



## Technical Data Sheet for AvK-Alternators

FM 7.3-5

Date:	09/10/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	dig140k_6_50_6600

### Object data:

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

### Generator data:

Generator:	DIG 140 k/6	Poles:	6	Standards:	IEC 60034
Rated power:	3000 kVA	2400 kWe	2492 kWm		
Power factor:	0.80				
Power at pf 1,0	2425 kVA	2425 kWe	2492 kWm		
Rated voltage:	6.6 kV				
Speed:	1000 1/min				
Frequency:	50 Hz			Voltage range / frequency range:	
Rated current:	262.4 A			Zone A according IEC 60034-1 (dU = +/-5%, df = +/-2%)	
Winding pitch:	ca. 5/6				
Insulation class:	Stator: Class F	Rotor: Class F		Temperature rise:	F
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):	250 kgm²	Weight:	10300 Kg	Losses (environment):	92 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	96,12	96,3	96,3	96	94,3
Power factor 0.9	96,65	96,8	96,75	96,35	94,45
Power factor 1.0	97,17	97,3	97,2	96,7	94,6

### Reactances and time constants

	unsaturated	saturated		unsaturated	saturated				
$X_d$	1.80	1.62 p.u.	$X_q$	0.90	0.88 p.u.	$T_{d0'}$	2.6 s	$T_{d0''}$	0.02583 s
$X_d'$	0.310	0.310 p.u.	$X_q'$	0.90	0.88 p.u.	$T_{d'}$	0.45 s	$T_{q0'}$	0.3 s
$X_d''$	0.198	0.180 p.u.	$X_q''$	0.198	0.198 p.u.	$T_{d''}$	0.015 s	$T_{q0''}$	0.13636 s
$X_2$	0.208	0.189 p.u.	$X_0$	0.059	0.054 p.u.	$T_a$	0.07 s	$T_{q'}$	0.3 s
$X_{1s}$	n.a.	0.108 p.u.						$T_{q''}$	0.03 s

Short circuit ratio saturated: 0.62	$Z_n$ 14.520 Ohm
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### Short circuit data:

Initial short circuit current (3-phase):	$I_k''$	1458 A	
Max. peak current (3-phase):	$I_s$	3711 A	
Sustained short circuit current:	$I_k$	787 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	$M_{k2}$	206.9 kNm	
	$M_{k3}$	124.1 kNm	
Max. faulty synchron moment:	$M_f$	444.8 kNm	
Rated kVA torque:	$M_{SN}$	28.65 kNm	
Rated torque	$M_N$	22.92 kNm	
Shaft torque	$M_{Sh}$	23.80 kNm	

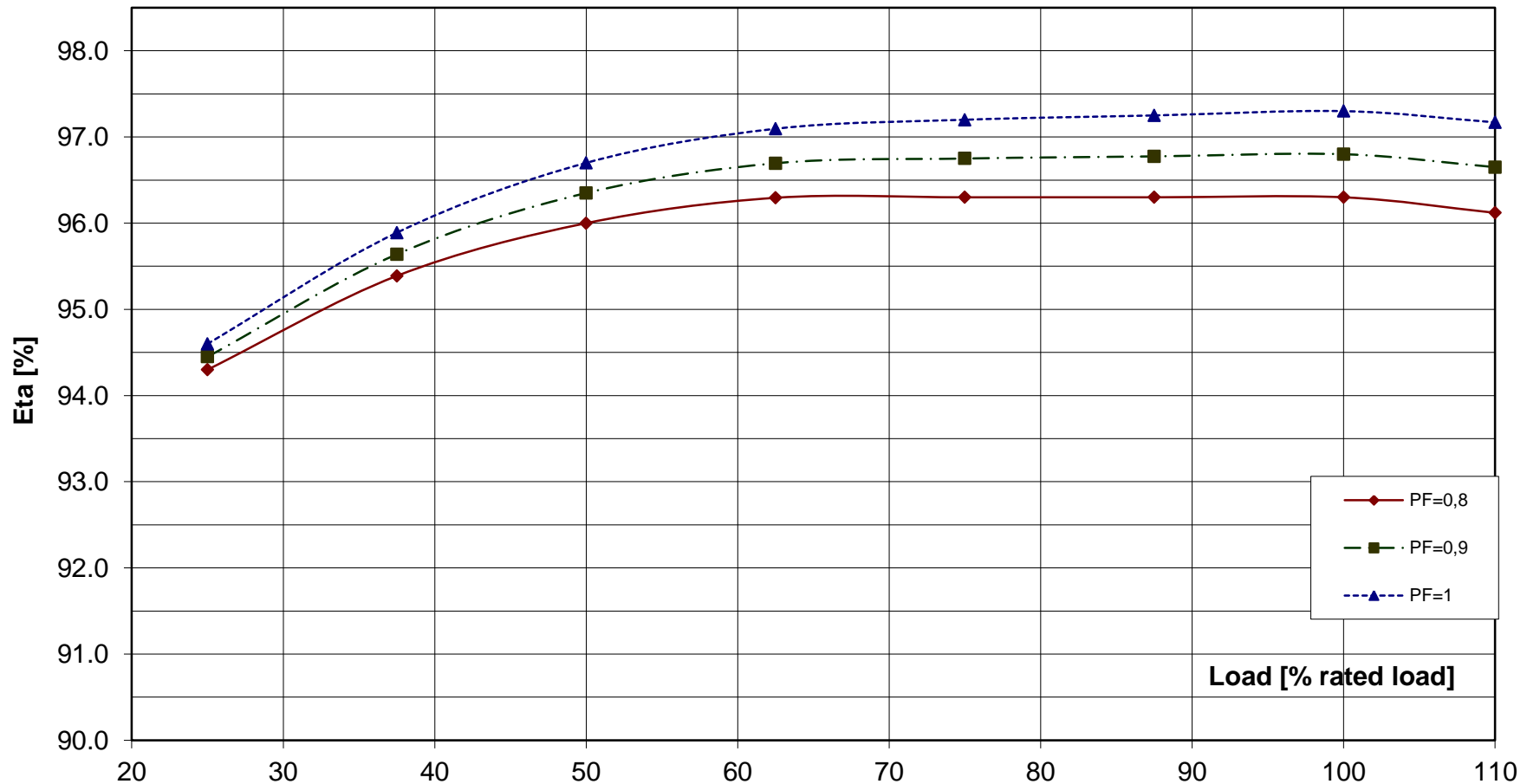
### Load application:

max. load application: 1452 kVA (corresponds to 48,39 % from 3000 kVA) for Power factor 0.4 15% transient voltage drop	Power: 3000 kVA Power factor: 0.8 transient voltage drop: -23.7 %
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### Remarks:

<b>Alternator :</b>	<b>DIG 140 k/6</b>		
Rated output [kVA]	3000	Rated power factor:	0.8
Rated frequency [Hz]	50	Rated speed [rpm]	1000
			Rated voltage [kV]: 6.6

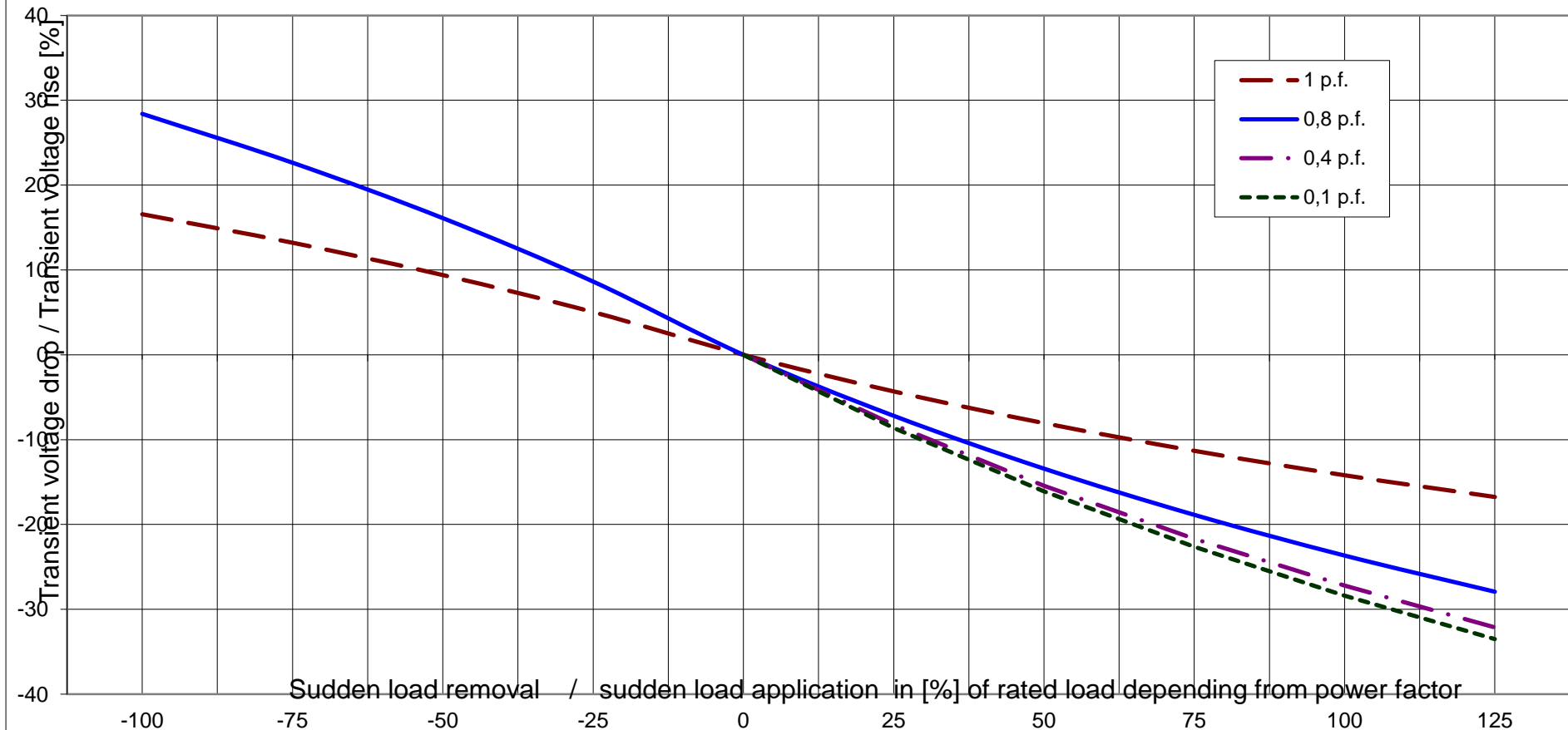
### Wirkungsgrad-Kennlinie - Efficiency Curve



