

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	09/10/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	dig142h_4_60_6600

**Object data:**

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

**Generator data:**

Generator:	DIG 142 h/4	Poles:	4	Standards:	IEC 60034
Rated power:	6600 kVA	5280 kWe	5414 kWm		
Power factor:	0.80				
Power at pf 1,0	5307 kVA	5307 kWe	5414 kWm		
Rated voltage:	6.6 kV				
Speed:	1800 1/min				
Frequency:	60 Hz			Voltage range / frequency range:	
Rated current:	577.4 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.:	5.0 m³/s	Cooling water quantity:	n/a
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Moment of inertia (I):	229 kgm²	Weight:	12700 Kg	Losses (environment):	134 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	97,41	97,53	97,51	97,13	95,47
Power factor 0.9	97,67	97,78	97,7	97,25	95,57
Power factor 1.0	97,93	98,03	97,88	97,36	95,66

**Reactances and time constants**

	unsaturated	saturated		unsaturated	saturated					
$X_d$	3.07	2.76 p.u.	$X_q$	1.54	1.51 p.u.	$T_{d0'}$	4.1 s	$T_{d0''}$	0.02852 s	
$X_d'$	0.241	0.241 p.u.	$X_q'$	1.54	1.51 p.u.	$T_{d'}$	0.32 s	$T_{q0'}$	0.4 s	
$X_d''$	0.186	0.169 p.u.	$X_q''$	0.186	0.186 p.u.	$T_{d''}$	0.02 s	$T_{q0''}$	0.33118 s	
$X_2$	0.195	0.177 p.u.	$X_0$	0.056	0.051 p.u.	$T_a$	0.12 s	$T_{q'}$	0.4 s	
$X_{1s}$	n.a.	0.101 p.u.						$T_{q''}$	0.04 s	

Short circuit ratio saturated:	0.36	$Z_n$	6.600 Ohm
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**Short circuit data:**

Initial short circuit current (3-phase):	$I_k''$	3416 A	
Max. peak current (3-phase):	$I_s$	8696 A	
Sustained short circuit current:	$I_k$	1732 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	$M_{k2}$	269.3 kNm	
	$M_{k3}$	161.6 kNm	
Max. faulty synchron moment:	$M_f$	579.0 kNm	
Rated kVA torque:	$M_{SN}$	35.02 kNm	
Rated torque	$M_N$	28.02 kNm	
Shaft torque	$M_{Sh}$	28.73 kNm	

