

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	15/01/14	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	dsg099k0_4_60_690_A048M982

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

Generator data:					
Generator:	DSG 99 K0/4	Poles:	4	Standards:	IEC 60034
Rated power:	3510 kVA	2808 kWe	2913 kWm		
Power factor:	0.80				
Power at pf 1,0	2831 kVA	2831 kWe	2913 kWm		
Rated voltage:	0.69 kV				
Speed:	1800 1/min				
Frequency:	60 Hz			Voltage range / frequency range:	
Rated current:	2937.0 A			Zone A according IEC 60034-1 (dU = +/-5%, df = +/-2%)	

Winding pitch:					
Insulation class:	Stator: Class H	Rotor: Class H	Temperature rise:	H	
Ambient temperature:	40 ° C	Environment:	Standard environment		
Site altitude:	1000 m	Filter:			
Enclosure:	IP23				
Cooling:	IC 01 - Open-circuit ventilation				
Coolant:	Ambient Air	Temperature	40 ° C	Temperature Air inlet	40 ° C
		Coolant:		generator:	
		Cooling air vol.:	3.9 m³/s	Cooling water quantity:	n/a
Moment of inertia (I):	113 kgm²	Weight:	6300 Kg	Losses (environment):	105 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	96,22	96,4	96,3	95,5	93,2
Power factor 0.9	96,64	96,8	96,6	95,8	93,35
Power factor 1.0	97,06	97,2	96,9	96,1	93,5

Reactances and time constants											
	unsaturated		saturated			unsaturated		saturated			
X _d	2.40	2.16	p.u.	X _q	1.20	1.18	p.u.	T _{d0'}	3.45 s	T _{d0''}	0.03813 s
X _{d'}	0.305	0.305	p.u.	X _{q'}	1.20	1.18	p.u.	T _{d'}	0.44 s	T _{q0'}	0.42 s
X _{d''}	0.185	0.168	p.u.	X _{q''}	0.185	0.185	p.u.	T _{d''}	0.021 s	T _{q0''}	0.27243 s
X ₂	0.194	0.176	p.u.	X ₀	0.055	0.050	p.u.	T _a	0.056 s	T _{q'}	0.42 s
X _{1s}	n.a.	0.101	p.u.							T _{q''}	0.042 s
Short circuit ratio saturated: 0.46					Z _n 0.136 Ohm						

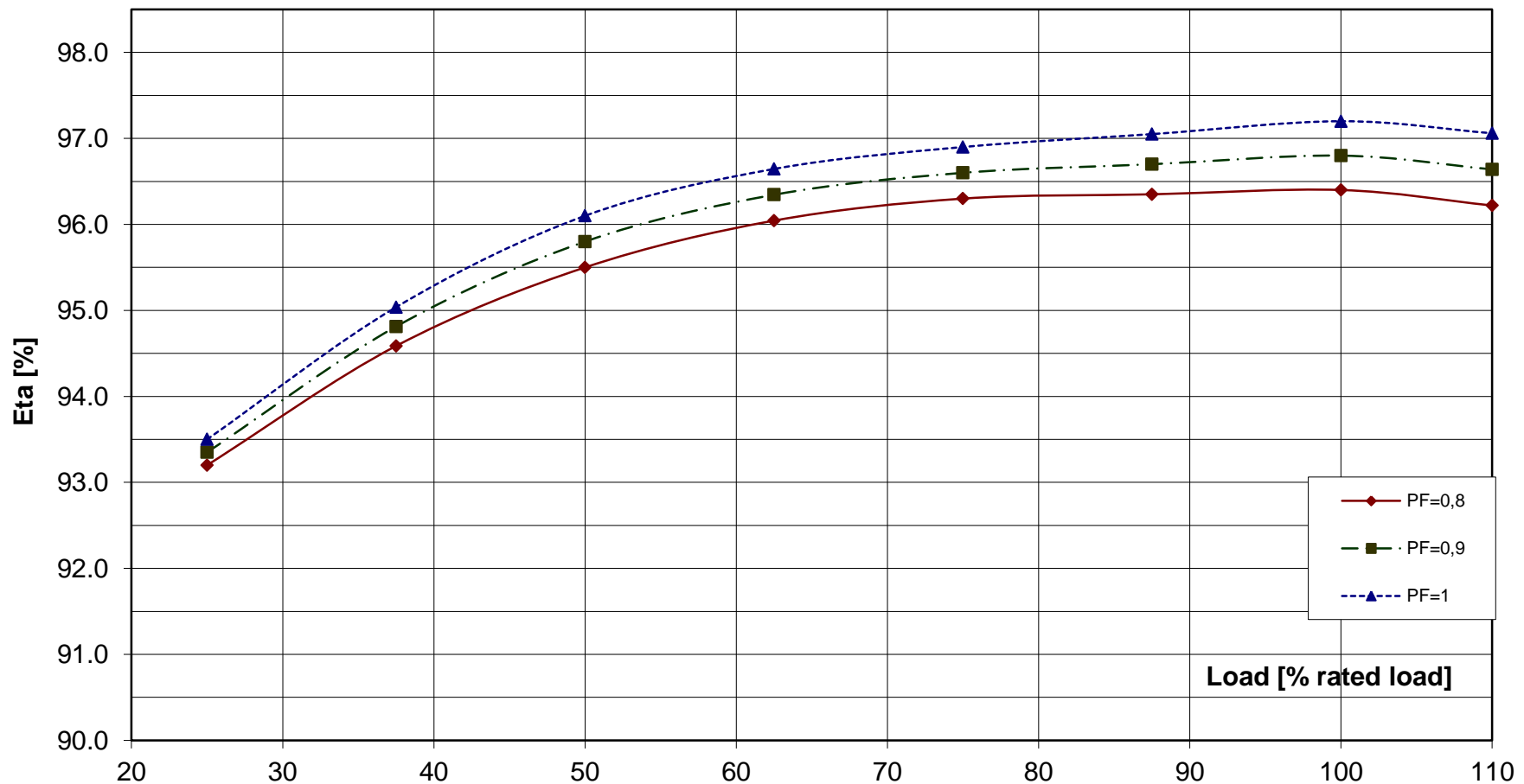
Short circuit data:		
Initial short circuit current (3-phase):	I _{k''}	17482 A
Max. peak current (3-phase):	I _s	44502 A
Sustained short circuit current:	I _k	8811 A
		Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M _{k2}	144.1 kNm
	M _{k3}	86.5 kNm
Max. faulty synchron moment:	M _f	309.8 kNm
Rated kVA torque:	M _{SN}	18.62 kNm
Rated torque	M _N	14.90 kNm
Shaft torque	M _{Sh}	15.46 kNm

