

**Technical Data Sheet for AvK-Alternators**

FM 7.3-5

Date:	09/10/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	dig156l_6_60_4160

Object data:

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

Generator data:

Generator:	DIG 156 I/6	Poles:	6	Standards:	IEC 60034
Rated power:	6650 kVA	5320 kWe	5464 kWm		
Power factor:	0.80				
Power at pf 1,0	5355 kVA	5355 kWe	5464 kWm		
Rated voltage:	4.16 kV				
Speed:	1200 1/min				
Frequency:	60 Hz			Voltage range / frequency range:	
Rated current:	922.9 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.:	6.6 m³/s	Cooling water quantity:	n/a
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Moment of inertia (I):	710 kgm²	Weight:	17100 Kg	Losses (environment):	144 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	97,24	97,37	97,27	96,76	94,91
Power factor 0.9	97,57	97,69	97,55	96,98	95,05
Power factor 1.0	97,9	98	97,83	97,19	95,19

Reactances and time constants

	unsaturated	saturated		unsaturated	saturated				
X _d	1.79	1.61 p.u.	X _q	0.89	0.87 p.u.	T _{d0'}	3.3 s	T _{d0''}	0.04629 s
X _{d'}	0.270	0.270 p.u.	X _{q'}	0.89	0.87 p.u.	T _{d'}	0.50 s	T _{q0'}	0.6 s
X _{d''}	0.193	0.175 p.u.	X _{q''}	0.193	0.193 p.u.	T _{d''}	0.03 s	T _{q0''}	0.27668 s
X ₂	0.202	0.184 p.u.	X ₀	0.058	0.053 p.u.	T _a	0.1 s	T _{q'}	0.6 s
X _{1s}	n.a.	0.105 p.u.						T _{q''}	0.06 s

Short circuit ratio saturated:	0.62	Z _n	2.602 Ohm
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Short circuit data:

Initial short circuit current (3-phase):	I _{k''}	5274 A	
Max. peak current (3-phase):	I _s	13425 A	
Sustained short circuit current:	I _k	2769 A	Minimum 3 x rated current for max.10 s

