Technical Data Sheet for AvK-Alternators

FM 7.3-5

Date:	03/10/13	Customer:	GENERIC DATASHEET only
Project No.:		AvK Reference:	DIG110I_4_50_3300

Object data:

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

Generator data:

Generator:	DIG 110 i/4	Poles:	4	Standards: IEC 60034	
Rated power:	1080 kVA	864 kWe	908 kWm		
Power factor:	0.80				
Power at pf 1,0	873 kVA	873 kWe	908 kWm		
Rated voltage:	3.3 kV				
Speed:	1500 1/min				
Frequency:	50 Hz		Voltage range / frequency range:		
Rated current:	189.0 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.:	1.3 m³/s	Cooling water quantity:	n/a
Moment of inertia (I):	26 kgm²	Weight:	3600 Kg	Losses (environment):	44 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	94,96	95,2	95,2	94,4	91,4
Power factor 0.9	95,49	95,7	95,6	94,75	91,5
Power factor 1.0	96,01	96,2	96	95,1	91,6

Reactances and time constants

	unsaturated	saturated			unsaturated	saturated							
x_d	2.40	2.16	p.u.	x_q	1.20	1.18	p.u.	$T_{d0'}$	2.2	s	$T_{d0''}$	0.02137	s
$x_{d'}$	0.290	0.290	p.u.	$x_{q'}$	1.20	1.18	p.u.	$T_{d'}$	0.27	s	$T_{q0'}$	0.28	s
$x_{d''}$	0.209	0.190	p.u.	$x_{q''}$	0.209	0.209	p.u.	$T_{d''}$	0.014	s	$T_{q0''}$	0.16077	s
x_2	0.220	0.200	p.u.	x_0	0.063	0.057	p.u.	T_a	0.036	s	$T_{q'}$	0.28	s
x_{1s}	n.a.	0.114	p.u.								$T_{q''}$	0.028	s

Short circuit ratio saturated: 0.46 Z_n 10.083 Ohm

Short circuit data:

Initial short circuit current (3-phase):	$I_{k''}$	994 A	
Max. peak current (3-phase):	I_S	2530 A	
Sustained short circuit current:	I_k	567 A	Minimum 3 x rated current for max.10 s
Initial short circuit torque:	M_{k2}	47.0 kNm	
	M_{k3}	28.2 kNm	
Max. faulty synchron moment:	M_f	101.1 kNm	
Rated kVA torque:	M_{SN}	6.88 kNm	
Rated torque	M_N	5.50 kNm	
Shaft torque	MSh	5.78 kNm	

Load application:

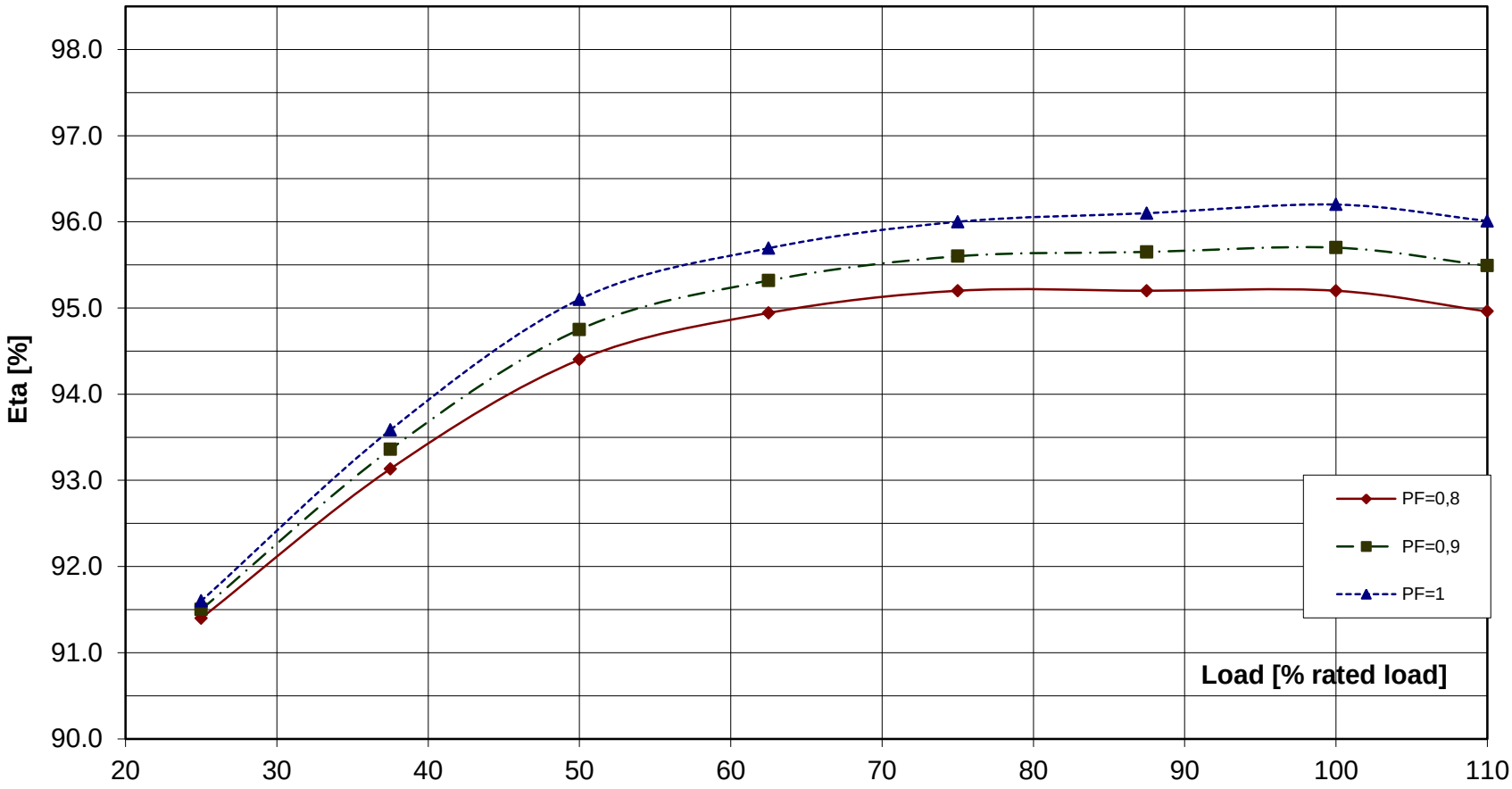
max. load application: 559 kVA(corresponds to 51,72 % from 1080 kVA) for Power factor 0.4	Power: 1080 kVA
15% transient voltage drop	Power factor: 0.8
	transient voltage drop: -22.5 %

Remarks:

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

Alternator :	**DIG 110 i/4**			
Rated output [kVA]	1080	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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Rated output [kVA]	1080	Rated power factor:	0.8	Rated voltage [kV]: 3.3
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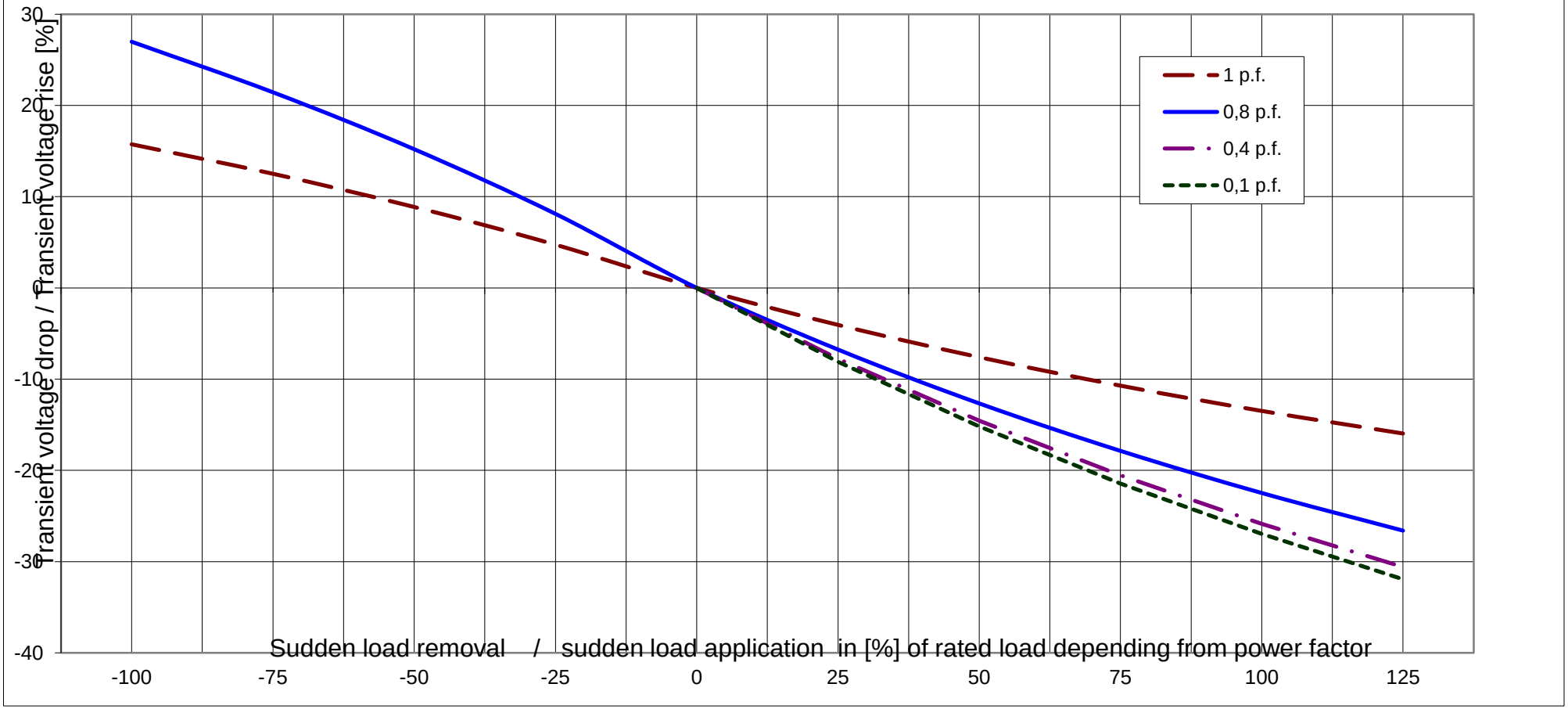
Transient Voltage rise or drop for sudden load removal or application



