

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	09/01/14	Customer:	Bitte Interessent eingeben!
Project No.:		AvK Reference:	1-607-0000107-1

**Object data:**

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

**Generator data:**

Generator:	DIG 120 h/4	Poles:	4	Standards:	IEC 60034
Rated power:	1500 kVA	1200 kWe	1258 kWm		
Power factor:	0.80				
Power at pf 1,0	1214 kVA	1214 kWe	1258 kWm		
Rated voltage:	6.3 kV				
Speed:	1500 1/min				
Frequency:	50 Hz			Voltage range / frequency range:	
Rated current:	137.5 A			Zone A according IEC 60034-1 (dU = +/-5%, df = +/-2%)	

Winding pitch:	ca. 5/6
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Insulation class:	Stator: Class F	Rotor: Class F	Temperature rise:	F
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Ambient temperature:	40 ° C	Environment:	Standard environment
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Site altitude:	1000 m		
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Enclosure:	IP23	Filter:	
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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.:	2.5 m³/s	Cooling water quantity:	n/a
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Moment of inertia (I):	48 kgm²	Weight:	4900 Kg	Losses (environment):	58 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	95,17	95,4	95,4	94,7	91,8
Power factor 0.9	95,75	95,95	95,8	95,05	92,05
Power factor 1.0	96,33	96,5	96,2	95,4	92,3

**Reactances and time constants**

	unsaturated	saturated		unsaturated	saturated					
$X_d$	2.52	2.27 p.u.	$X_q$	1.25	1.23 p.u.	$T_{d0'}$	2.9 s	$T_{d0''}$	0.02429 s	
$X_d'$	0.340	0.340 p.u.	$X_q'$	1.25	1.23 p.u.	$T_{d'}$	0.38 s	$T_{q0'}$	0.3 s	
$X_d''$	0.231	0.210 p.u.	$X_q''$	0.209	0.209 p.u.	$T_{d''}$	0.015 s	$T_{q0''}$	0.17943 s	
$X_2$	0.220	0.200 p.u.	$X_0$	0.063	0.057 p.u.	$T_a$	0.05 s	$T_{q'}$	0.3 s	
$X_{1s}$	n.a.	0.126 p.u.						$T_{q''}$	0.03 s	

Short circuit ratio saturated:	0.44	$Z_n$	26.460 Ohm
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**Short circuit data:**

Initial short circuit current (3-phase):	$I_k''$	655 A	
Max. peak current (3-phase):	$I_s$	1667 A	
Sustained short circuit current:	$I_k$	412 A	Minimum 3 x rated current for max.10 s

