AvK	Technical Data Sheet for AvK-Alternators	FM 7.3-5

Date:	03/10/13	Customer:	GENERIC DATA only
Project No.:		AvK Reference:	DIG120I_4_50_3300

Object data:

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

Generator data:

Generator:	DIG 120 i/4	Poles:	4	Standards: IEC 60034	
Rated power:	1750 kVA	1400 kWe	1464 kWm		
Power factor:	0.80				
Power at pf 1,0	1416 kVA	1416 kWe	1464 kWm		
Rated voltage:	3.3 kV				
Speed:	1500 1/min				
Frequency:	50 Hz		Voltage range / frequency range:		
Rated current:	306.2 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 Coolant:	40 ° C	Temperature Air inlet generator:	40 ° C
		Cooling air vol.:	2.5 m³/s	Cooling water quantity:	n/a
Moment of inertia (I):	59 kgm²	Weight:	5400 Kg	Losses (environment):	64 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	95,38	95,6	95,6	95	92,5
Power factor 0.9	95,96	96,15	96,05	95,35	92,65
Power factor 1.0	96,54	96,7	96,5	95,7	92,8

Reactances and time constants

	unsaturated	saturated			unsaturated	saturated							
x_d	2.50	2.25	p.u.	x_q	1.25	1.23	p.u.	$T_{d0'}$	3 s	$T_{d0''}$	0.025 s
$x_{d'}$	0.300	0.300	p.u.	$x_{q'}$	1.25	1.23	p.u.	$T_{d'}$	0.36 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	$T_{q0''}$	0.18939 s
x_2	0.208	0.189	p.u.	x_0	0.059	0.054	p.u.	T_a	0.05 s	$T_{q'}$	0.3 s
x_{1s}	n.a.	0.108	p.u.							$T_{q''}$	0.03 s

Short circuit ratio saturated: 0.44 Z_n 6.223 Ohm

Short circuit data:

Initial short circuit current (3-phase):	$I_{k''}$	1701 A	
Max. peak current (3-phase):	I_S	4330 A	
Sustained short circuit current:	I_k	919 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M_{k2}	80.5 kNm	
	M_{k3}	48.3 kNm	
Max. faulty synchron moment:	M_f	173.1 kNm	
Rated kVA torque:	M_{SN}	11.14 kNm	
Rated torque	M_N	8.91 kNm	
Shaft torque	MSh	9.32 kNm	

Load application:

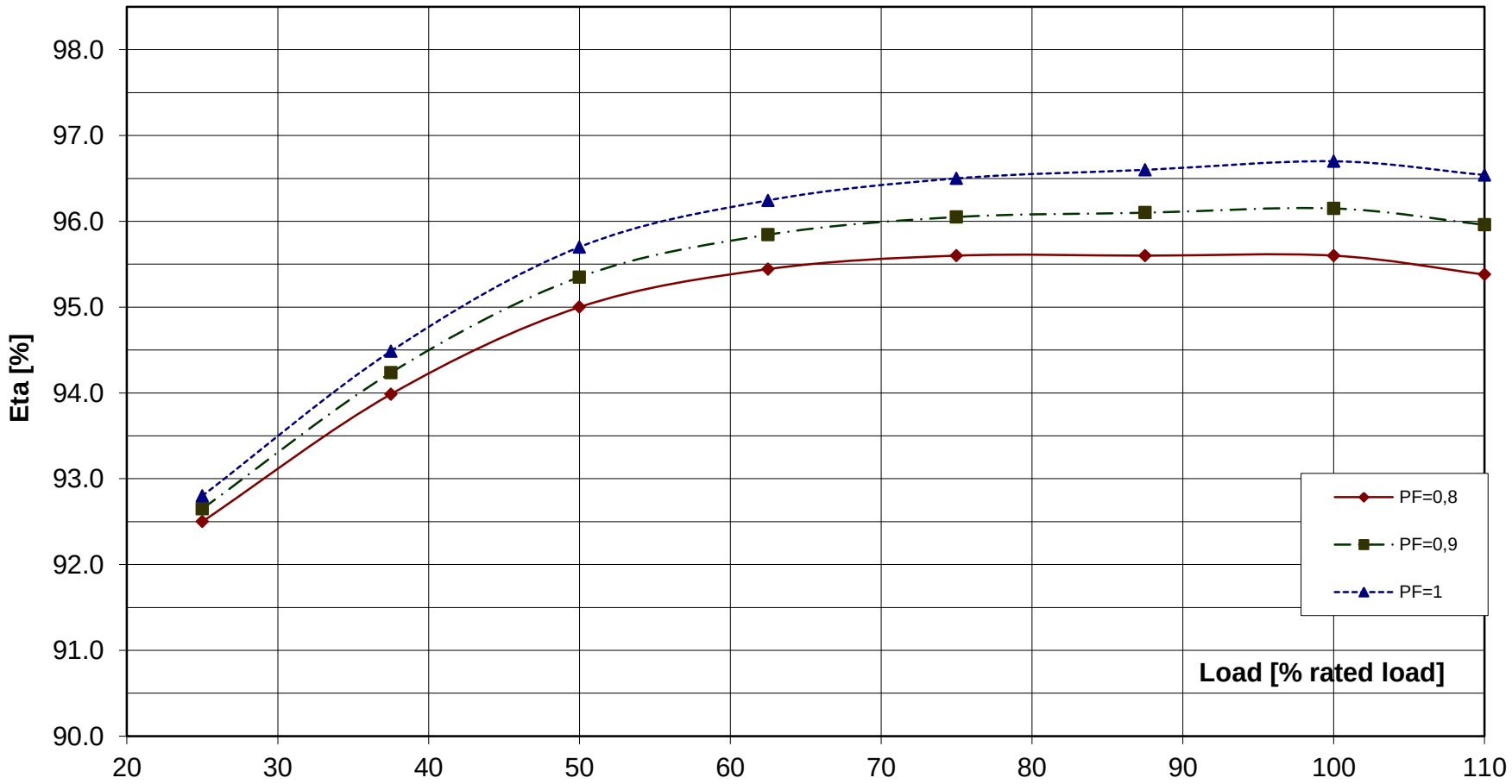
max. load application: 875 kVA(corresponds to 50 % from 1750 kVA)	Power: 1750 kVA
for Power factor 0.4	Power factor: 0.8
15% transient voltage drop	transient voltage drop: -23.1 %