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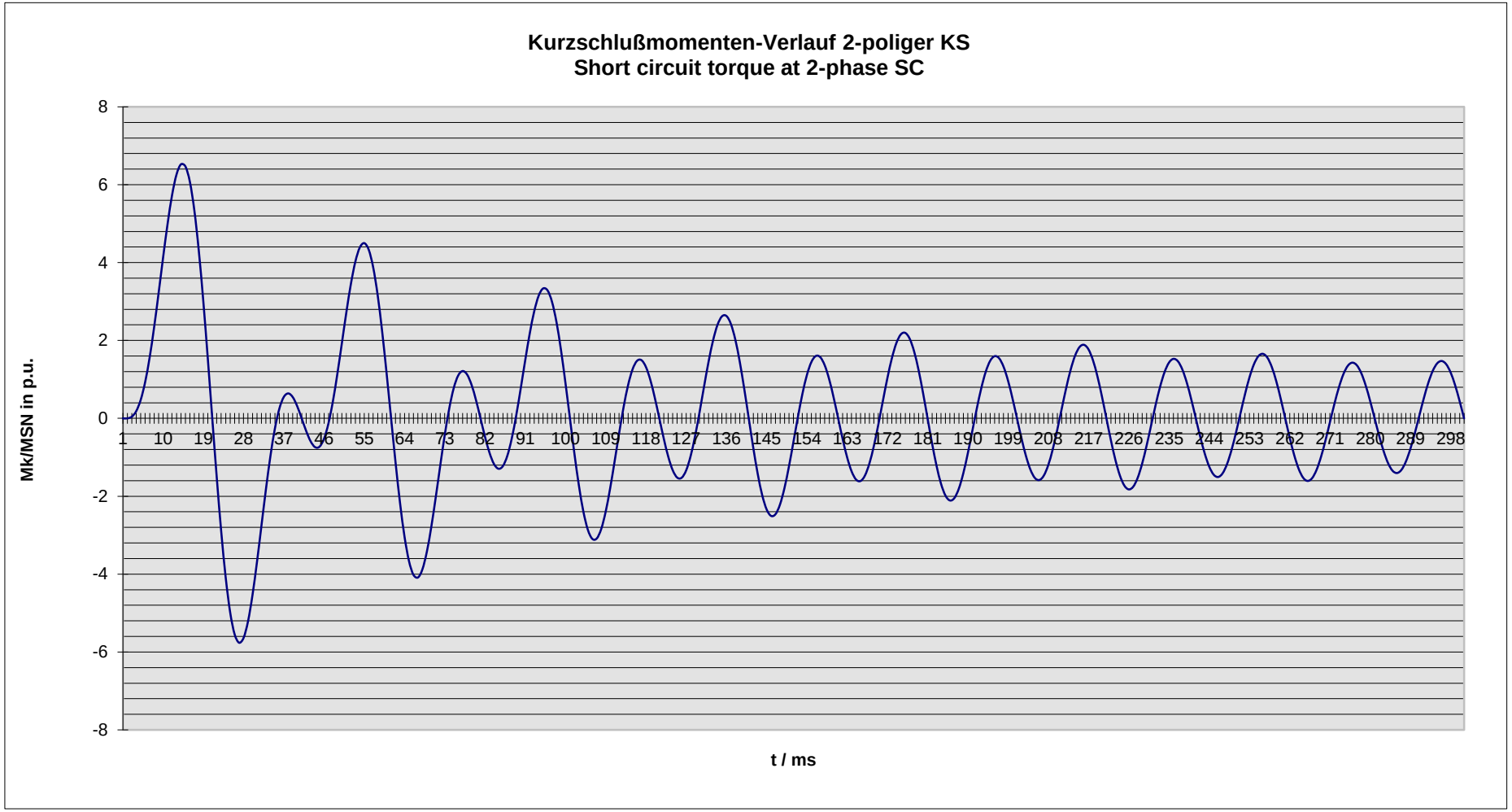
Alternator :	**DIG 110 i/4**			
Rated output [kVA]	1080	Rated power factor:	0.8	Rated voltage [kV]: 3.3
Rated frequency [Hz]	50	Rated speed [rpm]	1500	MSN related to kVA: 6.88 KNm