Initial short circuit torque:	$M_{k2}$	59.1 kNm
	$M_{k3}$	35.5 kNm

Max. faulty synchron moment:	$M_f$	127.1 kNm
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Rated kVA torque:	$M_{SN}$	9.55 kNm
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Rated torque	$M_N$	7.64 kNm
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Shaft torque	$M_{Sh}$	8.01 kNm
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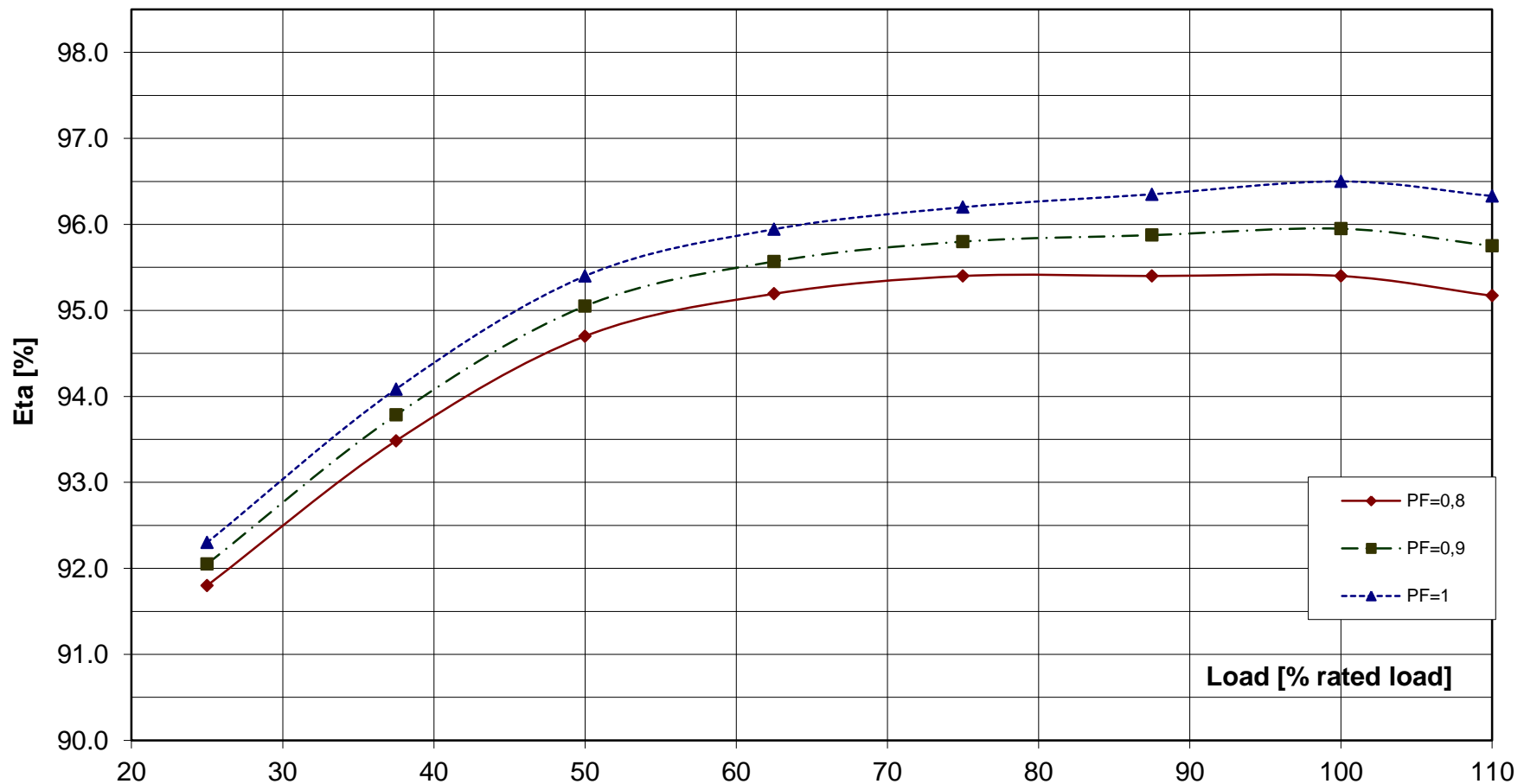
**Load application:**

max. load application: 662 kVA (corresponds to 44,12 % from 1500 kVA) for Power factor 0.4 15% transient voltage drop	Power: 1500 kVA Power factor: 0.8 transient voltage drop: -25.4 %
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**Remarks:**

<b>Alternator :</b>	<b>DIG 120 h/4</b>			
Rated output [kVA]	1500	Rated power factor:	0.8	Rated voltage [kV]: 6.3
Rated frequency [Hz]	50	Rated speed [rpm]	1500	

