



Technical Data Sheet for AvK-Alternators

FM 7.3-5

Date:	09/10/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	dig142e_4_60_6600

Object data:

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

Generator data:

Generator:	DIG 142 e/4	Poles:	4	Standards:	IEC 60034
Rated power:	5100 kVA	4080 kWe	4195 kWm		
Power factor:	0.80				
Power at pf 1,0	4104 kVA	4104 kWe	4195 kWm		
Rated voltage:	6.6 kV				
Speed:	1800 1/min				
Frequency:	60 Hz			Voltage range / frequency range:	
Rated current:	446.1 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.:	5.0 m³/s	Cooling water quantity:	n/a
Moment of inertia (I):	177 kgm²	Weight:	10250 Kg	Losses (environment):	115 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	97,12	97,26	97,21	96,76	94,84
Power factor 0.9	97,42	97,54	97,42	96,89	94,95
Power factor 1.0	97,71	97,82	97,62	97,02	95,06

Reactances and time constants

	unsaturated	saturated		unsaturated	saturated				
X_d	3.02	2.72 p.u.	X_q	1.51	1.48 p.u.	$T_{d0'}$	3.7 s	$T_{d0''}$	0.02831 s
X_d'	0.259	0.259 p.u.	X_q'	1.51	1.48 p.u.	$T_{d'}$	0.32 s	$T_{q0'}$	0.4 s
X_d''	0.201	0.183 p.u.	X_q''	0.201	0.201 p.u.	$T_{d''}$	0.02 s	$T_{q0''}$	0.3005 s
X_2	0.211	0.192 p.u.	X_0	0.061	0.055 p.u.	T_a	0.12 s	$T_{q'}$	0.4 s
X_{1s}	n.a.	0.110 p.u.						$T_{q''}$	0.04 s

Short circuit ratio saturated:	0.37	Z_n	8.541 Ohm
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Short circuit data:

Initial short circuit current (3-phase):	I_k''	2438 A	
Max. peak current (3-phase):	I_s	6206 A	
Sustained short circuit current:	I_k	1338 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M_{k2}	192.2 kNm	
	M_{k3}	115.3 kNm	
Max. faulty synchron moment:	M_f	413.2 kNm	
Rated kVA torque:	M_{SN}	27.06 kNm	
Rated torque	M_N	21.65 kNm	
Shaft torque	M_{Sh}	22.26 kNm	

