

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	21/01/14	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	dsg099k1_6_60_690_A048M983

**Object data:**

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

**Generator data:**

Generator:	DSG 99 K1/6	Poles:	6	Standards:	IEC 60034
Rated power:	2500 kVA	2000 kWe	2083 kWm		
Power factor:	0.80				
Power at pf 1,0	2022 kVA	2022 kWe	2083 kWm		
Rated voltage:	0.69 kV				
Speed:	1200 1/min				
Frequency:	60 Hz			Voltage range / frequency range:	
Rated current:	2091.8 A			Zone A according IEC 60034-1 (dU = +/-5%, df = +/-2%)	

Winding pitch:	ca. 5/6
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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.:	3.0 m³/s	Cooling water quantity:	n/a
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Moment of inertia (I):	151 kgm²	Weight:	6800 Kg	Losses (environment):	83 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	95,8	96	96,15	95,95	94,1
Power factor 0.9	96,35	96,53	96,58	96,25	94,32
Power factor 1.0	96,9	97,05	97	96,55	94,55

**Reactances and time constants**

	unsaturated	saturated		unsaturated	saturated					
$X_d$	2.20	1.98 p.u.	$X_q$	1.10	1.08 p.u.	$T_{d0'}$	2.35 s	$T_{d0''}$	0.02451 s	
$X_d'$	0.286	0.286 p.u.	$X_q'$	1.10	1.08 p.u.	$T_{d'}$	0.31 s	$T_{q0'}$	0.3 s	
$X_d''$	0.193	0.175 p.u.	$X_q''$	0.193	0.193 p.u.	$T_{d''}$	0.015 s	$T_{q0''}$	0.17098 s	
$X_2$	0.202	0.184 p.u.	$X_0$	0.058	0.053 p.u.	$T_a$	0.05 s	$T_{q'}$	0.3 s	
$X_{1s}$	n.a.	0.105 p.u.						$T_{q''}$	0.03 s	

Short circuit ratio saturated:	0.51	$Z_n$	0.190 Ohm
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**Short circuit data:**

Initial short circuit current (3-phase):	$I_k''$	11953 A	
Max. peak current (3-phase):	$I_s$	30427 A	
Sustained short circuit current:	$I_k$	6276 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	$M_{k2}$	147.8 kNm	
	$M_{k3}$	88.7 kNm	
Max. faulty synchron moment:	$M_f$	317.8 kNm	
Rated kVA torque:	$M_{SN}$	19.90 kNm	
Rated torque	$M_N$	15.92 kNm	
Shaft torque	$M_{Sh}$	16.58 kNm	