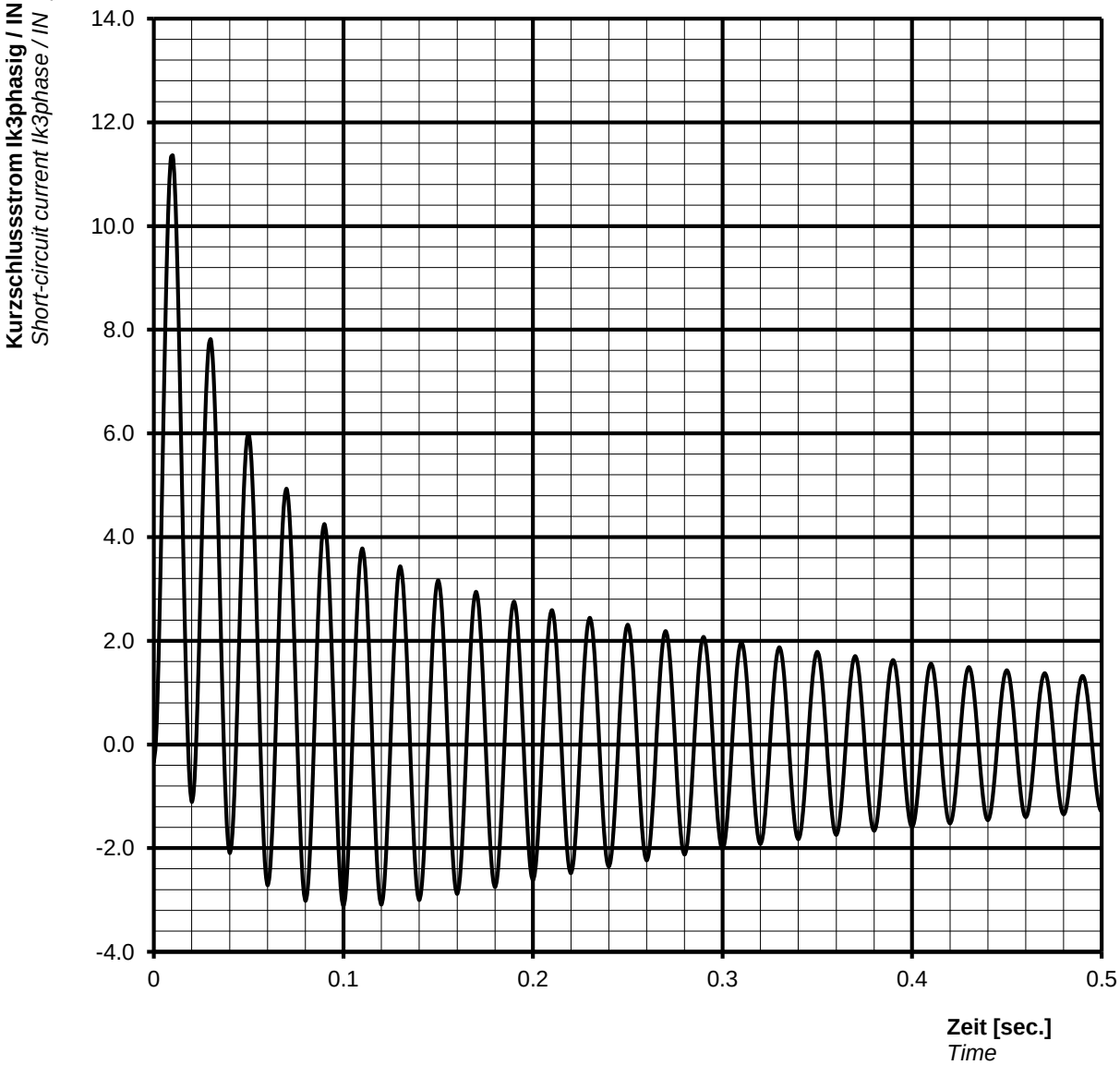


AvK	Technisches Datenblatt - Diagramme Technical data sheet - Diagrams	ING-FCD-0112

Nenndaten / ***nominal data*** **DIG 110 i/4**

Leistung S_N: *Rating*	**1080** kVA	cos φ: *p.f.*	**0.80**
Spannung U_N: *Voltage*	**3.30** kV	Strom I_N: *Current*	