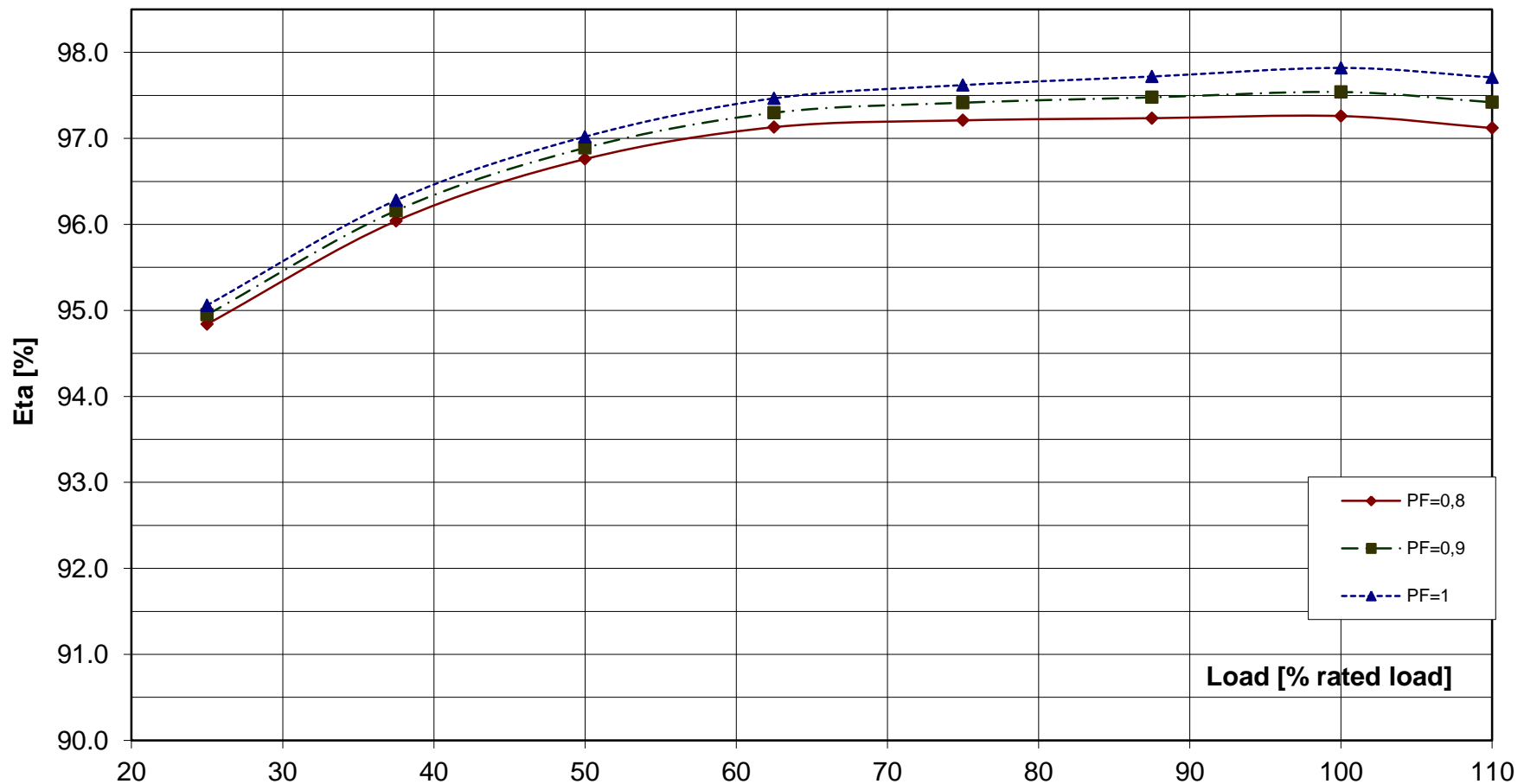
Load application:

max. load application: 2954 kVA (corresponds to 57,92 % from 5100 kVA) for Power factor 0.4 15% transient voltage drop	Power: 5100 kVA Power factor: 0.8 transient voltage drop: -20.6 %
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Remarks:

Alternator :	DIG 142 e/4		
Rated output [kVA]	5100	Rated power factor:	0.8
Rated frequency [Hz]	60	Rated speed [rpm]	1800
			Rated voltage [kV]: 6.6