Load application:	
max. load application: 1726 kVA (corresponds to 49,18 % from 3510 kVA) for Power factor 0.4 15% transient voltage drop	Power: 3510 kVA Power factor: 0.8 transient voltage drop: -23.4 %

Remarks:

Alternator :	DSG 99 K0/4			
Rated output [kVA]	3510	Rated power factor:	0.8	Rated voltage [kV]: 0.69
Rated frequency [Hz]	60	Rated speed [rpm]	1800	

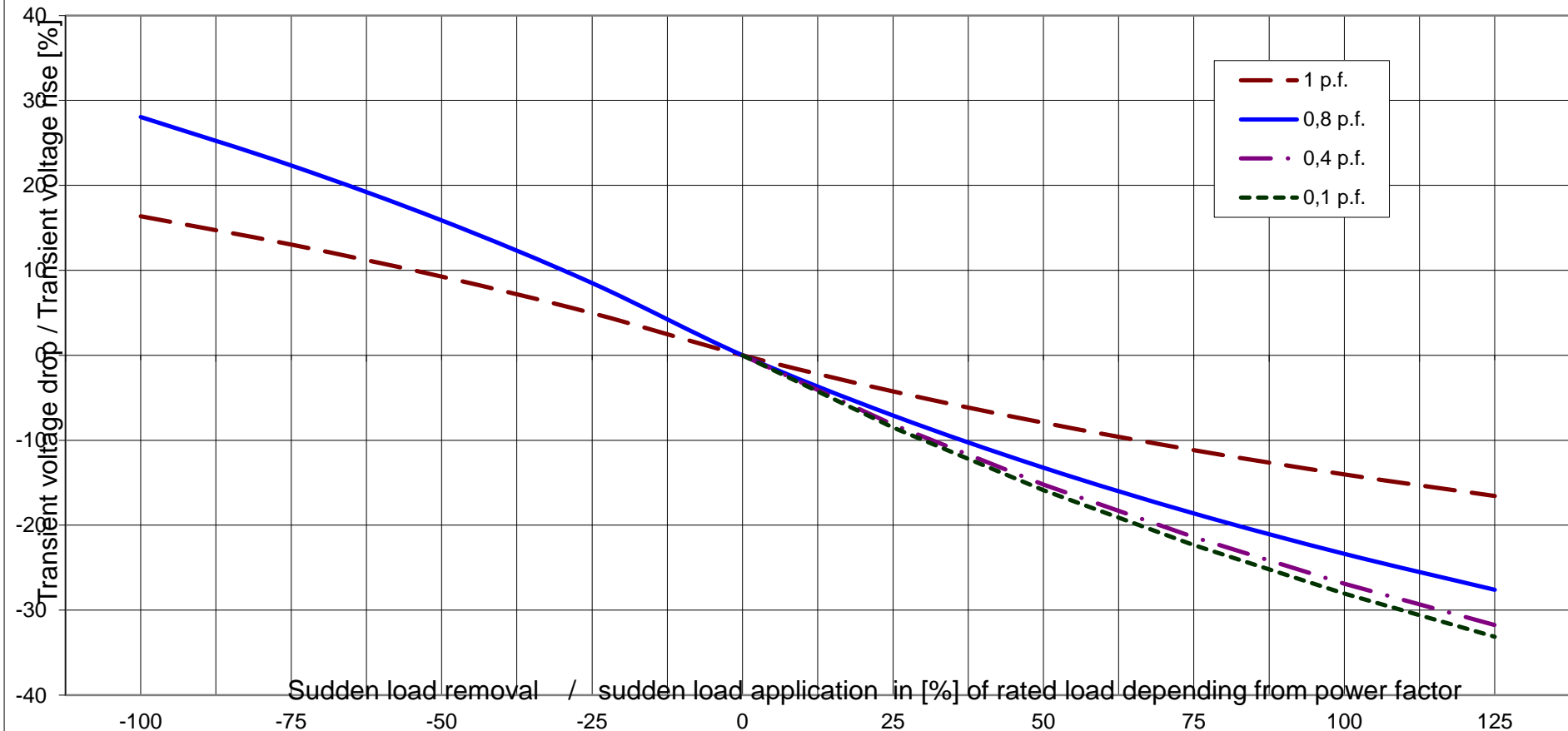
Wirkungsgrad-Kennlinie - Efficiency Curve