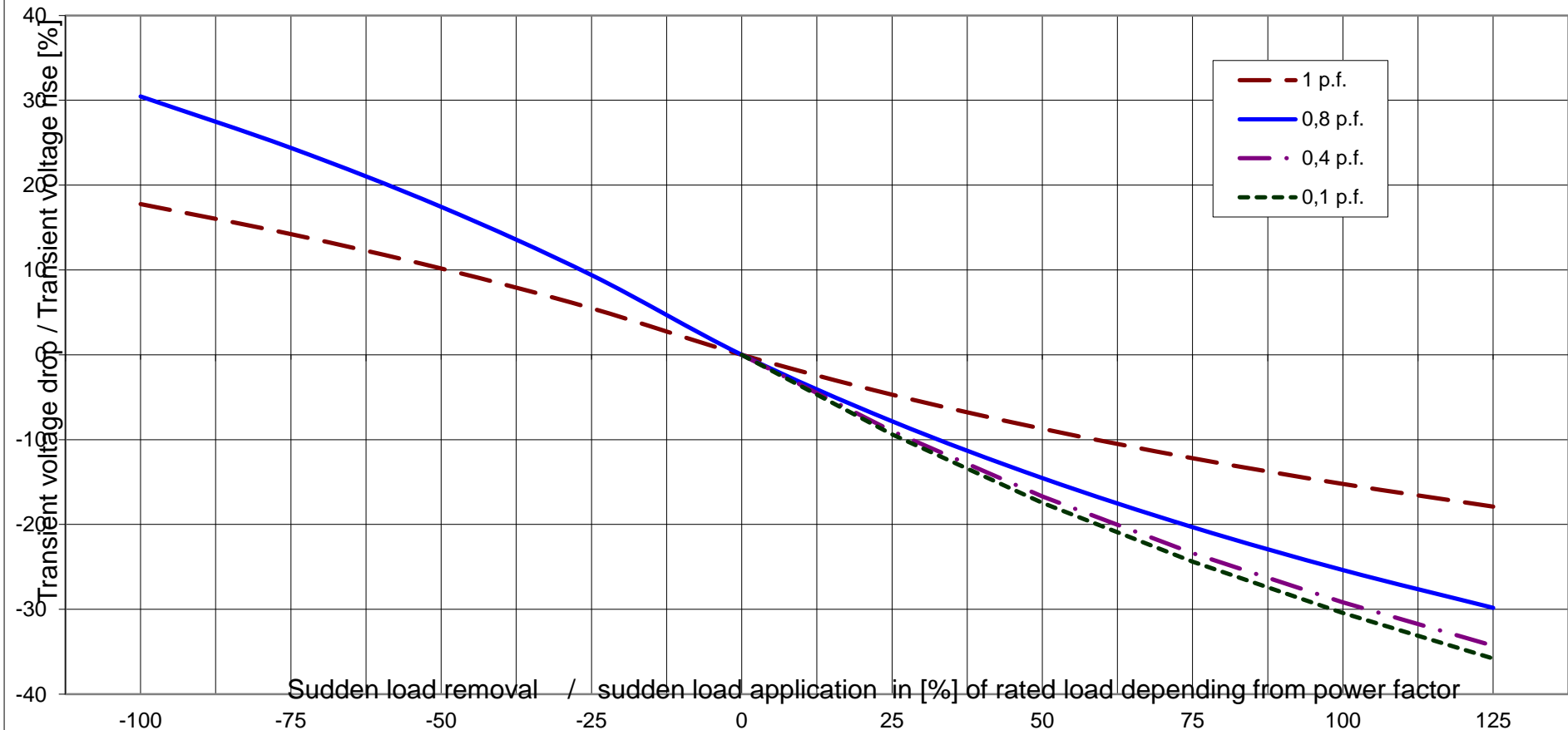
### Wirkungsgrad-Kennlinie - Efficiency Curve



**Alternator : DIG 120 h/4**

Rated output [kVA]	1500	Rated power factor:	0.8	Rated voltage [kV]:	6.3
Rated frequency [Hz]	50	Rated speed [rpm]	1500		

