



## Technical Data Sheet for AvK-Alternators

FM 7.3-5

Date:	02/10/13	Customer:	GENERIC DATASHEET only
Project No.:	GENERIC DATASHEET only	AvK Reference:	DSG099K1_8_60_480

<b>Object data:</b>	
Site:	Prime Mover:
Application: Stationary Power Plant	Manufacturer:

<b>Generator data:</b>					
Generator:	DSG 99 K1/8	Poles:	8	Standards: IEC 60034	
Rated power:	2080 kVA	1664 kWe	1750 kWm		
Power factor:	0.80				
Power at pf 1,0	1691 kVA	1691 kWe	1750 kWm		
Rated voltage:	0.48 kV				
Speed:	900 1/min				
Frequency:	60 Hz		Voltage range / frequency range:		
Rated current:	2501.9 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):	170 kgm²	Weight:	6600 Kg	Losses (environment):	86 KW
				Losses (cooling):	n/a

Wires:	4 terminals, starpoint connected in terminal box
Operation mode:	Single mode
Regulators:	
Voltage regulator:	DECS 100

<b>Electrical data: (acc. IEC)</b>					
Efficiencies:	110%	100%	75%	50%	25%
Power factor 0.8	94,85	95,1	95,5	95,45	94
Power factor 0.9	95,64	95,85	96,1	95,93	94,3
Power factor 1.0	96,43	96,6	96,7	96,4	94,6

<b>Reactances and time constants</b>									
	unsaturated		saturated			unsaturated		saturated	
$X_d$	2.11	1.90 p.u.	$X_q$	1.06	1.04 p.u.	$T_{d0'}$	2 s	$T_{d0''}$	0.02876 s
$X_d'$	0.347	0.347 p.u.	$X_q'$	1.06	1.04 p.u.	$T_d'$	0.33 s	$T_{q0'}$	0.3 s
$X_d''$	0.199	0.181 p.u.	$X_q''$	0.199	0.199 p.u.	$T_d''$	0.015 s	$T_{q0''}$	0.1598 s
$X_2$	0.209	0.190 p.u.	$X_0$	0.059	0.054 p.u.	$T_a$	0.045 s	$T_{q1'}$	0.3 s
$X_{1s}$	n.a.	0.109 p.u.						$T_{q1''}$	0.03 s
Short circuit ratio saturated: 0.53					$Z_n$ 0.111 Ohm				

<b>Short circuit data:</b>		
Initial short circuit current (3-phase):	$I_k'$	13822 A
Max. peak current (3-phase):	$I_s$	35185 A
Sustained short circuit current:	$I_k$	7506 A
Minimum 3 x rated current for max.10 s		
Initial short circuit torque:	$M_{k2}$	158.5 kNm
	$M_{k3}$	95.1 kNm
Max. faulty synchron moment:	$M_f$	340.8 kNm
Rated kVA torque:	$M_{SN}$	22.07 kNm
Rated torque	$M_N$	17.66 kNm
Shaft torque	$M_{Sh}$	18.57 kNm

<b>Load application:</b>	
max. load application: 899 kVA (corresponds to 43,23 % from 2080 kVA) for Power factor 0.4 15% transient voltage drop	Power: 2080 kVA Power factor: 0.8 transient voltage drop: -25.8 %

**Remarks:**

**Alternator :** DSG 99 K1/8

Rated output [kVA]

2080

Rated power factor:

0.8

Rated voltage [kV]: 0.48

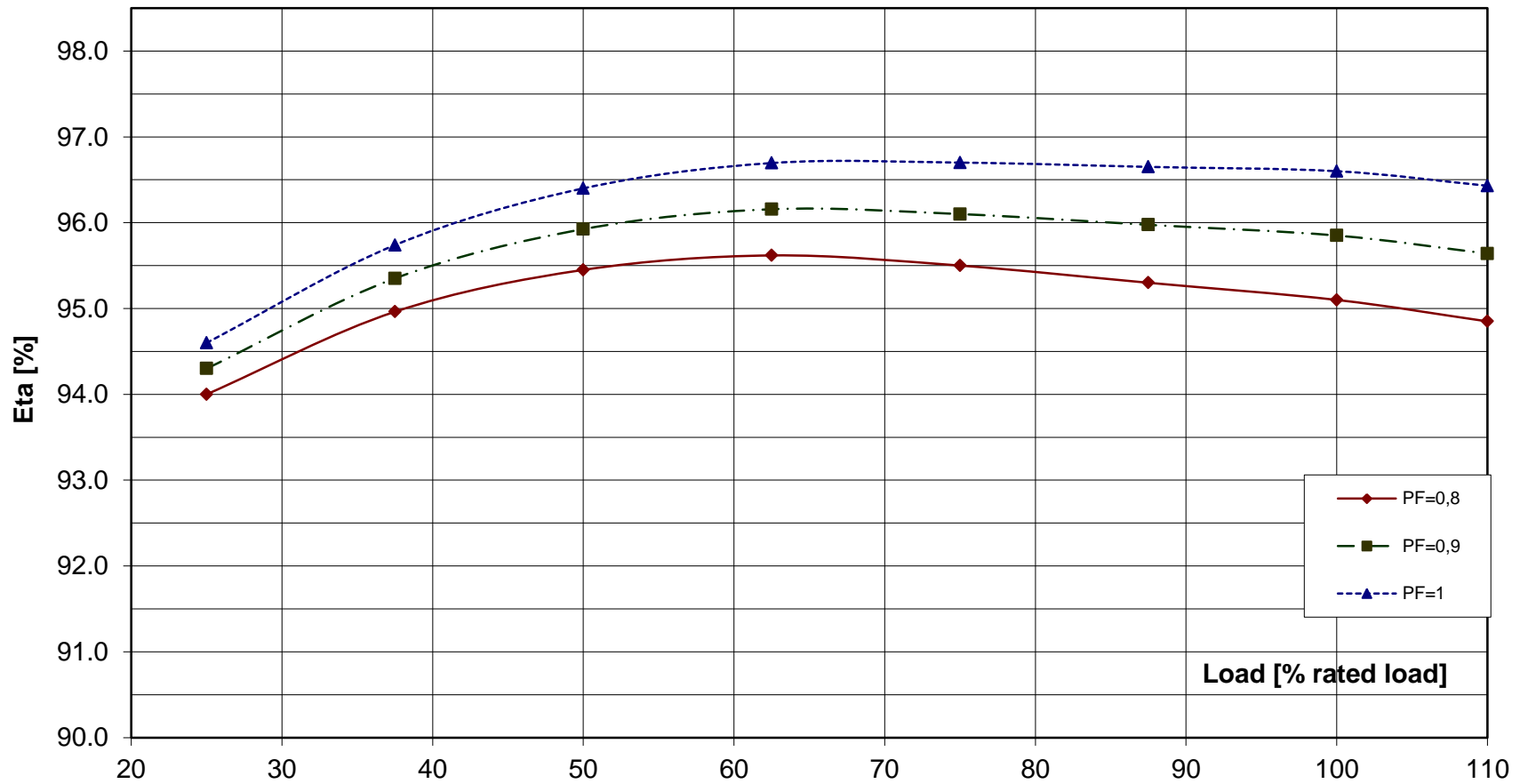
Rated frequency [Hz]

60

Rated speed [rpm]

900

### Wirkungsgrad-Kennlinie - Efficiency Curve



**Alternator : DSG 99 K1/8**

Rated output [kVA]

2080

Rated power factor:

0.8

Rated voltage [kV]: 0.48

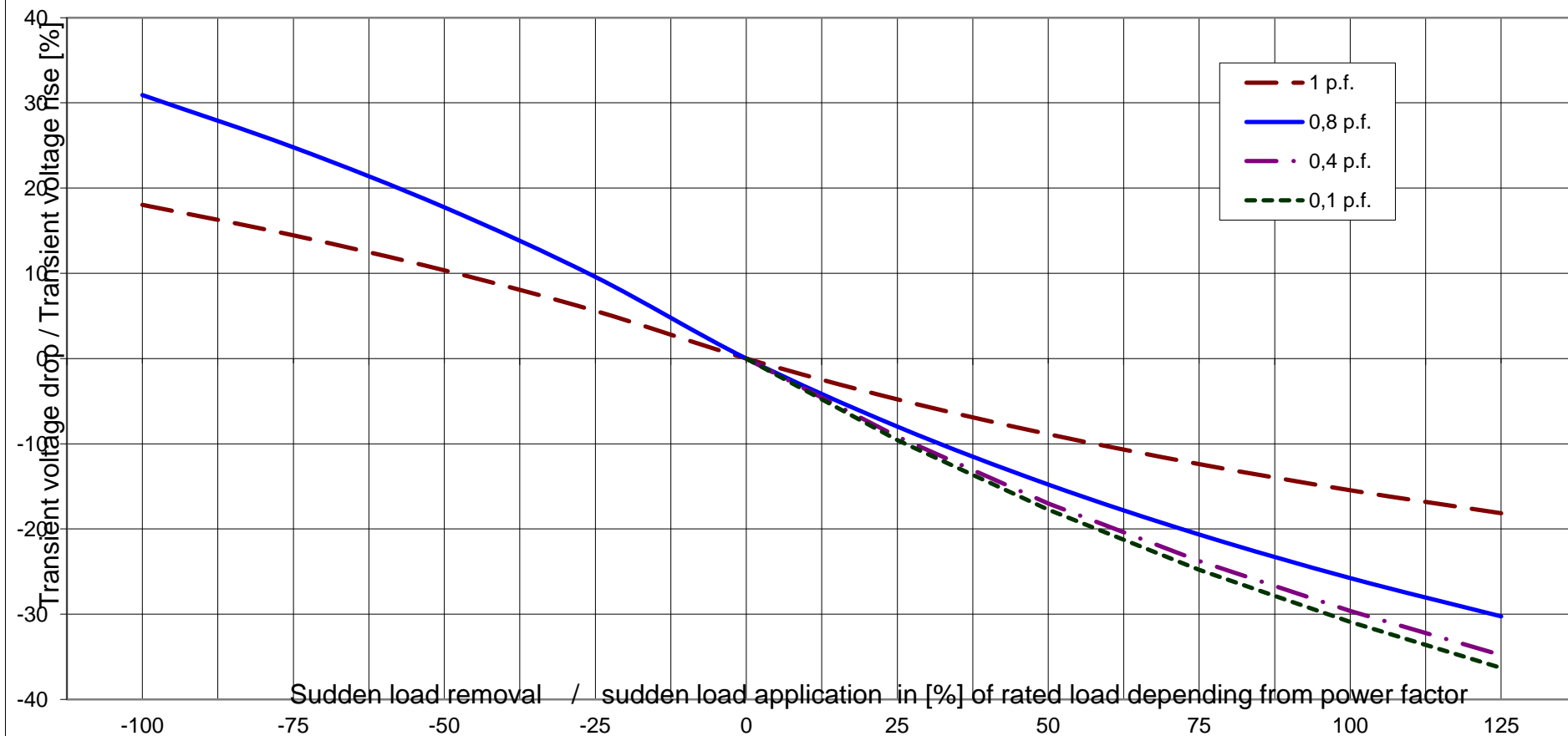
Rated frequency [Hz]

60

Rated speed [rpm]

900

**Transient Voltage rise or drop