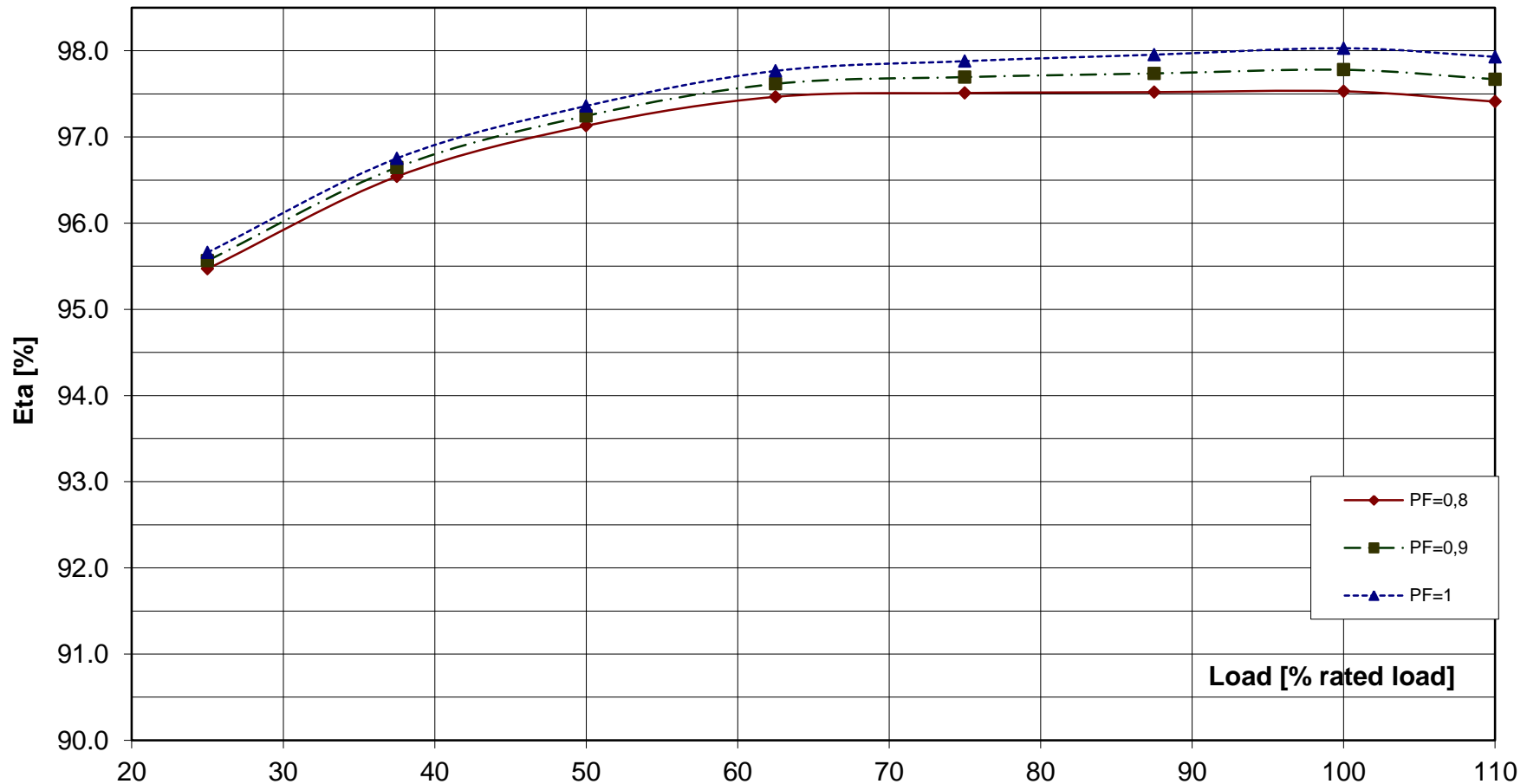
**Load application:**

max. load application: 4108 kVA (corresponds to 62,24 % from 6600 kVA) for Power factor 0.4 15% transient voltage drop	Power: 6600 kVA Power factor: 0.8 transient voltage drop: -19.4 %
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**Remarks:**

