

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	03/10/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	DSG114M1_6_50_400

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

Generator data:					
Generator:	DSG 114 M1/6	Poles:	6	Standards: IEC 60034	
Rated power:	4030 kVA	3224 kWe	3334 kWm		
Power factor:	0.80				
Power at pf 1,0	3256 kVA	3256 kWe	3334 kWm		
Rated voltage:	0.4 kV				
Speed:	1000 1/min				
Frequency:	50 Hz		Voltage range / frequency range:		
Rated current:	5816.8 A		Zone A according IEC 60034-1 (dU = +/-5%, df = +/-2%)		
Winding pitch:	ca. 5/6				
Insulation class:	Stator: Class H	Rotor: Class H	Temperature rise:	H	
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.:	3.0 m³/s	Cooling water quantity:	n/a
Moment of inertia (I):	312 kgm²	Weight:	11000 Kg	Losses (environment):	110 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	96,54	96,7	96,8	96,6	95,2
Power factor 0.9	97,04	97,18	97,2	96,9	95,35
Power factor 1.0	97,53	97,65	97,6	97,2	95,5

Reactances and time constants									
	unsaturated		saturated			unsaturated		saturated	
X _d	2.20	1.98 p.u.	X _q	1.10	1.08 p.u.	T _{d0'}	3.3 s	T _{d0''}	0.03423 s
X _{d'}	0.267	0.267 p.u.	X _{q'}	1.10	1.08 p.u.	T _{d'}	0.40 s	T _{q0'}	0.4 s
X _{d''}	0.172	0.156 p.u.	X _{q''}	0.172	0.172 p.u.	T _{d''}	0.02 s	T _{q0''}	0.25581 s
X ₂	0.180	0.164 p.u.	X ₀	0.052	0.047 p.u.	T _a	0.06 s	T _{q'}	0.4 s
X _{1s}	n.a.	0.094 p.u.						T _{q''}	0.04 s
Short circuit ratio saturated:	0.51		Z _n	0.040 Ohm					

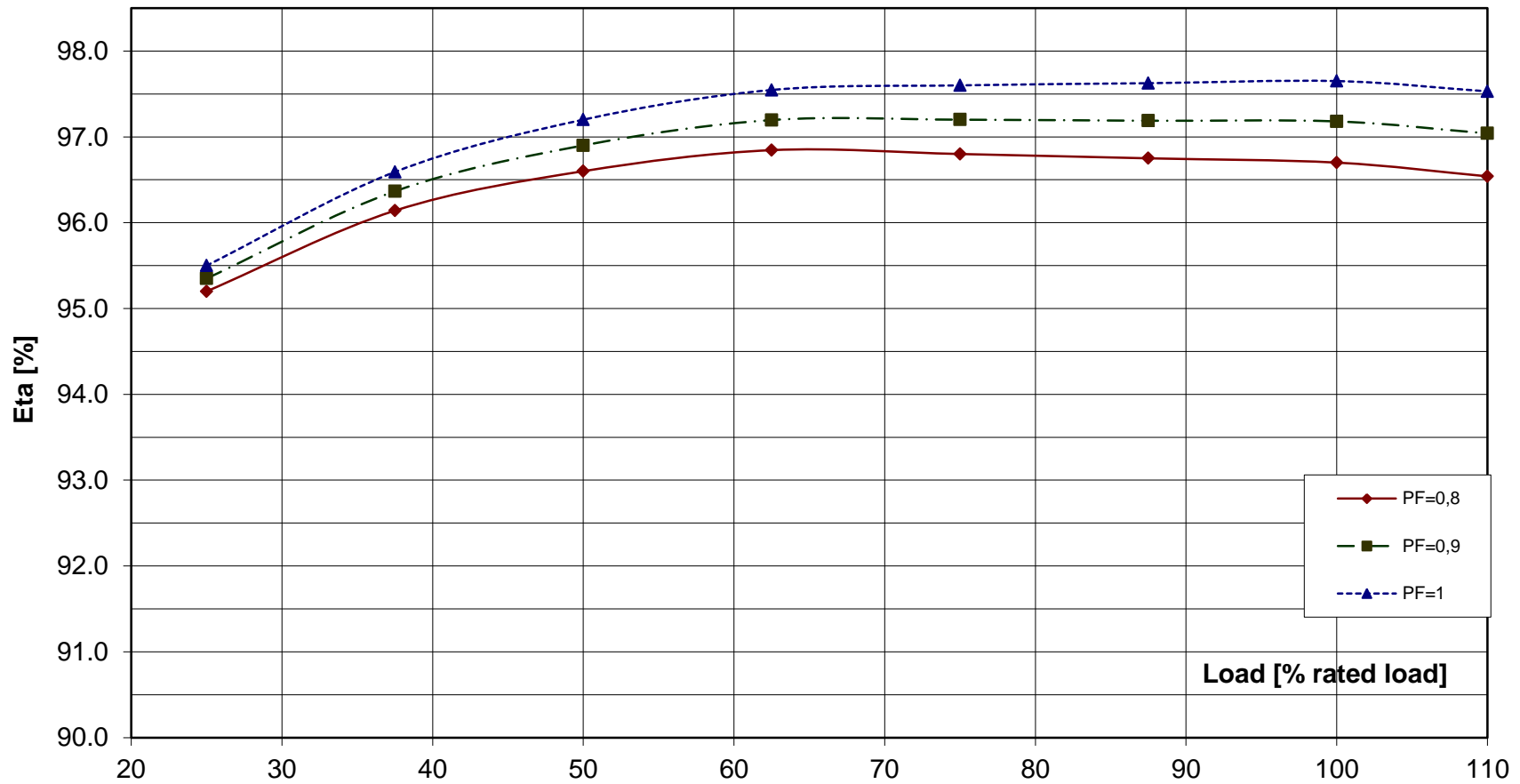
Short circuit data:			
Initial short circuit current (3-phase):	I _{k'}	37287 A	
Max. peak current (3-phase):	I _s	94917 A	
Sustained short circuit current:	I _k	17450 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M _{k2}	320.7 kNm	
	M _{k3}	192.4 kNm	
Max. faulty synchron moment:	M _f	689.5 kNm	
Rated kVA torque:	M _{SN}	38.49 kNm	
Rated torque	M _N	30.79 kNm	
Shaft torque	M _{Sh}	31.84 kNm	

