

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	08/01/14	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	dsg099m1_4_50_690_A048M980

Object data:

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

Generator data:

Generator:	DSG 99 M1/4	Poles:	4	Standards:	IEC 60034
Rated power:	4130 kVA	3304 kWe	3413 kWm		
Power factor:	0.80				
Power at pf 1,0	3324 kVA	3324 kWe	3413 kWm		
Rated voltage:	0.69 kV				
Speed:	1500 1/min				
Frequency:	50 Hz			Voltage range / frequency range:	
Rated current:	3455.7 A			Zone A according IEC 60034-1 (dU = +/-5%, df = +/-2%)	

Winding pitch:

Insulation class:	Stator: Class H	Rotor: Class H	Temperature rise:	H
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Ambient temperature:	40 ° C	Environment:	Standard environment
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Site altitude:	1000 m	Filter:	
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Enclosure:	IP23		
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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.:	3.3 m³/s	Cooling water quantity:	n/a
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Moment of inertia (I):	150 kgm²	Weight:	8100 Kg	Losses (environment):	109 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	96,64	96,8	96,9	96,4	94,5
Power factor 0.9	96,96	97,1	97,1	96,65	94,65
Power factor 1.0	97,27	97,4	97,3	96,9	94,8

Reactances and time constants

	unsaturated		saturated			unsaturated		saturated					
X_d	2.35	2.12	p.u.	X_q	1.18	1.16	p.u.	$T_{d0'}$	3.8	s	$T_{d0''}$	0.02717	s
X_d'	0.288	0.288	p.u.	X_q'	1.18	1.16	p.u.	$T_{d'}$	0.47	s	$T_{q0'}$	0.3	s
X_d''	0.175	0.159	p.u.	X_q''	0.175	0.175	p.u.	$T_{d''}$	0.015	s	$T_{q0''}$	0.20229	s
X_2	0.184	0.167	p.u.	X_0	0.053	0.048	p.u.	T_a	0.057	s	$T_{q'}$	0.3	s
X_{1s}	n.a.	0.095	p.u.								$T_{q''}$	0.03	s

Short circuit ratio saturated:	0.47	Z_n	0.115	Ohm
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Short circuit data:

Initial short circuit current (3-phase):	I_k''	21734 A
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Max. peak current (3-phase):	I_s	55326 A
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Sustained short circuit current:	I_k	10367 A	Minimum 3 x rated current for max.10 s
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Initial short circuit torque:	M_{k2}	215.0 kNm
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	M_{k3}	129.0 kNm
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Max. faulty synchron moment:	M_f	462.3 kNm
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Rated kVA torque:	M_{SN}	26.29 kNm
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Rated torque	M_N	21.03 kNm
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Shaft torque	M_{Sh}	21.73 kNm
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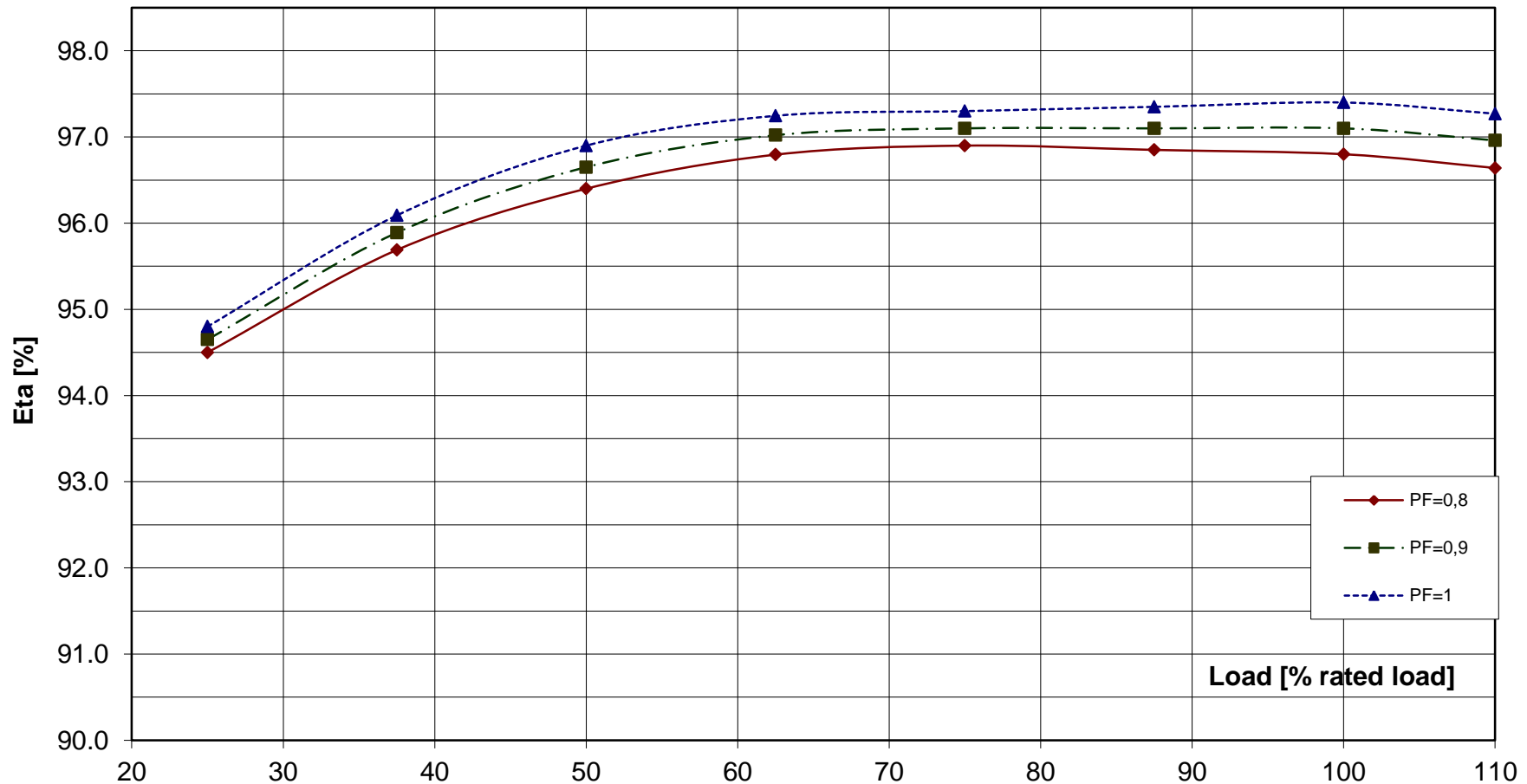
Load application:

max. load application: 2151 kVA (corresponds to 52,08 % from 4130 kVA) for Power factor 0.4 15% transient voltage drop	Power: 4130 kVA Power factor: 0.8 transient voltage drop: -22.4 %
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Remarks:

Alternator :	DSG 99 M1/4			
Rated output [kVA]	4130	Rated power factor:	0.8	Rated voltage [kV]: 0.69
Rated frequency [Hz]	50	Rated speed [rpm]	1500	