<b>Alternator :</b>	<b>DIG 142 h/4</b>		
Rated output [kVA]	6600	Rated power factor:	0.8
Rated frequency [Hz]	60	Rated speed [rpm]	1800
			Rated voltage [kV]: 6.6

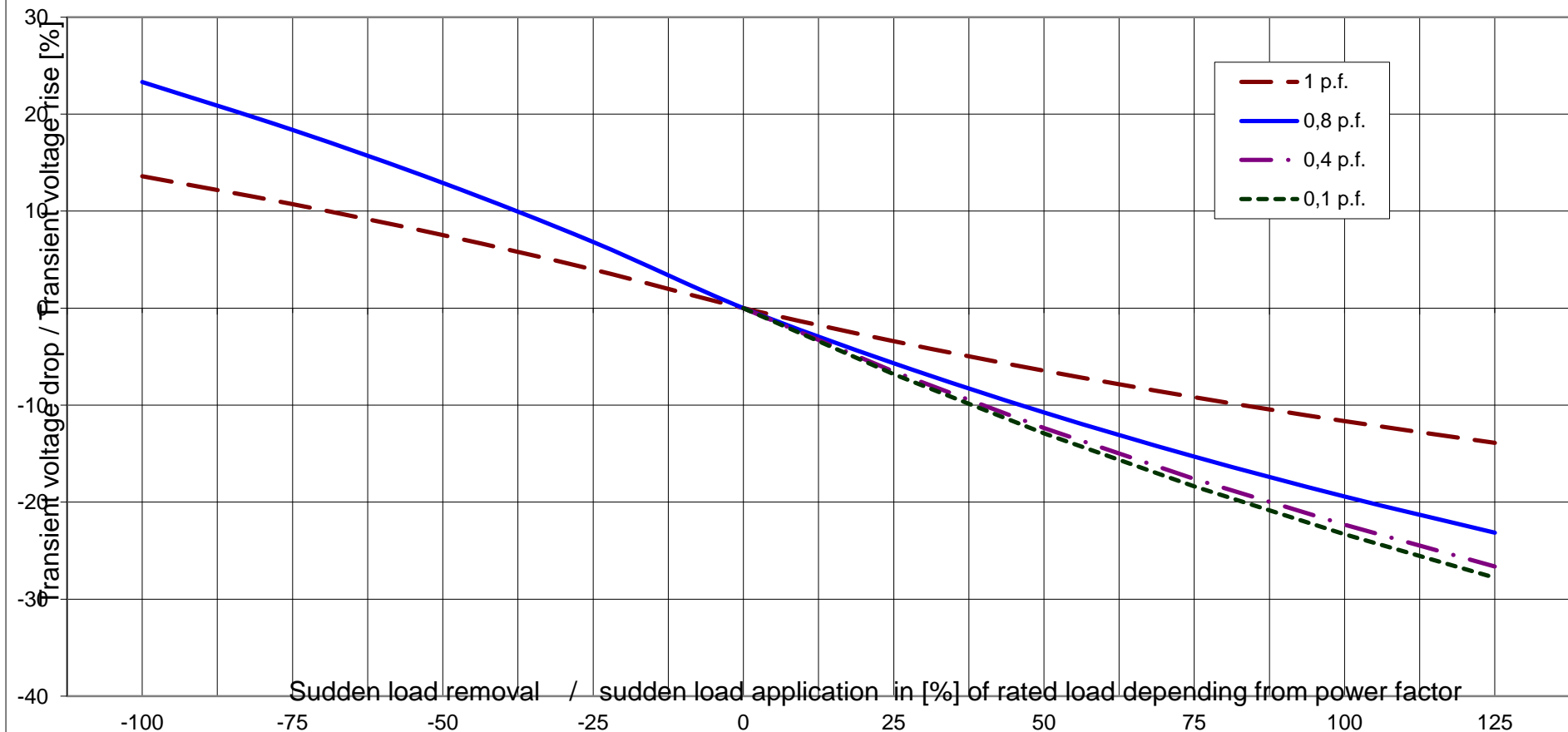
### Wirkungsgrad-Kennlinie - Efficiency Curve



