Extract from test report for NS protection Nr: 2015 – 1530

"Determination of electrical properties"

□ NS protection as central NS protection

Type of NS protection:	**Other manufacturer's data**
Software version:	
Manufacturer:	

Measuring period: from JJJJ-MM-TT to JJJJ-MM-TT

Protection function	Setting value	Tripping value	Tripping time NS protection[a]
Voltage drop protection $U <$	0,8 * U_n	* U_n	ms
Rise-in-voltage protection $U >$	1,1 * U_n	* U_n	ms
Rise-in-voltage protection $U >>$	1,15 * U_n	* U_n	ms
Frequency decrease protection $f <$	47,5 Hz	Hz	ms
Frequency increase protection $f >$	51,5 Hz	Hz	ms

[a] The tripping time comprises the period before limit violation U/f until tripping signal to interface switch.

During planning of power generation system the proper time of interface switch shall be added to the highest value of time determined above.
The break time (sum of tripping time NS protection plus proper time of interface switch) shall not exceed 200 ms.

☒ NS protection as integrated NS protection

Type of NS protection: **Steca-ENS**	**Other manufacturer's data**
Software version: **NET11_ENS_2.9 or higher**	
Manufacturer: **Steca Elektronik GmbH** **Mammostraße 1** **87700 Memmingen** **Germany**	**Assigned to PGU type:** StecaGrid 1500, StecaGrid 1500x, StecaGrid 2000, StecaGrid 2000x, StecaGrid 1800, StecaGrid 1800x, StecaGrid 2300, StecaGrid 2500, StecaGrid 2500x, StecaGrid 3010, StecaGrid 3010x, StecaGrid 3000, StecaGrid 3000x, StecaGrid 3600, StecaGrid 3600x, StecaGrid 4200, StecaGrid 4200x **Integrated interface switch** **Type of Switching equipment 1** **relay** **Type of Switching equipment 2** **relay**

Measuring period: from 2011-08-01 to 2011-12-21

Protection function	Setting value	Tripping value	Tripping time NS protection[a]
Voltage drop protection $U <$	0,8 * U_n	0,8 * U_n	185 ms
Rise-in-voltage protection $U >$	1,1 * U_n	1,1 * U_n	187 ms
Rise-in-voltage protection $U >>$	1,15 * U_n	1,15 * U_n	184 ms
Frequency decrease protection $f <$	47,5 Hz	47,5 Hz	186 ms
Frequency increase protection $f >$	51,5 Hz	51,5 Hz	183 ms
proper time of interface switch	max. 20 ms		

The break time (sum of tripping time NS protection plus proper time of interface switch) shall not exceed 200 ms.
The verification of the full functional chain "NS protection – Interface switch" has yield to intended disconnection.. ☒