Initial short circuit torque:	M _{k2}	393.1 kNm
	M _{k3}	235.9 kNm

Max. faulty synchron moment:	M _f	845.2 kNm
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Rated kVA torque:	M _{SN}	52.92 kNm
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Rated torque	M _N	42.34 kNm
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Shaft torque	M _{Sh}	43.48 kNm
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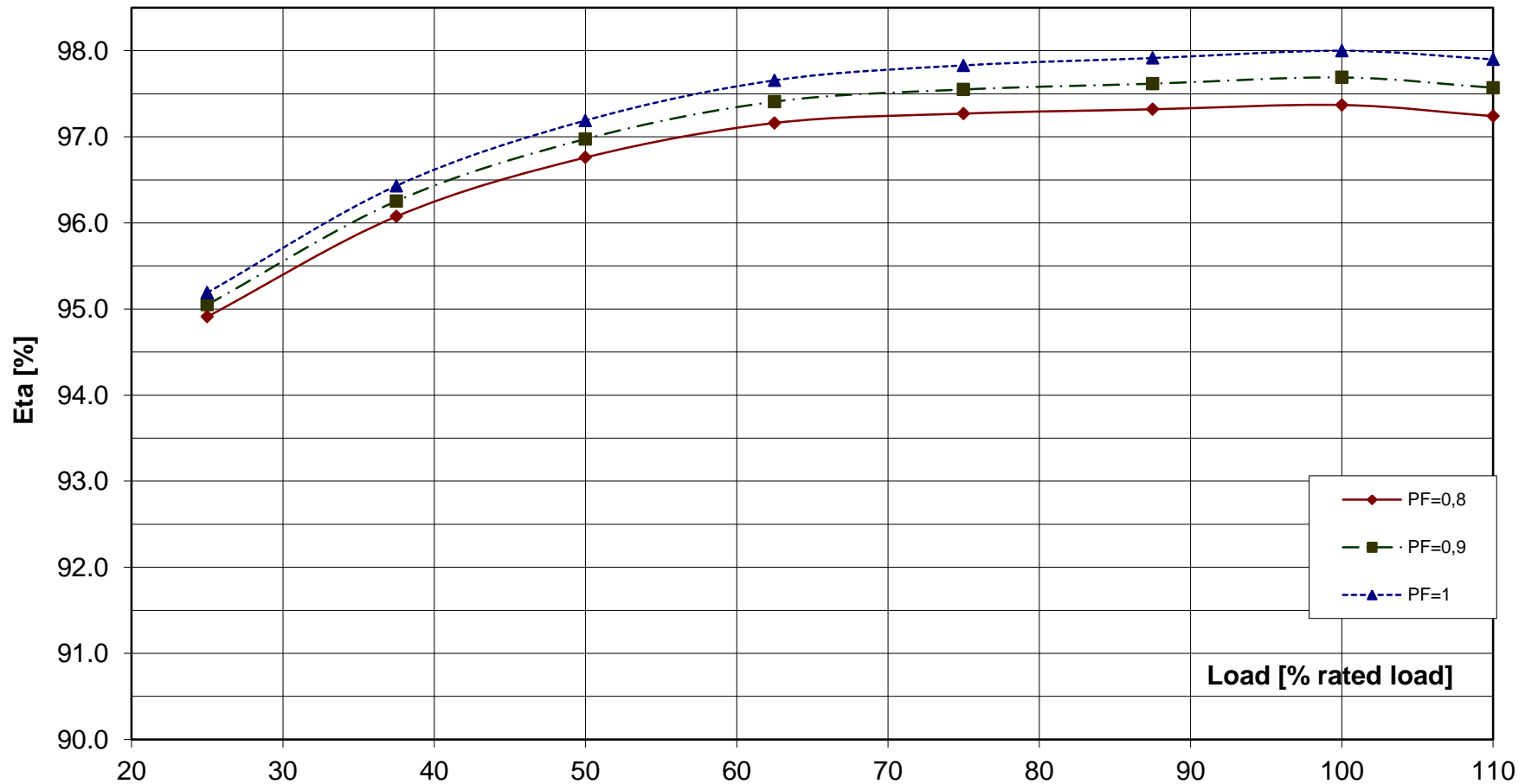
Load application:

max. load application: 3694 kVA (corresponds to 55,55 % from 6650 kVA) for Power factor 0.4 15% transient voltage drop	Power: 6650 kVA Power factor: 0.8 transient voltage drop: -21.3 %
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Remarks:

Alternator :	DIG 156 I/6			
Rated output [kVA]	6650	Rated power factor:	0.8	Rated voltage [kV]: 4.16
Rated frequency [Hz]	60	Rated speed [rpm]	1200	