**Alternator : DIG 140 k/6**

Rated output [kVA]	3000	Rated power factor:	0.8	Rated voltage [kV]:	6.6
Rated frequency [Hz]	50	Rated speed [rpm]	1000		

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





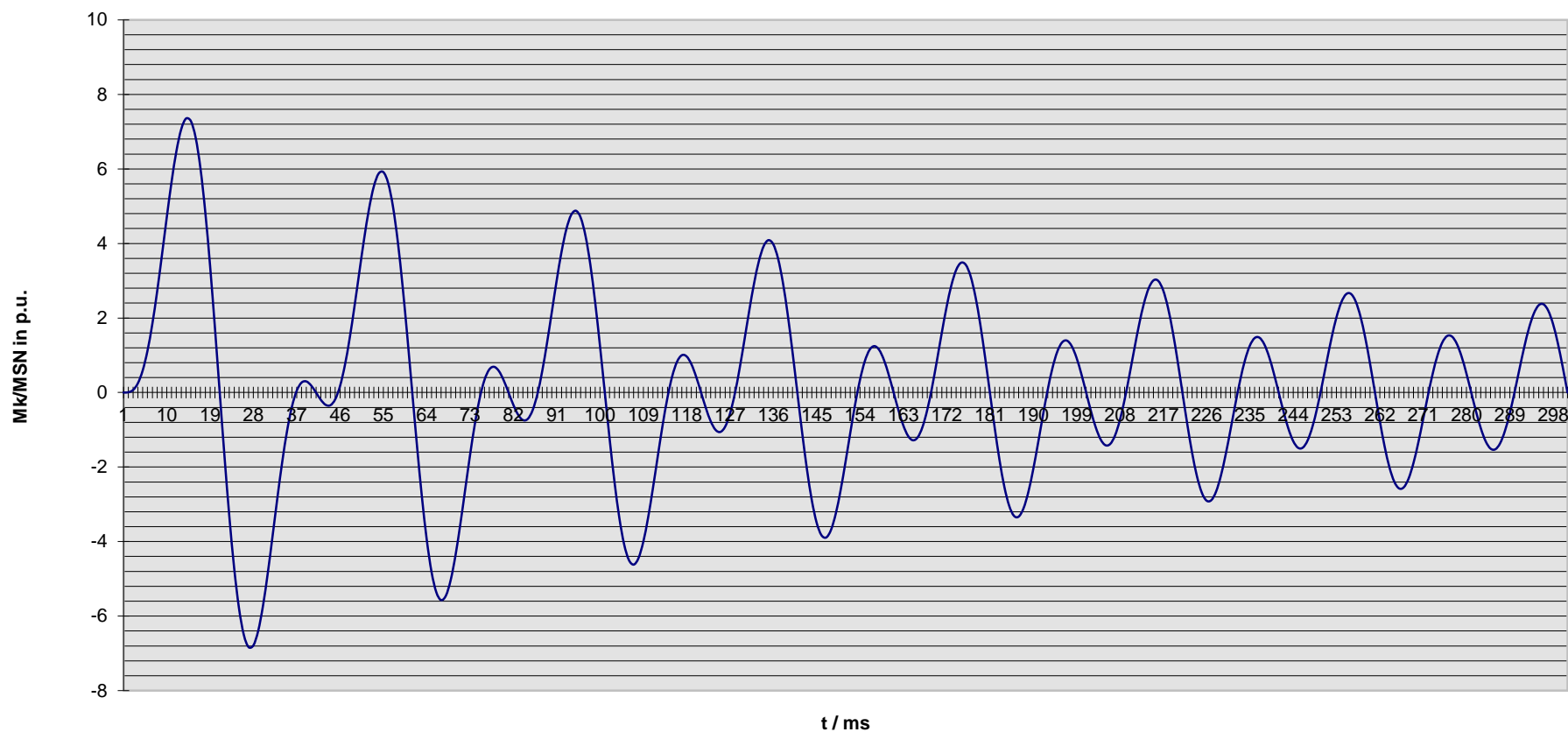
Technisches Datenblatt - Diagramme  
Technical data sheet - Diagrams