Alternator : DSG 99 K0/4

Rated output [kVA]	3510	Rated power factor:	0.8	Rated voltage [kV]:	0.69
Rated frequency [Hz]	60	Rated speed [rpm]	1800		

Transient Voltage rise or drop for sudden load removal or application



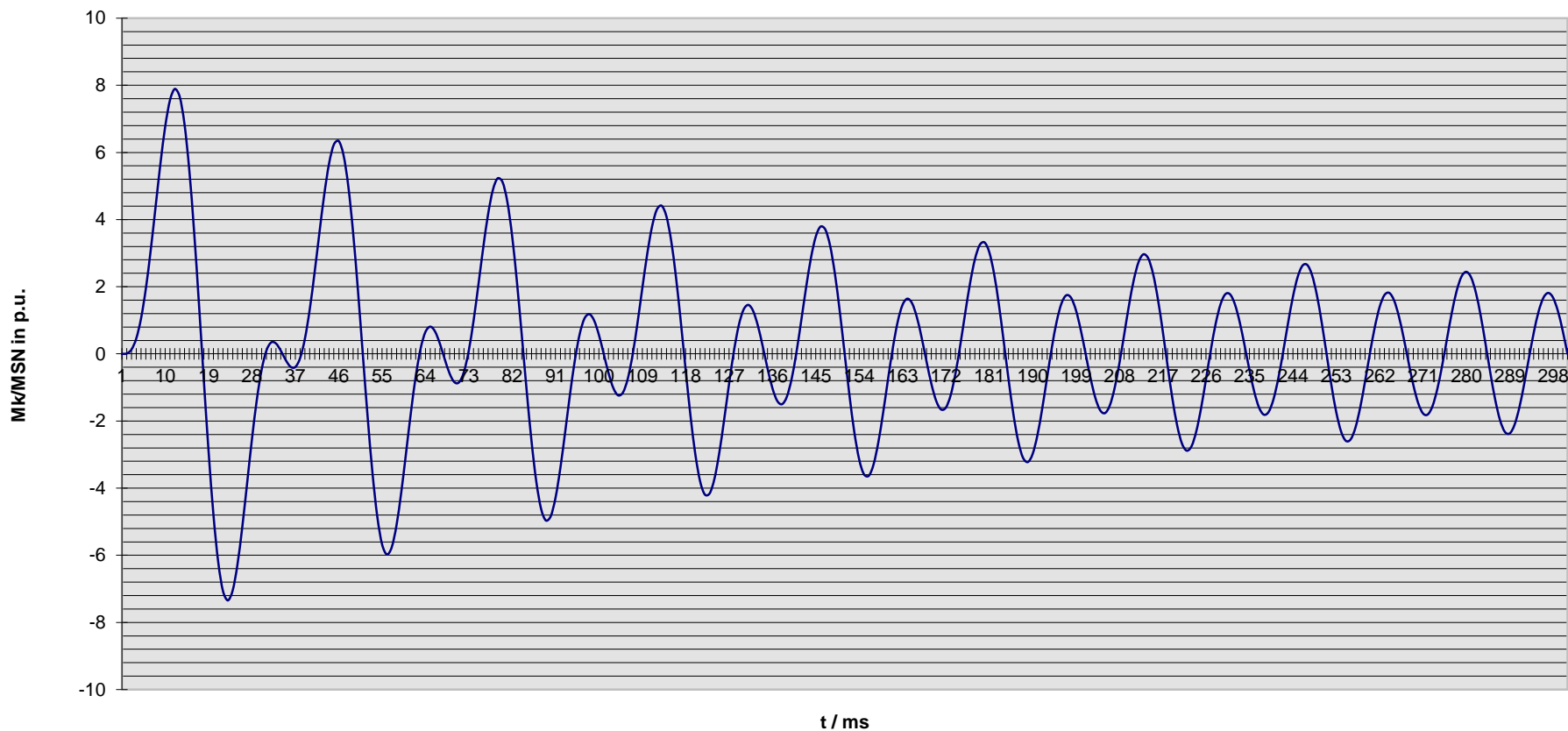


Technisches Datenblatt - Diagramme
Technical data sheet - Diagrams

ING-FCD-0112

Alternator :	DSG 99 K0/4			
Rated output [kVA]	3510	Rated power factor:	0.8	Rated voltage [kV]: 0.69
Rated frequency [Hz]	60	Rated speed [rpm]	1800	MSN related to kVA: 18.62 KNm

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



Nenndaten / nominal data

DSG 99 K0/4

Leistung S_N : **3510 kVA**

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

Rating

p.f.