**Alternator : DIG 142 h/4**

Rated output [kVA]	6600	Rated power factor:	0.8	Rated voltage [kV]:	6.6
Rated frequency [Hz]	60	Rated speed [rpm]	1800		

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

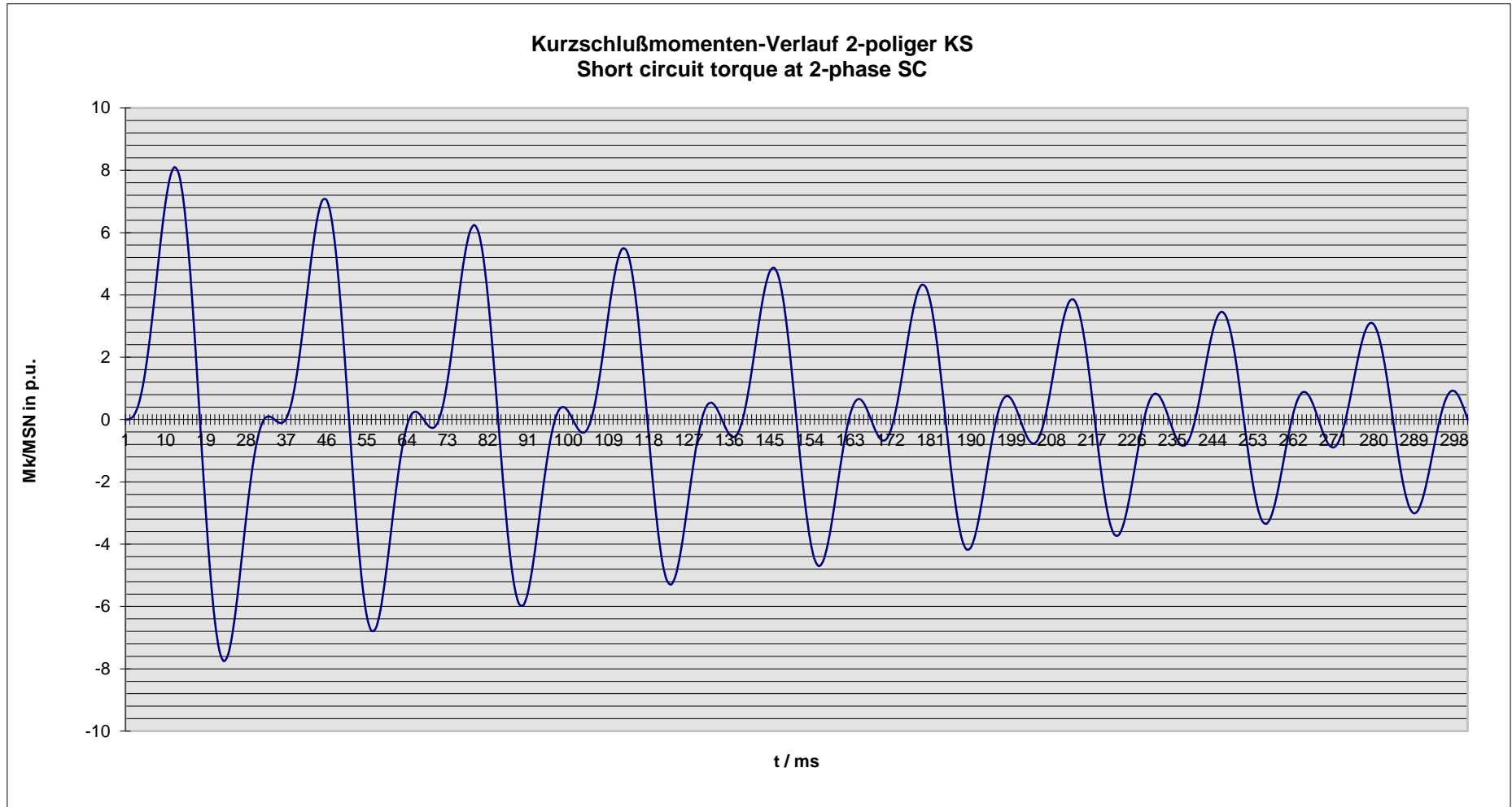




Technisches Datenblatt - Diagramme  
Technical data sheet - Diagrams

ING-FCD-0112

<b>Alternator :</b>	<b>DIG 142 h/4</b>			
Rated output [kVA]	6600	Rated power factor:	0.8	Rated voltage [kV]: 6.6
Rated frequency [Hz]	60	Rated speed [rpm]	1800	MSN related to kVA: 35.01 KNm



**Nenndaten / nominal data**

**DIG 142 h/4**

Leistung  $S_N$ : **6600** kVA

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

Rating

p.f.

Spannung  $U_N$ : **6.60** kV

Strom  $I_N$ : **577** A

Voltage

Current

Frequenz  $f$ : **60** Hz

Drehzahl  $n$ : **1,800** min<sup>-1</sup>

Frequency

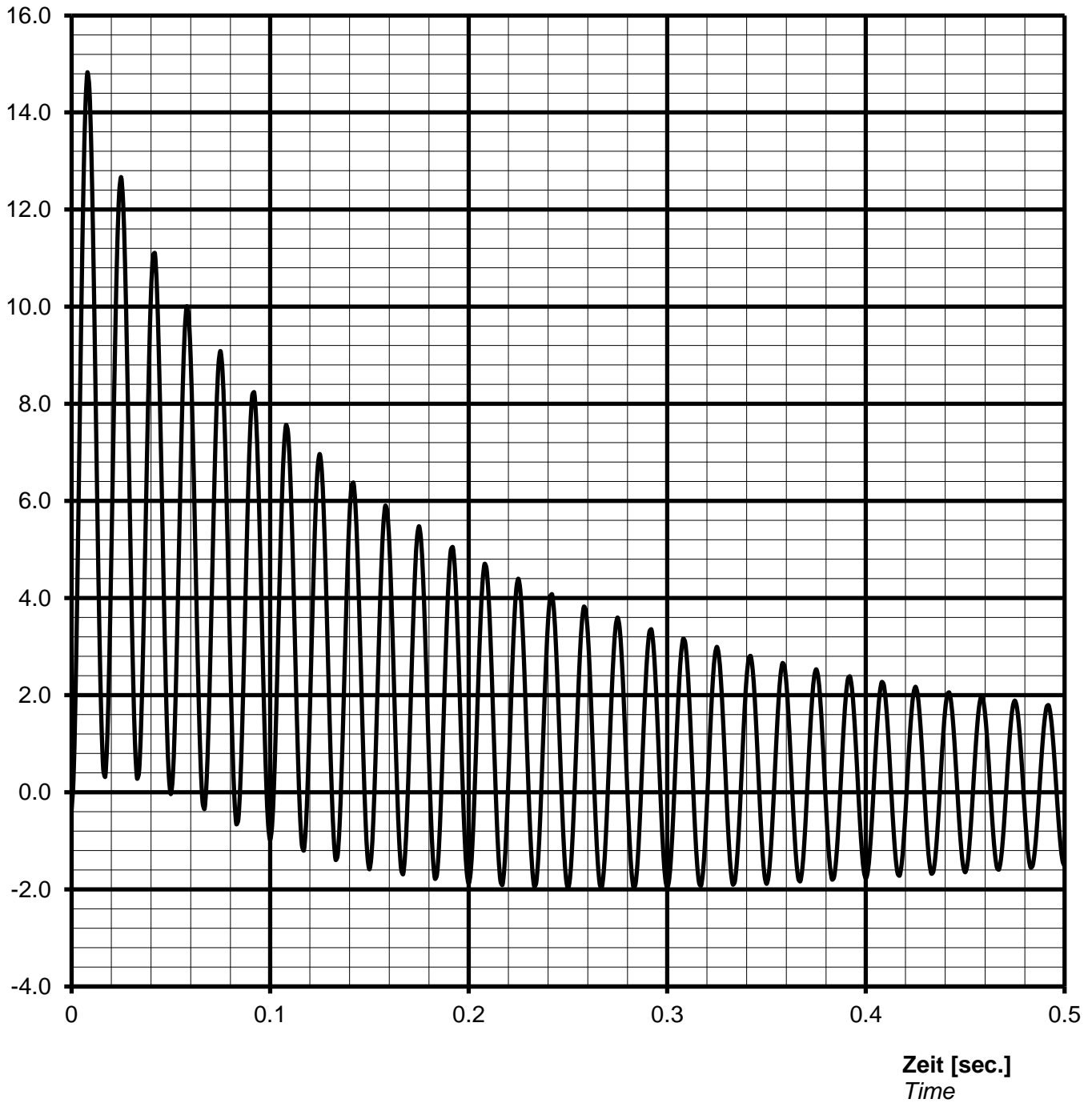
Speed

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**  $I_{\text{peak}} =$  **8559 A** or **14.82 p.u.**

#### Nennwerten / nominal data

DIG 142 h/4

Leistung  $S_N$ : **6600** kVA

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

Rating

p.f.

Spannung  $U_N$ : **6.60** kV

Strom  $I_N$ : **577** A

Voltage

Current

Frequenz f: **60** Hz

Drehzahl n: **1800** min<sup>-1</sup>

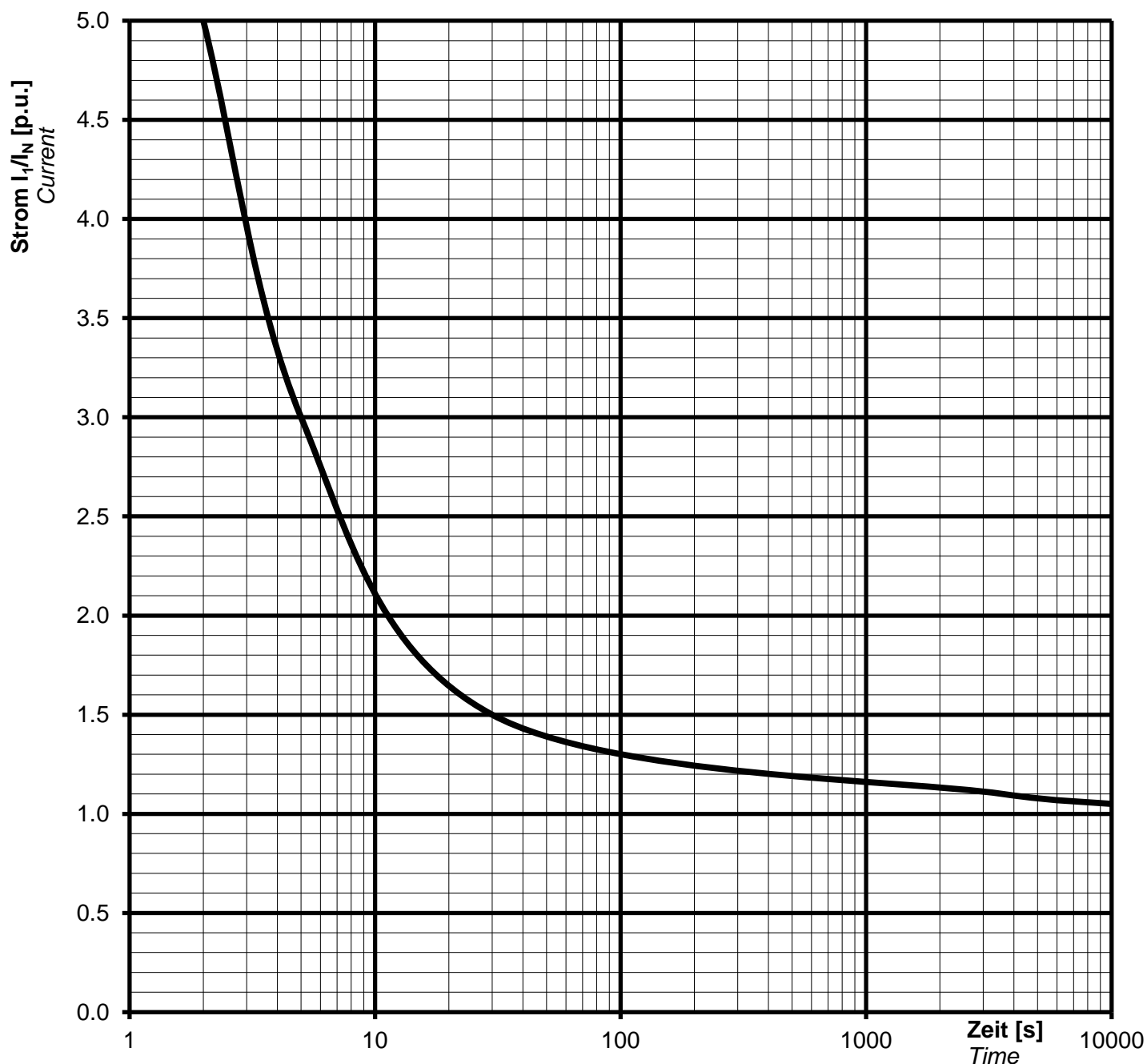
Frequency

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 142 h/4

Rating  $S_N$ : **6600 kVA**

*p.f.* **0.80**

*Bemessungsleistung*

Leistungsfaktor  $\cos \varphi$ :