Remarks:

AvK	Technisches Datenblatt - Diagramme Technical data sheet - Diagrams	ING-FCD-0112

Alternator :	**DIG 120 i/4**			
Rated output [kVA]	1750	Rated power factor:	0.8	Rated voltage [kV]: 3.3
Rated frequency [Hz]	50	Rated speed [rpm]	1500	

Wirkungsgrad-Kennlinie - Efficiency Curve



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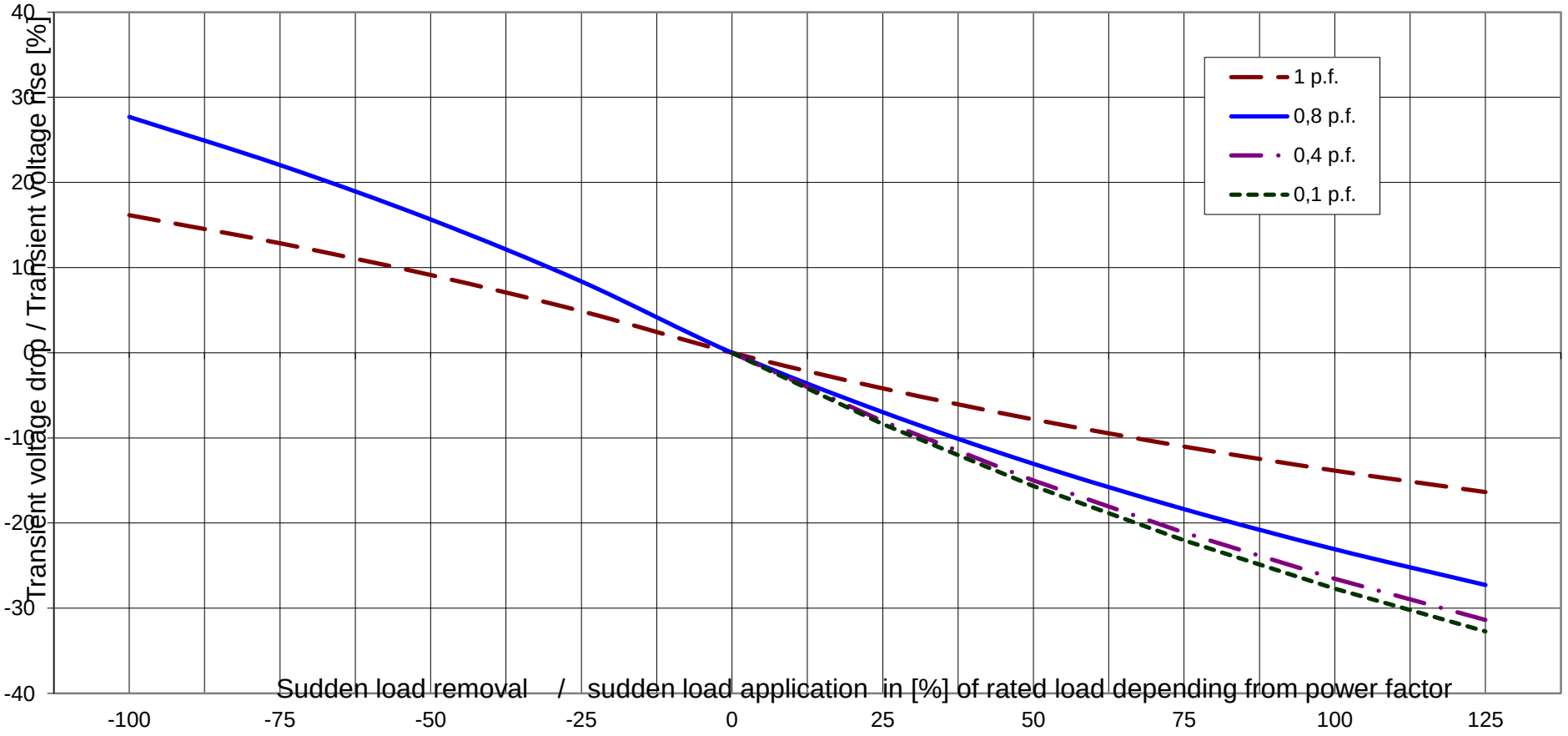
Alternator : DIG 120 i/4