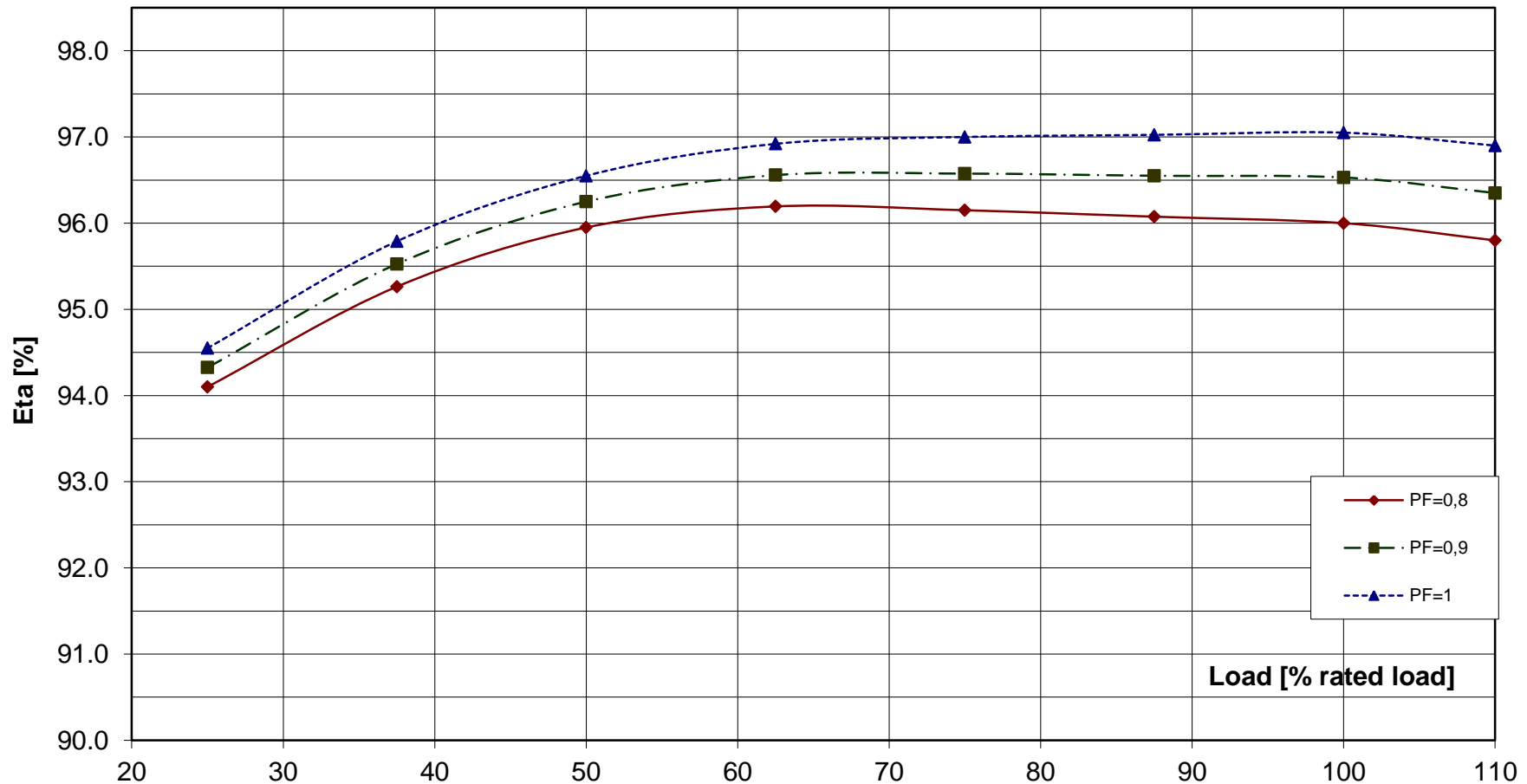
**Load application:**

max. load application: 1311 kVA (corresponds to 52,45 % from 2500 kVA) for Power factor 0.4 15% transient voltage drop	Power: 2500 kVA Power factor: 0.8 transient voltage drop: -22.2 %
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**Remarks:**

<b>Alternator :</b>	<b>DSG 99 K1/6</b>			
Rated output [kVA]	2500	Rated power factor:	0.8	Rated voltage [kV]: 0.69
Rated frequency [Hz]	60	Rated speed [rpm]	1200	