for sudden load removal or application**





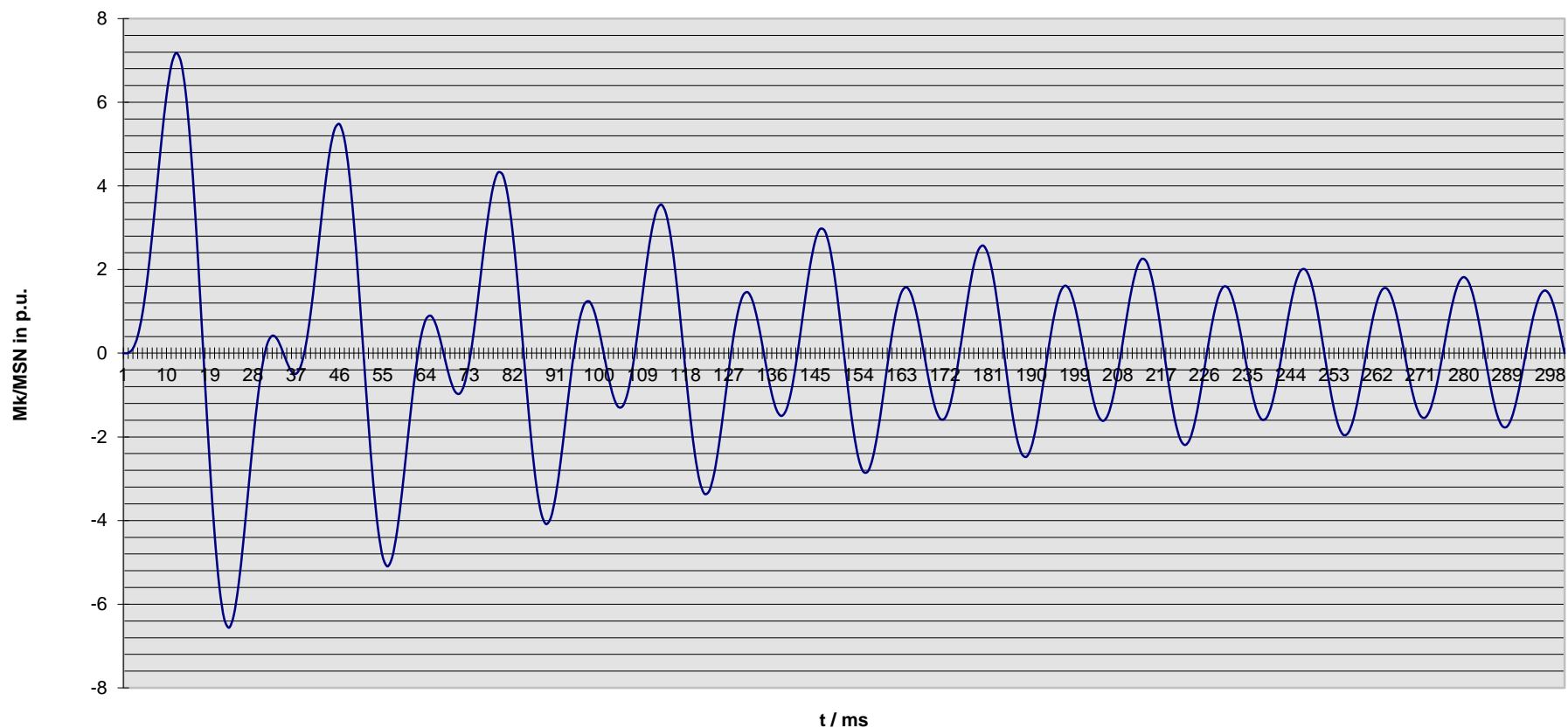
Technisches Datenblatt - Diagramme  
Technical data sheet - Diagrams