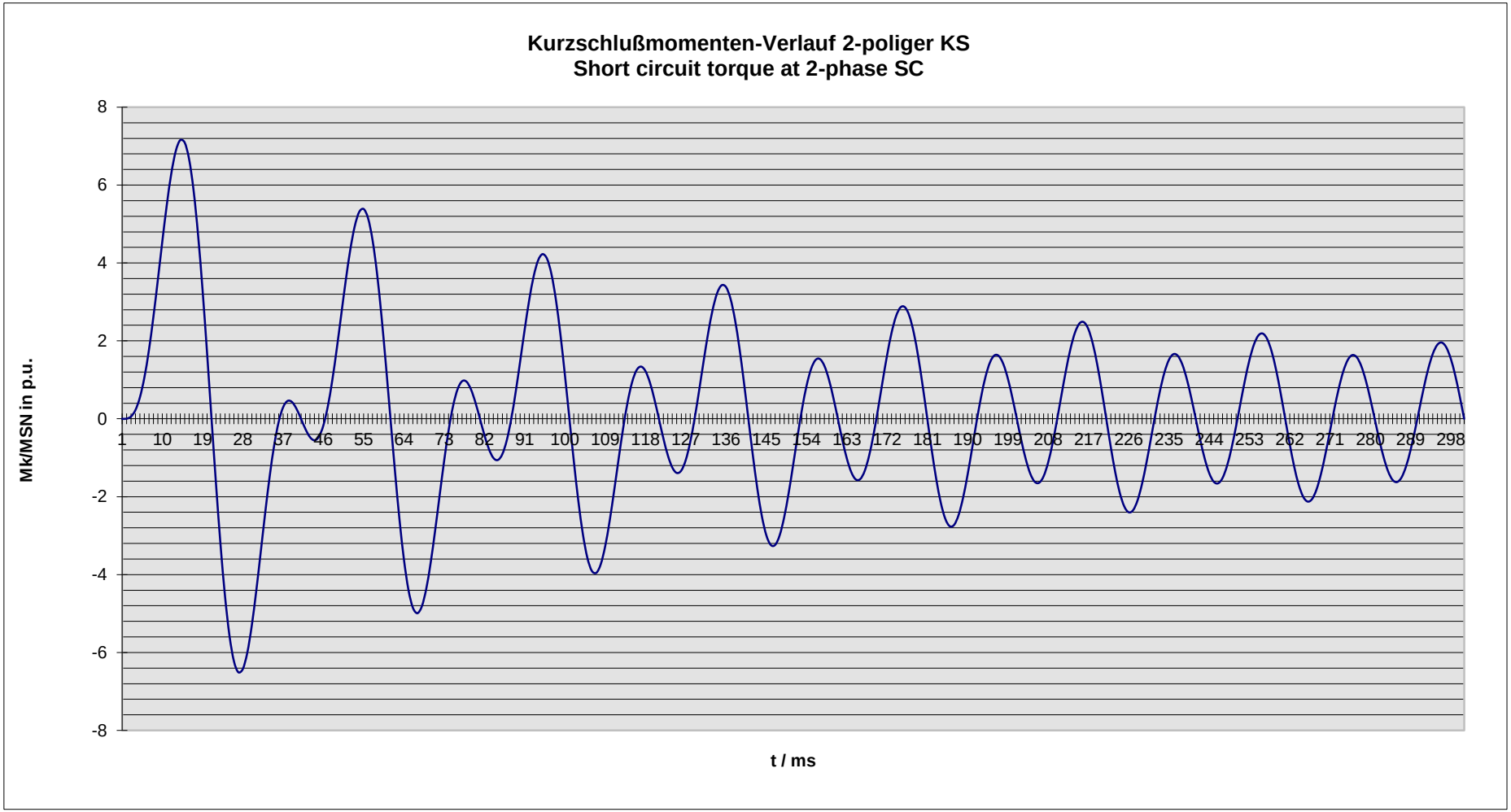
Rated output [kVA]	1750	Rated power factor:	0.8	Rated voltage [kV]: 3.3
Rated frequency [Hz]	50	Rated speed [rpm]	1500	