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





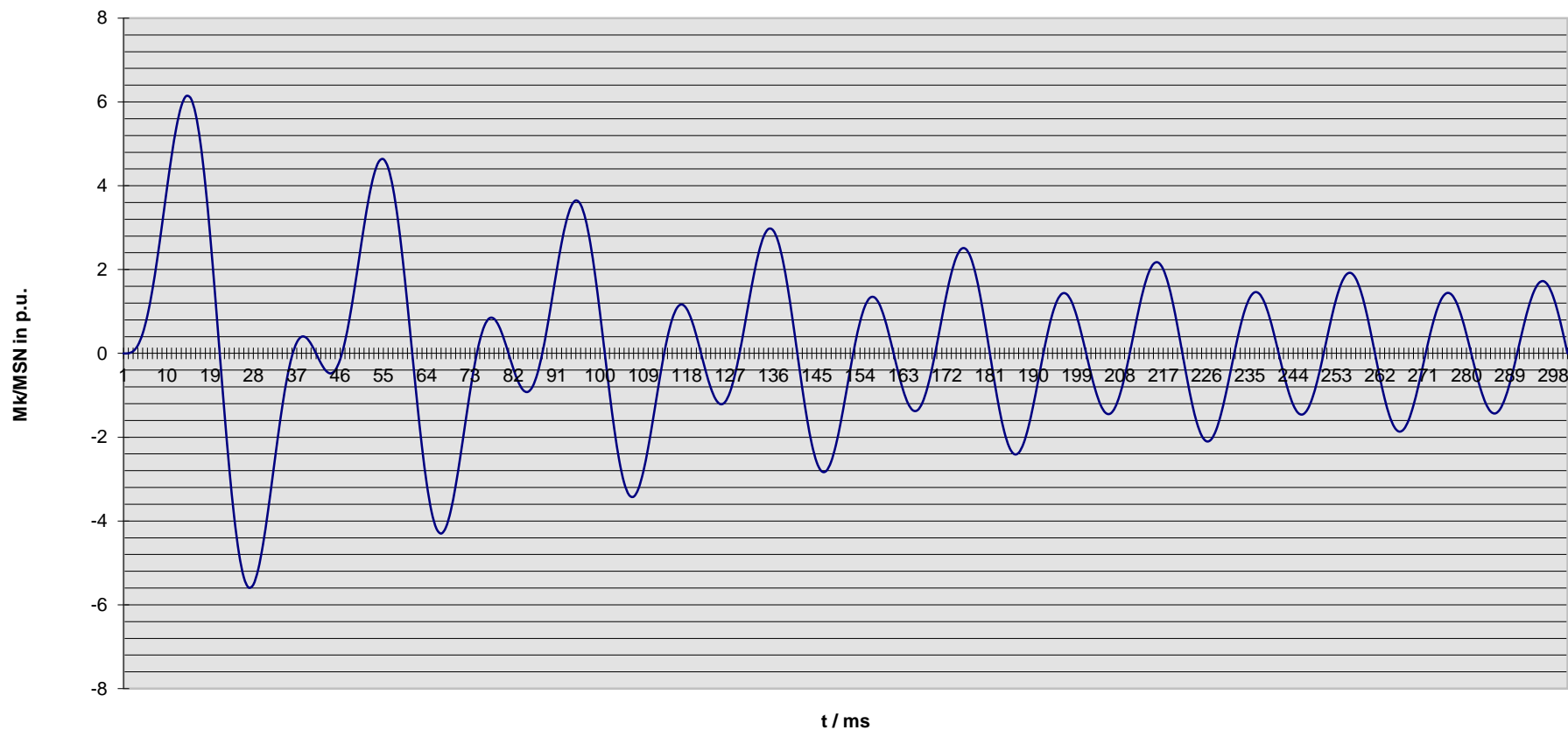
Technisches Datenblatt - Diagramme  
Technical data sheet - Diagrams

ING-FCD-0112

Alternator : **DIG 120 h/4**

Rated output [kVA]	1500	Rated power factor:	0.8	Rated voltage [kV]: 6.3
Rated frequency [Hz]	50	Rated speed [rpm]	1500	MSN related to kVA: 9.55 KNm

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



#### Nenn Daten / nominal data

DIG 120 h/4

Leistung  $S_N$ : **1500 kVA**

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

Rating

p.f.