**ING-FCD-0112**

**Alternator : DSG 99 K1/8**

Rated output [kVA]	2080	Rated power factor:	0.8	Rated voltage [kV]:	0.48
Rated frequency [Hz]	60	Rated speed [rpm]	900	MSN related to kVA:	22.07 KNm

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



Nennenden / nominal data

DSG 99 K1/8

Leistung  $S_N$ : **2080** kVA

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

Rating

p.f.

Spannung  $U_N$ : **0.48** kV

Strom  $I_N$ : **2502** A

Voltage

Current

Frequenz  $f$ : **60** Hz

Drehzahl  $n$ : **900** min<sup>-1</sup>

Frequency

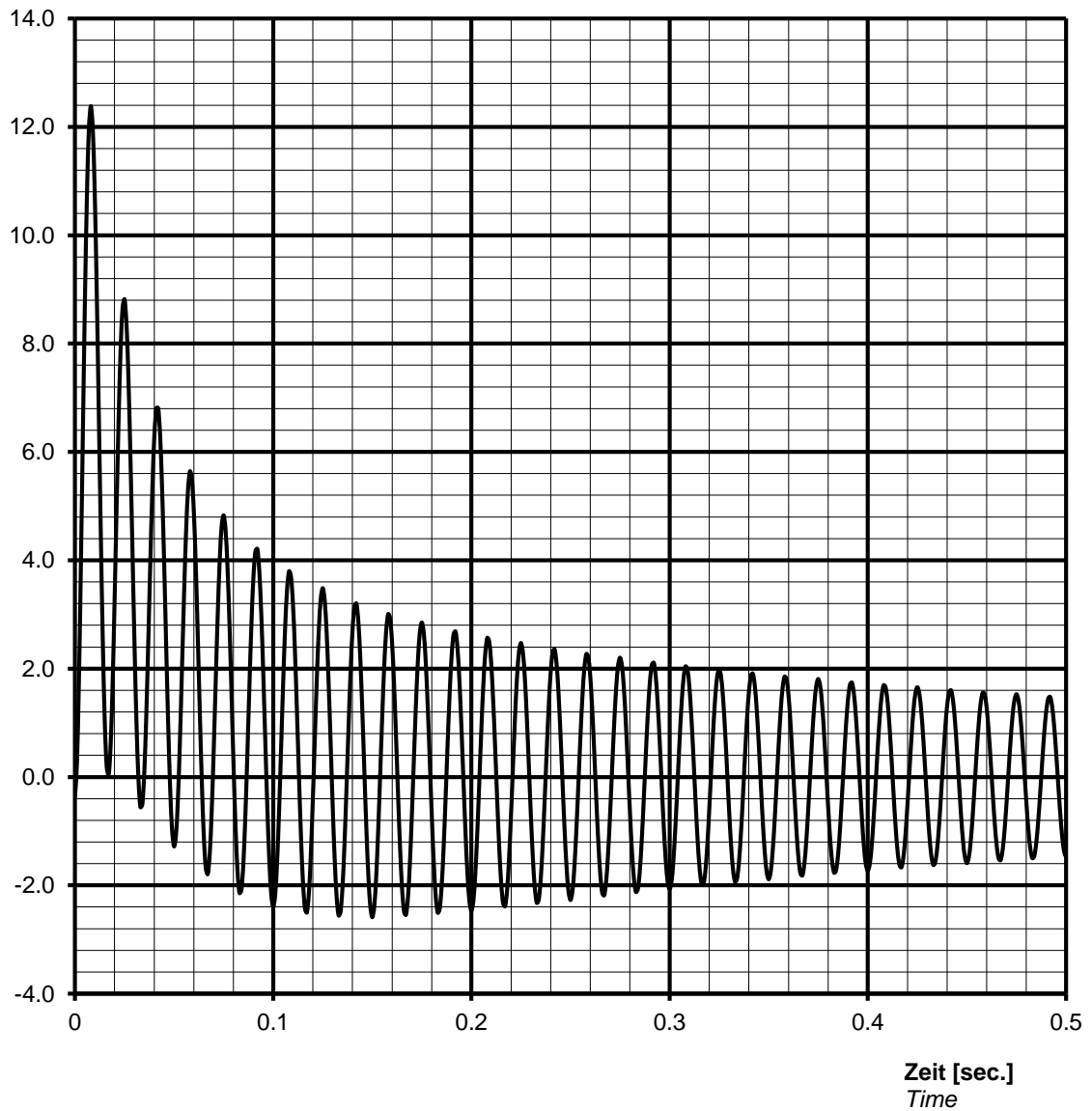
Speed

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  $I_{\text{speak}} =$  **30984 A** or **12.38 p.u.**

**Nenndaten / nominal data**

**DSG 99 K1/8**

Leistung  $S_N$ : **2080** kVA

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

Rating

p.f.

Spannung  $U_N$ : **0.48** kV

Strom  $I_N$ : **2502** A

Voltage

Current

Frequenz f: **60** Hz

Drehzahl n: **900** min<sup>-1</sup>

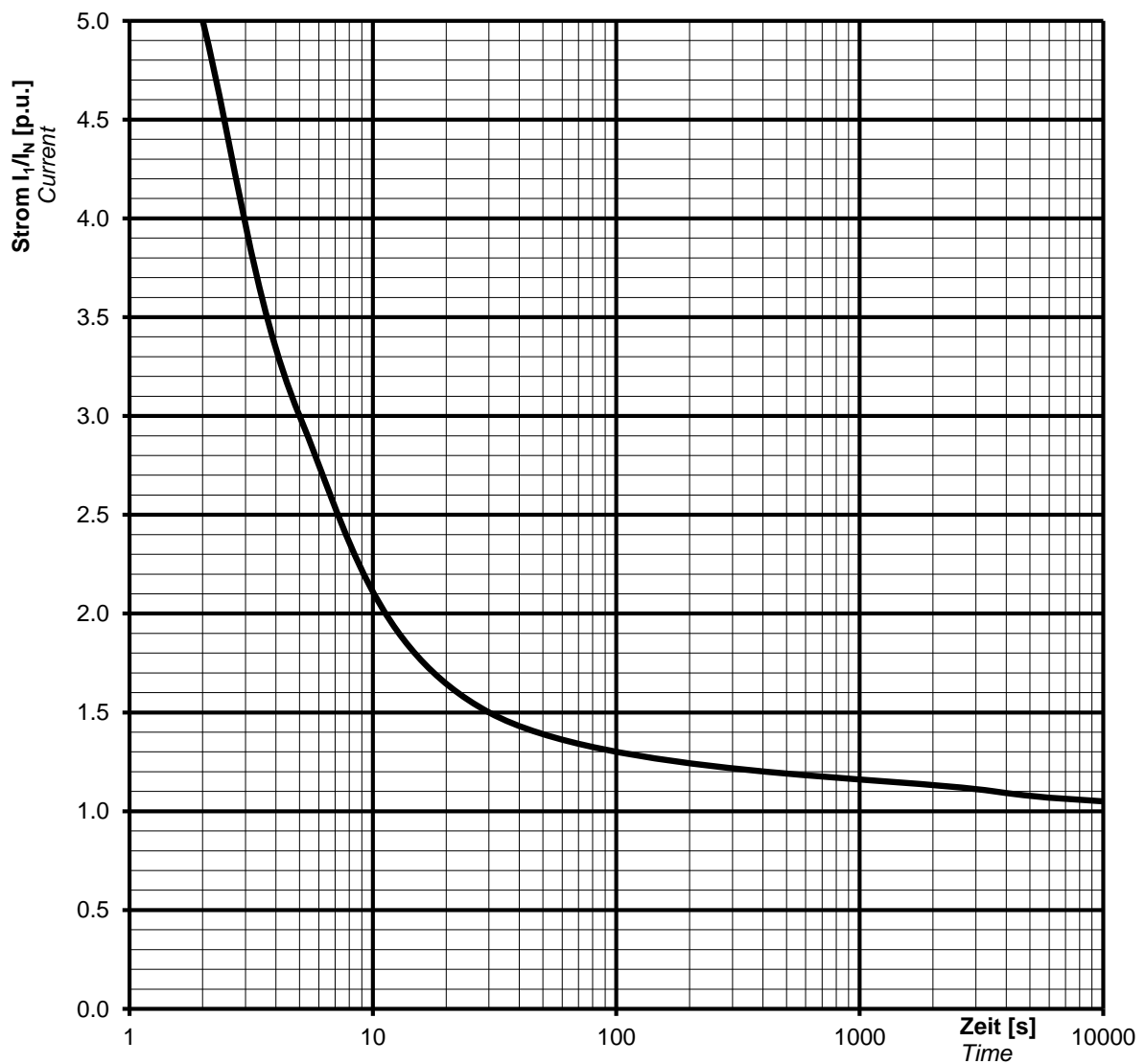
Frequency

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

#### Nennndaten / nominal data

**DSG 99 K1/8**

Rating  $S_N$ : **2080 kVA**

*p.f.* **0.80**

*Bemessungsleistung*

Leistungsfaktor  $\cos \varphi$ :