**189** 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}= **2146 A or 11.36 p.u.**

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

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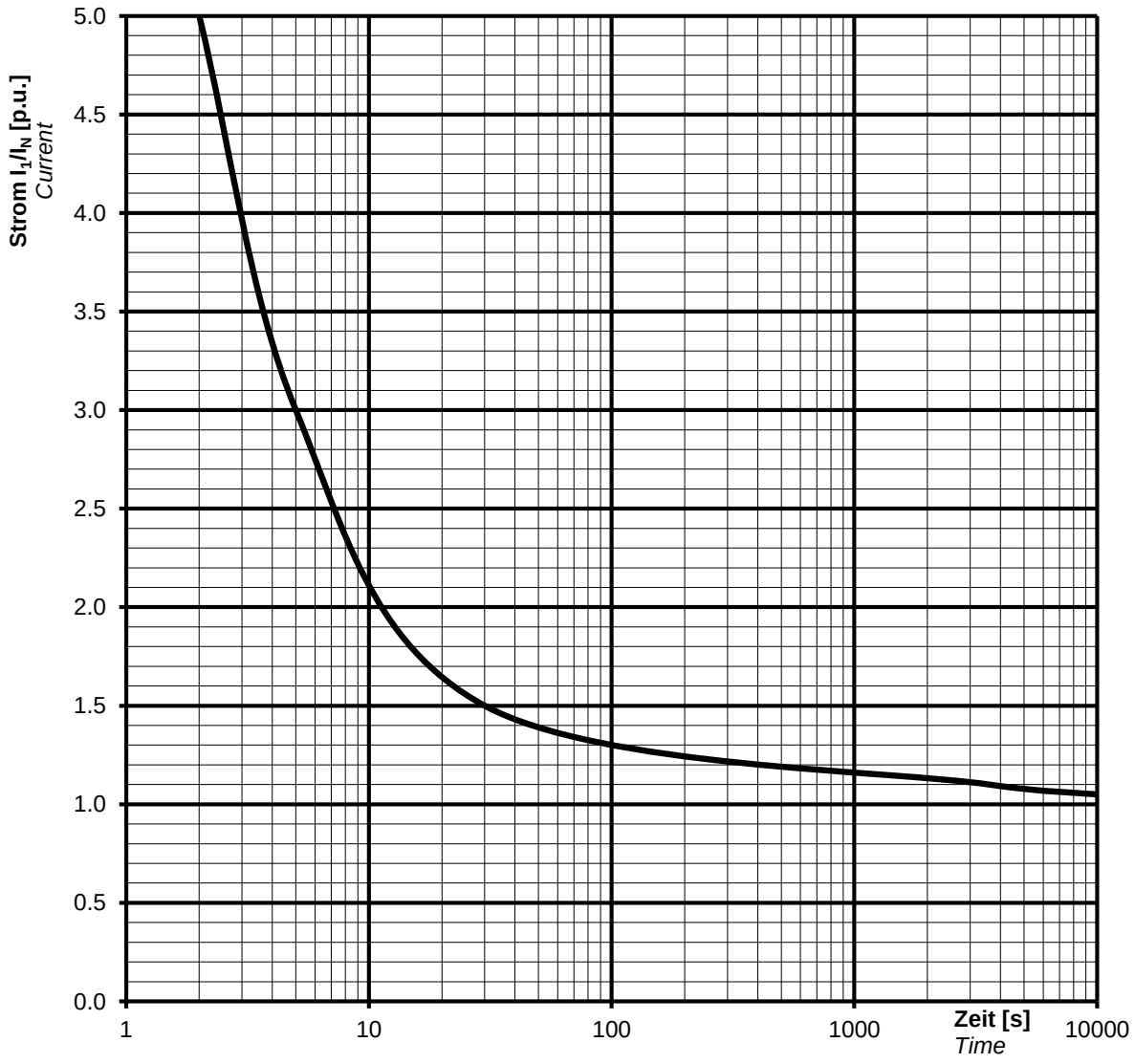
Nenndaten / ***nominal data*** **DIG 110 i/4**

Leistung S_N: *Rating*	**1080** kVA	cos φ: *p.f.*	**0.80**
Spannung U_N: *Voltage*	**3.30** kV	Strom I_N: *Current*	**189** 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***

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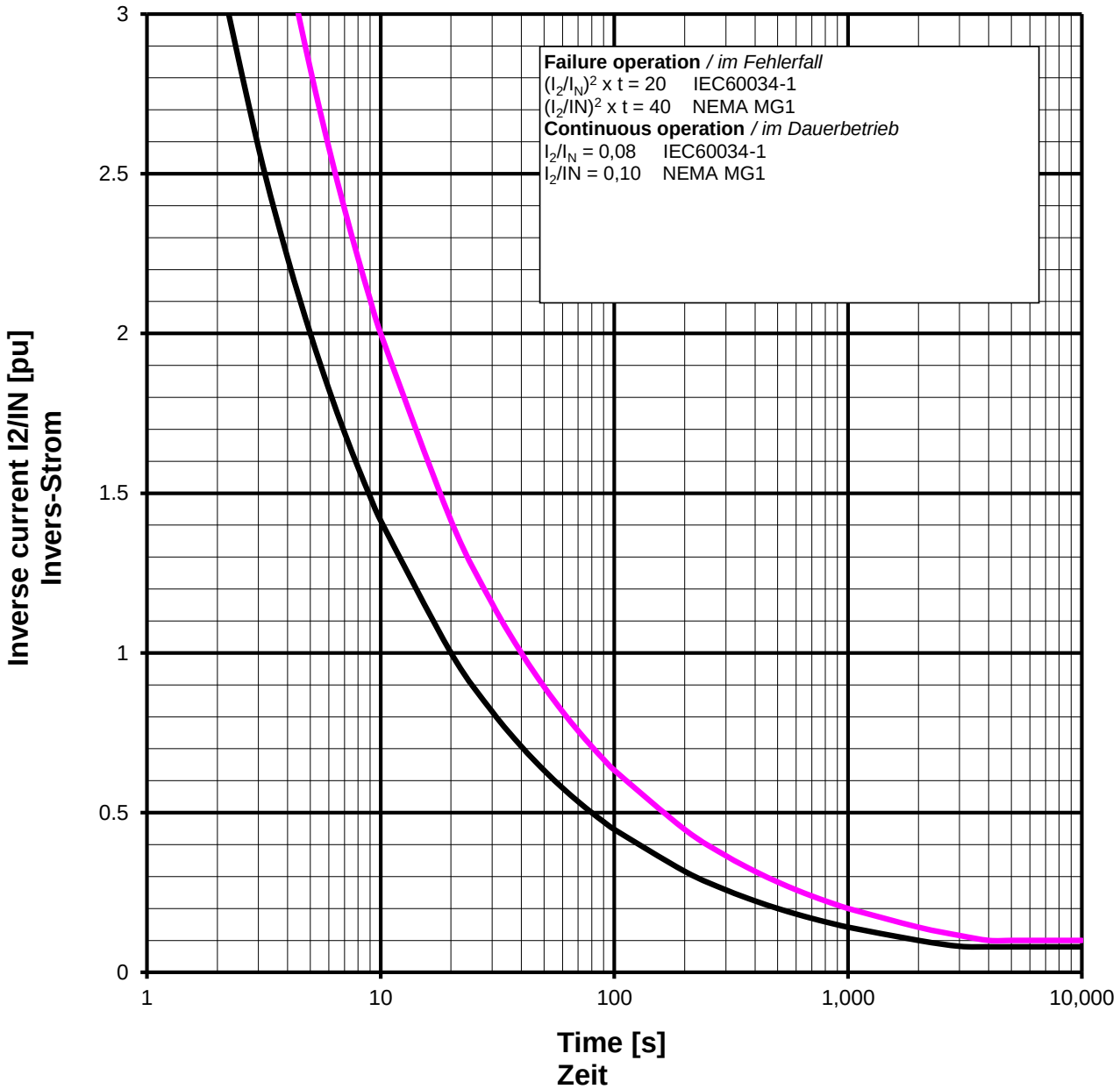
Nenndaten / *nominal data* **DIG 110 i/4**