ING-FCD-0112

Alternator : **DIG 140 k/6**

Rated output [kVA]	3000	Rated power factor:	0.8	Rated voltage [kV]:	6.6
Rated frequency [Hz]	50	Rated speed [rpm]	1000	MSN related to kVA:	28.65 KNm

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



**Nenndaten / nominal data**

**DIG 140 k/6**

Leistung  $S_N$ : **3000 kVA**

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

*Rating*

*p.f.*

Spannung  $U_N$ : **6.60 kV**

Strom  $I_N$ : **262 A**

*Voltage*

*Current*

Frequenz  $f$ : **50 Hz**

Drehzahl  $n$ : **1,000 min<sup>-1</sup>**

*Frequency*

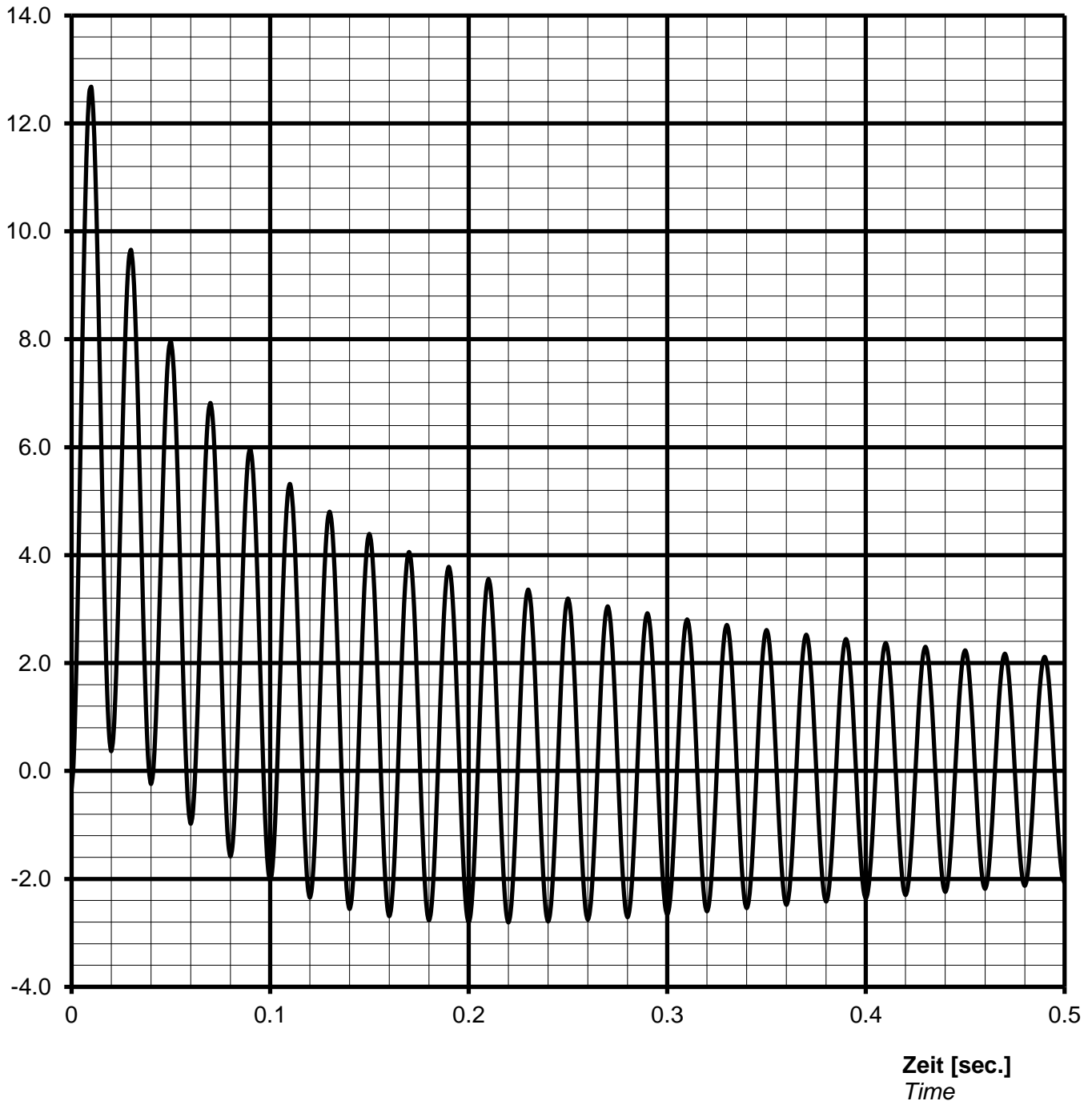
*Speed*

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**  $I_{\text{peak}} =$  **3326 A** or **12.67 p.u.**

#### Nenn Daten / nominal data

DIG 140 k/6

Leistung  $S_N$ : **3000** kVA

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

Rating

p.f.