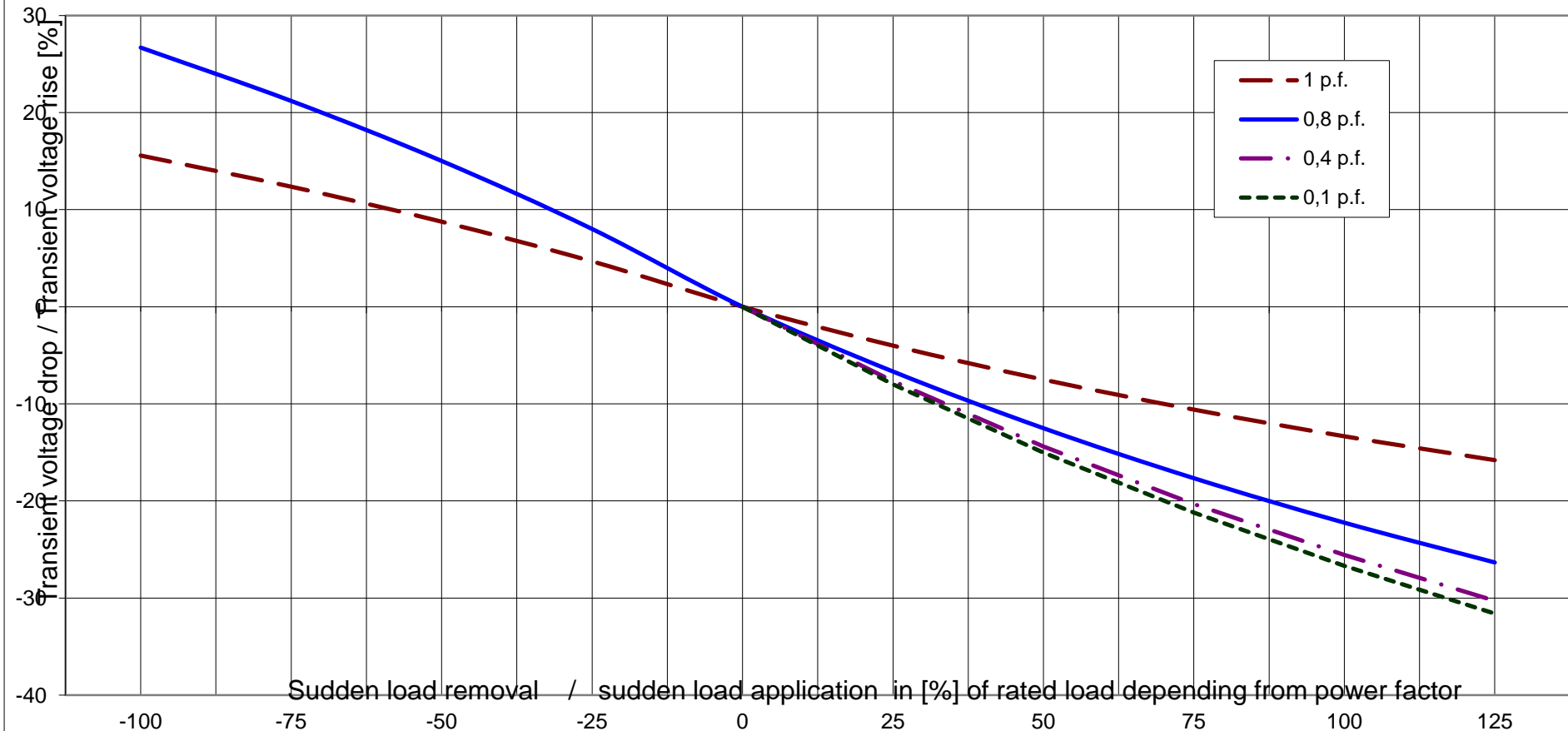
### Wirkungsgrad-Kennlinie - Efficiency Curve



**Alternator : DSG 99 K1/6**

Rated output [kVA]	2500	Rated power factor:	0.8	Rated voltage [kV]:	0.69
Rated frequency [Hz]	60	Rated speed [rpm]	1200		

