ECOsine® active Harmonic Filters
Failure analysis 100A/120A 3-Wire

October 2018
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1. Intended use

The ECOsine® active harmonic filter is used for active compensation of reactive power and harmonic content and for load balancing. Please ensure that no compensation systems, which are not detuned, are connected to the same grid. Otherwise interactions between ECOsine® active and these compensation systems may occur.

Dangerous voltage
Risk of death due to short circuits and electric shock if the active filter is opened improperly. The discharge time of the intermediate circuit after disconnecting from the mains can be more than 5 minutes. All interventions involving opening the device cover or removing or installing the connection cable may only be performed by qualified personnel.

High-frequency interferences
In a residential environment, high-frequency interferences could occur, which necessitate interference suppression.

Note
Please note that there are additional manuals for some product variants. For the latest versions of these manuals go to www.schaffner.com. It particularly applies to types FN3420-100/120-400-3-GL, please observe the special EMC-Filter Manual for these types (ECOsine EMC Filters for Applications with GL).

2. Personnel qualification

Installation of the ECOsine® active filter, inspections for proper operation, and certain troubleshooting measures may only be performed by qualified personnel. All other measures may be performed by people who have read these instructions.

Attention!
Before starting to work on the device, ensure that it is disconnected from the grid and capacitors are discharged

3. Tool list (minimum requirements)

- Camera
- Multimeter with diode tester
- Screwdriver PH2
- AHF viewer software
4. General condition

Take a picture of the label to get the device datas

- [ ] Label

Take a picture of the Front cover includ near surroundings, check the basic condition outside.

- [ ] Front Cover
- [ ] Near surrounding
- [ ] Basic condition outside

Take a picture from the main fan side

- [ ] Main Fan
Take a picture from the enclosure fan side

- Enclosure Fan

Remove the cover of the main connectors

Remove the front cover
Take a picture of the device without front cover, check the basic condition inside

- Without front cover
- Basic Condition

Take a picture only of the Filter Board
- Filter Board

Take a Picture of the capacitors where they are connected with the IGBT modules
- Capacitor & IGBT
5. Application & Installation

Check and indicate how the device is connected. Specify the type & values of the load & external fuses or forward a schematic diagram.

Load: ____________________________

Load Values: ______________________

External fuses: _____________________

Specify the type and value of the used current transformer

CT Brand: __________________________

CT Value: __________________________

Mains/Load side installed: Mains □ Load □

Specify the environmental conditions: Ambient temperature in °C & humidity. Also indicate device temperature during operation

Ambient temperature: _____°C

Device temperature: _______°C

Humidity: _______%RH
Specify the exact information showed in the display. Status or error message, if it's possible

Error message:_____________________
Status message:_____________________

Parameters and even log of all affected devices are required. These can be downloaded via AHF Viewer, if possible.

Parameter File: Yes ☐ No ☐
Event Log: Yes ☐ No ☐

Any other Schaffner filters are installed in same application:
Type & Qty:_____________________
No: ☐

Any other problems detected on these other filters, same/other problems happen in the past:
__________________________________
6. Measurements on device

Check with ohmmeter the resistance between
L1 and L2:_______ Ω
L2 and L3:_______ Ω
L1 and L3:_______ Ω

Check with ohmmeter resistance between
L1 and connecting bolt 1_______ Ω
L2 and connecting bolt 2_______ Ω
L3 and connecting bolt 3_______ Ω
Check with
+ of diode tester on + connection of capacitor paket and - of diode tester on bolt L1 / L2 / L3

+ of diode tester on - connection of capacitor paket and - of diode tester on bolt L1 / L2 / L3

- of diode tester on + connection of capacitor paket and + of diode tester on bolt L1 / L2 / L3

- of diode tester on - connection of capacitor paket and + of diode tester on bolt L1 / L2 / L3

Enter the measured value to the table below

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Send the pictures, all requested information, the event log and the parameter setting to Schaffner Service Center, for final analysis and define of next steps.