Extract from test report for NS protection	<u>Nr: 2013 – 1319</u>
"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 8000+ 3ph** **StecaGrid 10000+ 3ph** **Integrated interface switch** **Type of Switching equipment 1 relay** **Type of Switching equipment 2 relay**

Measuring period: <u>from 2011-08-01 to 2011-12-21</u>

Protection function	Setting value	Tripping value	Tripping time NS protection[a]
Voltage drop protection $U <$	$0{,}8 * U_n$	$0{,}8 * U_n$	181 ms
Rise-in-voltage protection $U >$	$1{,}1 * U_n$	$1{,}1 * U_n$	183 ms
Rise-in-voltage protection $U >>$	$1{,}15 * U_n$	$1{,}15 * U_n$	185 ms
Frequency decrease protection $f <$	47,5 Hz	47,5 Hz	175 ms
Frequency increase protection $f >$	51,5 Hz	51,5 Hz	179 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..   ☒