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



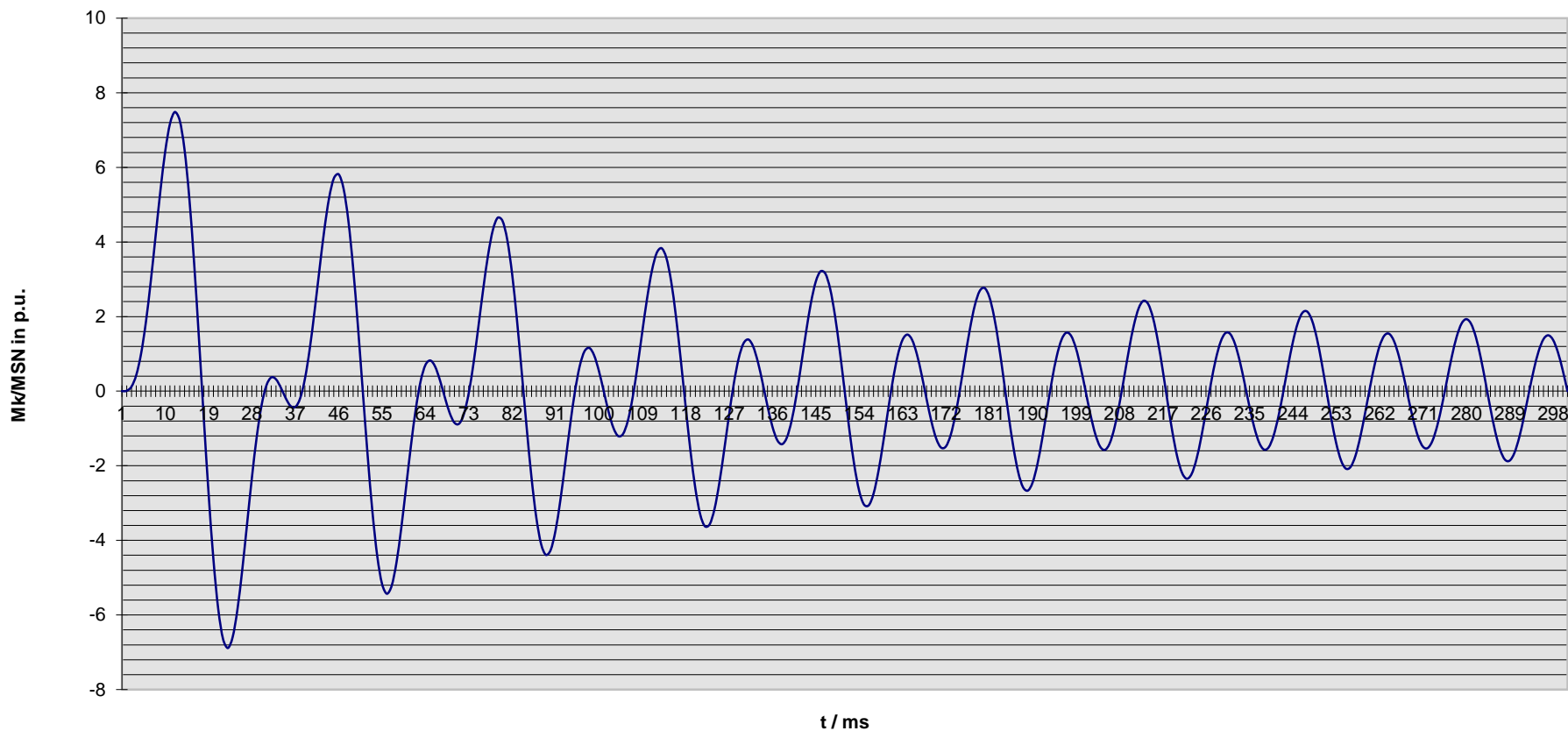


Technisches Datenblatt - Diagramme  
Technical data sheet - Diagrams

ING-FCD-0112

<b>Alternator :</b>	<b>DSG 99 K1/6</b>			
Rated output [kVA]	2500	Rated power factor:	0.8	Rated voltage [kV]: 0.69
Rated frequency [Hz]	60	Rated speed [rpm]	1200	MSN related to kVA: 19.89 KNm