Spannung U_N : **0.69 kV**

Strom I_N : **2937 A**

Voltage

Current

Frequenz f : **60 Hz**

Drehzahl n : **1,800 min⁻¹**

Frequency

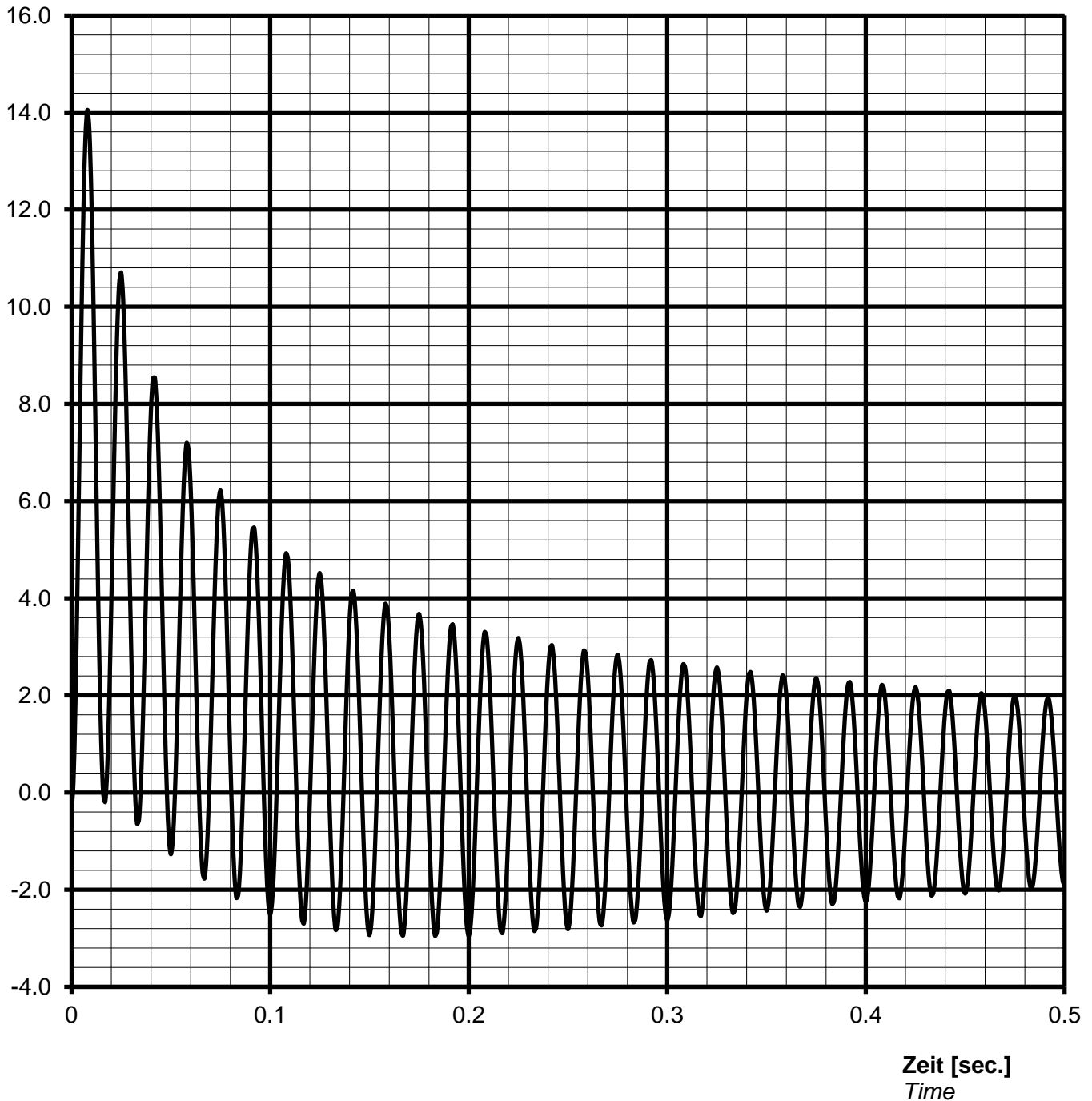
Speed

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

$I_{\text{peak}} =$ **41275 A** or **14.05 p.u.**

Nennwerten / nominal data

DSG 99 K0/4

Leistung S_N : **3510** kVA

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

Rating

p.f.

Spannung U_N : **0.69** kV

Strom I_N : **2937** A

Voltage

Current

Frequenz f: **60** Hz

Drehzahl n: **1800** min⁻¹

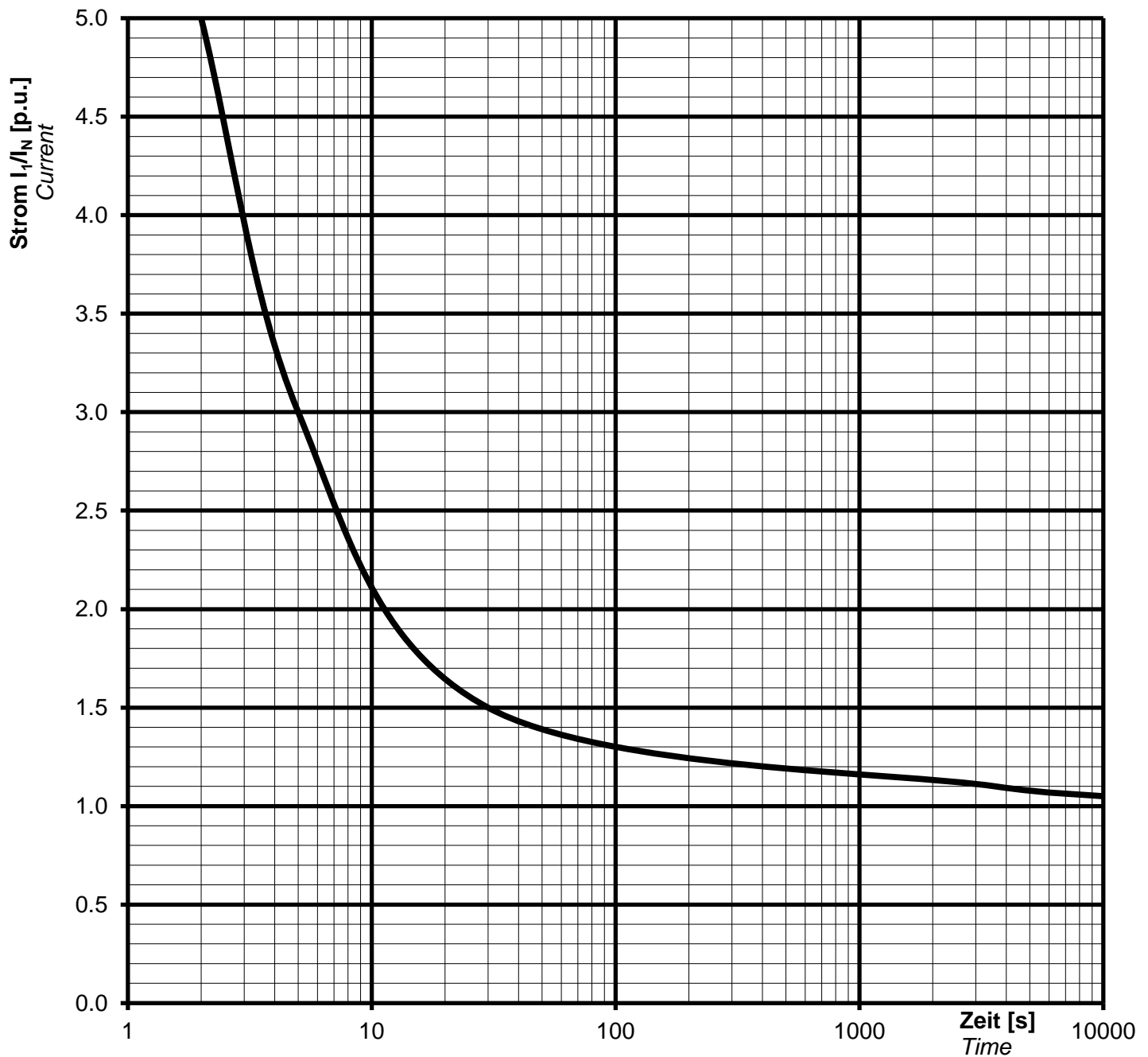
Frequency

Speed

Schutzart **IP23**

Protection

Überlast Kennlinie Overload capability



Notizen / remarks:

Strom / Zeit Kriterien:

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

Current/time characteristics:

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

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

Nennwerten / nominal data

DSG 99 K0/4

Rating S_N : **3510 kVA**

p.f. **0.80**

Bemessungsleistung

Leistungsfaktor $\cos \varphi$:

Nominal voltage U_N : **0.69 kV**

Nominal current I_N : **2937 A**

Bemessungsspannung

Bemessungsstrom

Frequency f_N : **60 Hz**

Speed n : **1800 min⁻¹**

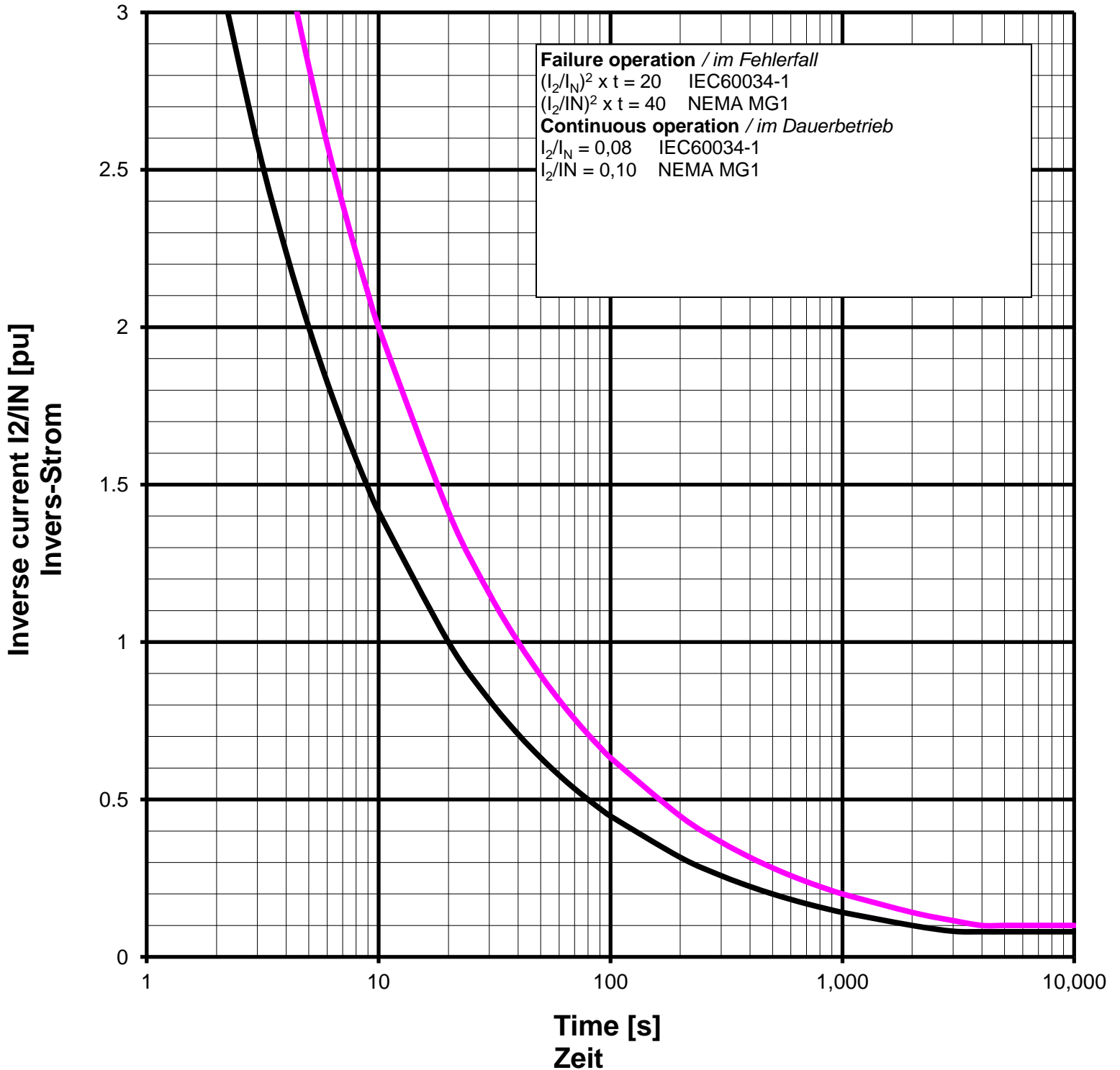