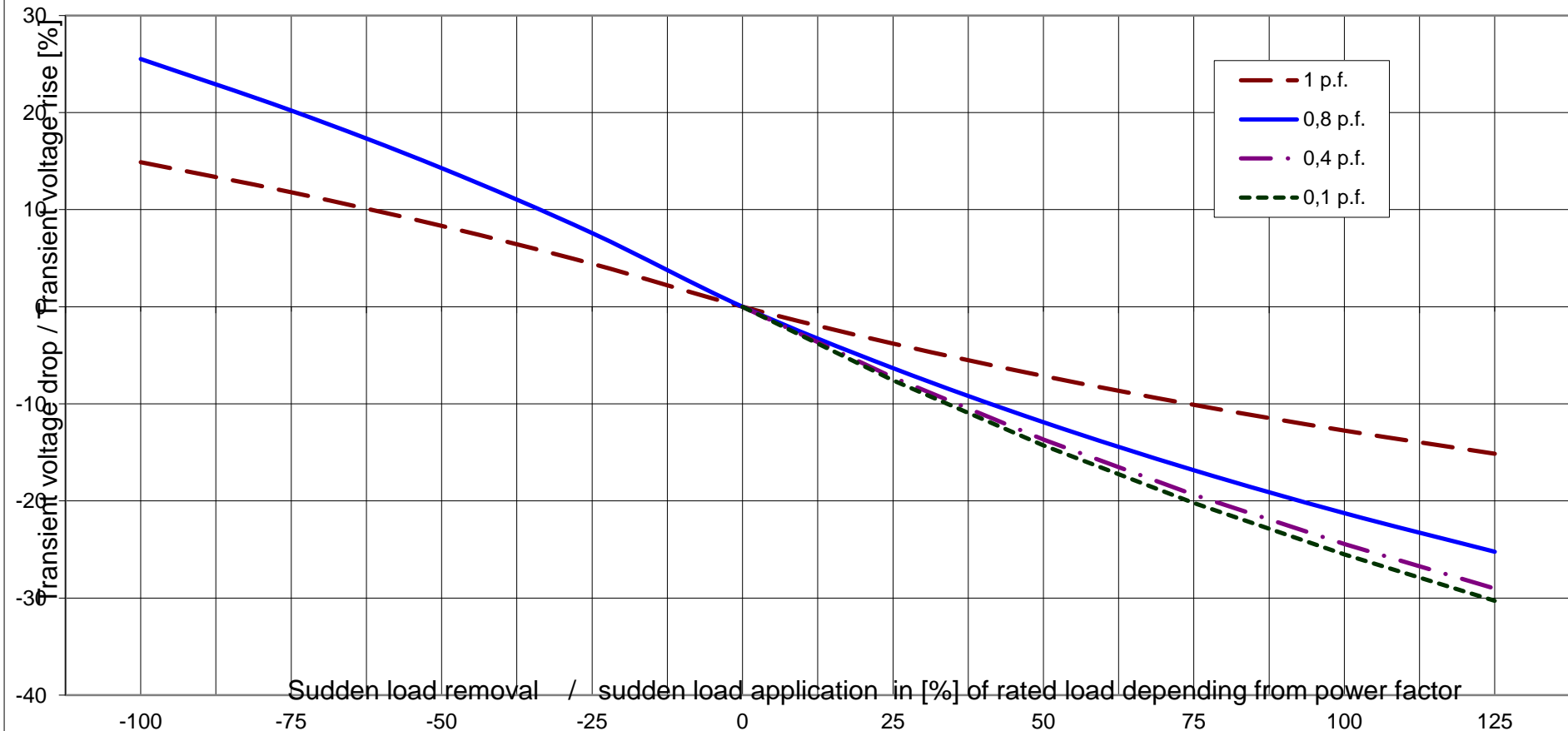
Wirkungsgrad-Kennlinie - Efficiency Curve



Alternator : DIG 156 I/6

Rated output [kVA]	6650	Rated power factor:	0.8	Rated voltage [kV]:	4.16
Rated frequency [Hz]	60	Rated speed [rpm]	1200		