Spannung  $U_N$ : **6.30 kV**

Strom  $I_N$ : **137 A**

Voltage

Current

Frequenz  $f$ : **50 Hz**

Drehzahl  $n$ : **1,500 min<sup>-1</sup>**

Frequency

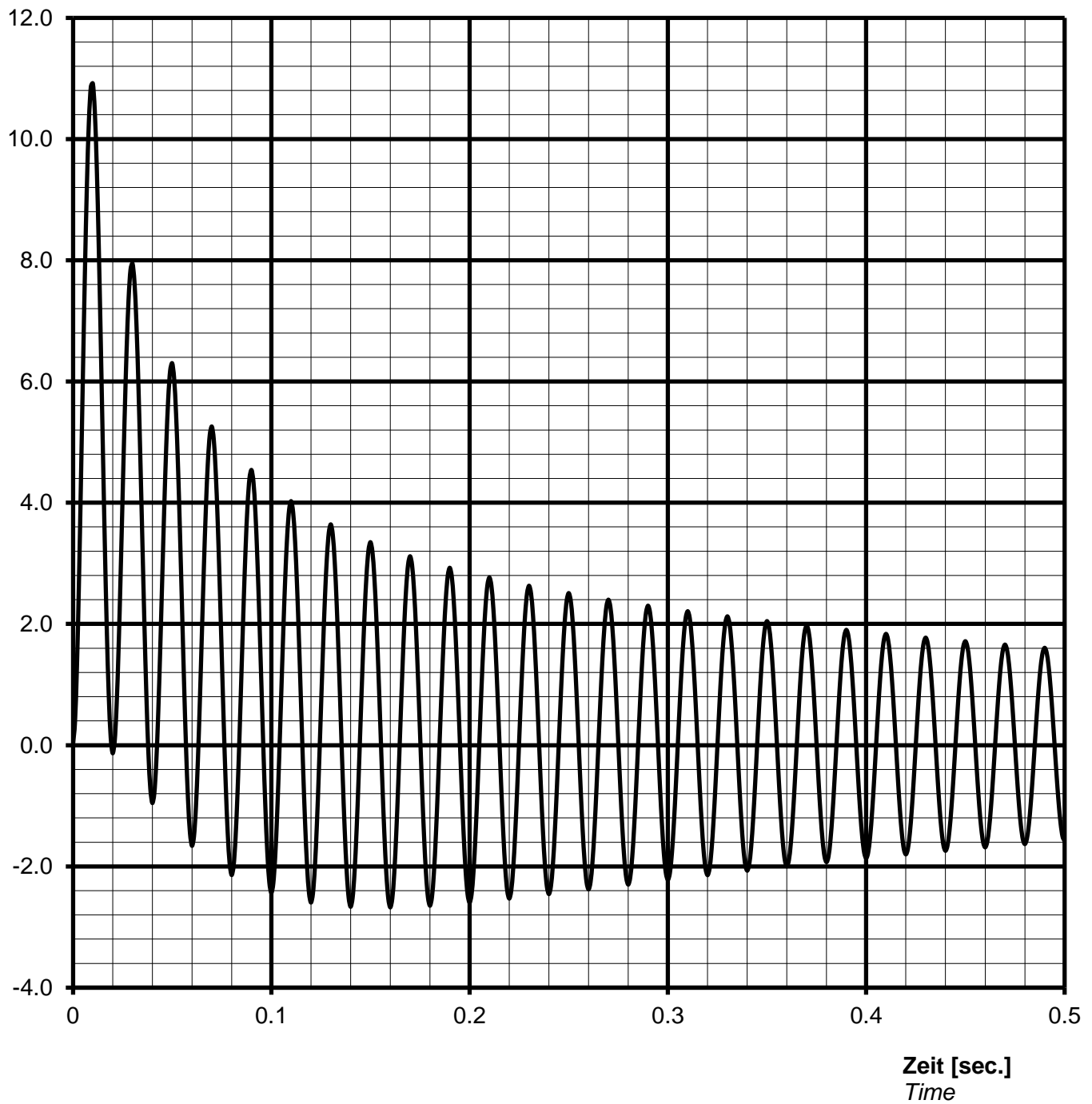
Speed

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  $I_{\text{peak}} =$  **1501 A** or **10.92 p.u.**

#### Nennwerten / nominal data

DIG 120 h/4

Leistung  $S_N$ : **1500** kVA

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

Rating

p.f.

Spannung  $U_N$ : **6.30** kV

Strom  $I_N$ : **137** A

Voltage

Current

Frequenz f: **50** Hz

Drehzahl n: **1500** min<sup>-1</sup>

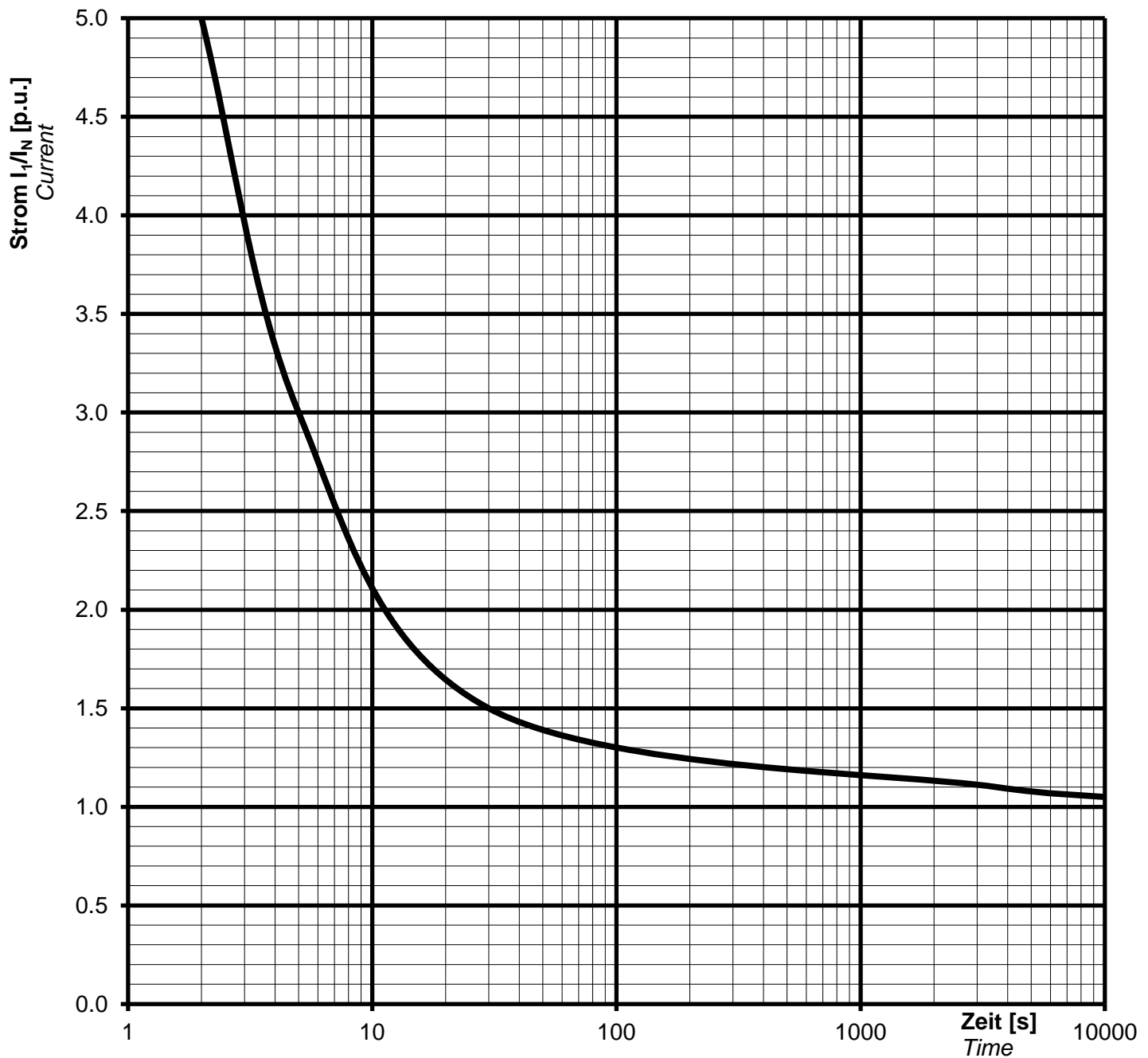
Frequency

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

#### Nennwerten / nominal data

DIG 120 h/4

Rating  $S_N$ : **1500 kVA**

*p.f.* **0.80**

*Bemessungsleistung*

Leistungsfaktor  $\cos \varphi$ :

Nominal voltage  $U_N$ : **6.30 kV**

Nominal current  $I_N$ : **137 A**

*Bemessungsspannung*

*Bemessungsstrom*

Frequency  $f_N$ : **50 Hz**

Speed  $n$ : **1500 min<sup>-1</sup>**

*Frequenz*

*Drehzahl*

Protection: **IP23**

*Schutzart*

#### Inverse current or unbalanced negative sequence current



Remarks / Notizen:

TYPE

DIG 120 h/4

Projekt:

Order Nr.:

**Capability (P-Q) Diagram**