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

Nominal current  $I_N$ : **577 A**

*Bemessungsspannung*

*Bemessungsstrom*

Frequency  $f_N$ : **60 Hz**

Speed  $n$ : **1800 min<sup>-1</sup>**

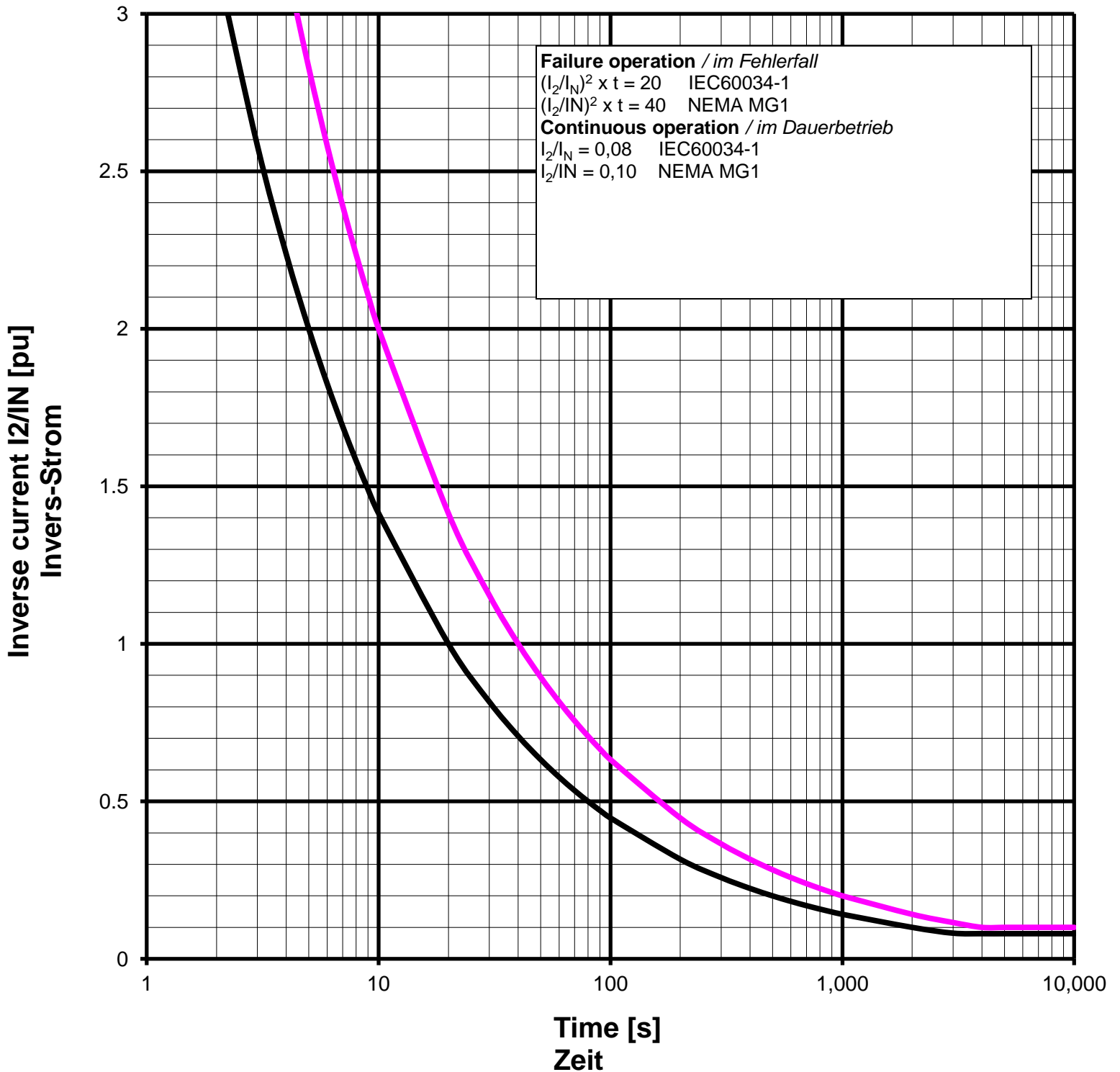
*Frequenz*

*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

ING-FCD-0112

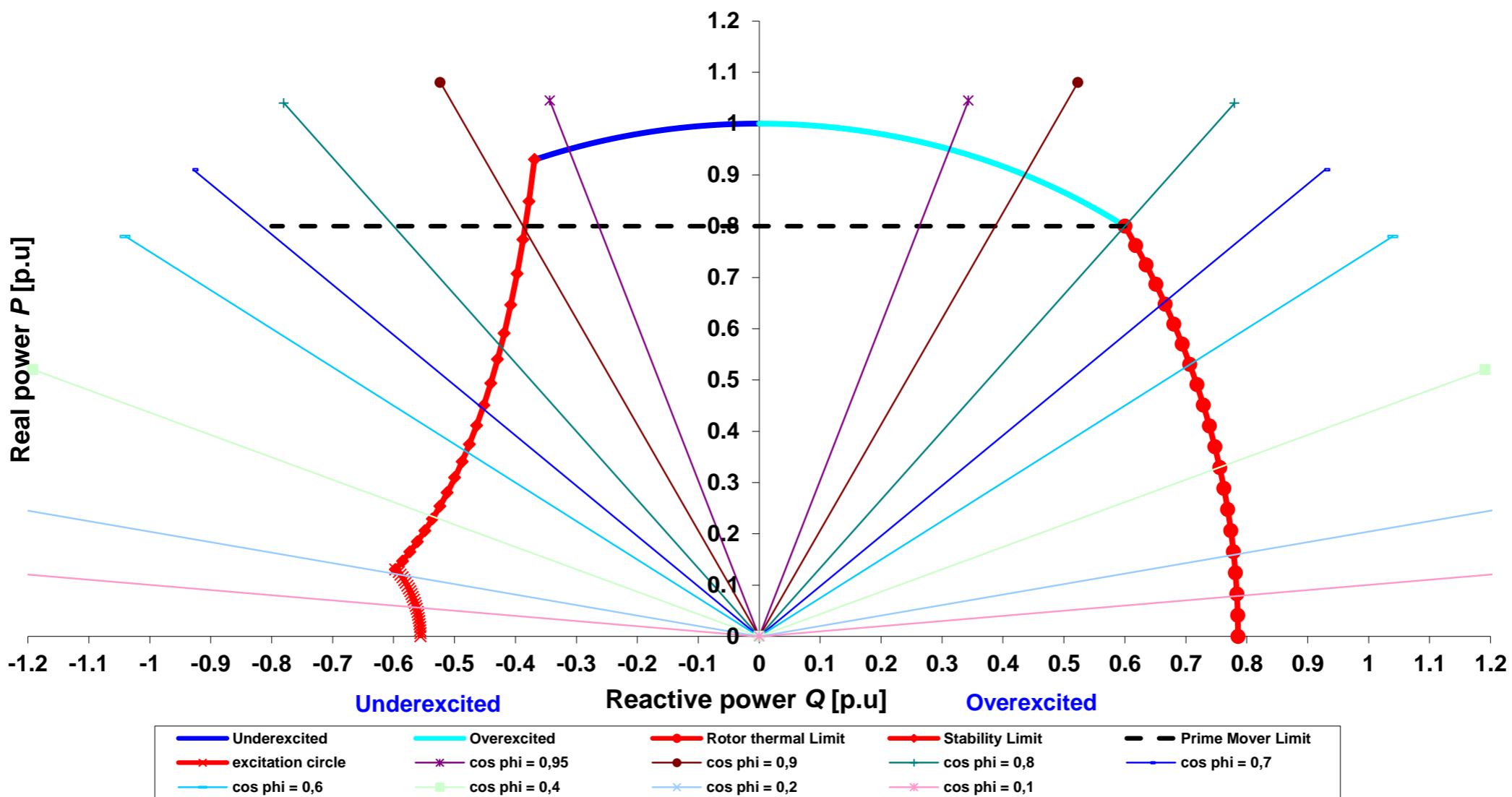
TYPE

DIG 142 h/4

Projekt:

Order Nr.:

### Capability (P-Q) Diagram



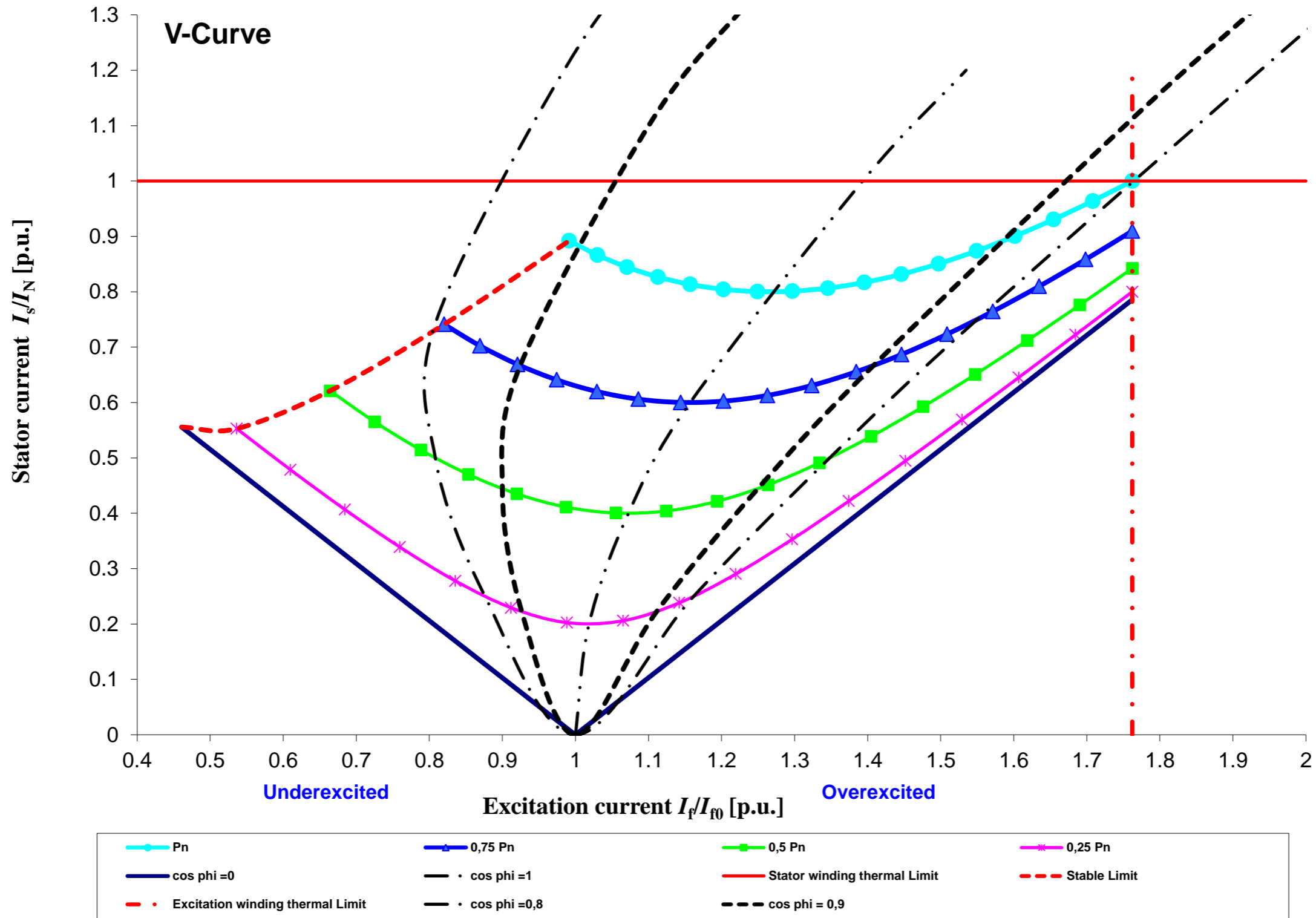
Cummins Generator Technologies

Datum / date:

17/10/2013



TYPE	DIG 142 h/4	Projekt:		Order Nr.:	
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Cummins Generator Technologies	Datum / date:	
	17/10/2013	