Comparisons user documentation

Introduction

This pdf is created to provide instructions for users about the script named diff.py in path I:\Konstantinos Sidiropoulos\Documentation\Comparisons OpenLF_Unicorn.

The specified script creates a comparison between OpenLF's and Unicorn's LoadFlow reports. It calculates absolute and percentage differences (Unicorns variable is denominator) in current, active and reactive power between lines and boundary lines(X-lines). Also calculates absolute and percentage differences in voltage and theta between nodes and boundary nodes(X-nodes). User can make daily or hourly comparisons depending on his needs. Script has been tested in IGM'S in a daily period and CGM's**.**

NOTE: CGM's run for hourly period and user has every time to check the name structure of load flow reports (LINE 224, 225, 249). ANYTIME AN ERROR 'AT LEAST ONE SHEET MUST BE VISIBLE' INDICATES WRONG NAME STRUCTURE.

Script was used in computer 10.91.100.15 with the following installations:

- Python version 3.12.0
- Visual Studio Cide: VSCodeUserSetup-x64-1.91.0.exe

1. User Instructions

User has to enter after **running** the script the following information to console:

- **Enter the hours (comma-separated ex. 0030,0130 ... , or leave blank for default 0030-2330):** Enters the timestamps he wants to make comparisons. If he wants for a day period he hits enter button.

- **Enter the base folder path where the load flows are located:** Enters the folder where both Unicorn's and OpenLF's reports are located.

Note: Script is designed to read the .xlsx files that compares from the same path. User has to create a common folder for the LoadFlow reports he wants to compare. Otherwise he crates a new dynamic variable.

- **Enter the folder path where comparison results will be saved:** Enters the path where final excel will be saved.
- **Enter the date (in YYYYMMDD format):** Enters the date of LoadFlow reports.
- **Enter the file type (e.g., 'FO3'):** Enters the File type.
- **Enter the country code (e.g., 'GR'):** Enters the country code.

Note: Script considers that both LoadFlow reports will have same timestamp, destination_folder, Date, File_type and country code.

Also Script structures the file names like (**line 224 and 225, 249**): (SOS)

```
1. df1_path = os.path.join(destination_folder,
f'{Date}_{timestamp}_{File_type}_{country_code}_{number}_igmLfReport.xlsx')
2. df2_path = os.path.join(destination_folder,
f'{Date}_{timestamp}_{File_type}_{country_code}_0_OPENLF_REPORT.xlsx')
```

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Figure 1: file structure that script reads

Note: user can easily change the file structure depending on the names of the LoadFlow reports he wants to compare. (SOS)

Finally user can write the name of the .xlsx file that contains the final comparison excel(**Line 259**) as he wish:

Note: User can compare LoadFlow reports for more than one timestamp and not necessarily for the whole day.

```
1. output_file_path = os.path.join(destination_folder_1,
f'combined_results_{Date}_OPENLF_UNICORN.xlsx')
```

Figure 2: Daily comparisons file names

In path I:\Konstantinos Sidiropoulos\Documentation\Comparisons OpenLF_Unicorn there are folders for demonstration of the proccess in both CGM's and IGM's in UCTE format. User can see the structure of the LoadFlow comparison data results.