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



#### Nenndaten / nominal data

DSG 99 K1/6

Leistung  $S_N$ : **2500** kVA

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

*Rating*

*p.f.*

Spannung  $U_N$ : **0.69** kV

Strom  $I_N$ : **2092** A

*Voltage*

*Current*

Frequenz  $f$ : **60** Hz

Drehzahl  $n$ : **1,200** min<sup>-1</sup>

*Frequency*

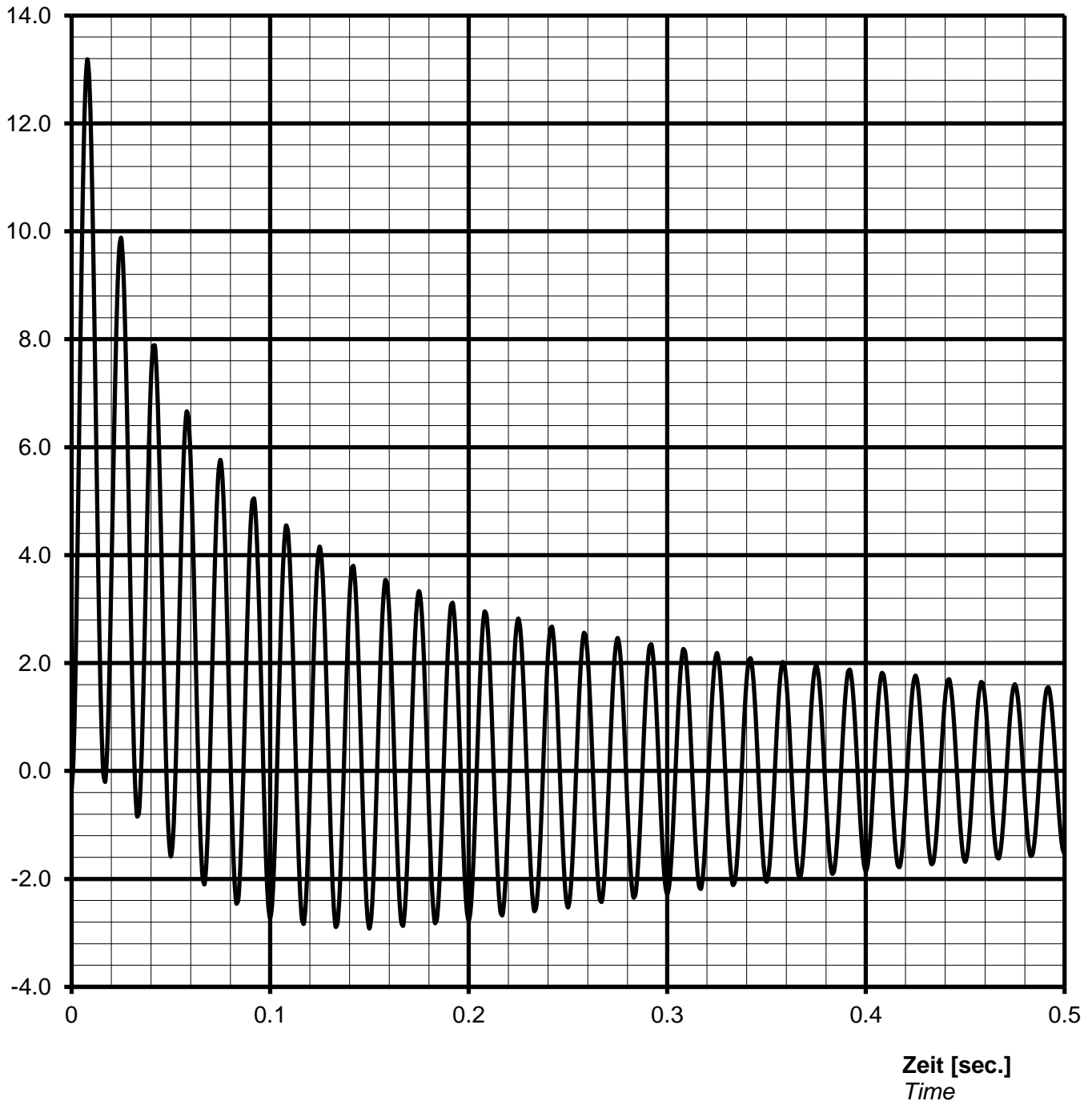
*Speed*

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

$I_{\text{peak}} =$  **27587** A or **13.19** p.u.

#### Nennwerten / nominal data

DSG 99 K1/6

Leistung  $S_N$ : **2500** kVA

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

Rating

p.f.

Spannung  $U_N$ : **0.69** kV

Strom  $I_N$ : **2092** A

Voltage

Current

Frequenz f: **60** Hz

Drehzahl n: **1200** min<sup>-1</sup>

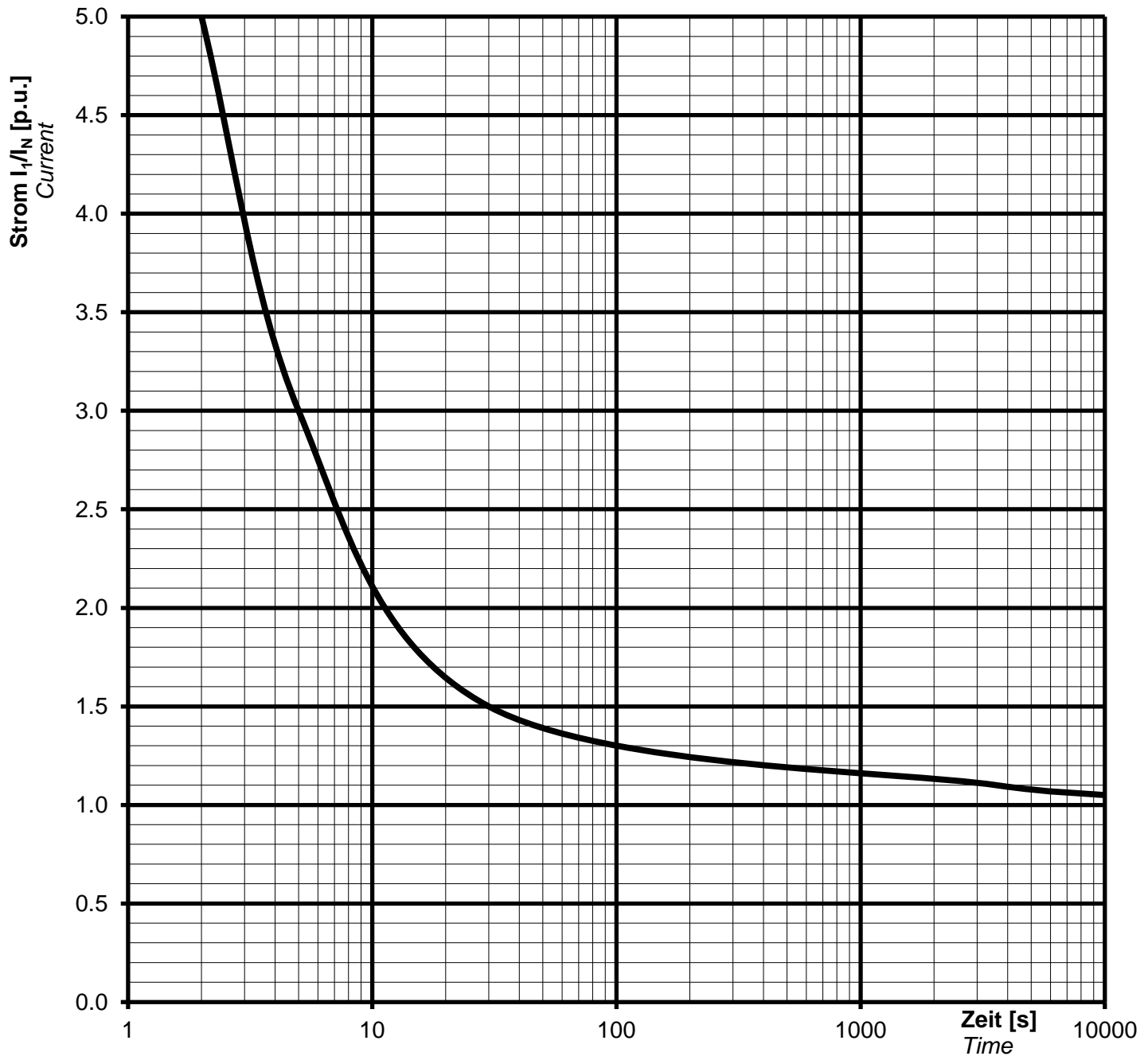
Frequency

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

#### Nennenden / nominal data

**DSG 99 K1/6**

Rating  $S_N$ : **2500 kVA**

*p.f.* **0.80**

*Bemessungsleistung*

Leistungsfaktor  $\cos \varphi$ :