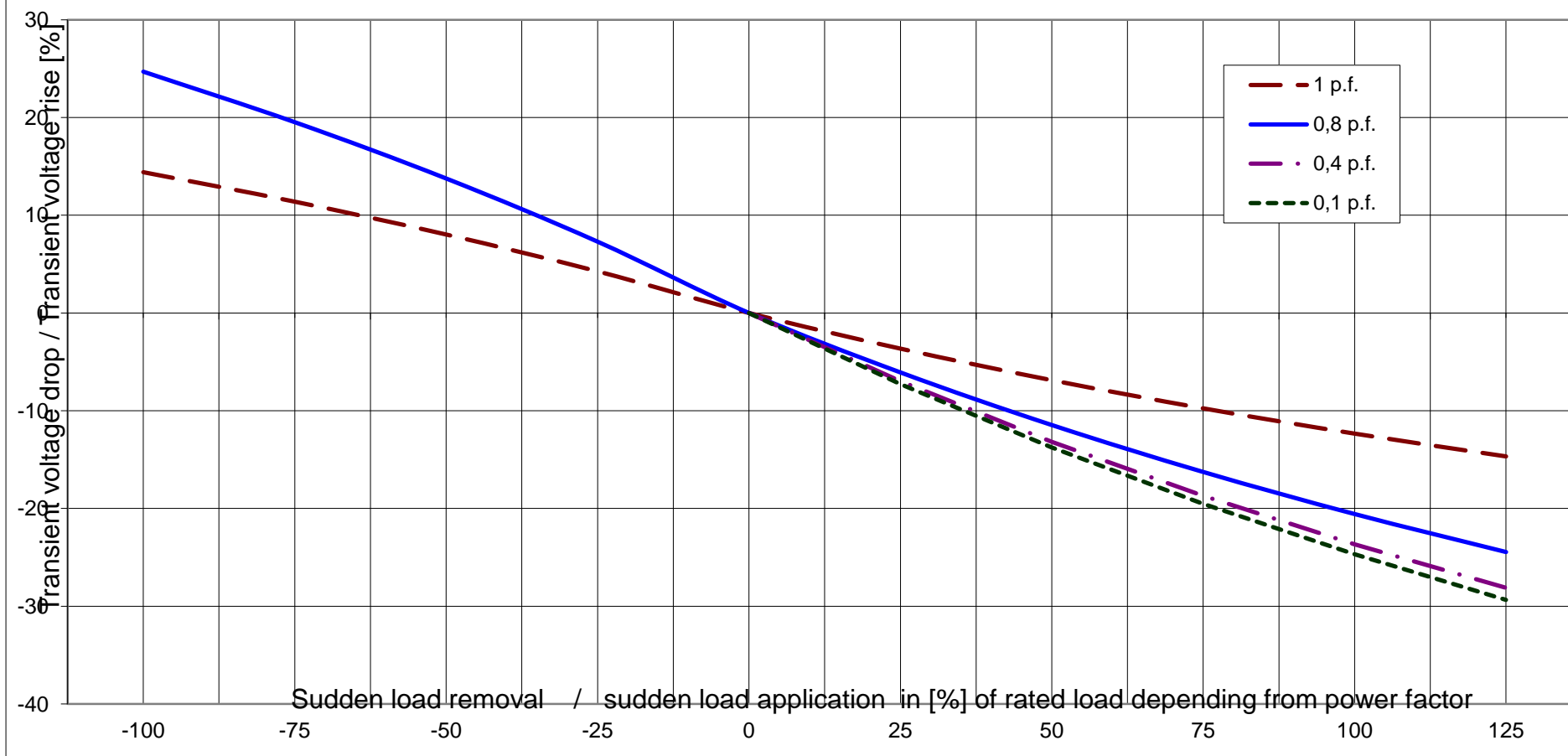
Wirkungsgrad-Kennlinie - Efficiency Curve



Alternator : DIG 142 e/4

Rated output [kVA]	5100	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

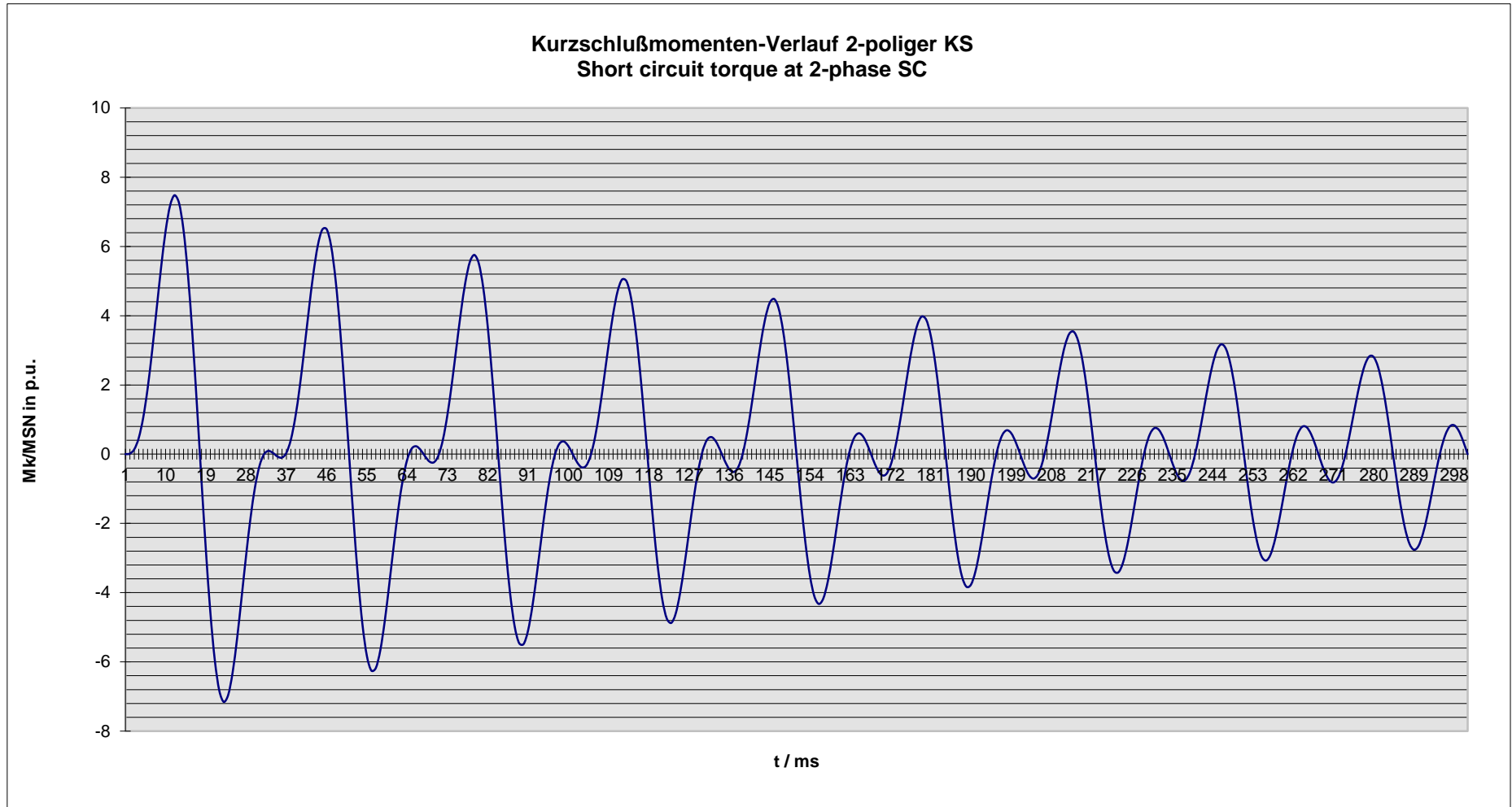




Technisches Datenblatt - Diagramme
Technical data sheet - Diagrams

ING-FCD-0112

Alternator :	DIG 142 e/4			
Rated output [kVA]	5100	Rated power factor:	0.8	Rated voltage [kV]: 6.6
Rated frequency [Hz]	60	Rated speed [rpm]	1800	MSN related to kVA: 27.06 KNm



Nenndaten / nominal data

DIG 142 e/4

Leistung S_N : **5100 kVA**

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

Rating

p.f.

Spannung U_N : **6.60 kV**

Strom I_N : **446 A**

Voltage

Current

Frequenz f : **60 Hz**

Drehzahl n : **1,800 min⁻¹**

Frequency

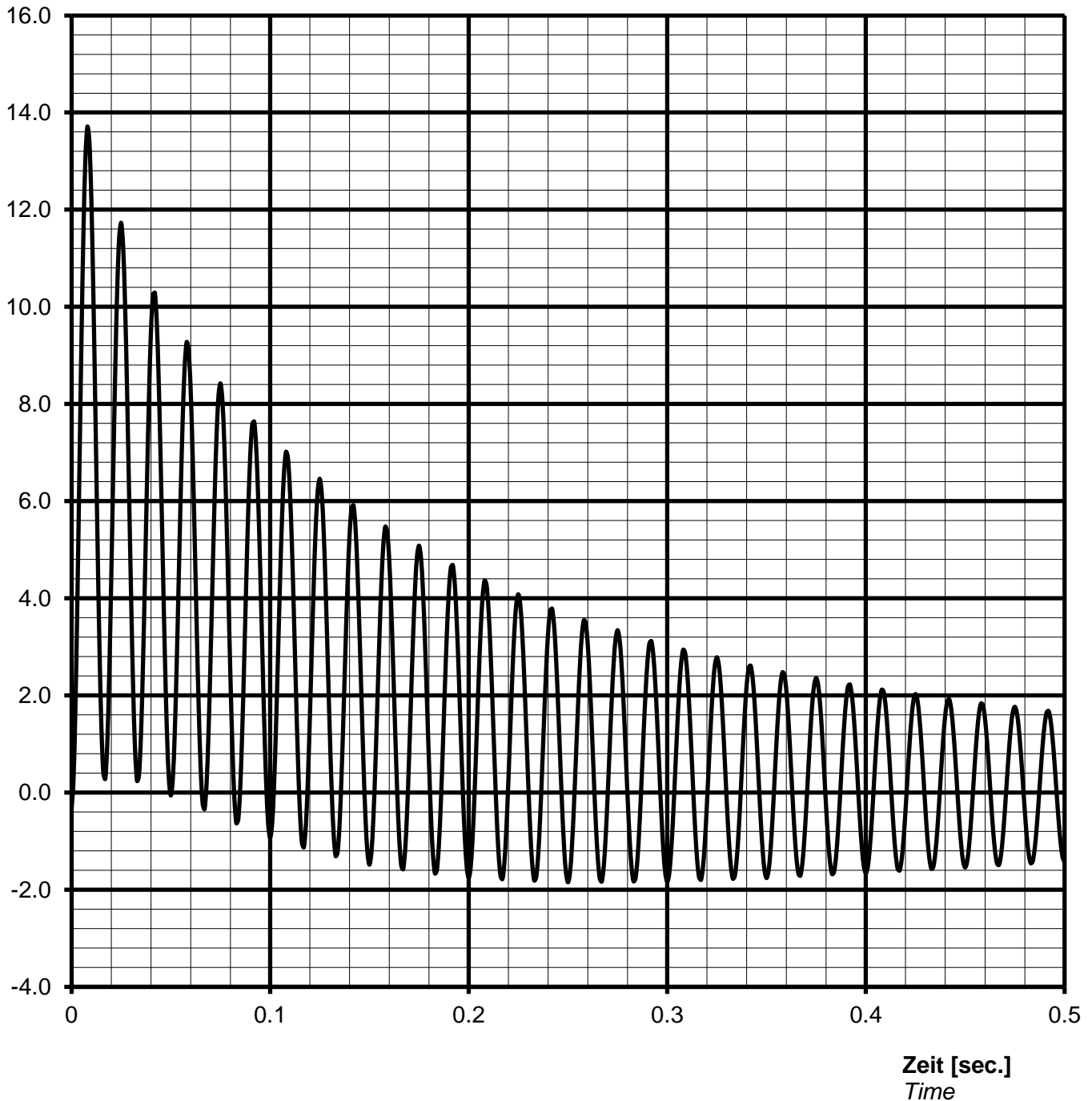
Speed

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 $I_{\text{peak}} =$ **6116 A** or **13.71 p.u.**

Nennwerten / nominal data

DIG 142 e/4

Leistung S_N : **5100 kVA**

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

Rating

p.f.

Spannung U_N : **6.60 kV**

Strom I_N : **446 A**

Voltage

Current

Frequenz f: **60 Hz**

Drehzahl n: **1800 min⁻¹**

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 e/4

Rating S_N : **5100 kVA**

p.f. **0.80**

Bemessungsleistung

Leistungsfaktor $\cos \varphi$:

Nominal voltage U_N : **6.60 kV**

Nominal current I_N : **446 A**

Bemessungsspannung

Bemessungsstrom

Frequency f_N : **60 Hz**

Speed n : **1800 min⁻¹**

Frequenz

Drehzahl

Protection: **IP23**

Schutzart

Inverse current or unbalanced negative sequence current



Remarks / Notizen:

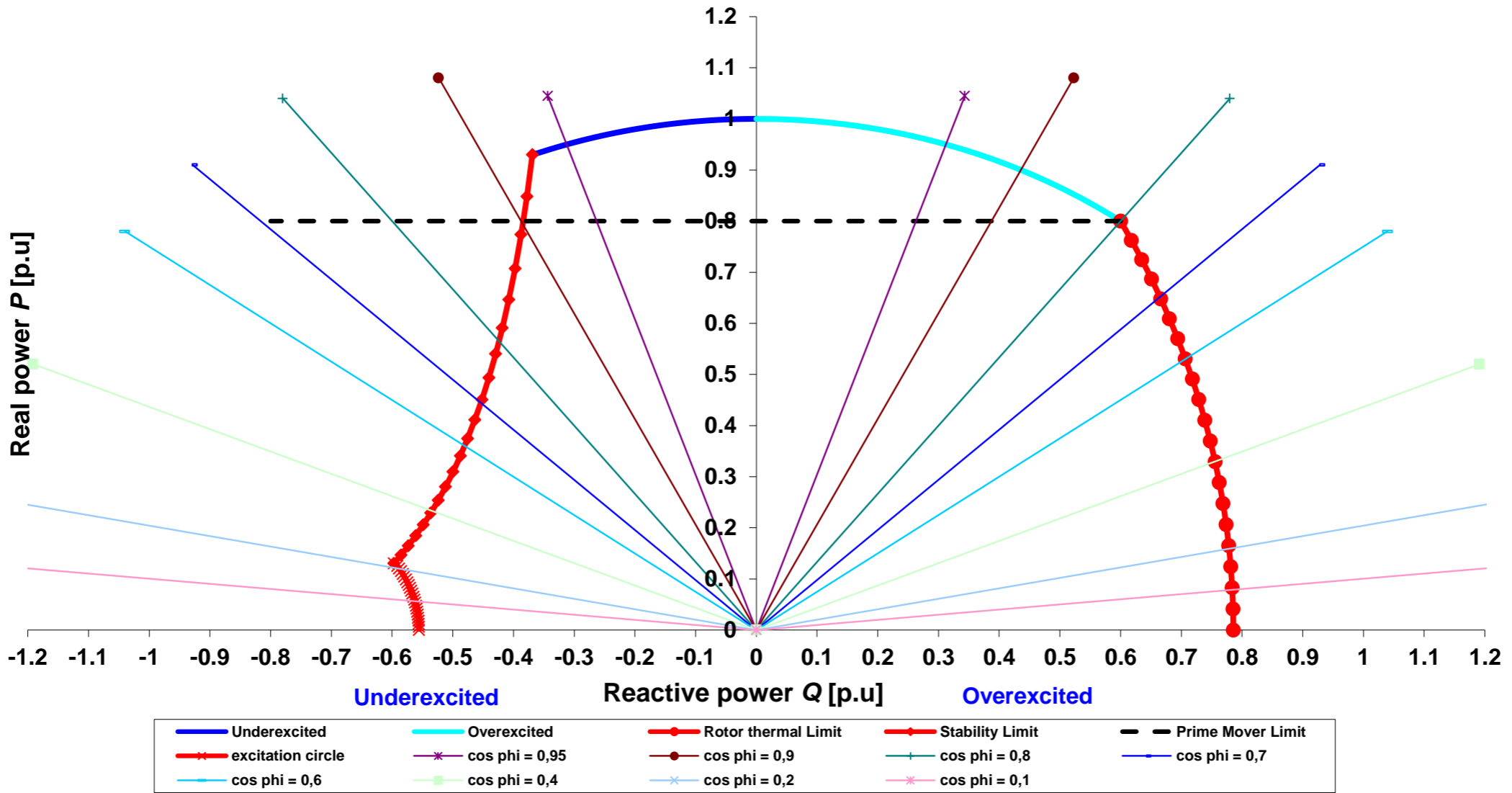
TYPE

DIG 142 e/4

Projekt:

Order Nr.:

Capability (P-Q) Diagram



TYPE

DIG 142 e/4

Projekt:

Order Nr.:

