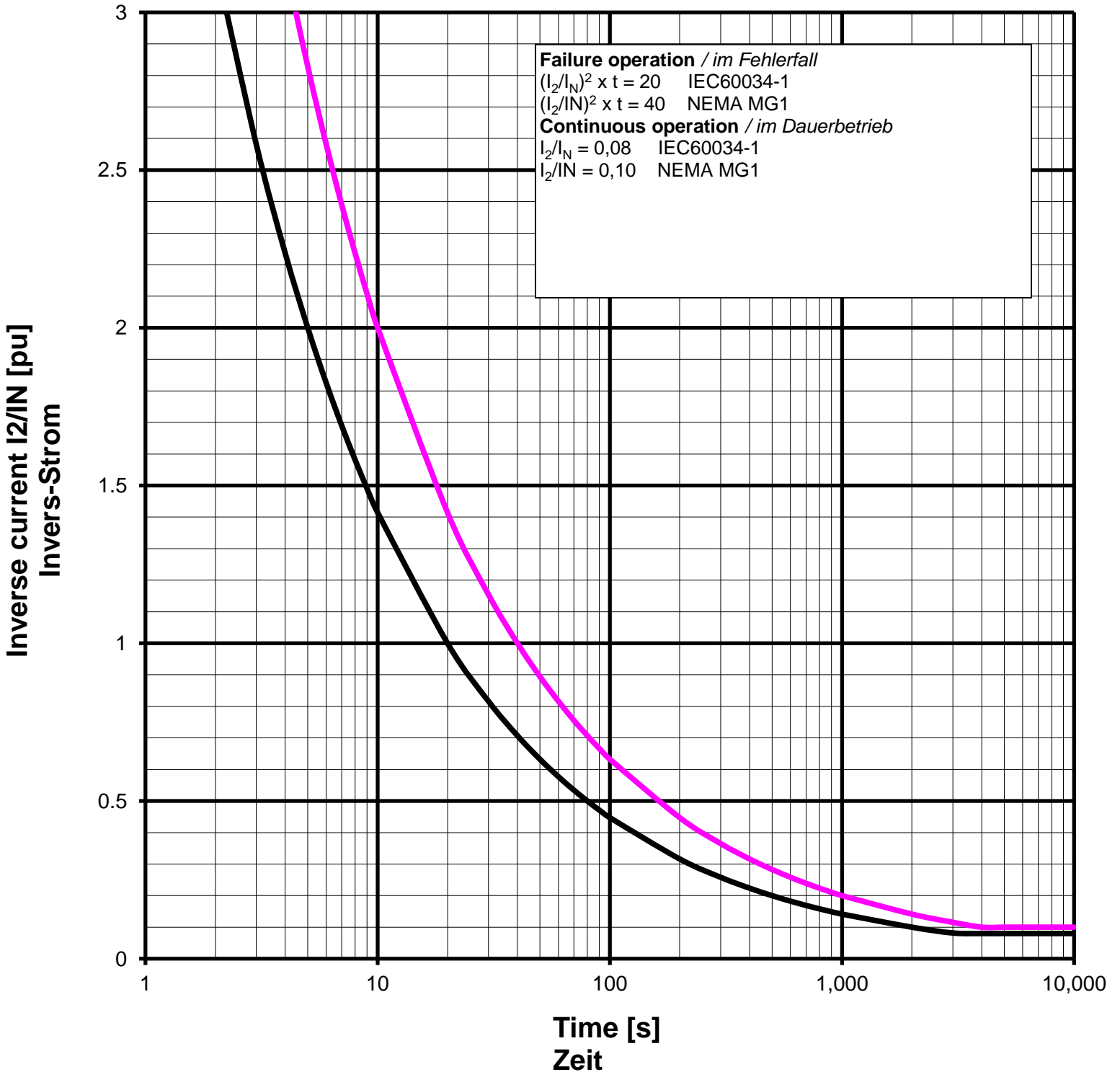
Frequenz

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