Nominal voltage  $U_N$ : **0.69 kV**

Nominal current  $I_N$ : **2092 A**

*Bemessungsspannung*

*Bemessungsstrom*

Frequency  $f_N$ : **60 Hz**

Speed  $n$ : **1200 min<sup>-1</sup>**

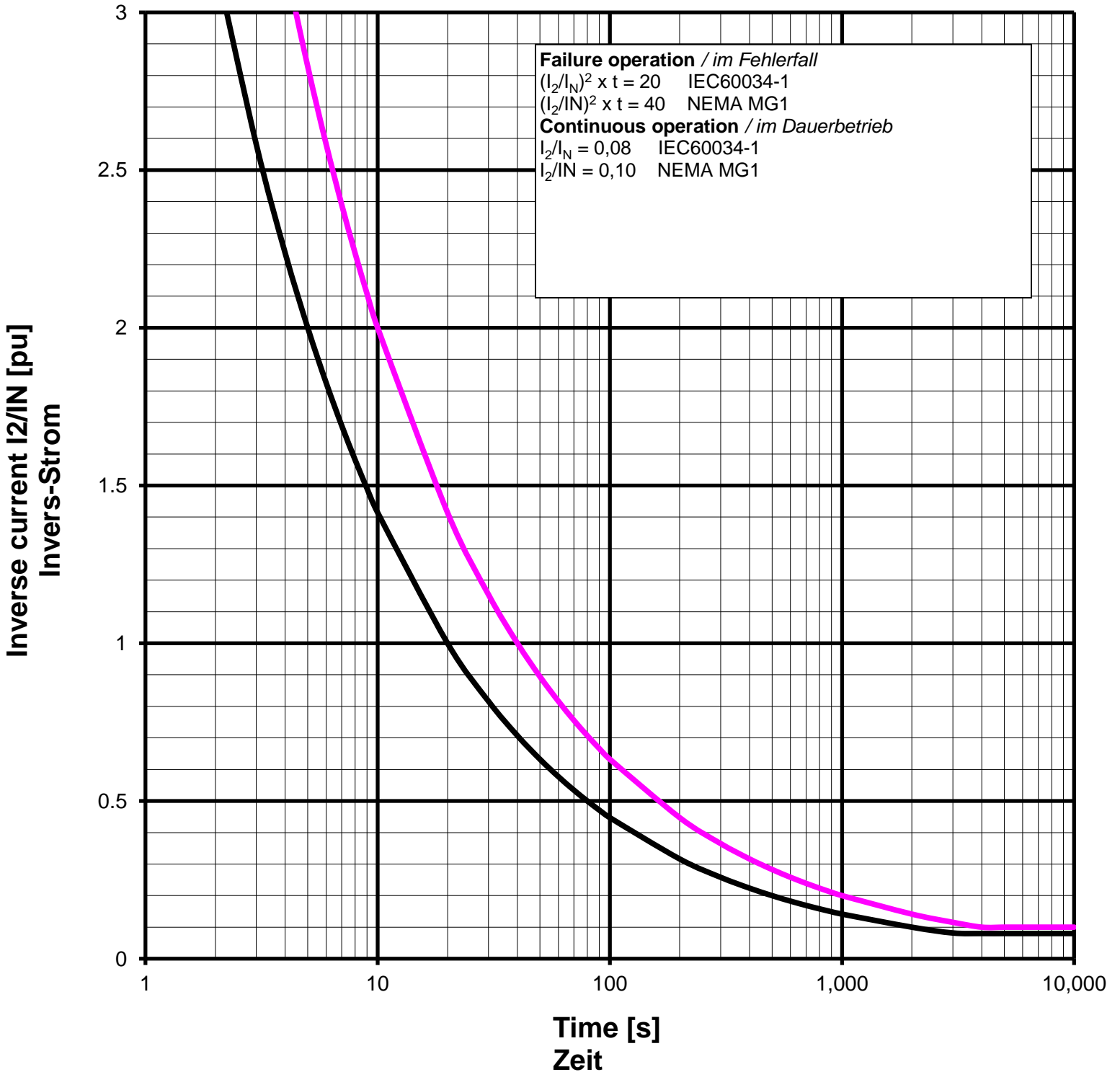
*Frequenz*

*Drehzahl*

Protection: **IP23**

*Schutzart*

#### Inverse current or unbalanced negative sequence current



Remarks / Notizen:



TYPE

DSG 99 K1/6

Projekt:

Order Nr.:

### Capability (P-Q) Diagram