Rating S_N: *Bemessungsleistung*	**1080** kVA	*p.f.* Leistungsfaktor cos φ:	**0.80**
Nominal voltage U_N: *Bemessungsspannung*	**3.30** kV	Nominal current I_N: *Bemessungsstrom*	**189** A
Frequency f_N: *Frequenz*	**50** Hz	Speed n: *Drehzahl*	**1500** min^{-1}
Protection: *Schutzart*	**IP23**		

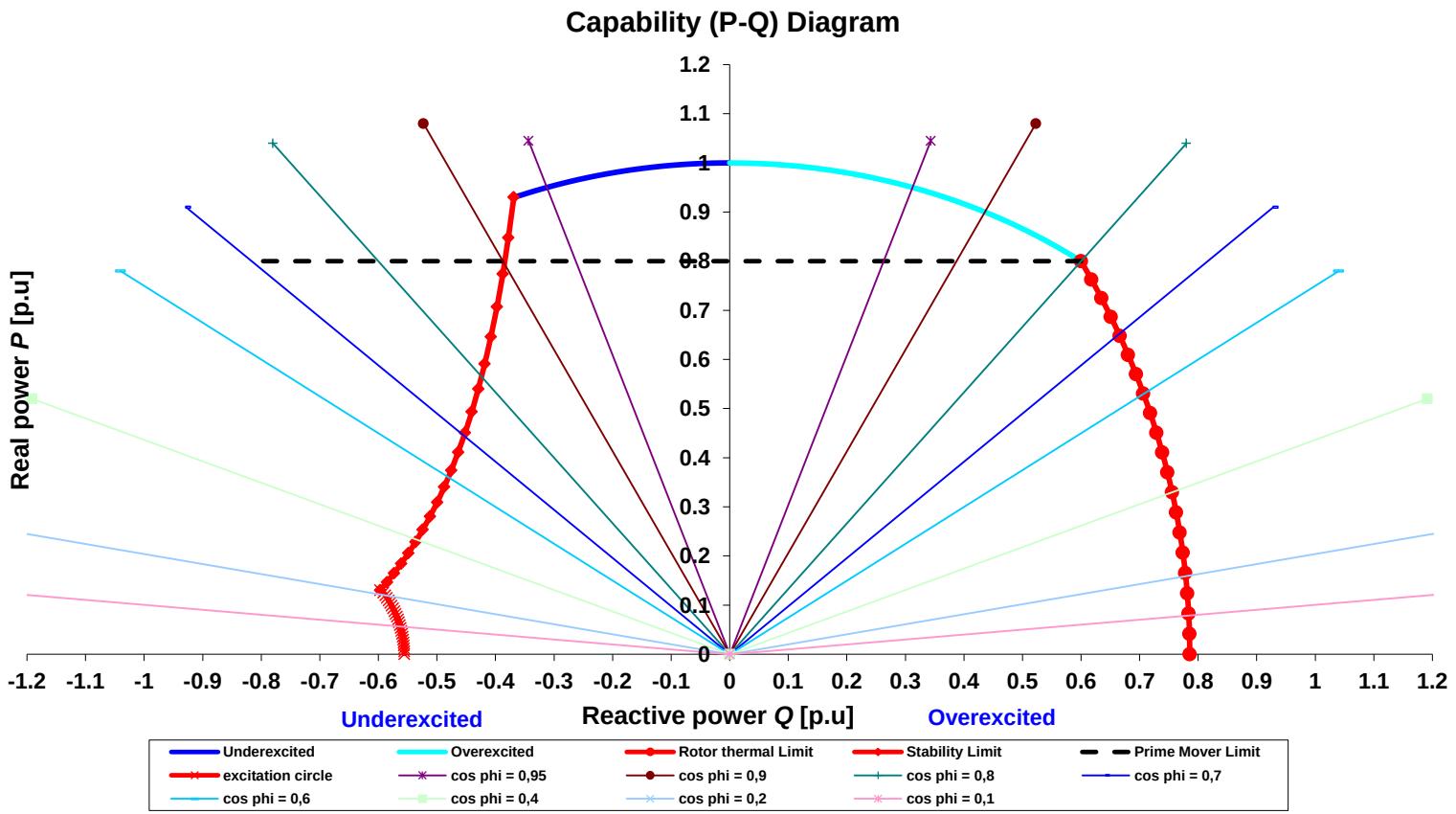
Inverse current or unbalanced negative sequence current