Transient Voltage rise or drop for sudden load removal or application





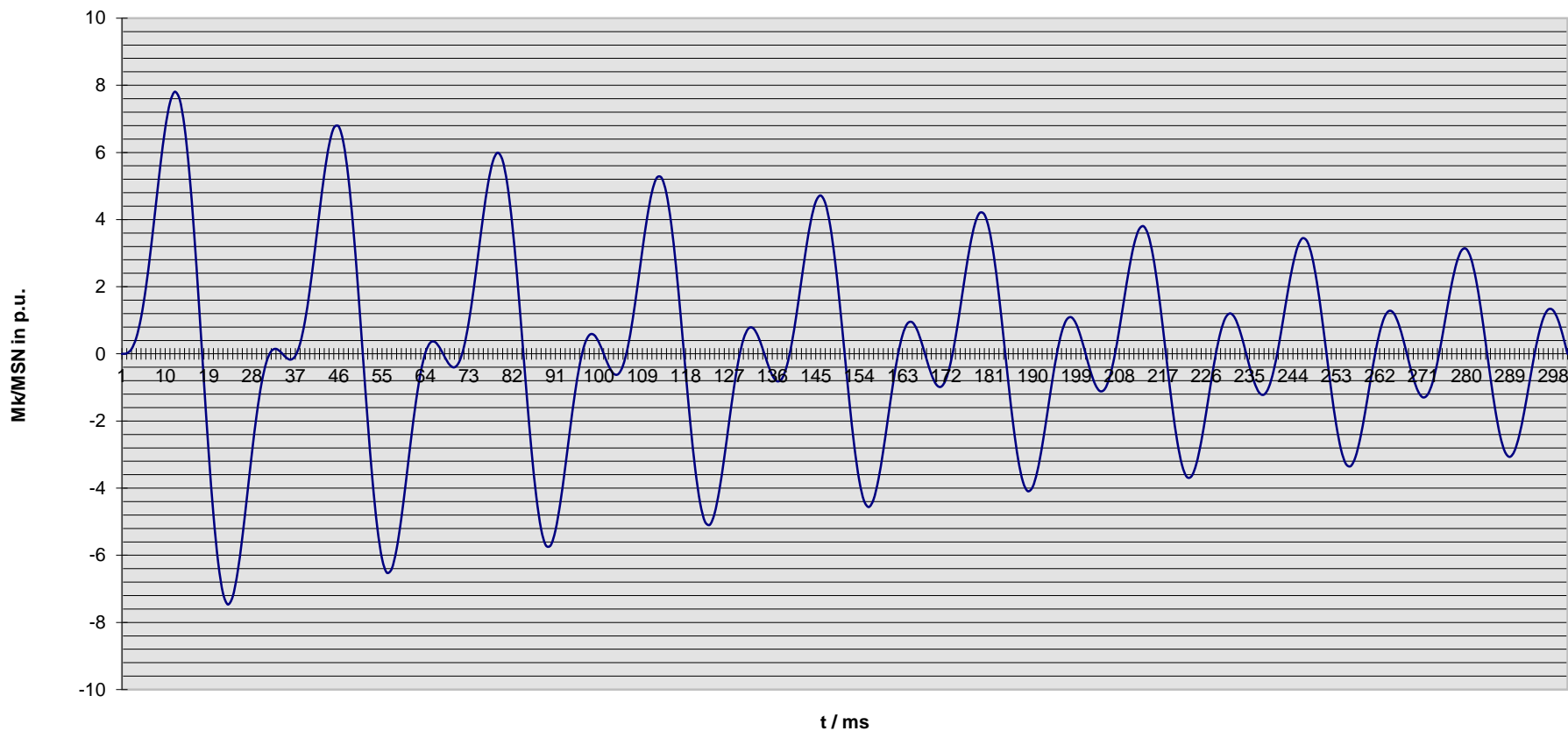
Technisches Datenblatt - Diagramme
Technical data sheet - Diagrams

ING-FCD-0112

Alternator : DIG 156 I/6

Rated output [kVA]	6650	Rated power factor:	0.8	Rated voltage [kV]:	4.16
Rated frequency [Hz]	60	Rated speed [rpm]	1200	MSN related to kVA:	52.92 KNm

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



Nenn Daten / nominal data

DIG 156 I/6

Leistung S_N : **6650 kVA**

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

Rating

p.f.