Load application:	
max. load application: 2264 kVA (corresponds to 56,18 % from 4030 kVA) for Power factor 0.4 15% transient voltage drop	Power: 4030 kVA Power factor: 0.8 transient voltage drop: -21.1 %

Remarks:

Alternator :	DSG 114 M1/6			
Rated output [kVA]	4030	Rated power factor:	0.8	Rated voltage [kV]: 0.4
Rated frequency [Hz]	50	Rated speed [rpm]	1000	

Wirkungsgrad-Kennlinie - Efficiency Curve



Alternator : DSG 114 M1/6

Rated output [kVA]

4030

Rated power factor:

0.8

Rated voltage [kV]: 0.4

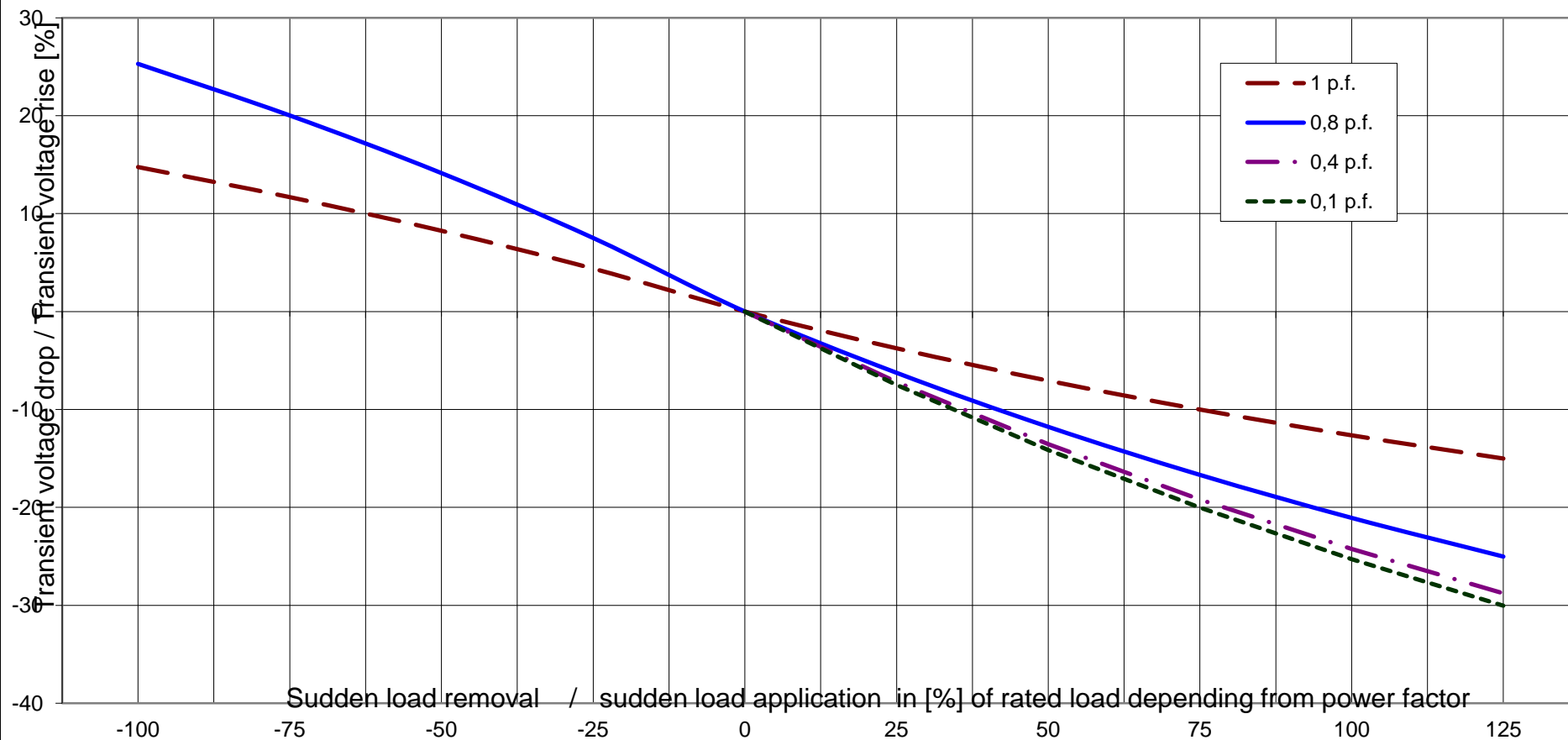
Rated frequency [Hz]

50

Rated speed [rpm]

1000

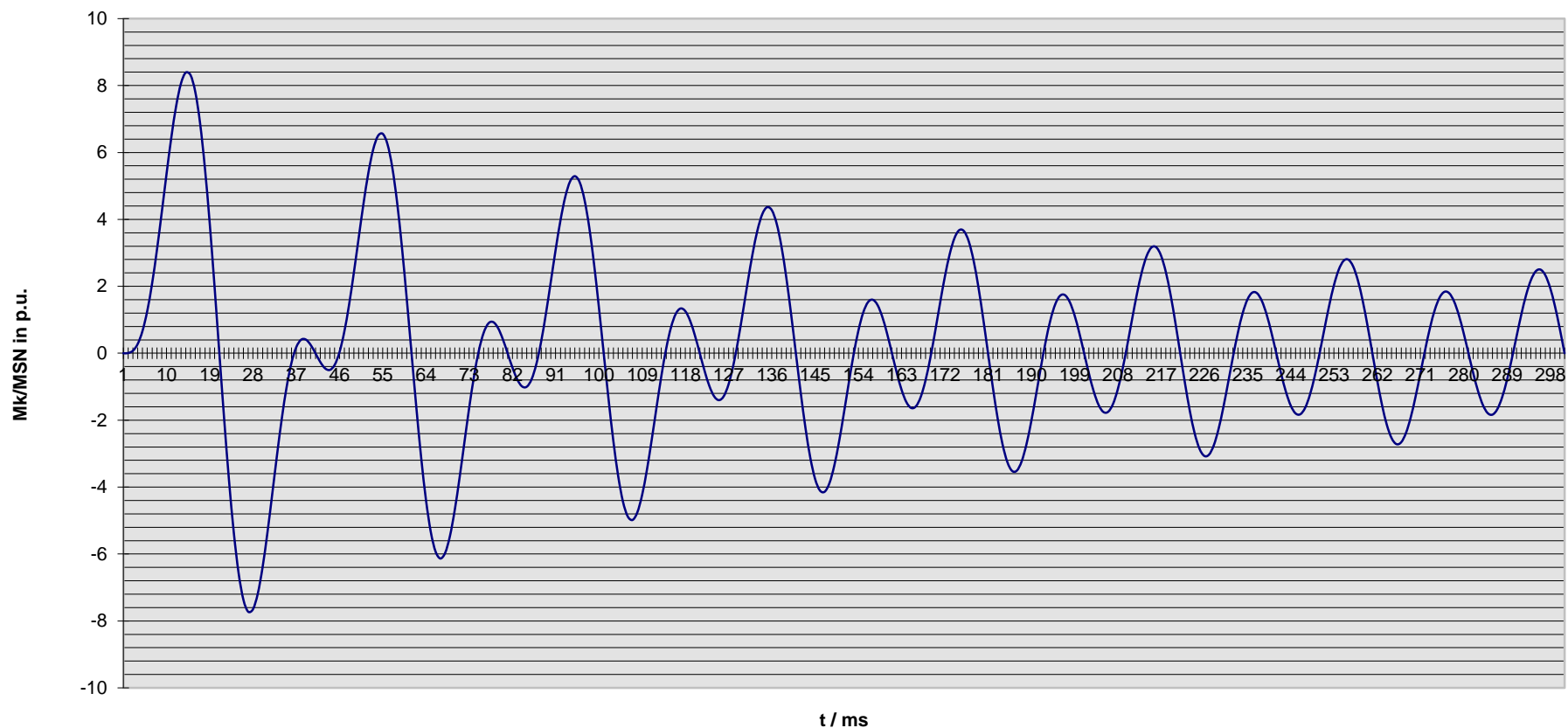
Transient Voltage rise or drop for sudden load removal or application



Alternator : DSG 114 M1/6

Rated output [kVA]	4030	Rated power factor:	0.8	Rated voltage [kV]:	0.4
Rated frequency [Hz]	50	Rated speed [rpm]	1000	MSN related to kVA:	38.48 KNm

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



Nenndaten / nominal data

DSG 114 M1/6

Leistung S_N : **4030** kVA

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

Rating

p.f.

Spannung U_N : **0.40** kV

Strom I_N : **5817** A

Voltage

Current

Frequenz f : **50** Hz

Drehzahl n : **1,000** min⁻¹

Frequency

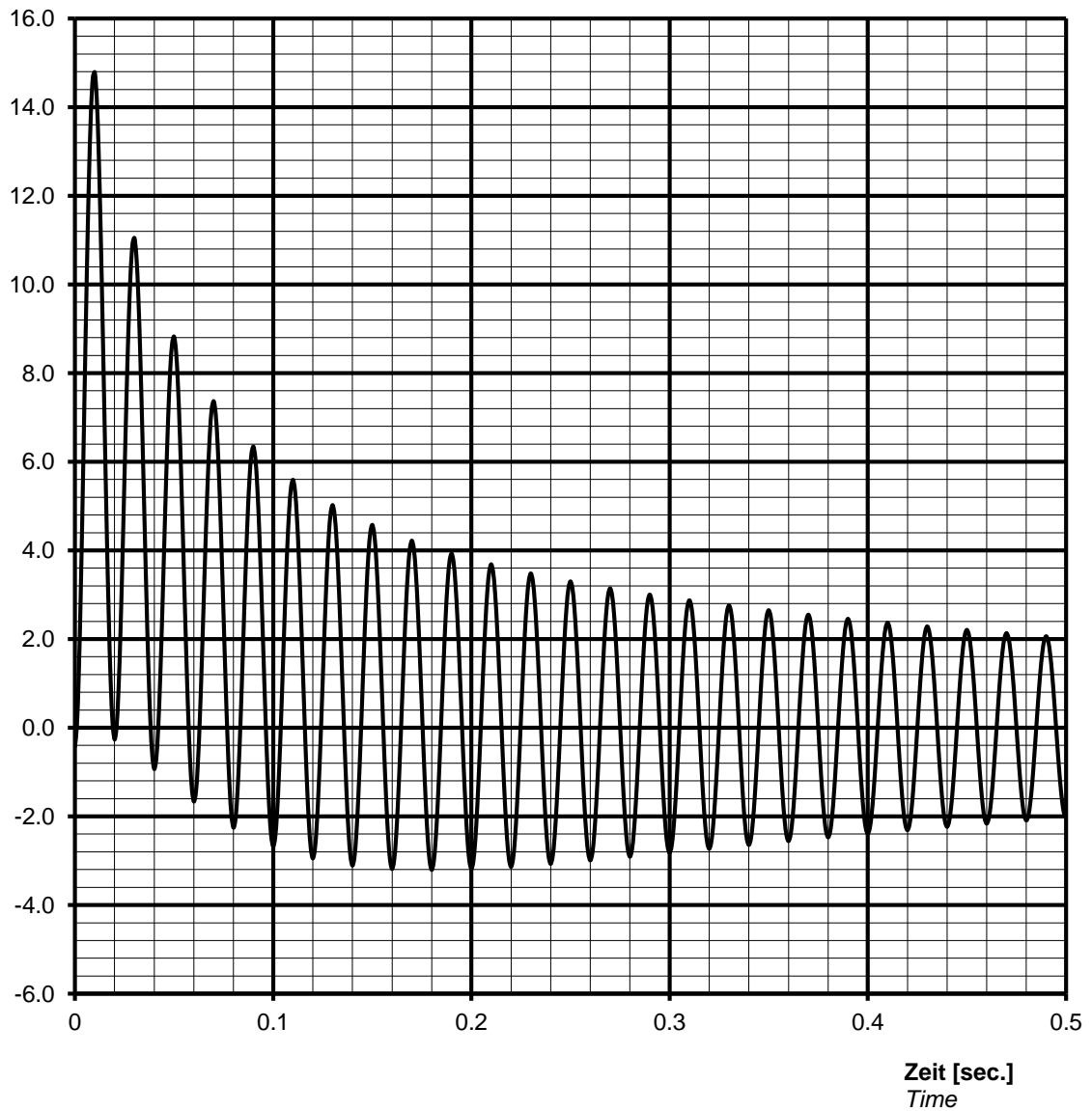
Speed

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 $I_{\text{speak}} =$ **86010 A** or **14.79 p.u.**

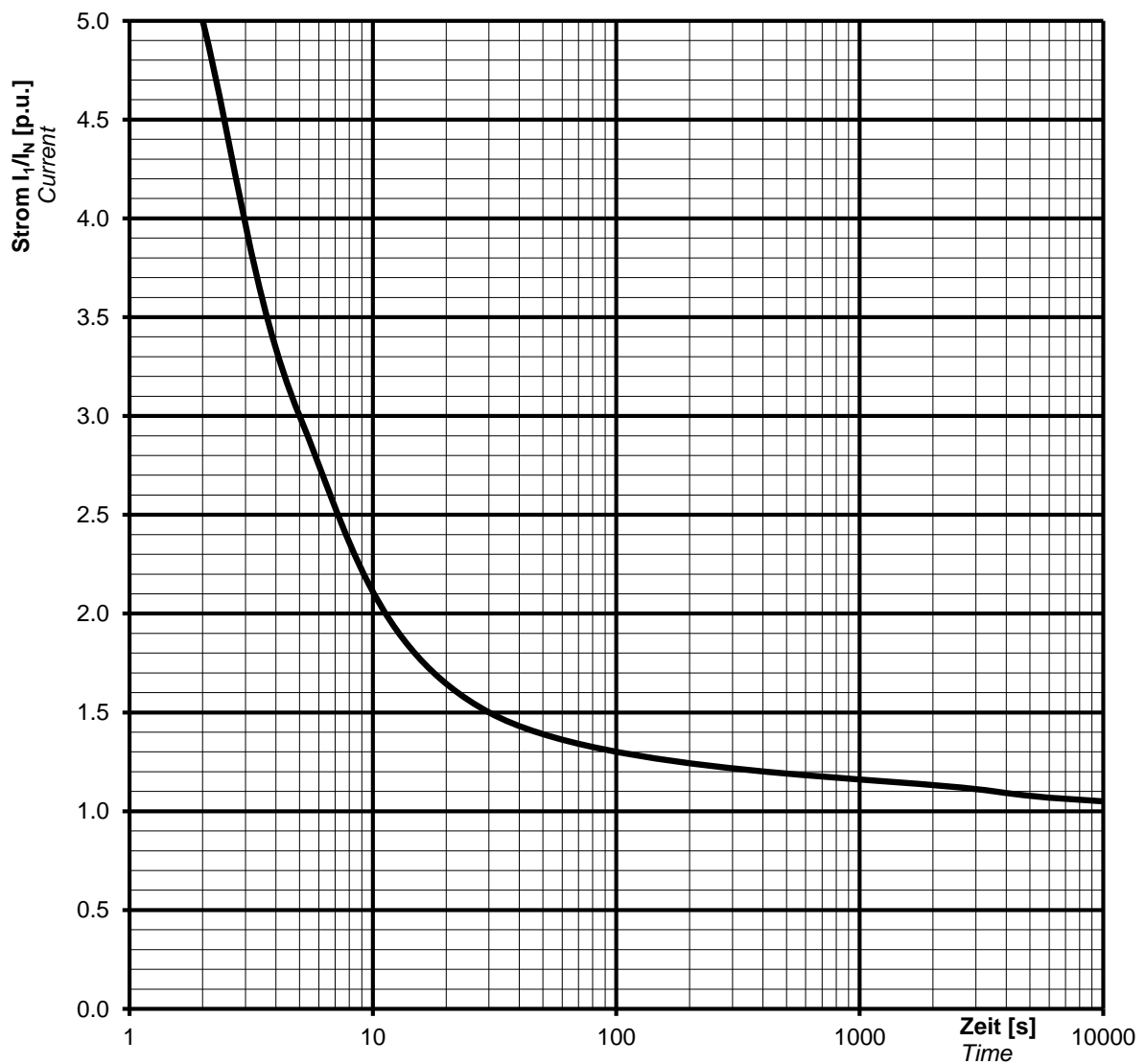
Nenndaten / nominal data

DSG 114 M1/6

Leistung S_N : **4030** kVA
Rating
 Spannung U_N : **0.40** kV
Voltage
 Frequenz f : **50** Hz
Frequency
 Schutzart **IP23**
Protection

$\cos \varphi$: **0.80**
p.f.
 Strom I_N : **5817** A
Current
 Drehzahl n : **1000** min⁻¹
Speed

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

Neendaten / nominal data

DSG 114 M1/6

Rating S_N : **4030 kVA**

Bemessungsleistung

Nominal voltage U_N : **0.40 kV**

Bemessungsspannung

Frequency f_N : **50 Hz**

Frequenz

Protection: **IP23**

Schutzart

p.f. **0.80**

Leistungsfaktor $\cos \varphi$:

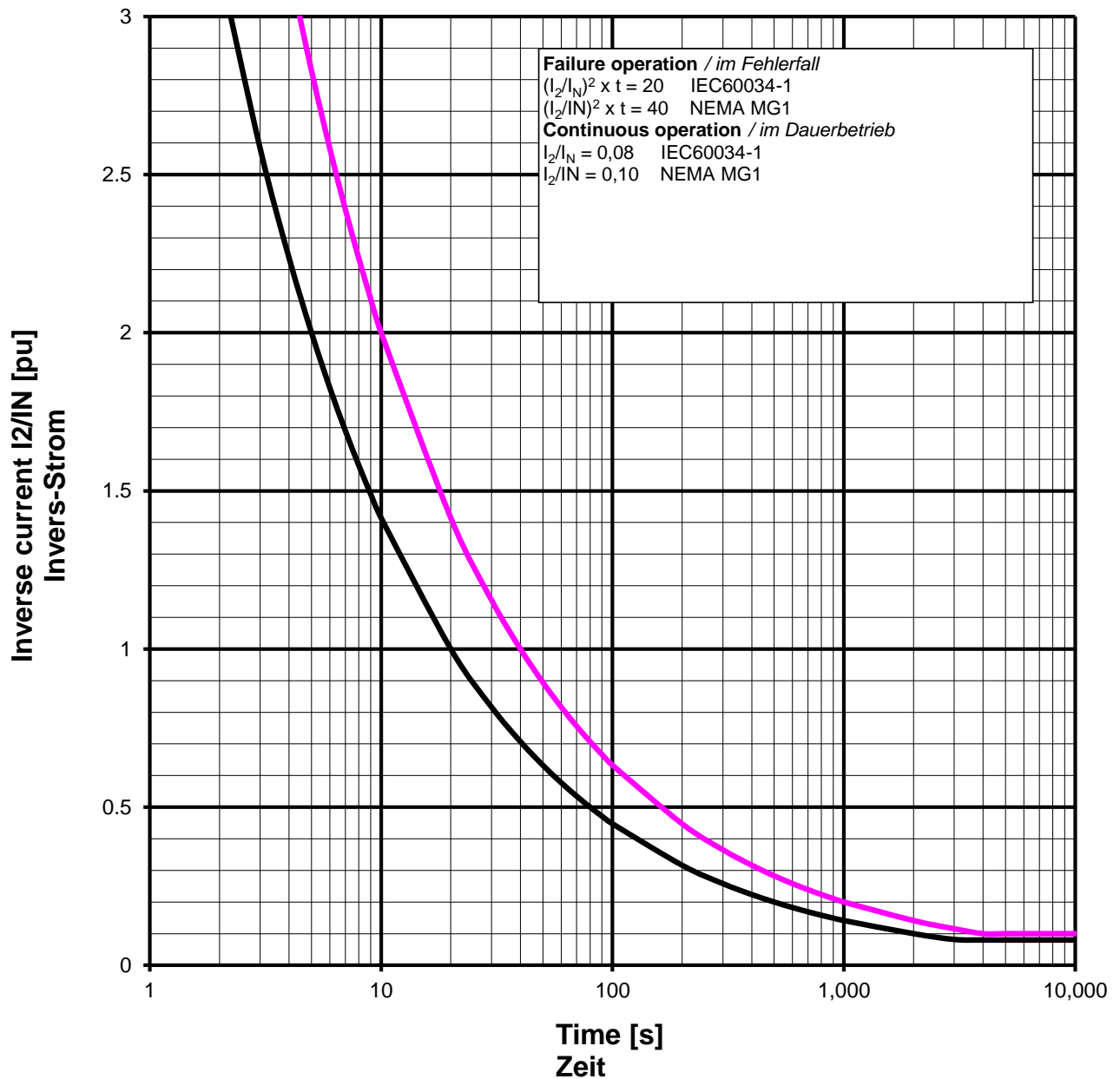
Nominal current I_N : **5817 A**

Bemessungsstrom

Speed n: **1000 min⁻¹**

Drehzahl

Inverse current or unbalanced negative sequence current



Remarks / Notizen:

All data according IEC 60034-1, NEMA MG1



Technische Daten selbstregelnden Drehstrom-Synchrongenerator
technical data for self regulating three phase alternator

ING-FCD-0112

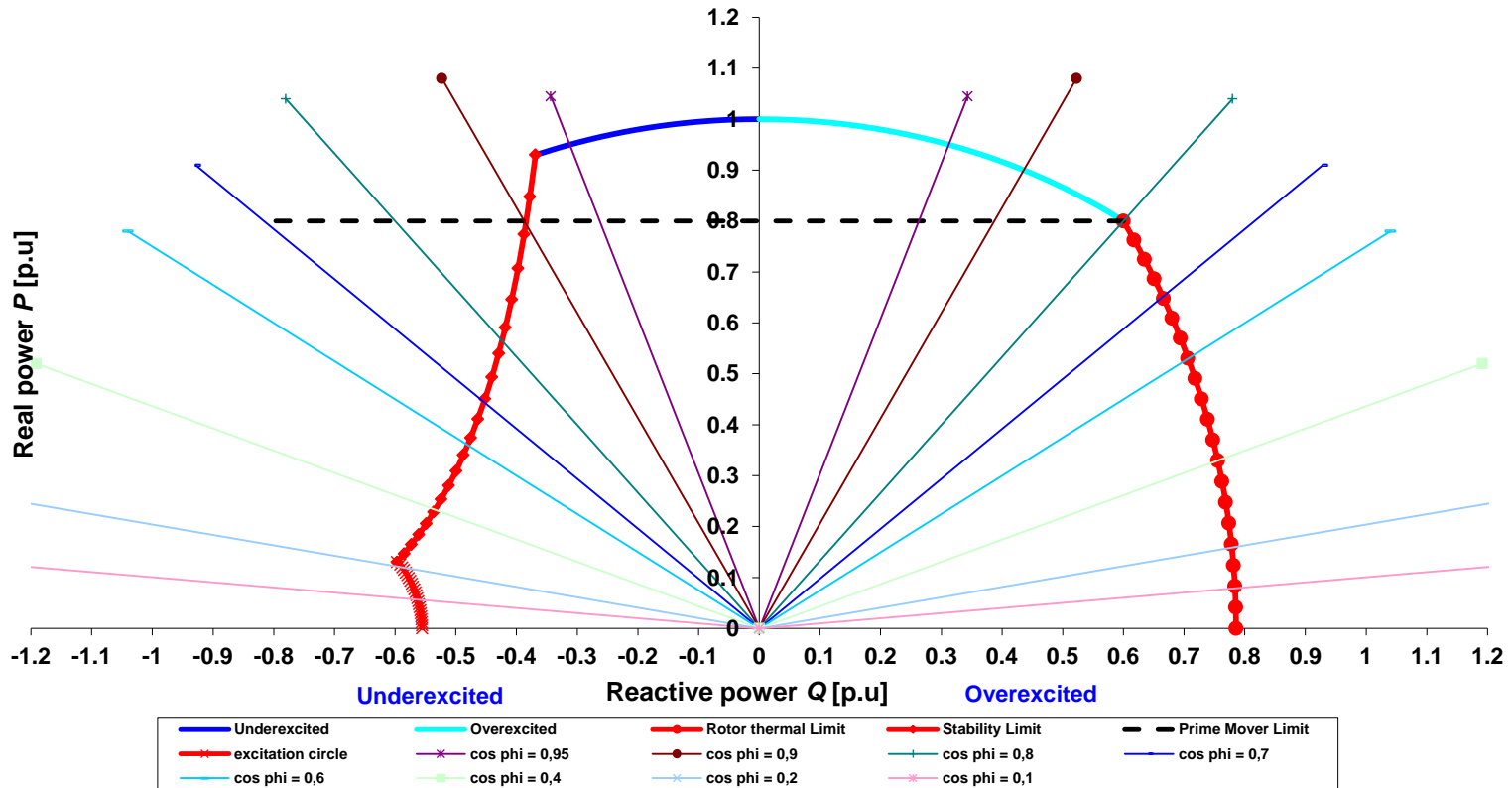
TYPE

DSG 114 M1/6

Projekt:

Order Nr.:

Capability (P-Q) Diagram



Cummins Generator Technologies

Datum / date:

03/10/2013



Technische Daten selbstregelnden Drehstrom-Synchrongenerator
 technical data for self regulating three phase alternator

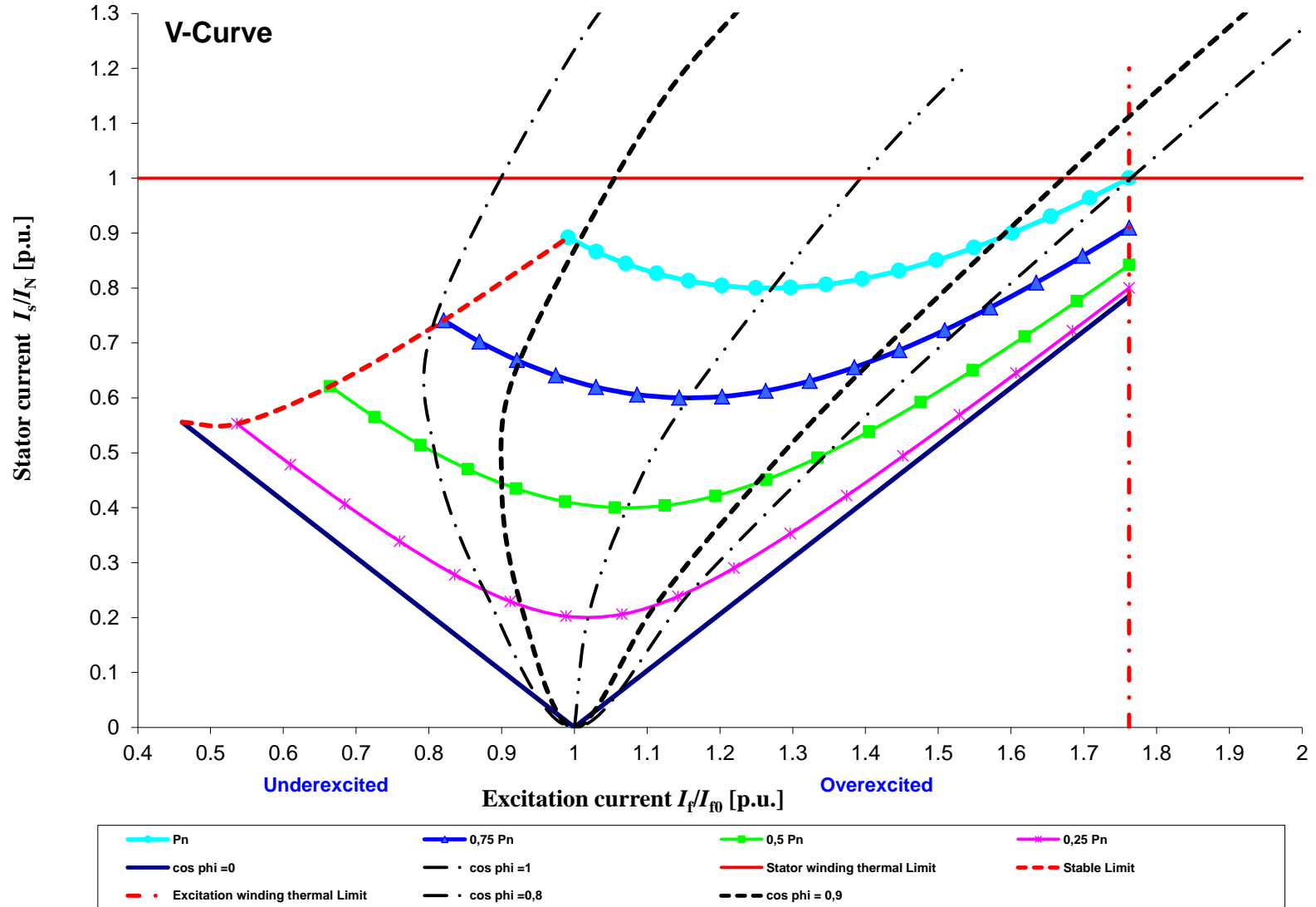
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