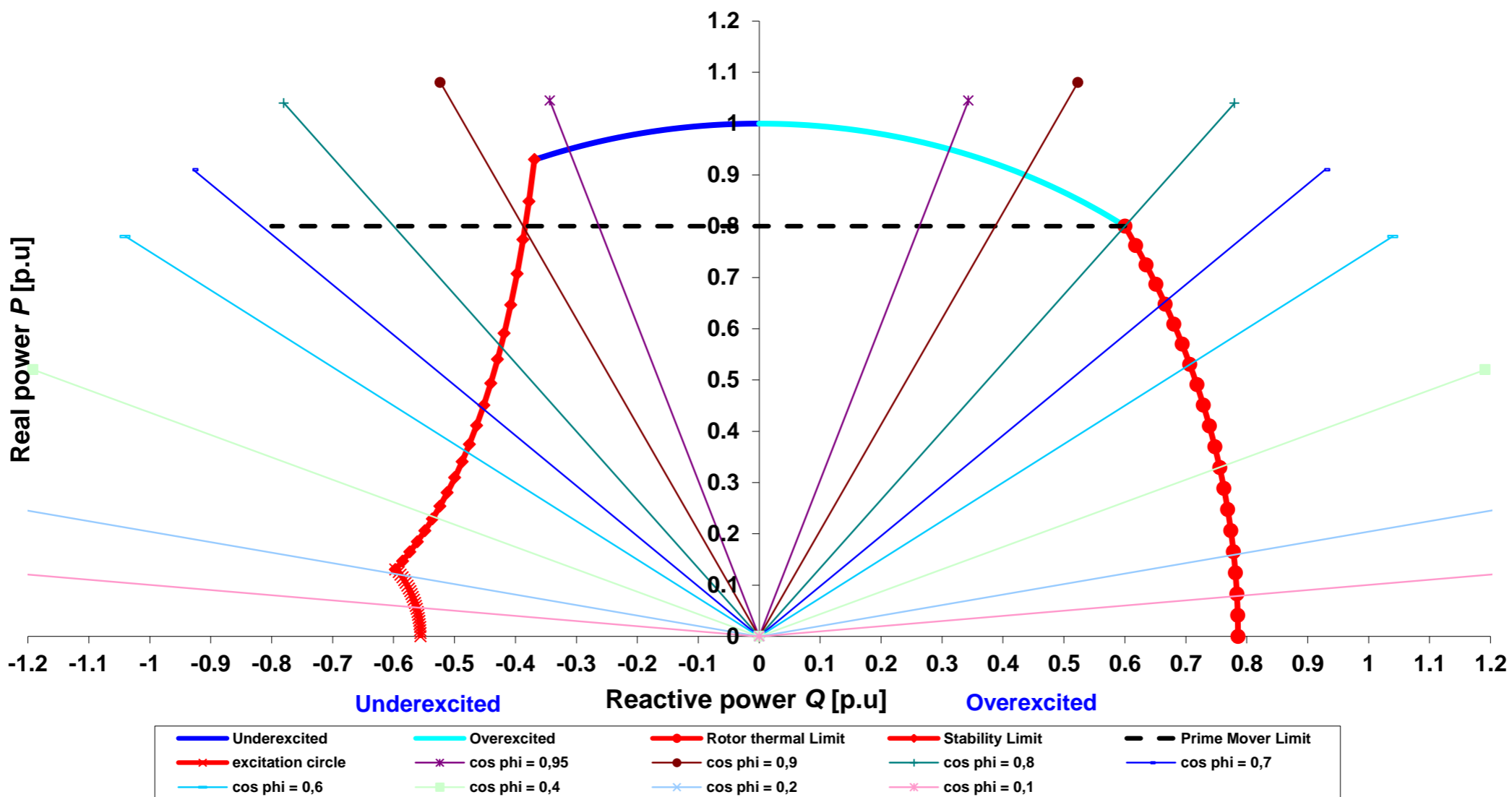
TYPE

DIG 156 o/8

Projekt:

Order Nr.:

Capability (P-Q) Diagram

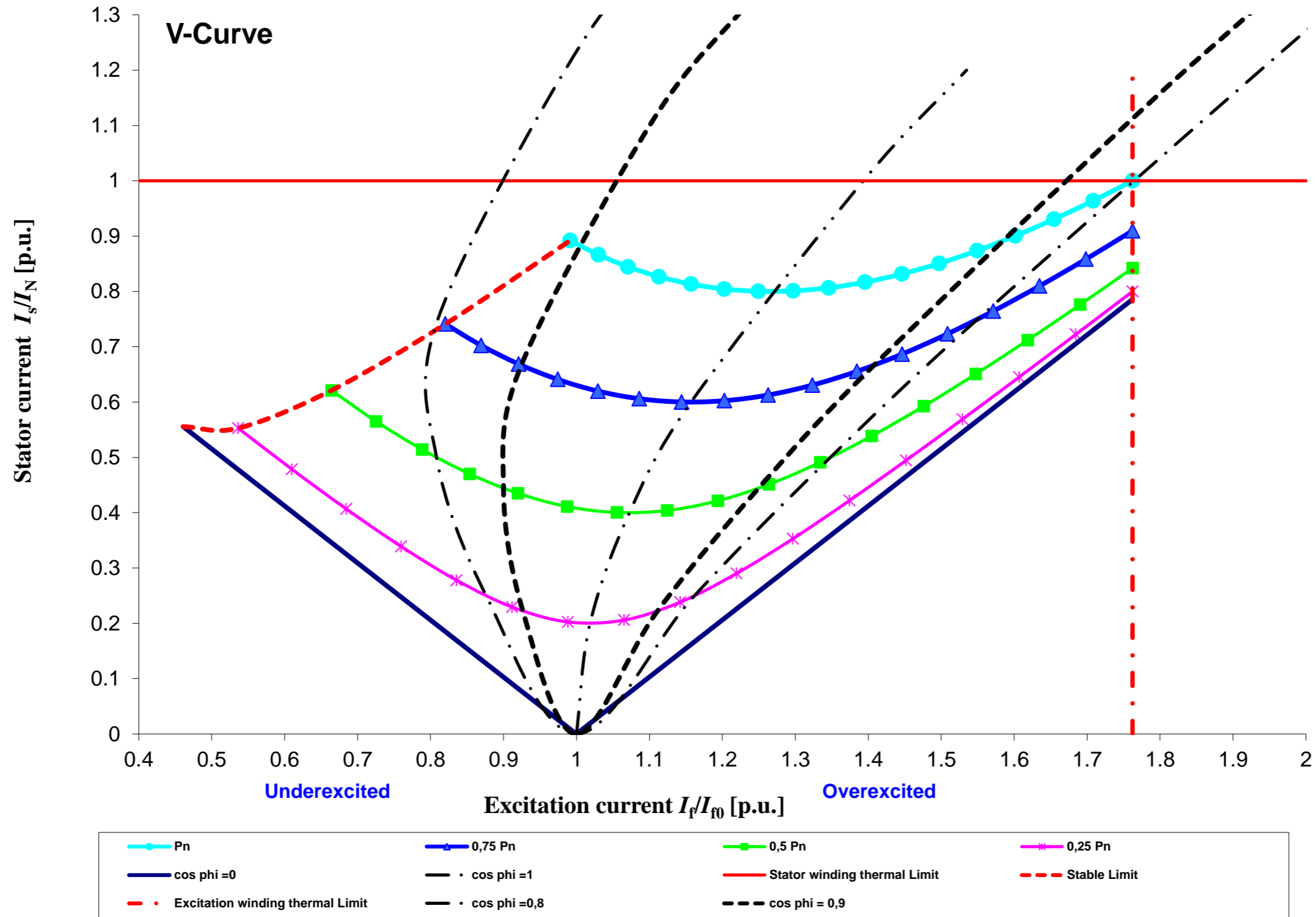


Cummins Generator Technologies

Datum / date:

18/10/2013

TYPE	DIG 156 o/8	Projekt:		Order Nr.:	
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Cummins Generator Technologies	Datum / date:	
	18/10/2013	