Transient Voltage rise or drop for sudden load removal or application



AvK®	Technisches Datenblatt - Diagramme Technical data sheet - Diagrams	ING-FCD-0112

Alternator :	**DIG 120 i/4**			
Rated output [kVA]	1750	Rated power factor:	0.8	Rated voltage [kV]: 3.3
Rated frequency [Hz]	50	Rated speed [rpm]	1500	MSN related to kVA: 11.14 KNm

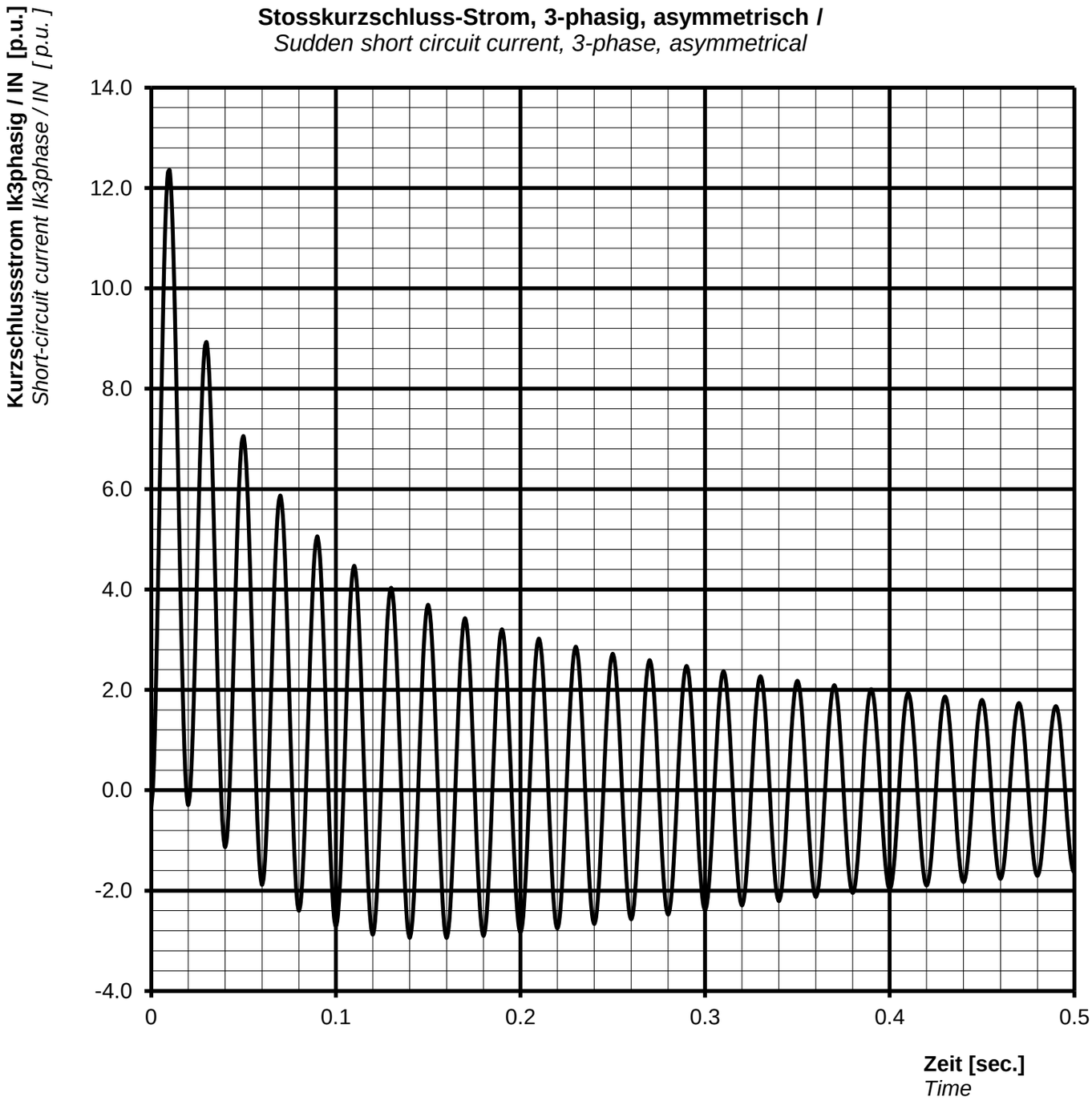


AvK	Technisches Datenblatt - Diagramme Technical data sheet - Diagrams	**ING-FCD-0112**