Spannung  $U_N$ : **6.60** kV

Strom  $I_N$ : **262** A

Voltage

Current

Frequenz f: **50** Hz

Drehzahl n: **1000** min<sup>-1</sup>

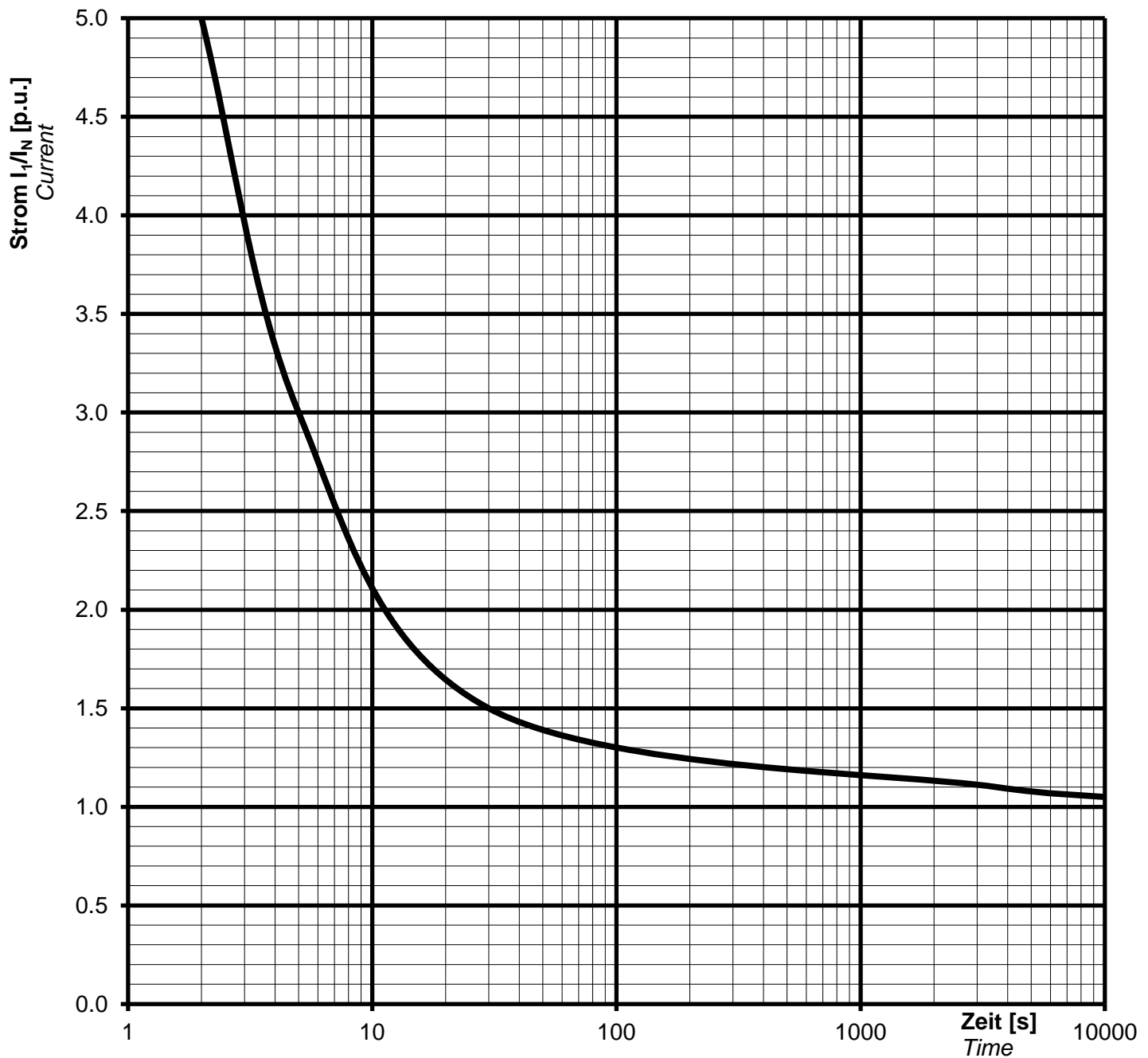
Frequency

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

#### Nenndaten / nominal data

**DIG 140 k/6**

Rating  $S_N$ : **3000 kVA**

*p.f.* **0.80**

*Bemessungsleistung*

Leistungsfaktor  $\cos \varphi$ :

Nominal voltage  $U_N$ : **6.60 kV**

Nominal current  $I_N$ : **262 A**

*Bemessungsspannung*

*Bemessungsstrom*

Frequency  $f_N$ : **50 Hz**

Speed  $n$ : **1000 min<sup>-1</sup>**

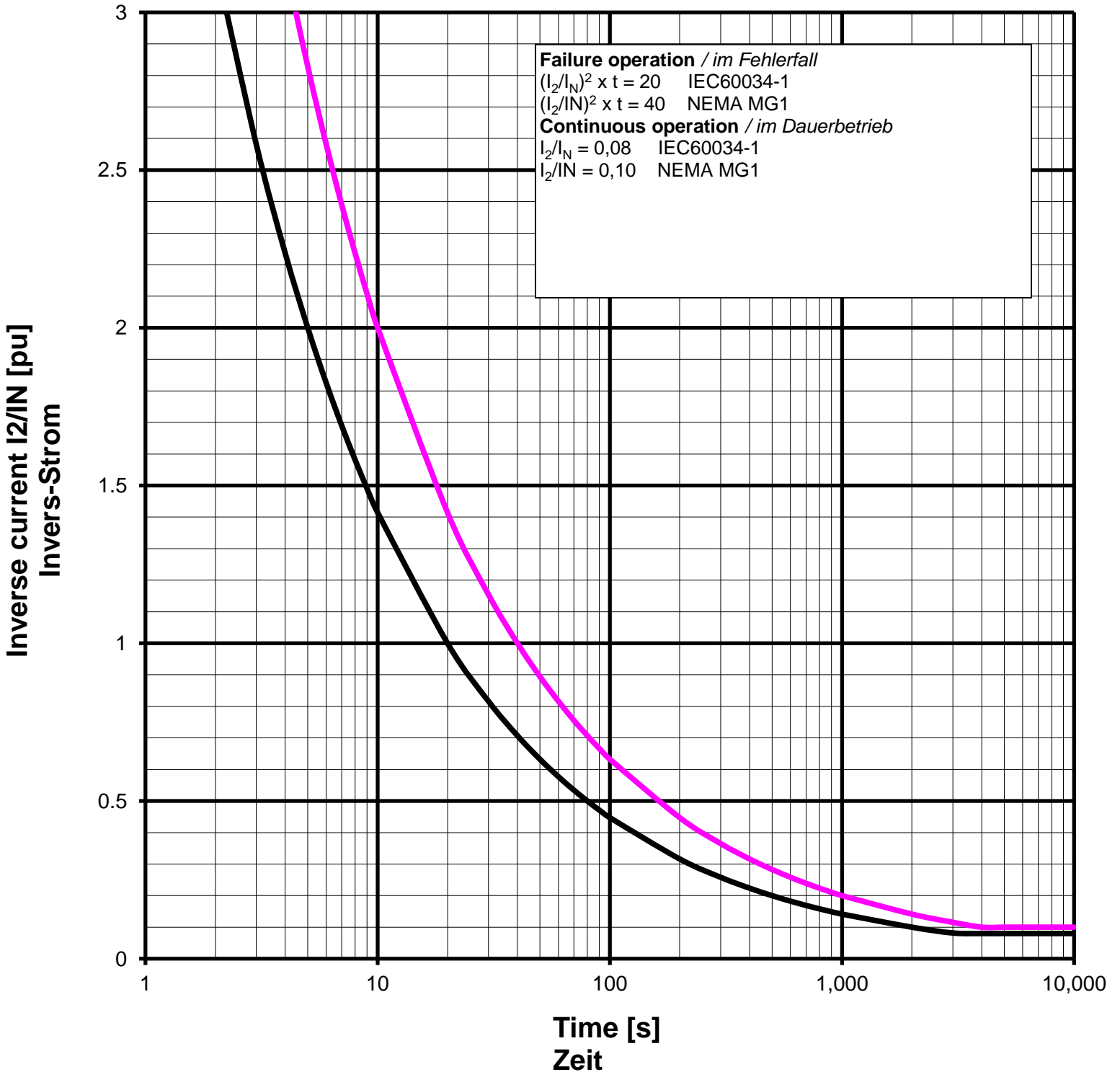
*Frequenz*

*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

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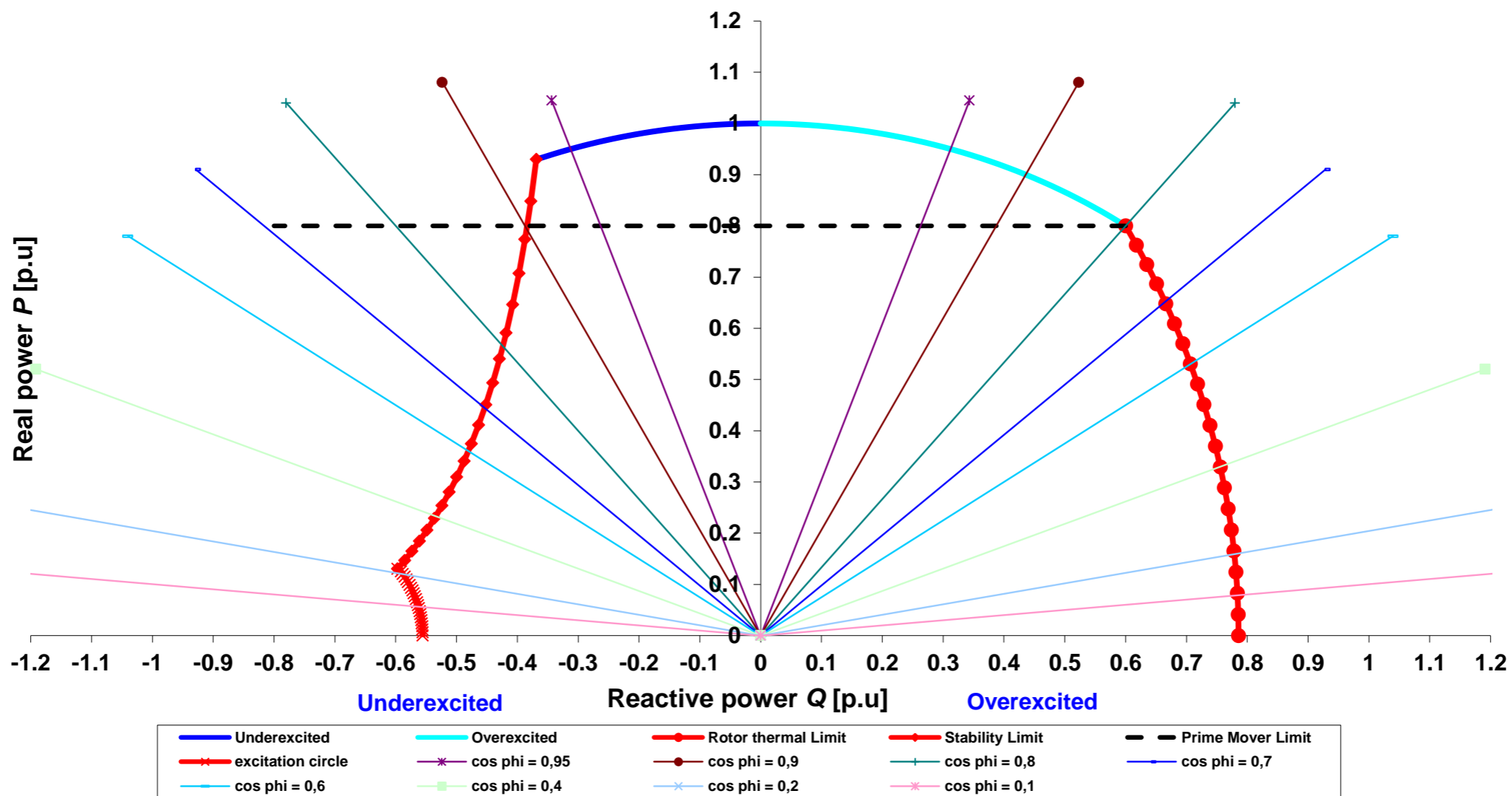
TYPE