Spannung U_N : **4.16 kV**

Strom I_N : **923 A**

Voltage

Current

Frequenz f : **60 Hz**

Drehzahl n : **1,200 min⁻¹**

Frequency

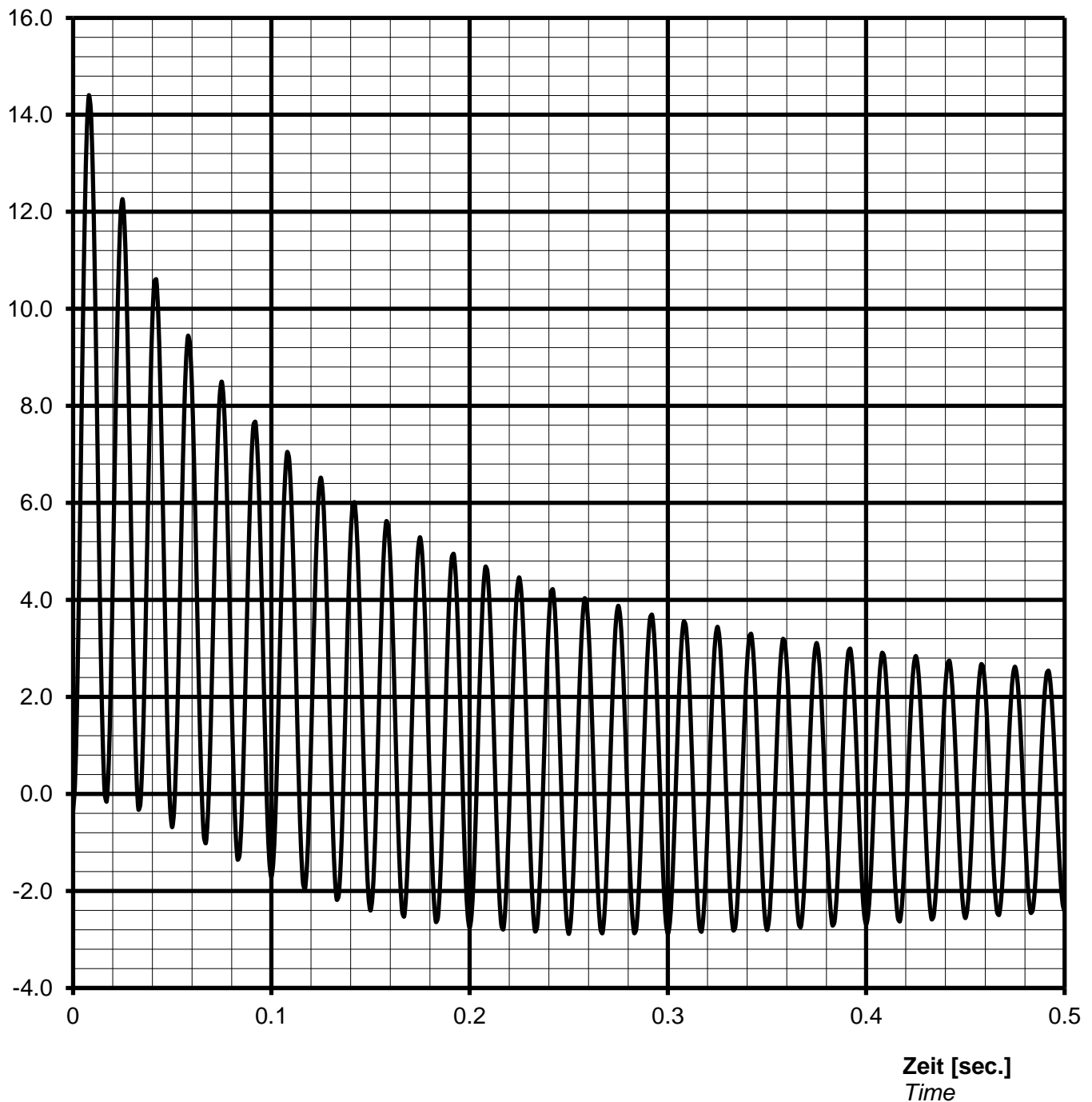
Speed

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 $I_{\text{peak}} =$ **13290 A** or **14.40 p.u.**

Nennwerten / nominal data

DIG 156 I/6

Leistung S_N : **6650** kVA

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

Rating

p.f.

Spannung U_N : **4.16** kV

Strom I_N : **923** A

Voltage

Current

Frequenz f: **60** Hz

Drehzahl n: **1200** min⁻¹

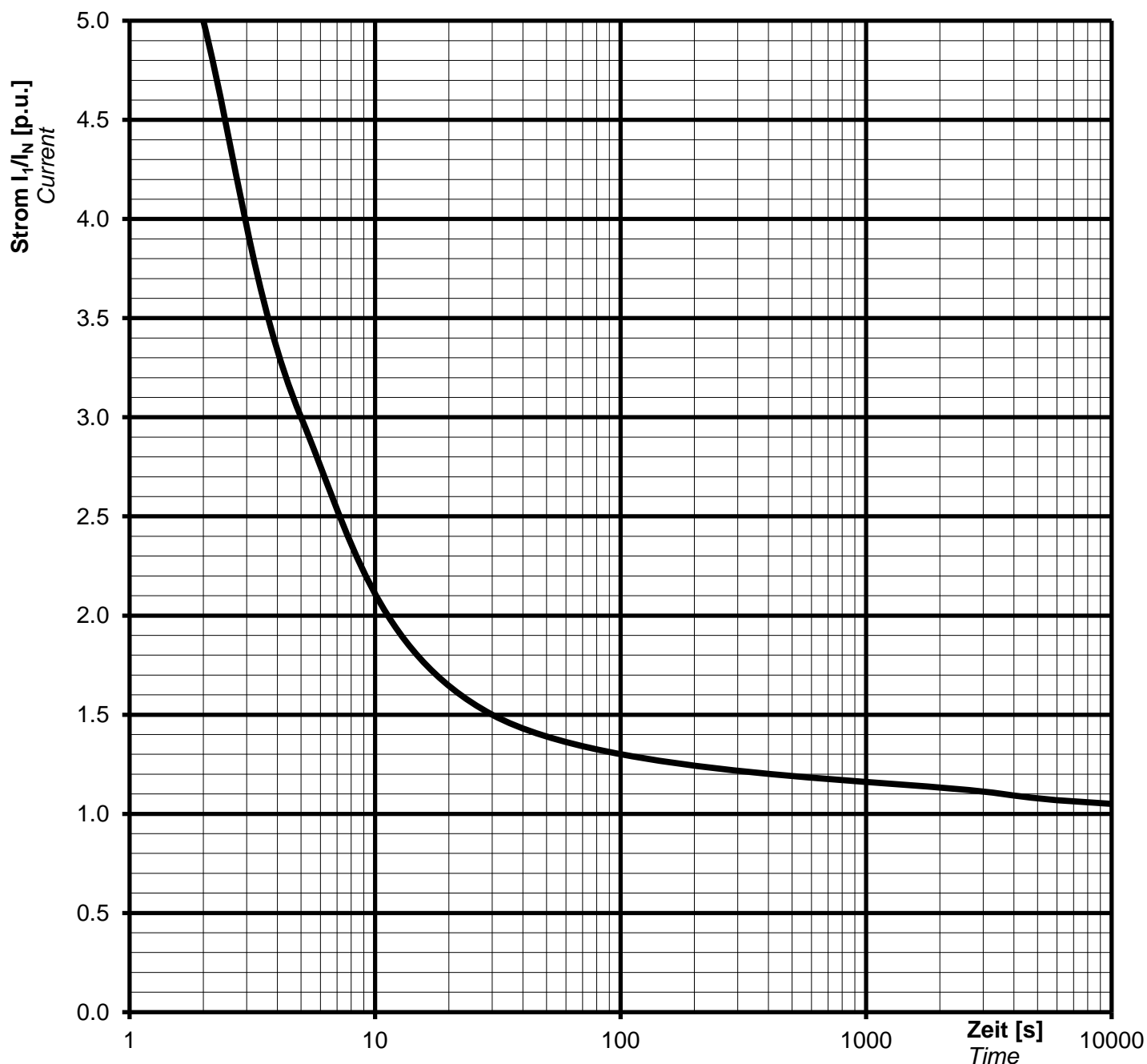
Frequency

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

Nennwerten / nominal data

DIG 156 I/6

Rating S_N : **6650 kVA**

p.f. **0.80**

Bemessungsleistung

Leistungsfaktor $\cos \varphi$:

Nominal voltage U_N : **4.16 kV**

Nominal current I_N : **923 A**

Bemessungsspannung

Bemessungsstrom

Frequency f_N : **60 Hz**

Speed n : **1200 min⁻¹**

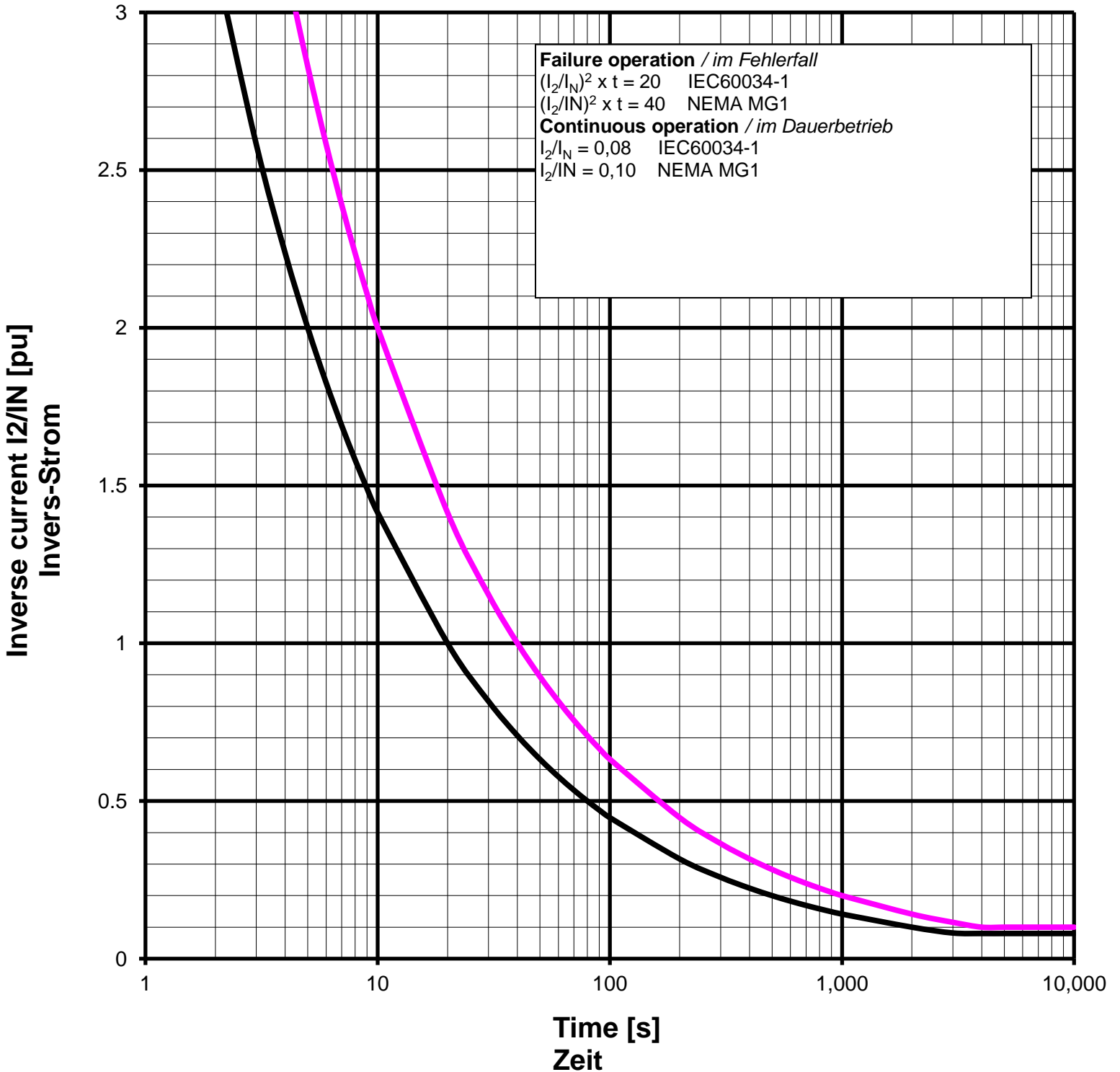
Frequenz

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