Nenndaten / ***nominal data*** **DIG 120 i/4**

Leistung S_N: *Rating*	**1750** kVA	cos φ: *p.f.*	**0.80**
Spannung U_N: *Voltage*	**3.30** kV	Strom I_N: *Current*	**306** A
Frequenz f: *Frequency*	**50** Hz	Drehzahl n: *Speed*	**1,500** min^{-1}
Schutzart *Protection*	**IP23**		

Stosskurzschluss-Strom, 3-phasig, asymmetrisch /
Sudden short circuit current, 3-phase, asymmetrical



Notizen / remarks:

Maximum asymmetric peak value I_{speak}= **3783 A** **or** **12.36 p.u.**

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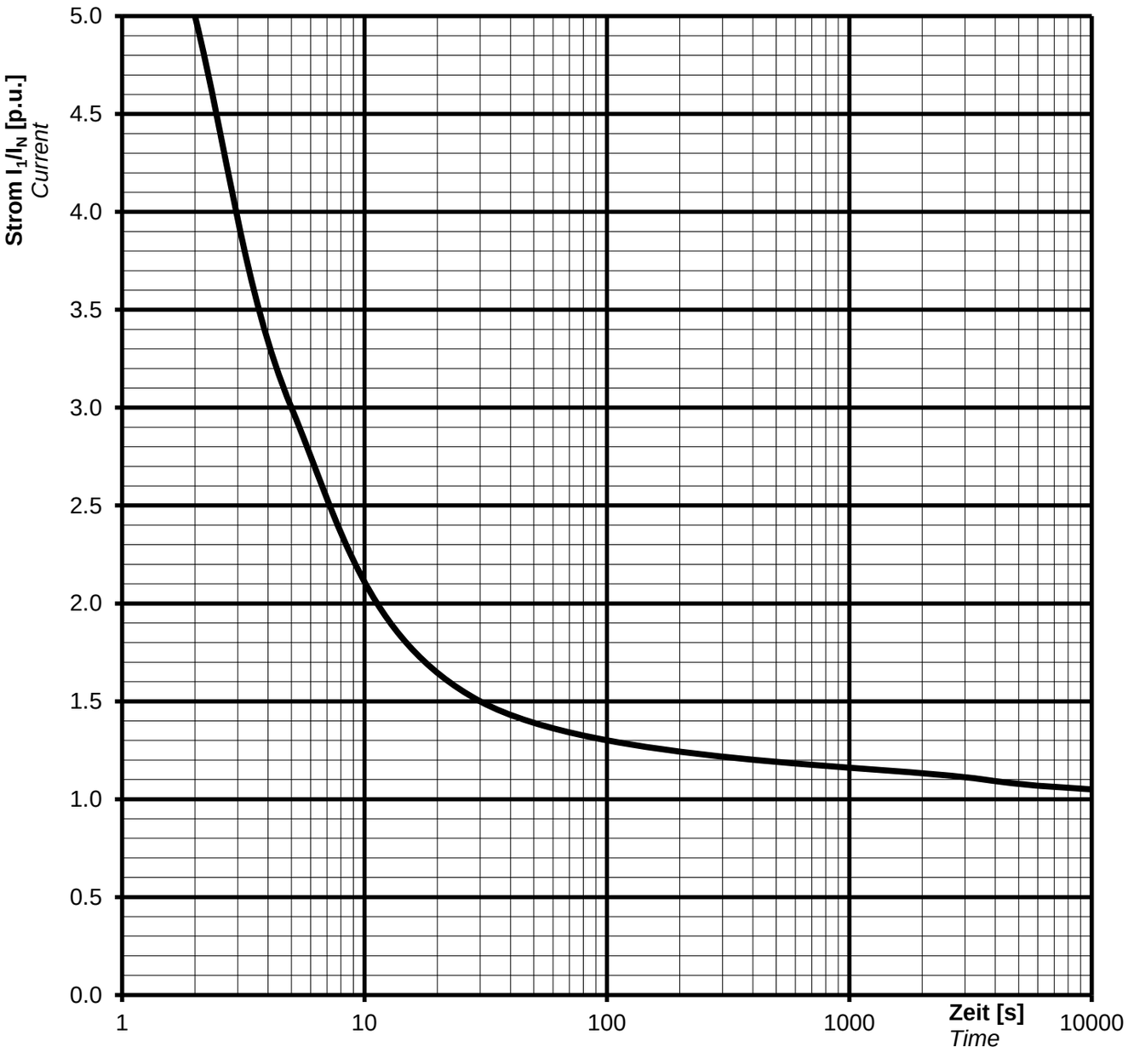
Nenndaten / ***nominal data*** **DIG 120 i/4**

Leistung S_N: *Rating*	**1750** kVA	cos φ: *p.f.*	**0.80**
Spannung U_N: *Voltage*	**3.30** kV	Strom I_N: *Current*	**306** A
Frequenz f: *Frequency*	**50** Hz	Drehzahl n: *Speed*	**1500** min^{-1}
Schutzart *Protection*	**IP23**		

Überlast Kennlinie
Overload capability



Notizen / **remarks:**

Strom / Zeit Kriterien:	**$(I / I_N)^2 * t = 45s$**
Current/time characteristics:	**$1{,}5 * I_N$ for 30 s**
	$1{,}1 * I_N$ for 1 h in 6h

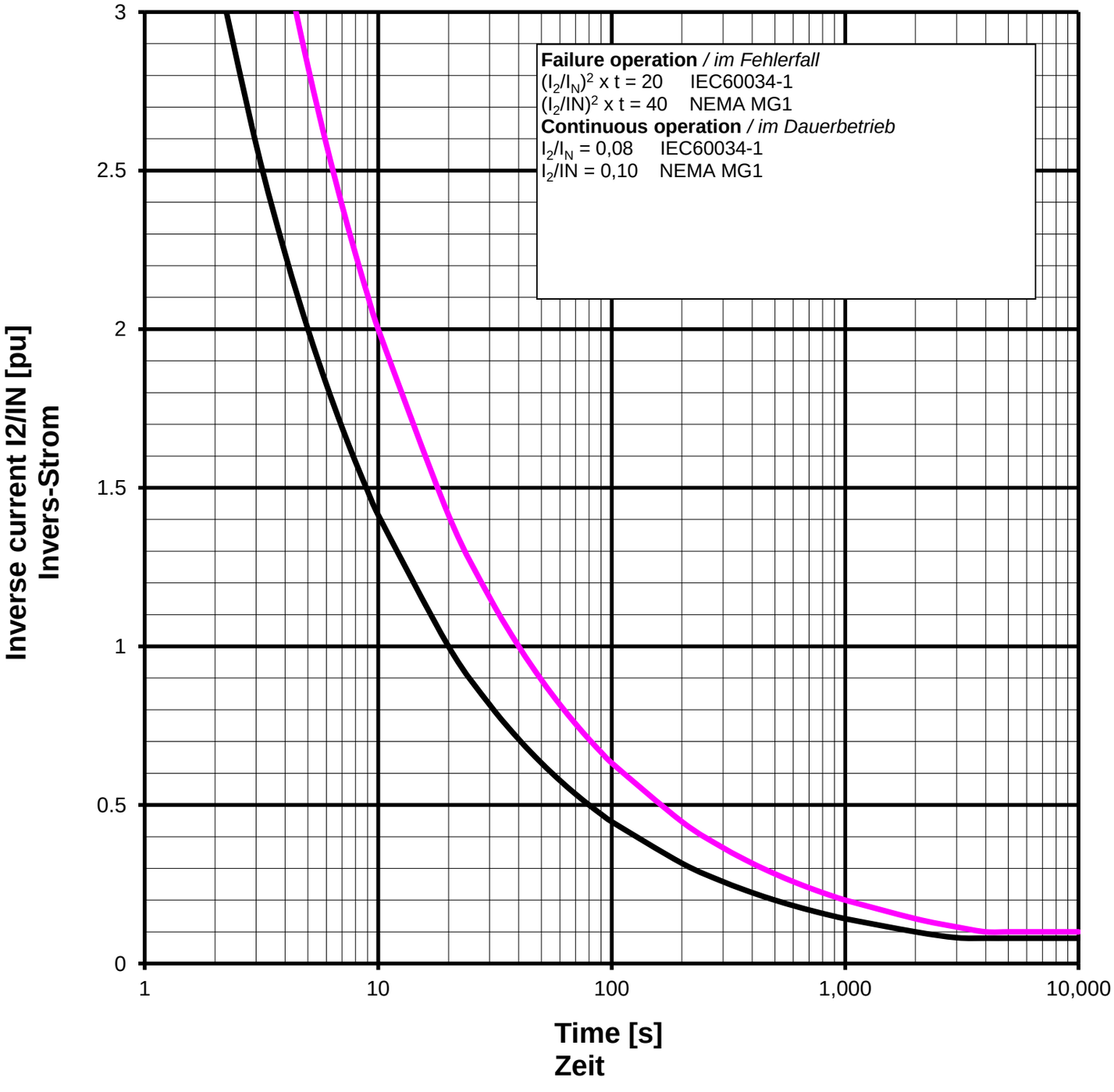
Alle Angaben gemäß VDE 0530, IEC600 34 ***All data according VDE 0530, IEC600 34***