DIG 140 k/6

Projekt:

Order Nr.:

### Capability (P-Q) Diagram



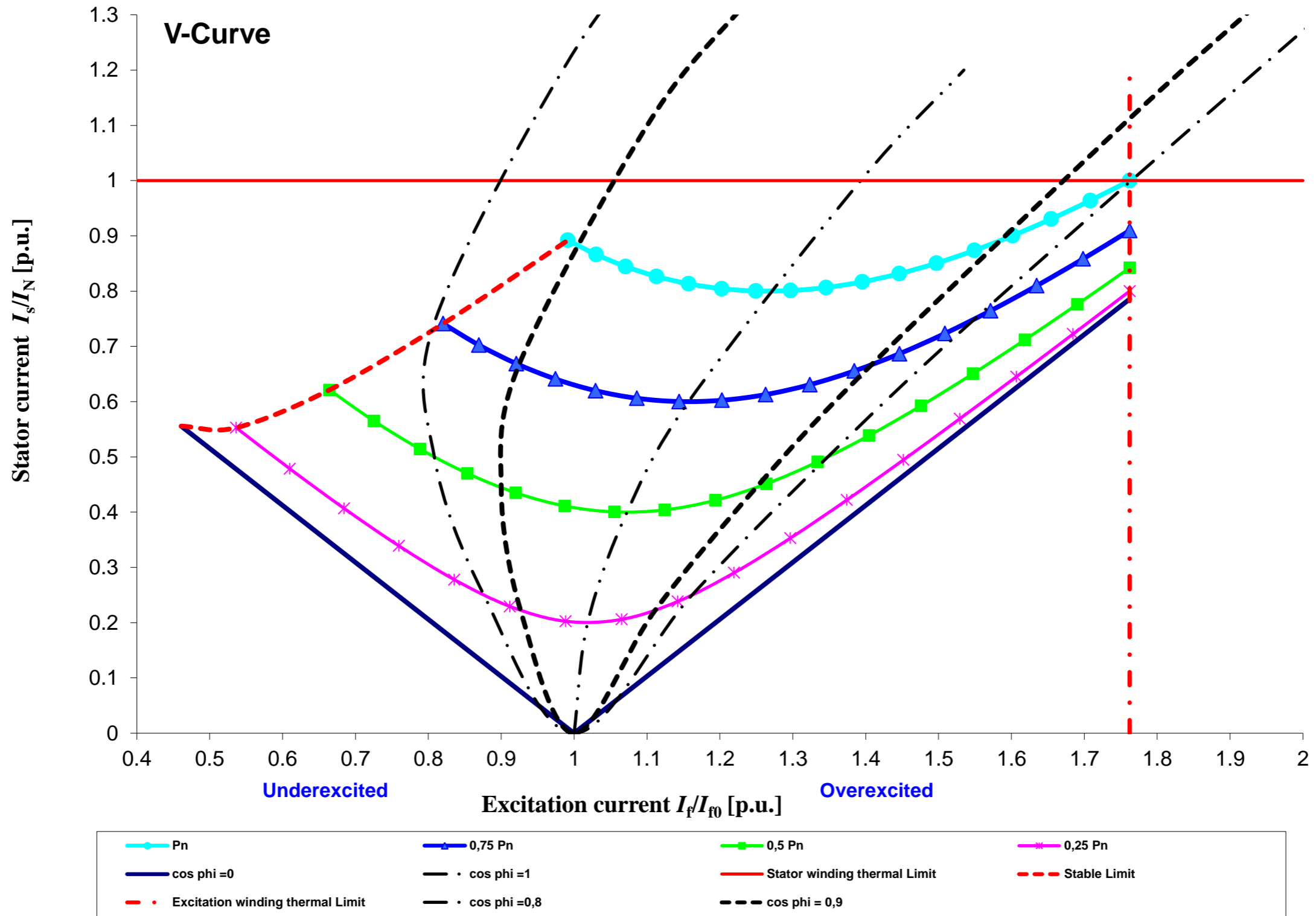
Cummins Generator Technologies

Datum / date:

17/10/2013



TYPE	DIG 140 k/6	Projekt:		Order Nr.:	
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Cummins Generator Technologies	Datum / date:	
	17/10/2013	