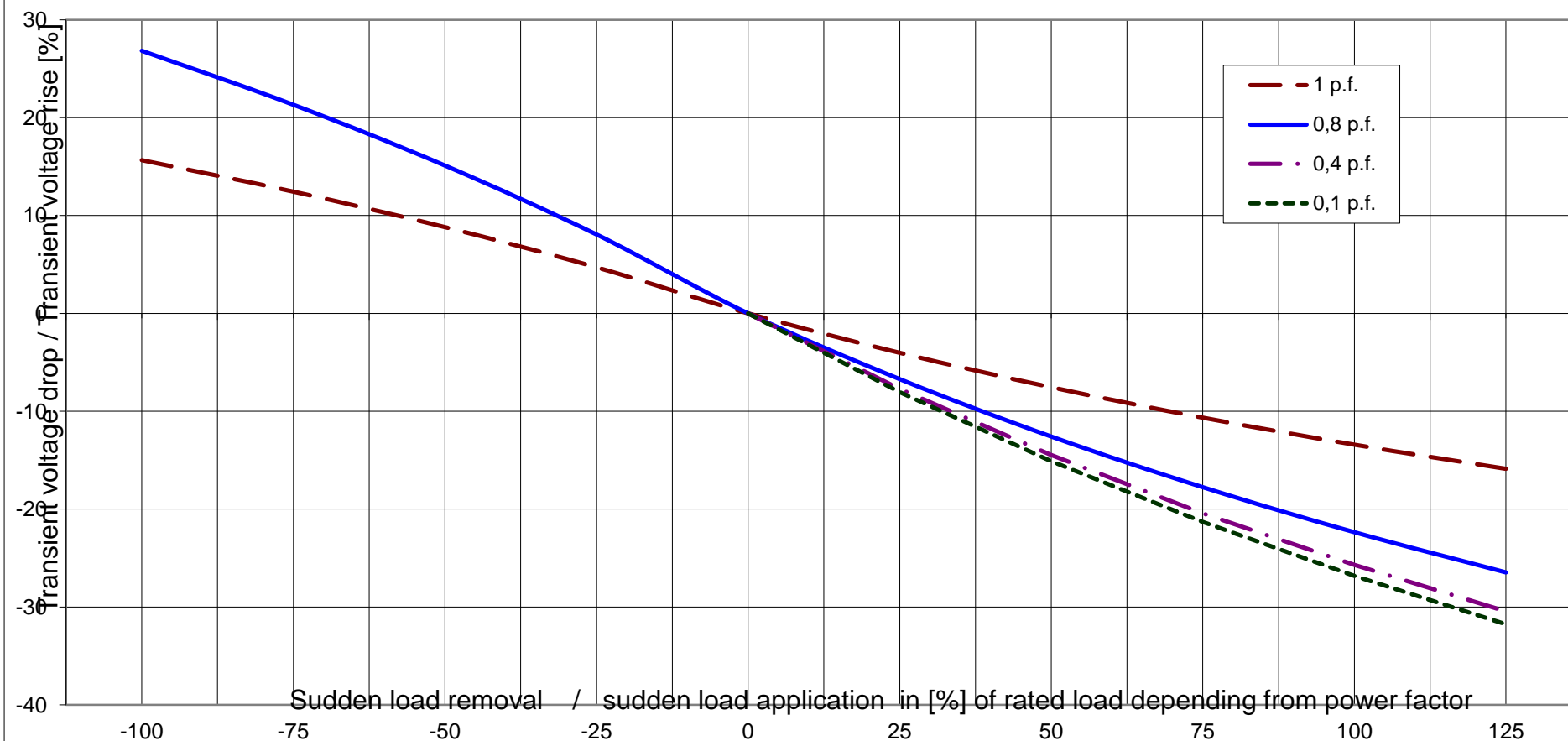
Wirkungsgrad-Kennlinie - Efficiency Curve



Alternator : DSG 99 M1/4

Rated output [kVA]	4130	Rated power factor:	0.8	Rated voltage [kV]:	0.69
Rated frequency [Hz]	50	Rated speed [rpm]	1500		

Transient Voltage rise or drop for sudden load removal or application



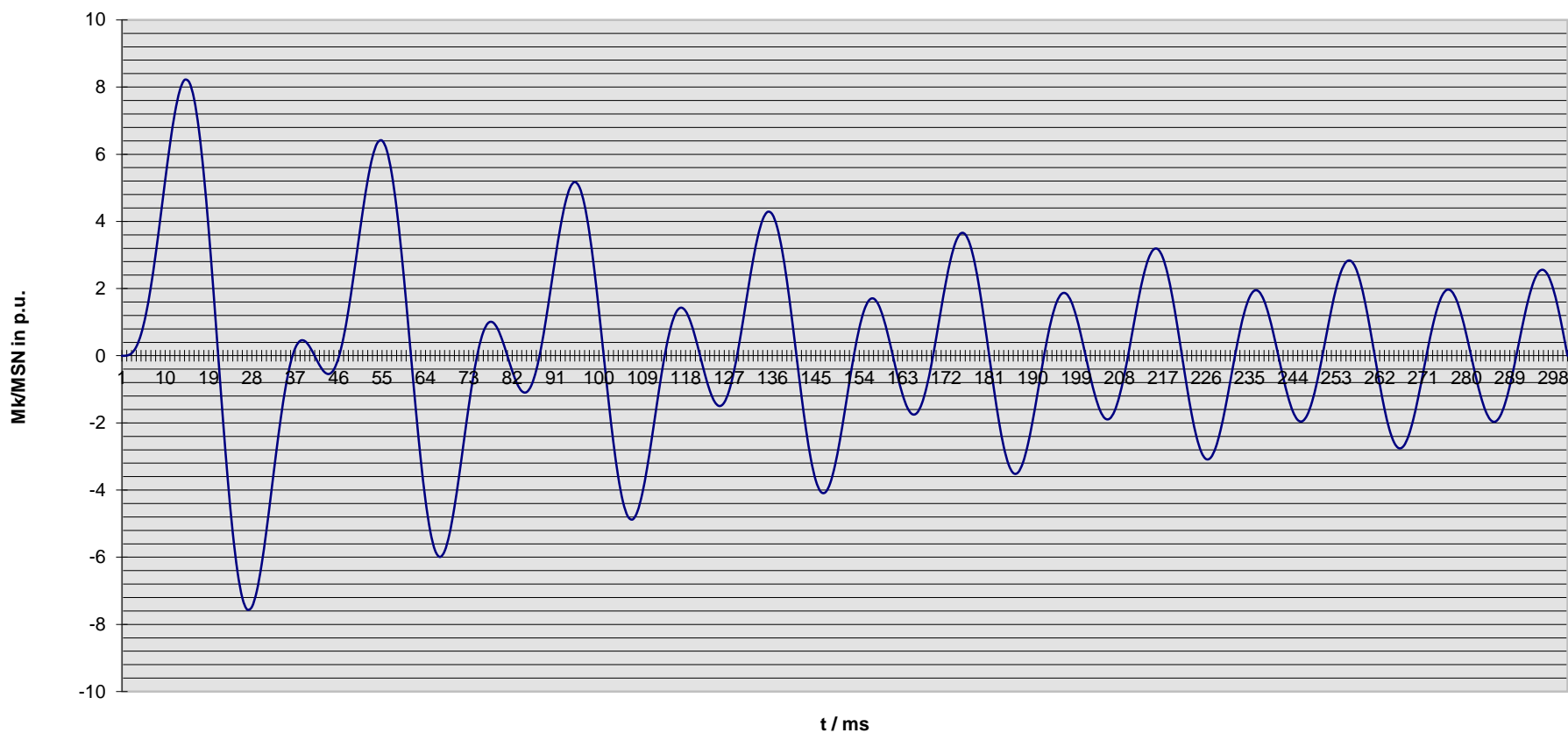


Technisches Datenblatt - Diagramme
Technical data sheet - Diagrams

ING-FCD-0112

Alternator :	DSG 99 M1/4			
Rated output [kVA]	4130	Rated power factor:	0.8	Rated voltage [kV]: 0.69
Rated frequency [Hz]	50	Rated speed [rpm]	1500	MSN related to kVA: 26.29 KNm

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



Nenndaten / nominal data

DSG 99 M1/4

Leistung S_N : **4130 kVA**

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

Rating

p.f.

Spannung U_N : **0.69 kV**

Strom I_N : **3456 A**

Voltage

Current

Frequenz f : **50 Hz**

Drehzahl n : **1,500 min⁻¹**

Frequency

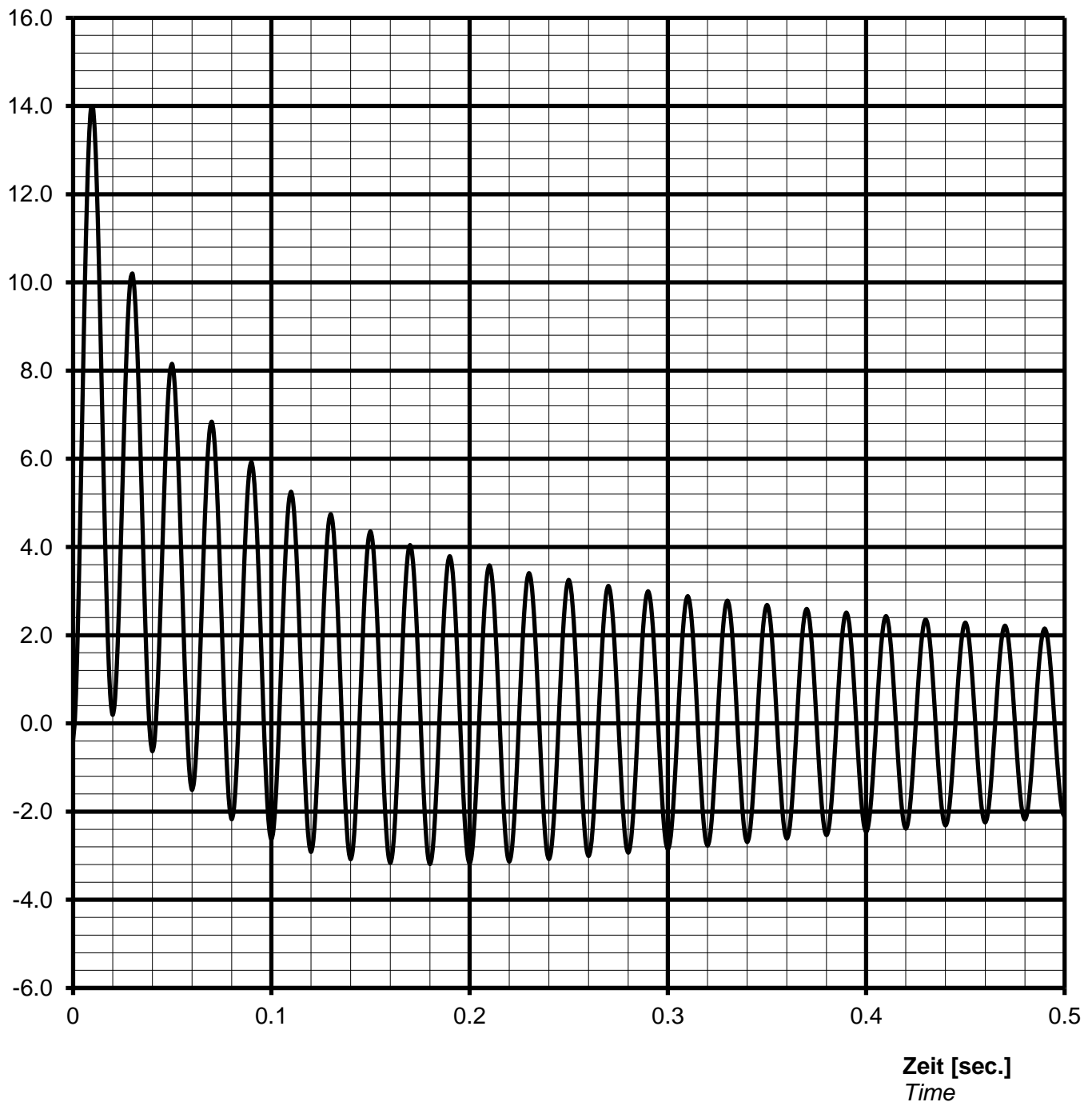
Speed

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 $I_{\text{peak}} =$ **48338 A** or **13.99 p.u.**

Nennwerten / nominal data

DSG 99 M1/4

Leistung S_N : **4130 kVA**

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

Rating

p.f.

Spannung U_N : **0.69 kV**

Strom I_N : **3456 A**

Voltage

Current

Frequenz f: **50 Hz**

Drehzahl n: **1500 min⁻¹**

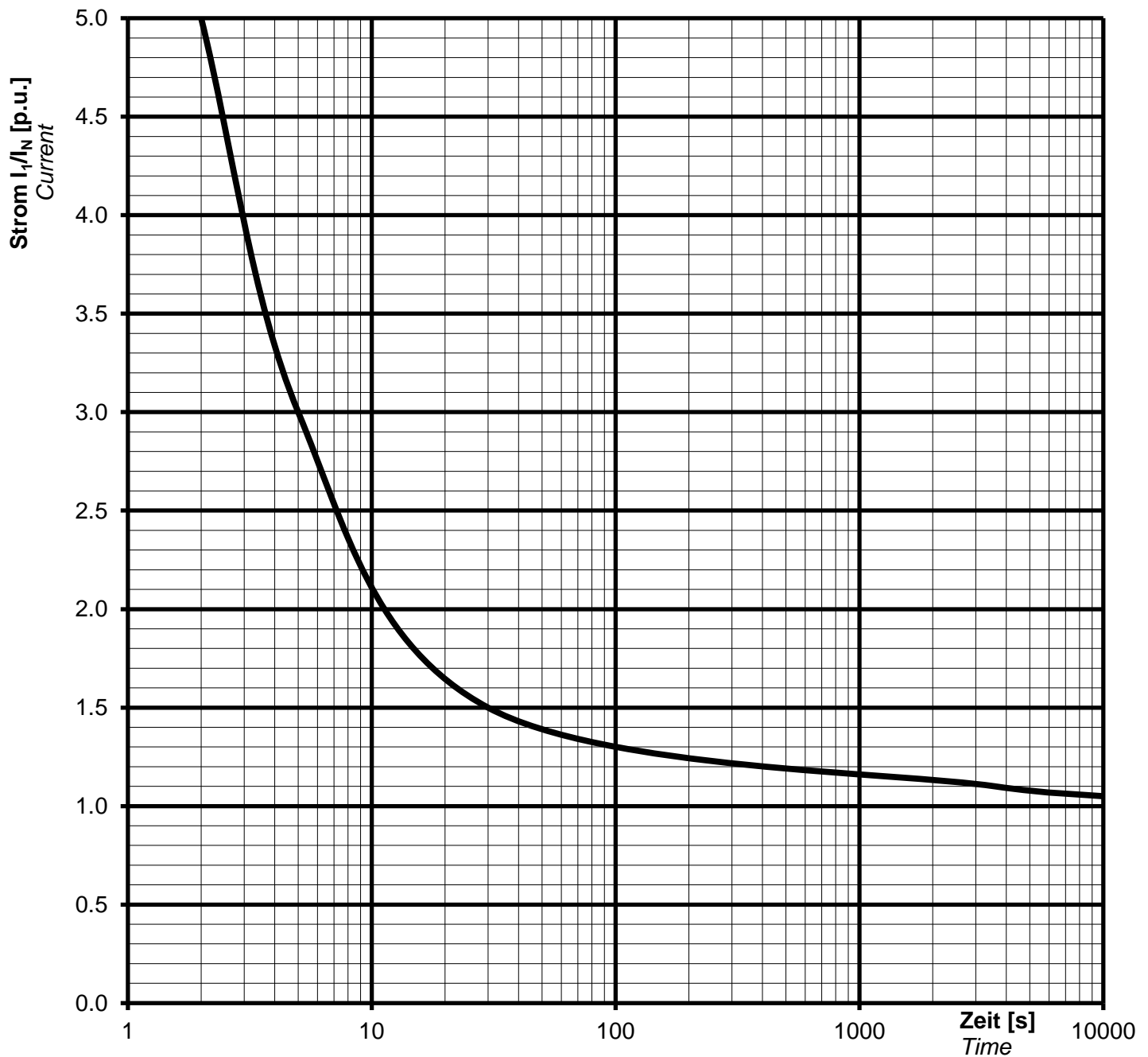
Frequency

Speed

Schutzart **IP23**

Protection

Überlast Kennlinie Overload capability



Notizen / remarks:

Strom / Zeit Kriterien:

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

Current/time characteristics:

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

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

Nenndaten / nominal data

DSG 99 M1/4

Rating S_N : **4130 kVA**

p.f. **0.80**

Bemessungsleistung

Leistungsfaktor $\cos \varphi$:

Nominal voltage U_N : **0.69 kV**

Nominal current I_N : **3456 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

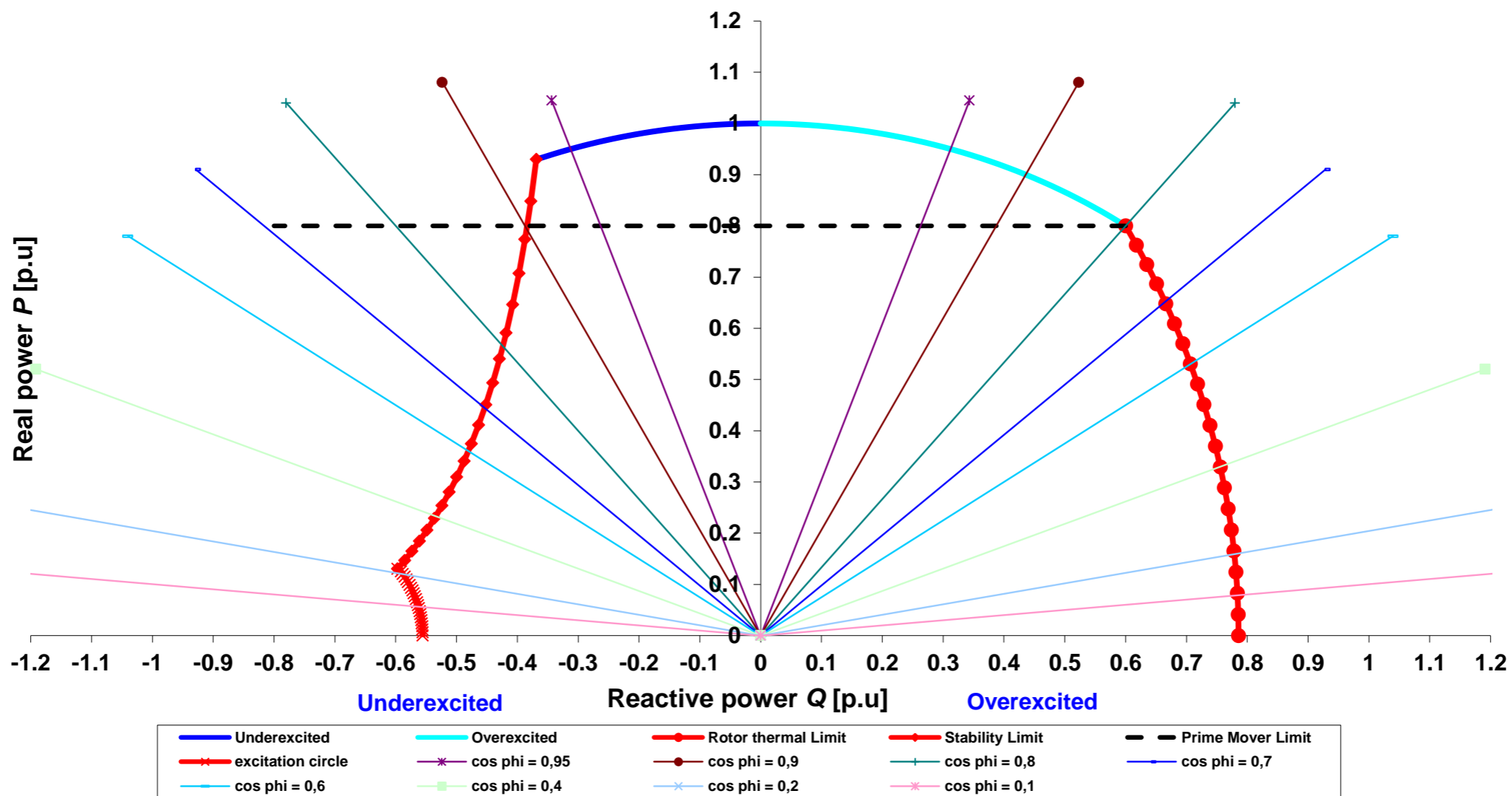
TYPE

DSG 99 M1/4

Projekt:

Order Nr.:

Capability (P-Q) Diagram

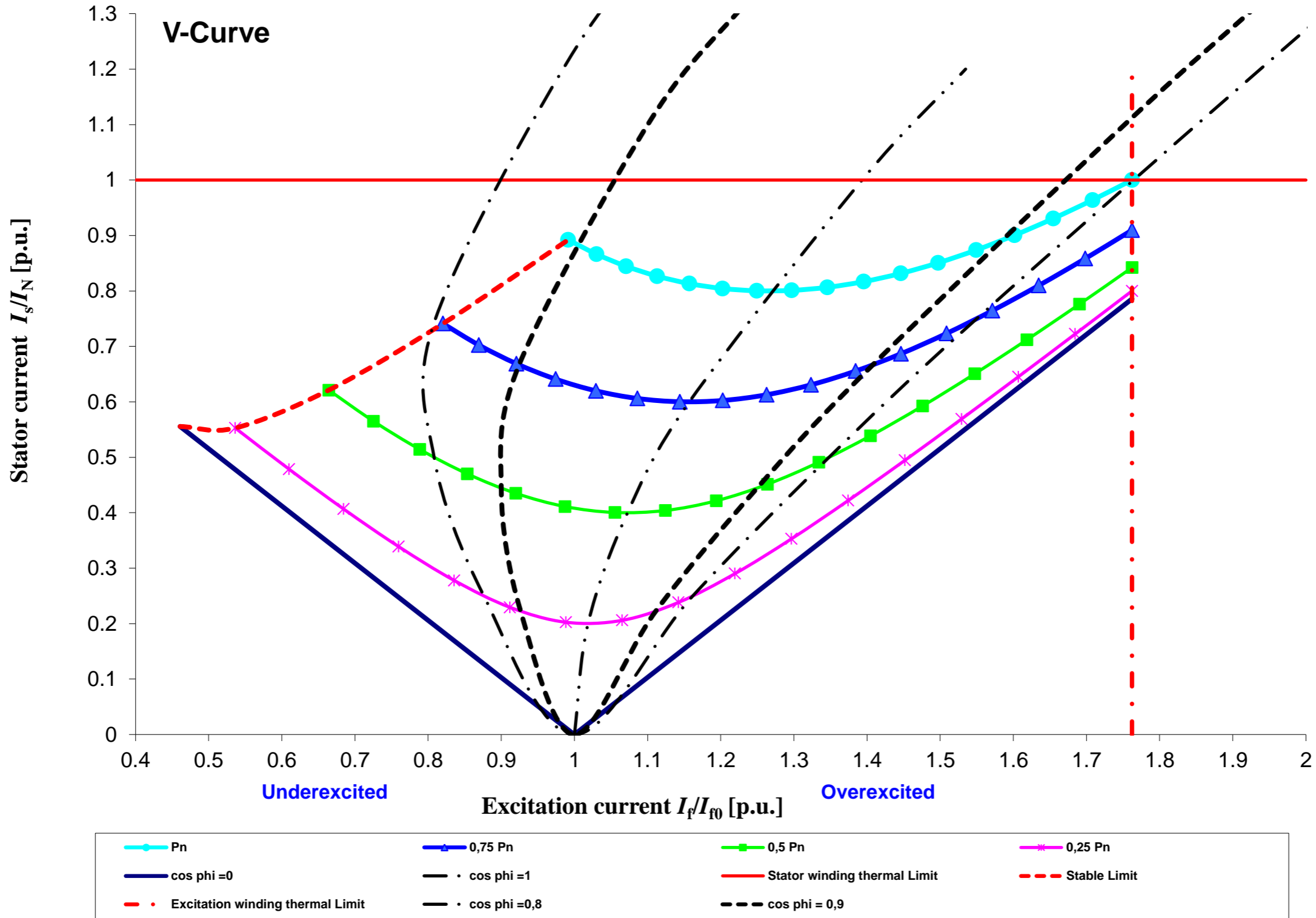


Cummins Generator Technologies

Datum / date:

21/01/2014

TYPE	DSG 99 M1/4	Projekt:		Order Nr.:	
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Cummins Generator Technologies	Datum / date:	
	21/01/2014	