AvK	Technisches Datenblatt - Diagramme Technical data sheet - Diagrams	ING-FCD-0112

Nenndaten / *nominal data* **DIG 120 i/4**

Rating S_N: *Bemessungsleistung*	**1750** kVA	*p.f.* Leistungsfaktor cos φ:	**0.80**
Nominal voltage U_N: *Bemessungsspannung*	**3.30** kV	Nominal current I_N: *Bemessungsstrom*	**306** A
Frequency f_N: *Frequenz*	**50** Hz	Speed n: *Drehzahl*	**1500** min^{-1}
Protection: *Schutzart*	**IP23**		

Inverse current or unbalanced negative sequence current

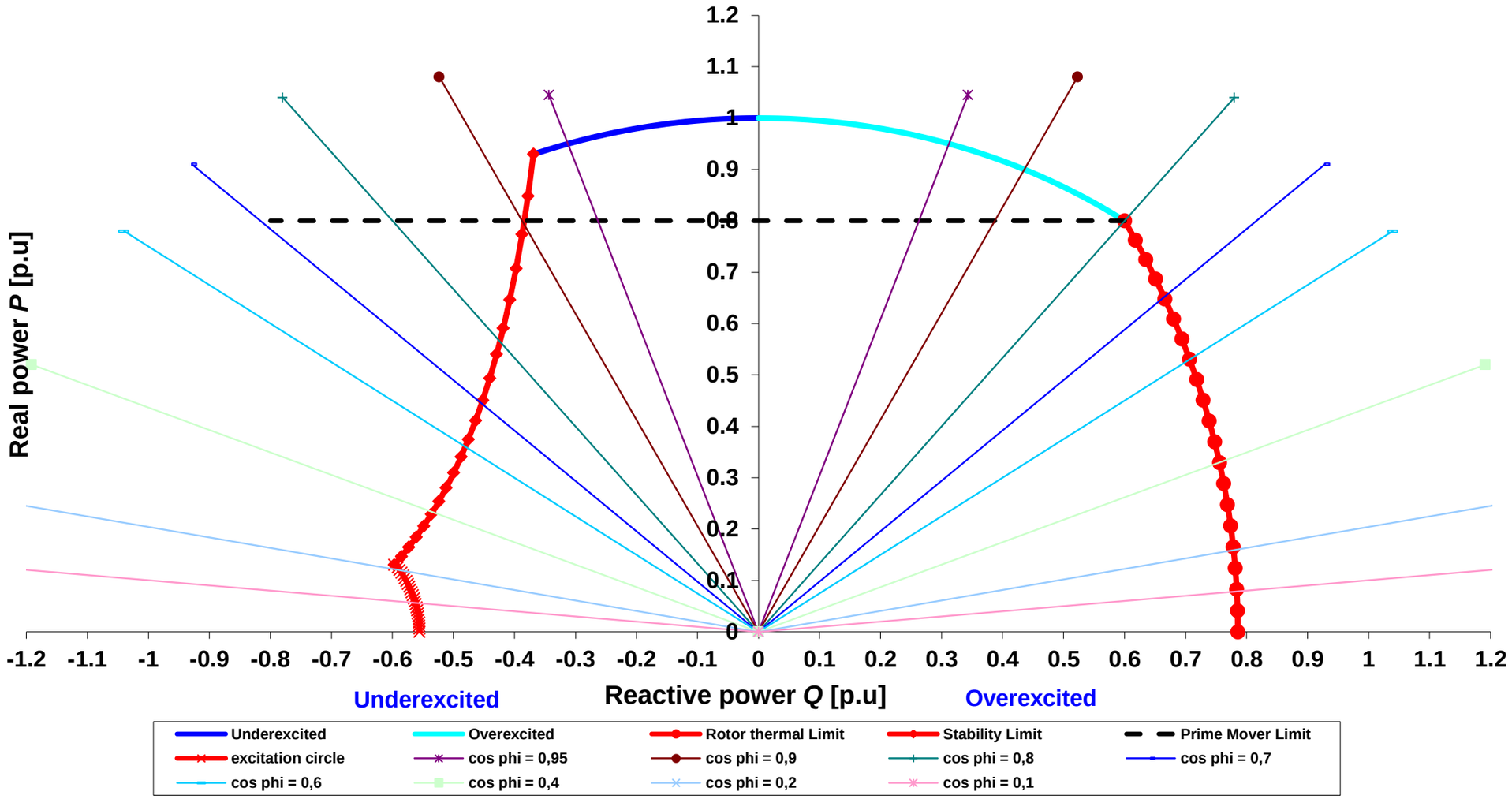


Remarks / Notizen:

All data according IEC 60034-1, NEMA MG1

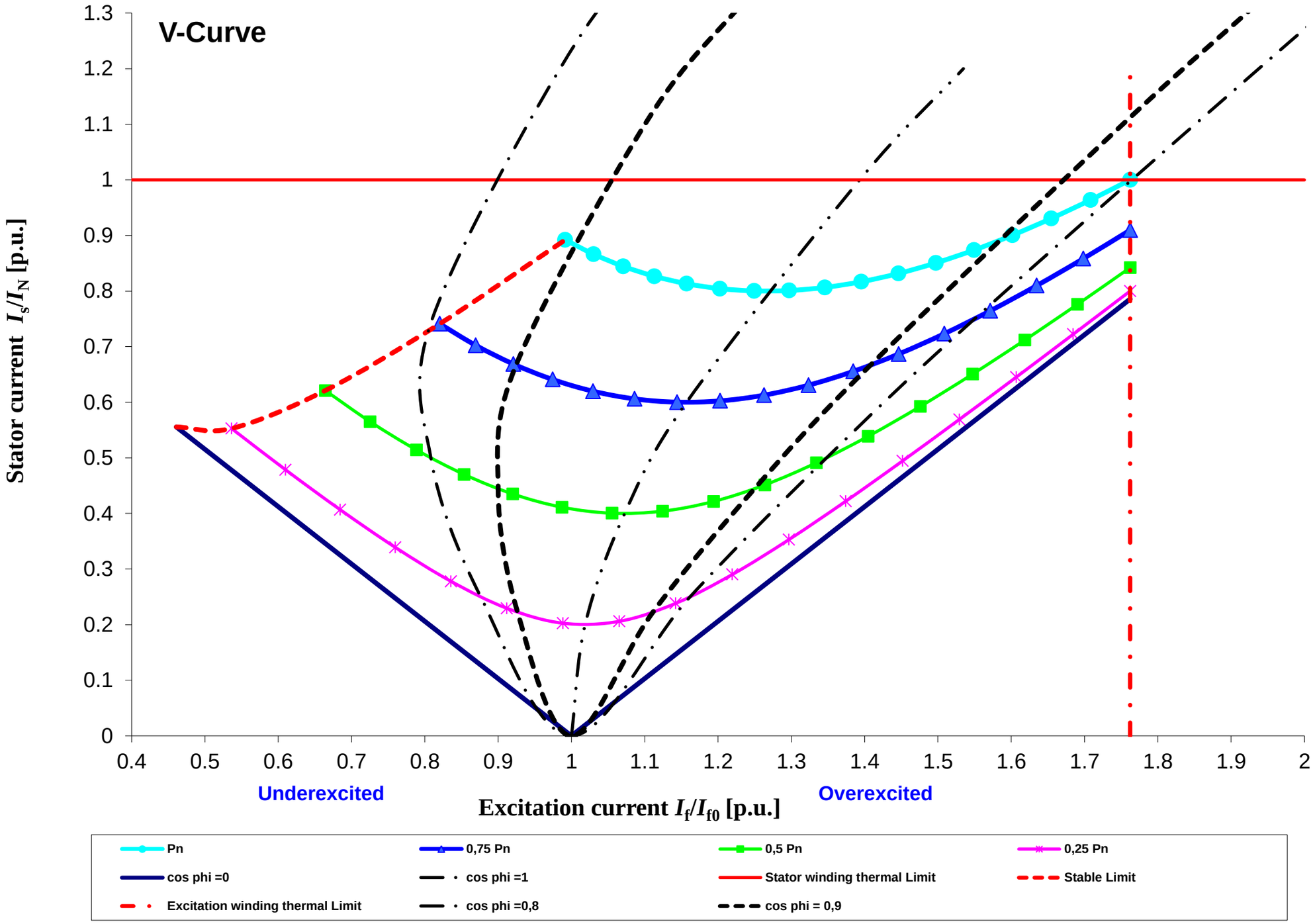
AvK	Technische Daten selbstregelnden Drehstrom-Synchrongenerator technical data for self regulating three phase alternator					ING-FCD-0112
TYPE	DIG 120 i/4	Projekt:		Order Nr.:		

Capability (P-Q) Diagram



Cummins Generator Technologies		Datum / *date* :	
		09/10/2013	

AvK	Technische Daten selbstregelnden Drehstrom-Synchrongenerator technical data for self regulating three phase alternator					ING-FCD-0112
TYPE	DIG 120 i/4	Projekt:		Order Nr.:		



Cummins Generator Technologies		Datum / *date*:	
		09/10/2013	