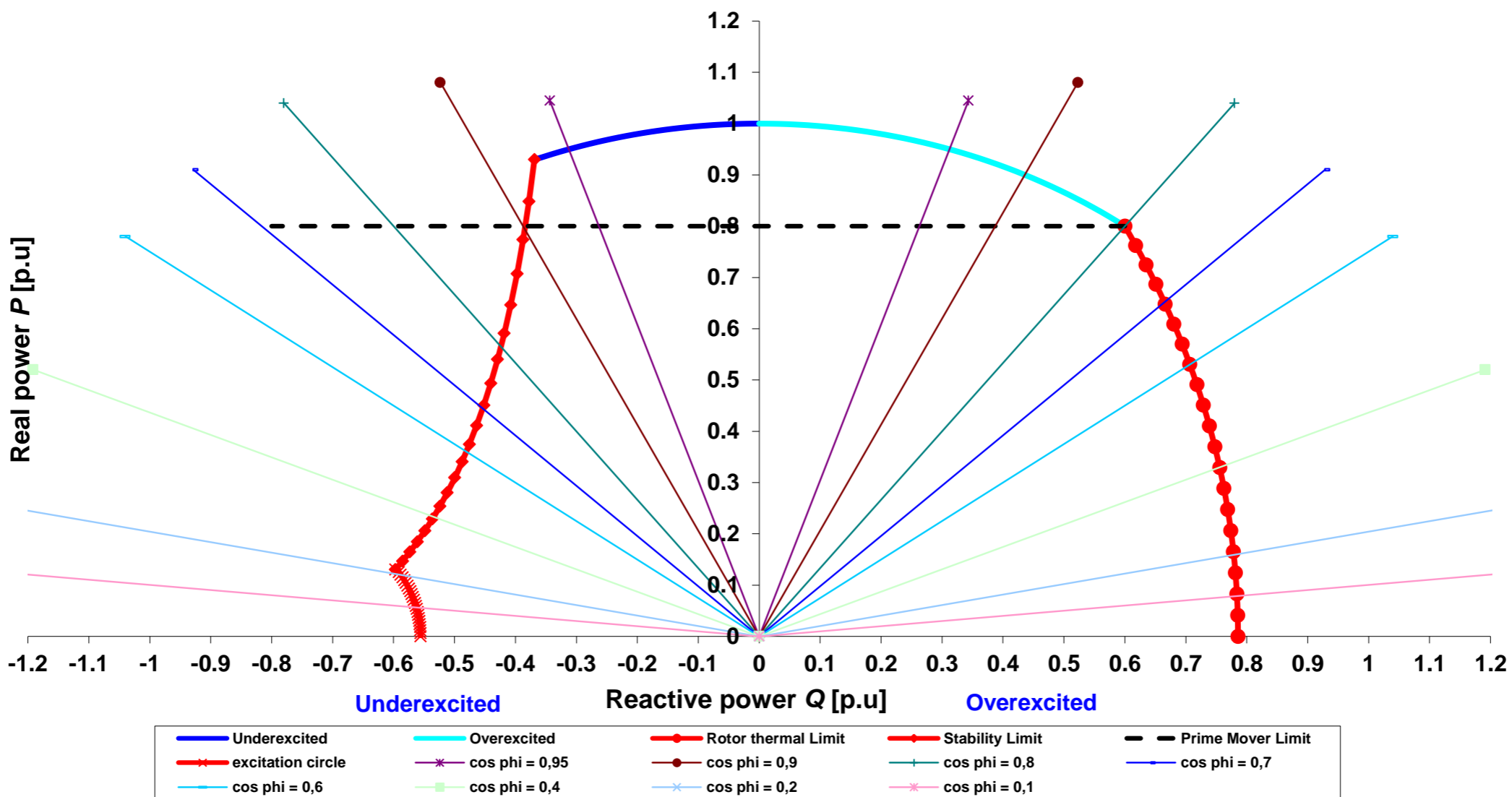
TYPE

DIG 156 I/6

Projekt:

Order Nr.:

Capability (P-Q) Diagram



Cummins Generator Technologies

Datum / date:

18/10/2013

TYPE

DIG 156 I/6

Projekt:

Order Nr.:

