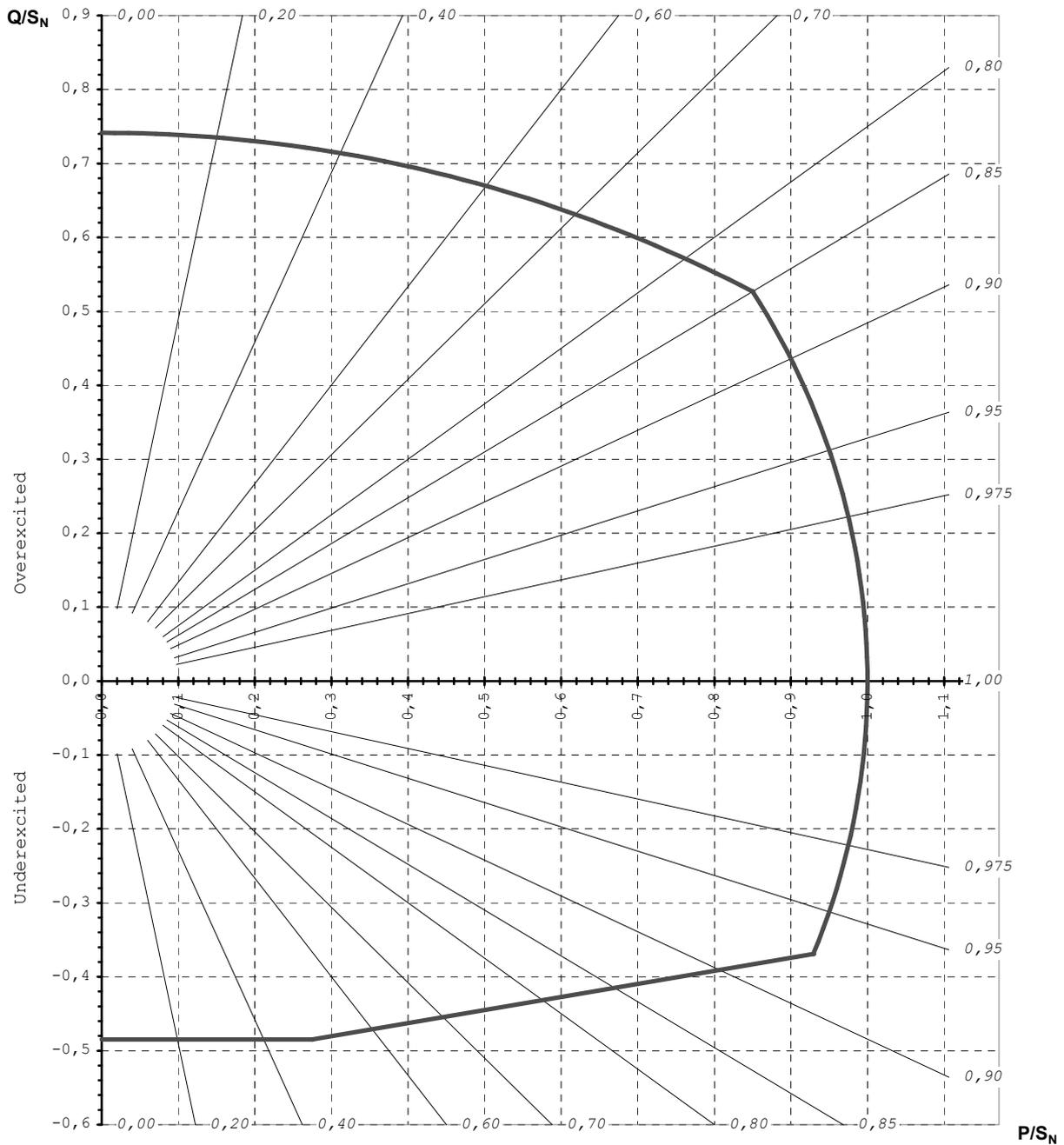


Generator Type: TLRI 100/30-36

Load Point						N			
Standard						ANSI C50.13			
Thermal Classification: Design / Using						F / B			
Power				MVA		137,00			
Cold Air Temperature				°C		45,0			
Voltage				kV		13,80			
Voltage Deviation		+	-	%		5,0	5,0		
Armature Current				kA		5,732			
Frequency				Hz		60			
Power Factor				-		0,85			
Excitation		No load	I _f	U _f	A	V	405	90	
Requirements		4/4-load	I _f	U _f	A	V	1056	234	
		5/4-load	I _f	U _f	A	V	1270	281	
Cooling Air		Losses		kW		1914			
		Air flow	Temp. rise		m ³ /s	K	45,0	40,7	
Short Circuit		I _s : 3-phase (peak)		kA		122			
Currents at		I _{K3} : 3-phase (sustained)		kA		8,6			
No-Load		I _{K2} : 2-phase (sustained)		kA		13,8			
Short Circuit Ratio				-		0,58			
Reactances		X'' _d	unsat.	sat.	%	%	16,3	13,2	
		X' _d	unsat.	sat.	%	%	24,3	21,8	
		X _d	unsat.	sat.	%	%	195	173	
		X'' _q	unsat.	sat.	%	%	18,0	14,6	
		X' _q	unsat.	sat.	%	%	42,4	38,4	
		X _q	unsat.	sat.	%	%	185	158	