Frequenz

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

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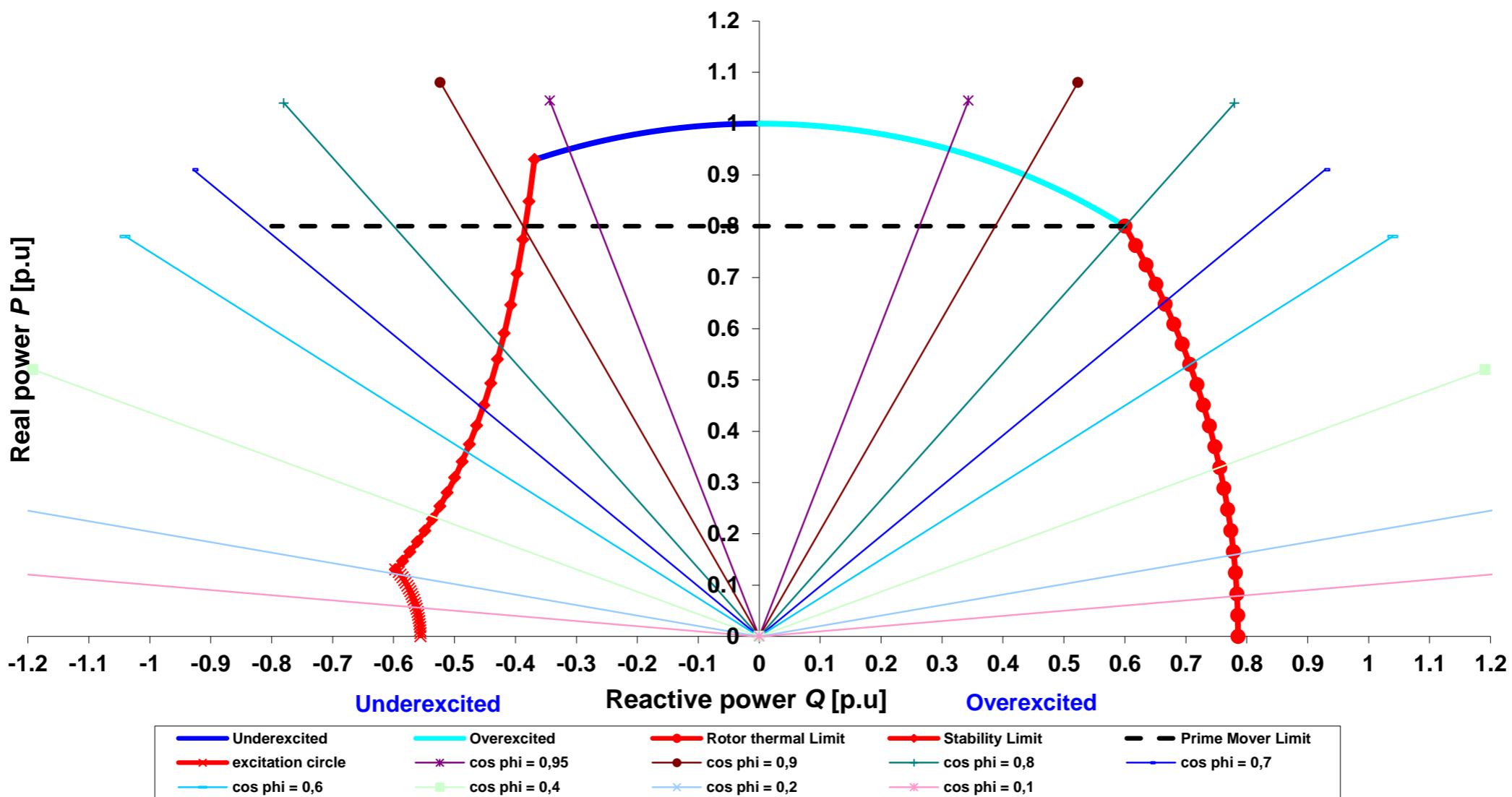
TYPE