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 110 i/4	Projekt:		Order Nr.:		



Cummins Generator Technologies		Datum / *date* :	
		03/10/2013	

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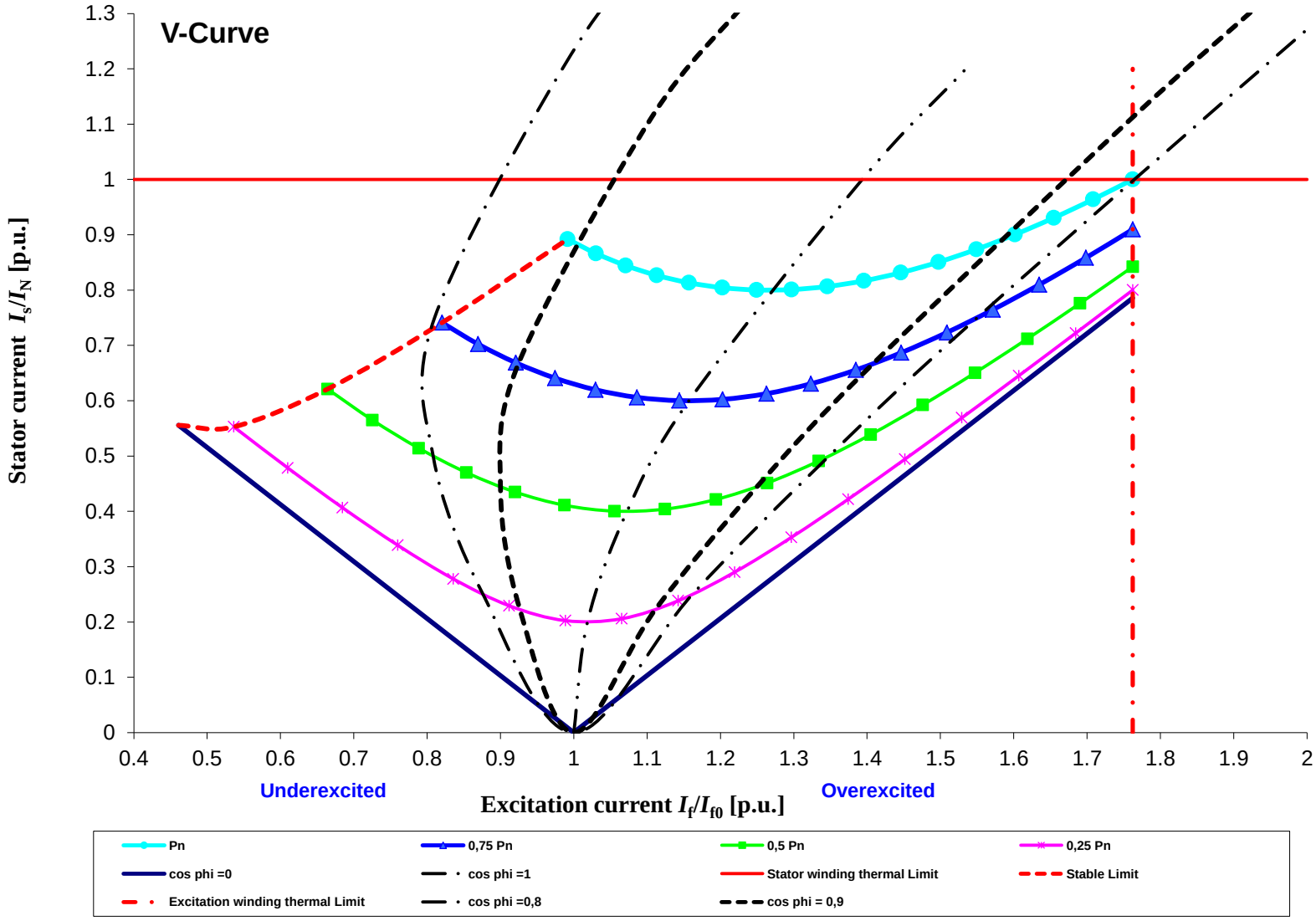

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