		X ₂	unsat.	sat.	%	%	17,2	13,9	
		X ₀	unsat.		%		8,6		
		X _{leak}	unsat.		%		12,8		
Time constants		T'' _d		s		0,031			
at 75 °C		T' _d		s		1,013			
winding		T' _{d0}		s		8,772			
temperature		T'' _{d0}		s		0,047			
		T _a		s		0,287			
Resistance		Stator winding / phase		mΩ		1,36			
at 20°C		Rotor winding		mΩ		164,11			
Voltage		PF = rated P.F.		%		30,3			
regulation		PF = 1,00		%		23,8			
Max. unbalanced		Continuous		%		8			
load		Short time i ₂ ² * t		s		10			
Power at		Underexcited		Mvar		66,4			
PF = 0		Overexcited		Mvar		101,6			
Winding temp. rise		Stator (RTD)		K	°C	60	105		
Winding temp.		Rotor (average)		K	°C	64	109		
Losses		Bearing losses		kW		140			
		Windage losses		kW		845			
		Core losses		kW		321			
		Short circuit losses		kW		451			
		Rotor I ² R losses		kW		233			
		Total losses		kW		1990			
Efficiencies with tolerance		4/4-load		%		98,32			
at brushless excitation		3/4-load		%		98,07			
and rated P.F.		2/4-load		%		97,46			
(incl. bearing losses)		1/4-load		%		95,43			

Generator - Type: TLRI 100/30-36

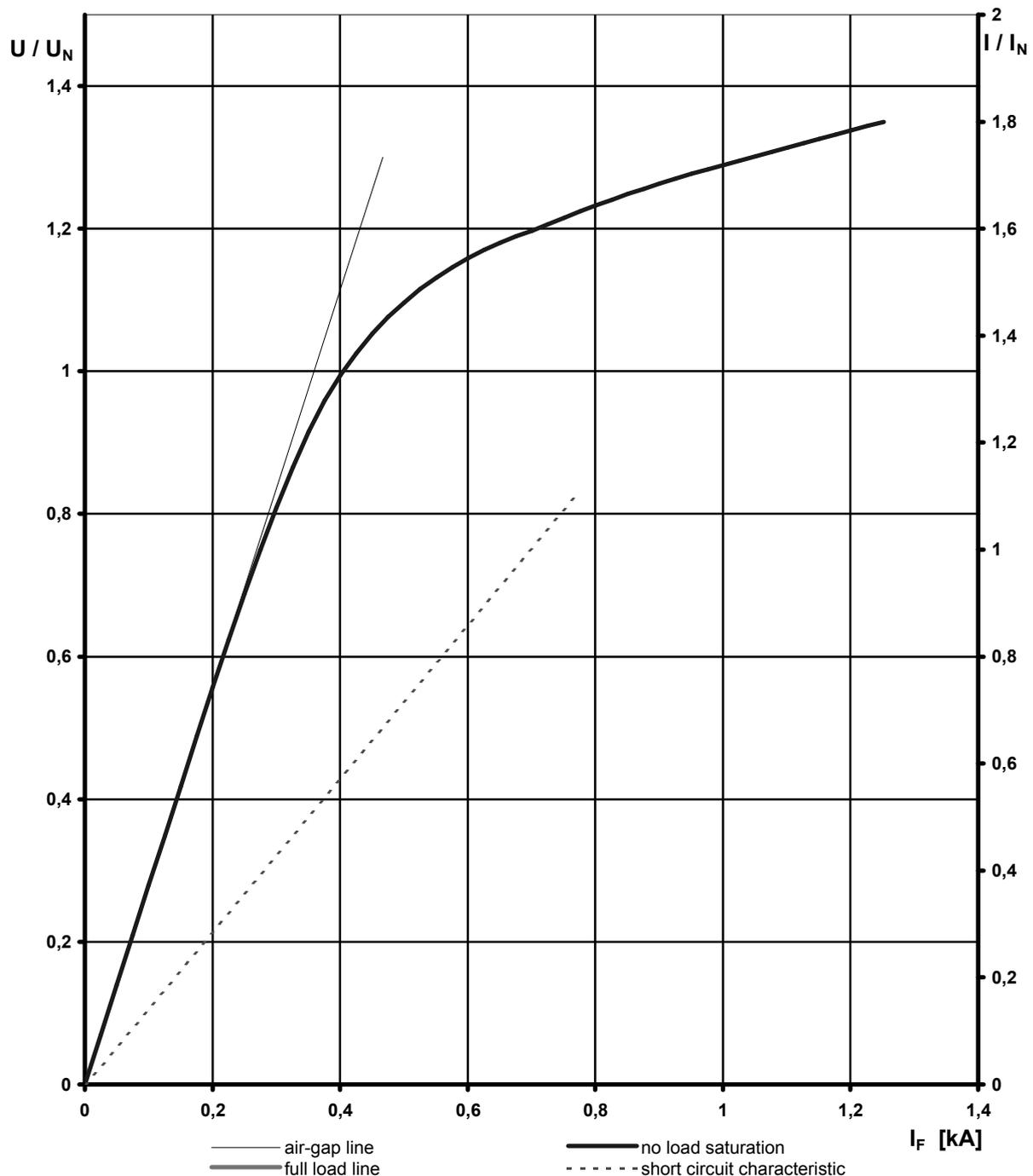
Load Point	Rated
S_N	137,00 MVA
U_N	13,80 kV
I_N	5,732 kA
f_N	60 Hz
PF	0,85
T_{Cold}	45,0 °C



Generator - Typ:

TLRI 100/30-36

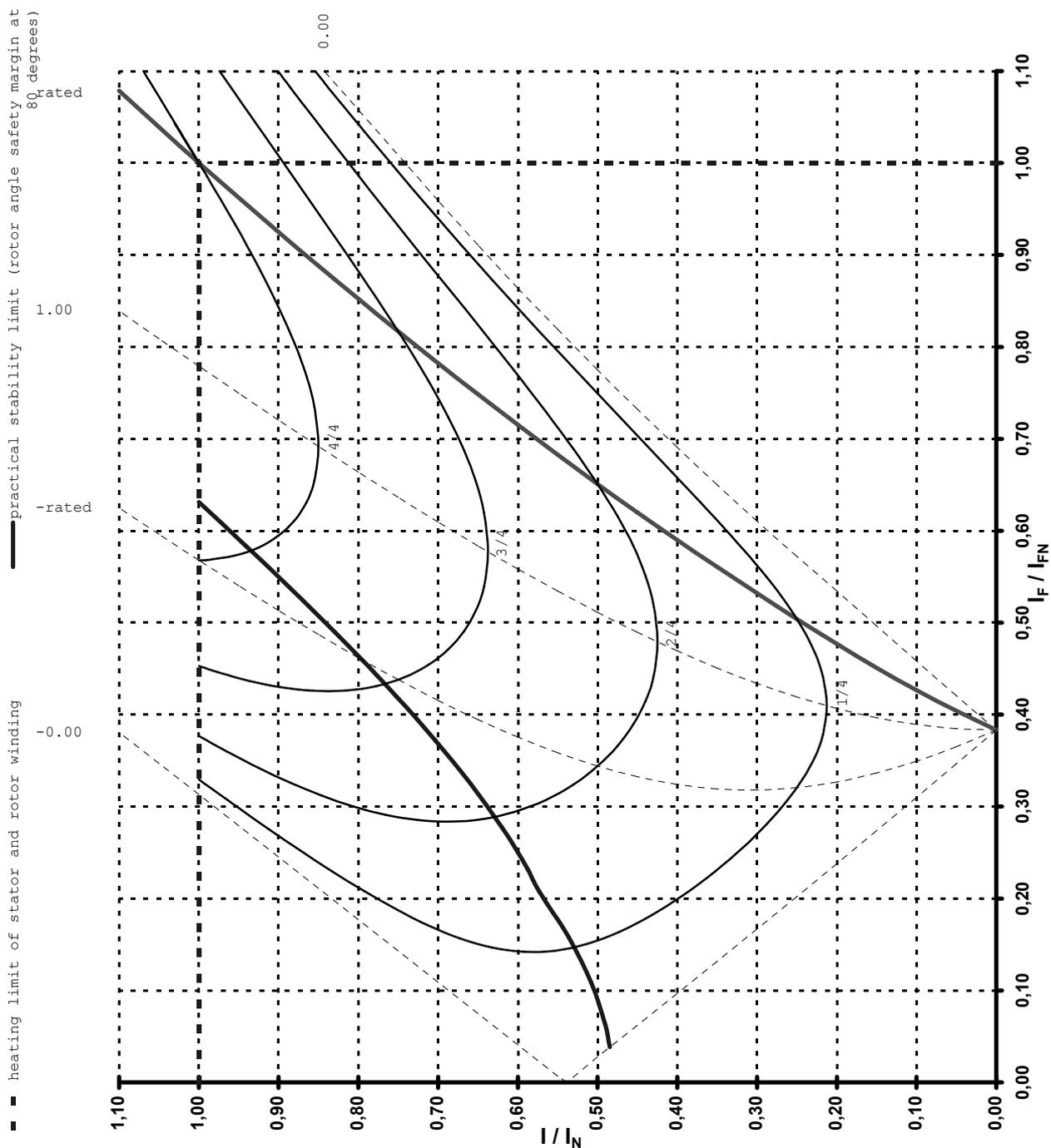
$S_N =$	137,00 MVA	PF =	0,85	$S(1,0) =$	12,7 %
$U_N =$	13,80 kV	SCR =	0,58	$S(1,2) =$	64,9 %
$I_N =$	5,732 kA	$I_{f0} =$	405 A		
$f_N =$	60 Hz	$I_{fN} =$	1056 A		



Generator - Typ:

TLRI 100/30-36

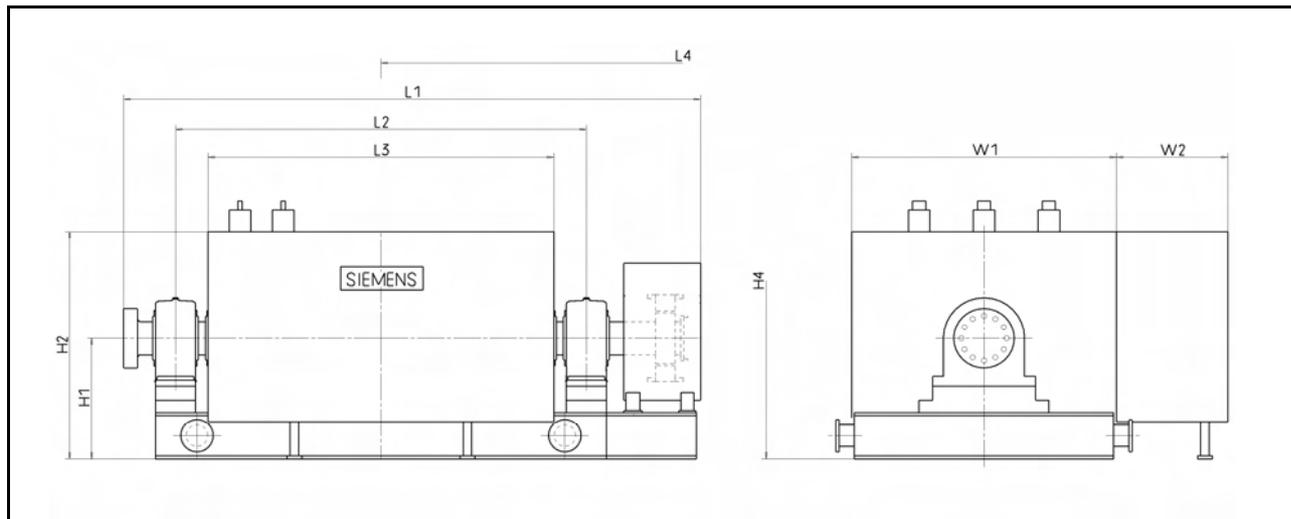
$S_N =$	137,00 MVA	$PF =$	0,85	$I_{f0} =$	405 A
$U_N =$	13,80 kV	$f_N =$	60 Hz	$I_{fN} =$	1056 A
$I_N =$	5,732 kA	$T_{Cold Air} =$	45,0 °C		



V-Curves Refer to Apparent Power

Generator - Type: TLRI 100/30-36

$S_N =$	137,00 MVA	$PF =$	0,85	$T_{Cold Air} =$	45,0 °C
$U_N =$	13,80 kV	$f_N =$	60 Hz	$T_{Warm Air} =$	85,7 °C
$I_N =$	5,732 kA	$n_N =$	3600 rpm	$P_{V, Cooler} =$	1914 kW



Dimensions [mm]:

L1 =	8800	H1 =	1486
L2 =	6500	H2 =	3300
L3 =	6100	H3 ¹⁾ =	0
W1 =	3500	W2 =	1400
L4 =	11500	H4 =	7000
	for rotor withdrawal		crane hook height

Overall weight: **149500 kg**

Stator weight: **119000 kg**

Rotor weight: **30500 kg**

Rotor moment of inertia: **3434 kgm²**

Oil flow for both bearings: **220 l/min**

Preliminary values.

Exact values are part of detail engineering.

Thermal time constants [min]:

Stator Winding: **12,4 min**

Rotor Winding: **6,1 min**

Estimation for required cooling water²⁾ flow (for TEWAC - cooling):

$T_{A(cooling air)} - T_{W(cooling water)}$	Standard water temperature rise	Required cooling water flow
15 K	10 K	165 m³/hour
10 K	7 K	236 m³/hour
5 K	3,5 K	471 m³/hour

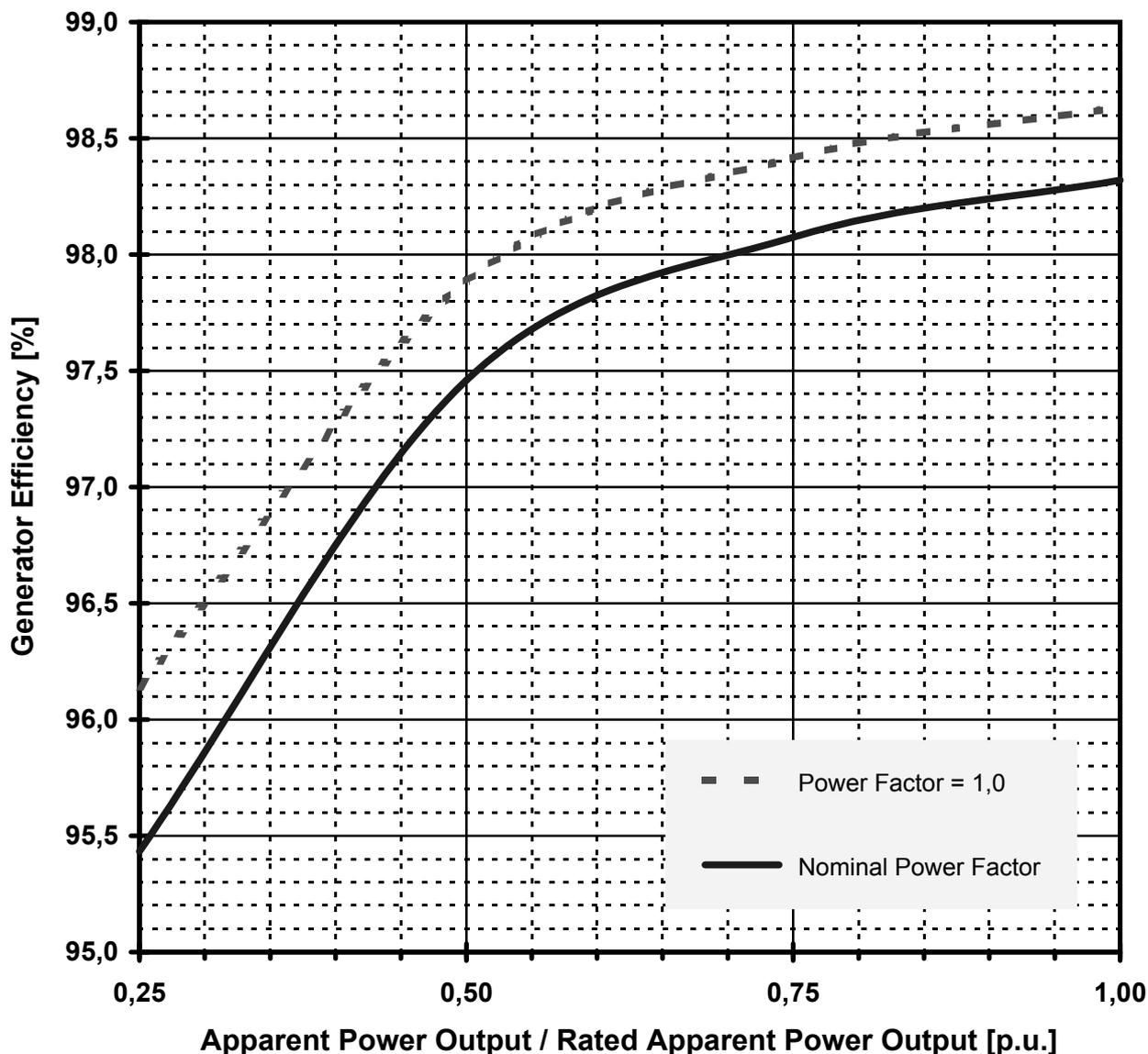
1) For cooler in top position.

2) Data are generated independent of cooling method; for DAC- or CACA-applications these data are not applicable.

Generator - Type: TLRI 100/30-36

$S_N = 137,00$ MVA	PF = 0,85	$T_{Cold Air} = 45,0$ °C
$U_N = 13,80$ kV	$f_N = 60$ Hz	Efficiency acc. to:
$I_N = 5,732$ kA	$n_N = 3600$ rpm	ANSI C50.13

Apparent Power Output	MVA	34,3	68,5	102,8	137,0
	p.u.	0,25	0,50	0,75	1,00
Efficiency at P.F. = 1,00	%	96,14	97,89	98,42	98,63
Efficiency at nominal P.F. = 0,85	%	95,43	97,46	98,07	98,32



Generator - Type: TLRI 100/30-36

$S_N =$	137,00 MVA	$PF =$	0,85	$T_{Cold Air} =$	45,0 °C
$U_N =$	13,80 kV	$f_N =$	60 Hz		
$I_N =$	5,732 kA	$n_N =$	3600 rpm		

Continuous operation limits (S1)			
Voltage max.:	5,0 % 1)	Frequency max.:	+2,0 %
Voltage min.:	-5,0 %	Frequency min.:	-2,0 % 1)
1) In case of overvoltage and underfrequency at the same time the sum of both deviations for continuous operation is limited to: 5,0 %			
Minimum requirements IEC 34-3 Item 5			
Voltage:	+/- 5 %	Frequency:	+/- 2 %