DSG 99 K0/4

Projekt:

Order Nr.:

Capability (P-Q) Diagram

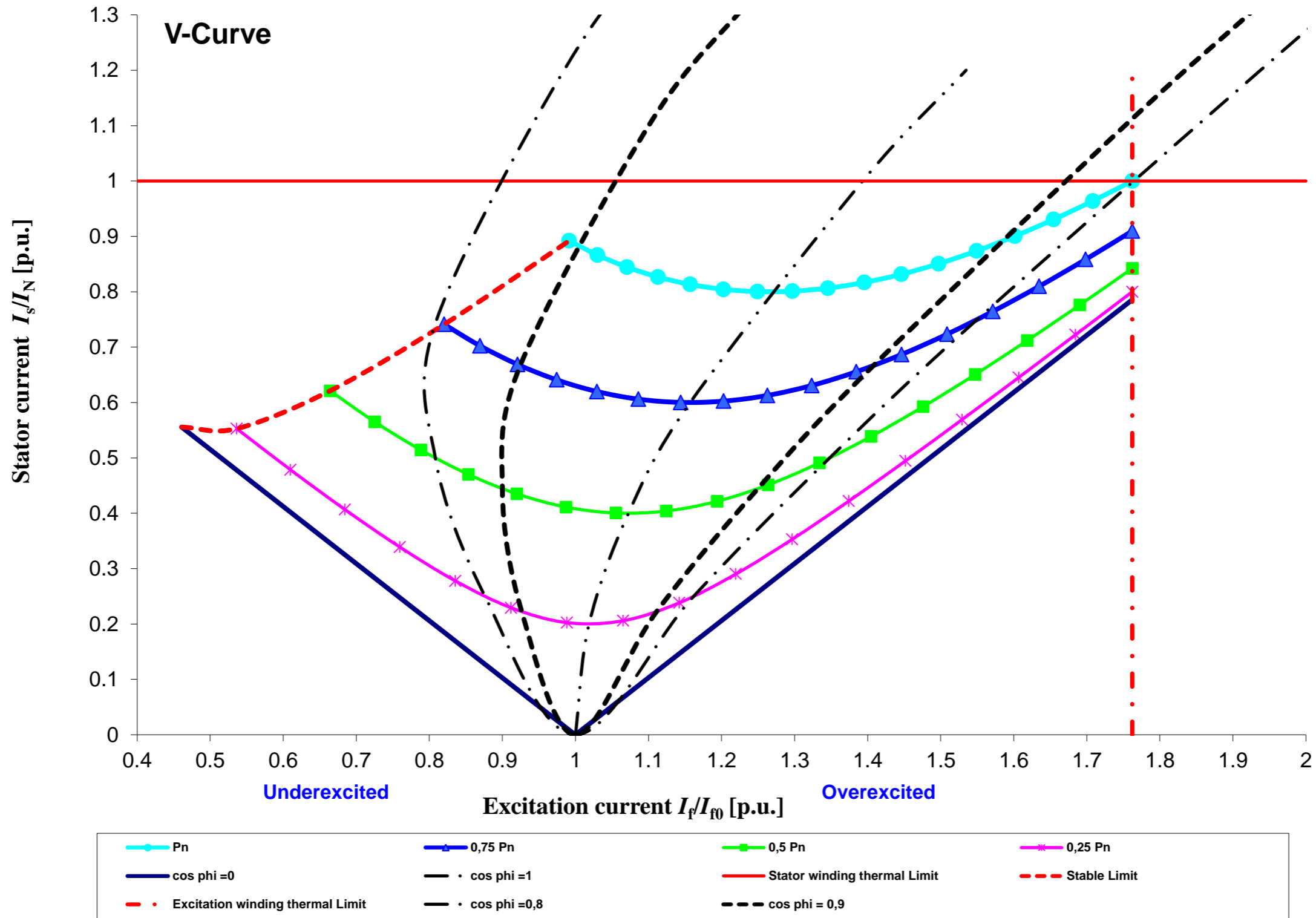


Cummins Generator Technologies

Datum / date:

21/01/2014

TYPE	DSG 99 K0/4	Projekt:		Order Nr.:	
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Cummins Generator Technologies	Datum / date:	
	21/01/2014	