Nominal voltage  $U_N$ : **0.48 kV**

Nominal current  $I_N$ : **2502 A**

*Bemessungsspannung*

*Bemessungsstrom*

Frequency  $f_N$ : **60 Hz**

Speed  $n$ : **900 min<sup>-1</sup>**

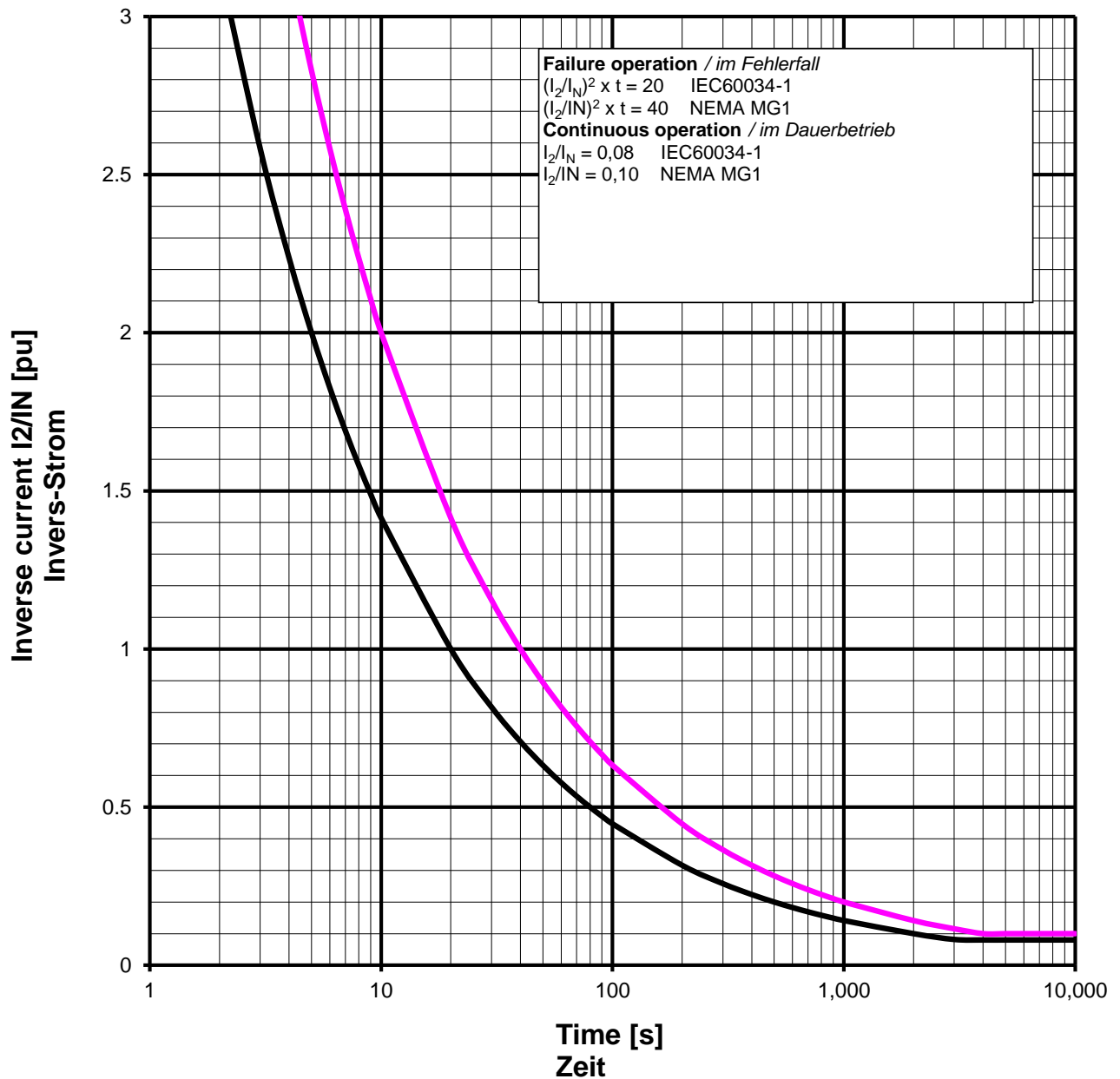
*Frequenz*

*Drehzahl*

Protection: **IP23**

*Schutzart*

#### 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

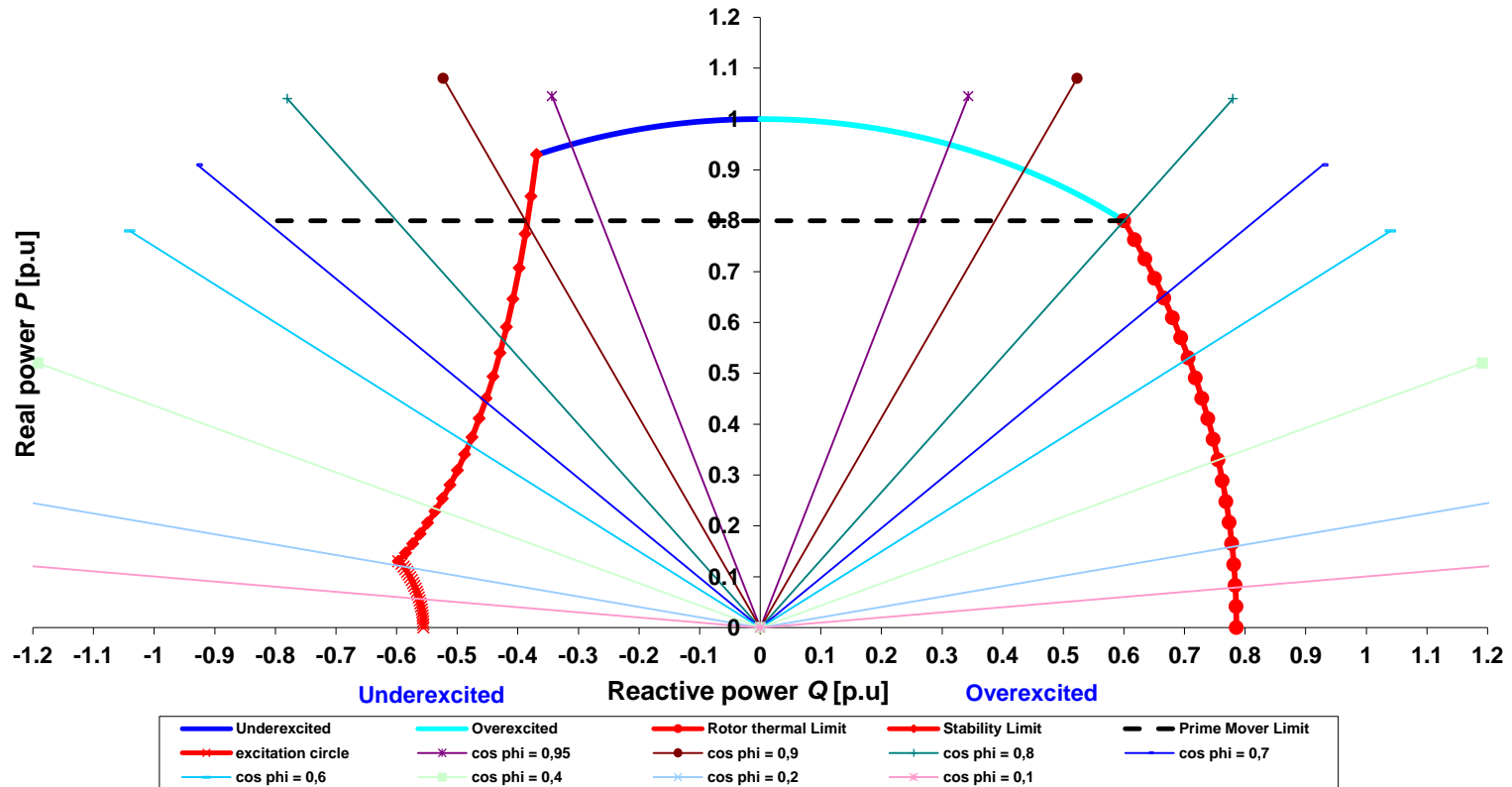
TYPE

DSG 99 K1/8

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

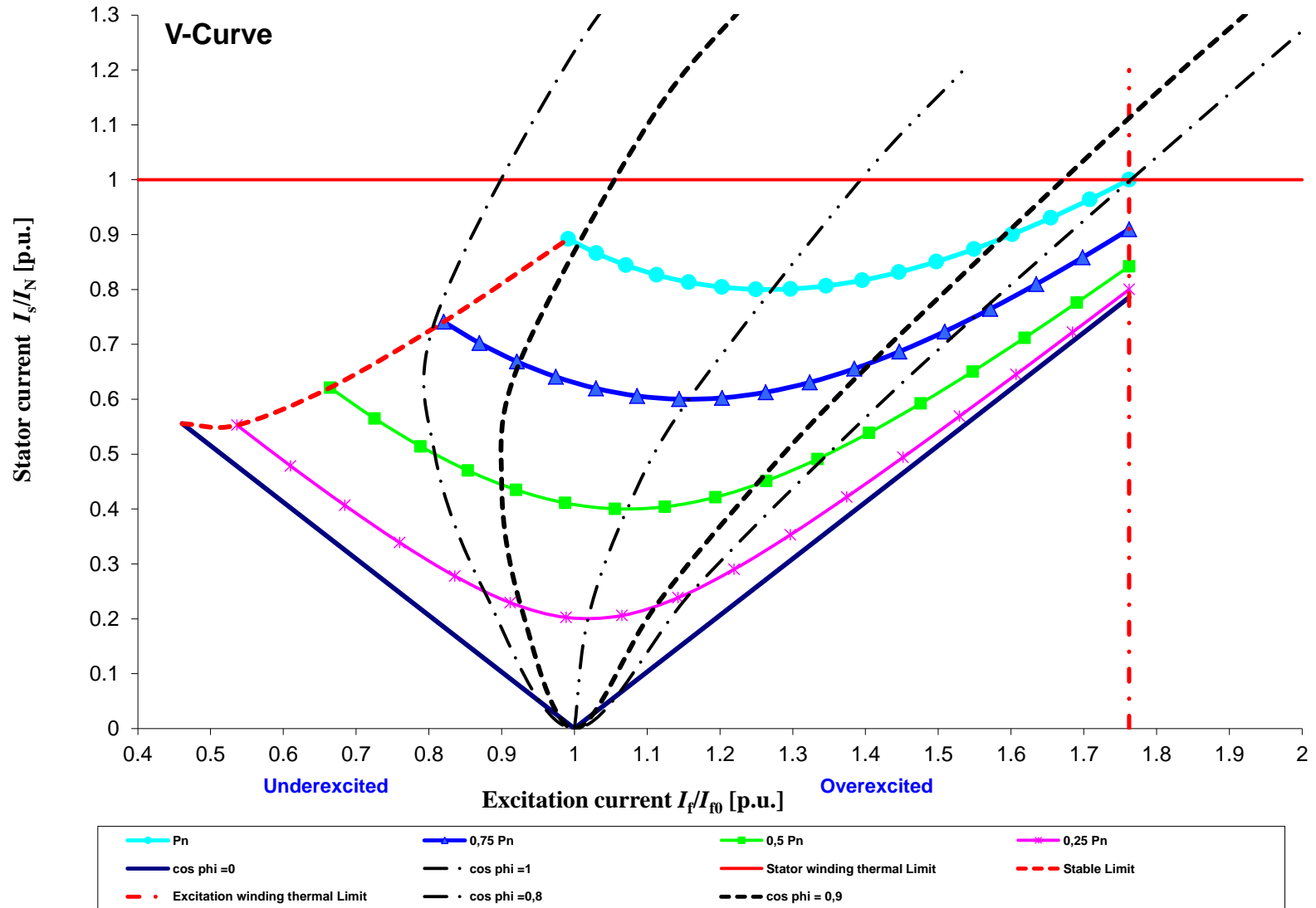
ING-FCD-0112

TYPE

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