

## EFC-400 Release 2024 – new Libraries and Functions

Overview of the new features:

- Isolines-DXF-export shifted to double in order to avoid rounding errors
- Detailed log-file of the calculated induced current with complex values
- Command line parameter '/LFHF' for simultaneous LF- and HF-calculation
- Calculation of multiple projects of entire directories via CMD
- Construction of 1- and 2-conductor cables now possible
- New command line parameter '/saveclose'

### Extension of Libraries:

- A new example 'train\_and\_repeater.geo' of a train with an antenna system on board is included in the high frequency version. This model can also be found in the antenna library with the name 'Train'.

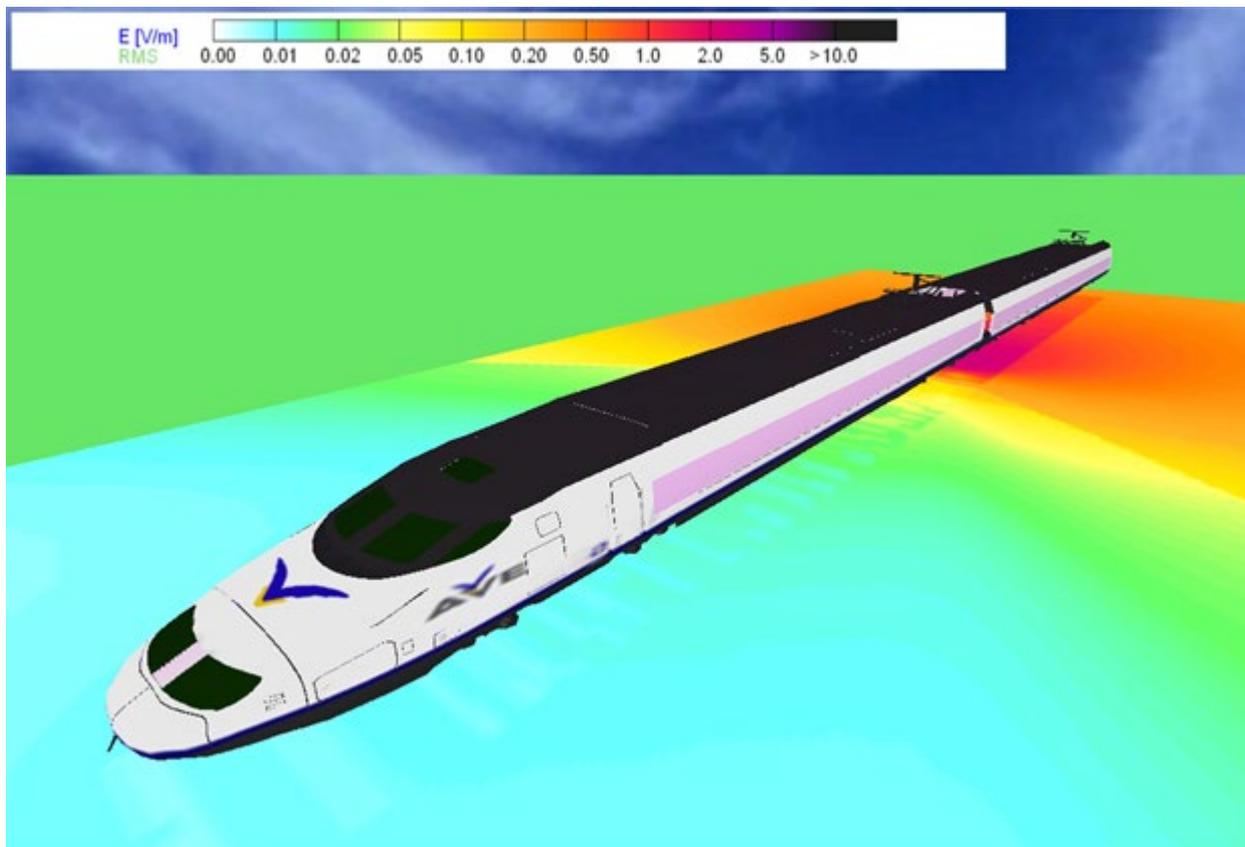


Fig.: new example of a train with internal antenna

### New Calculation Functions:

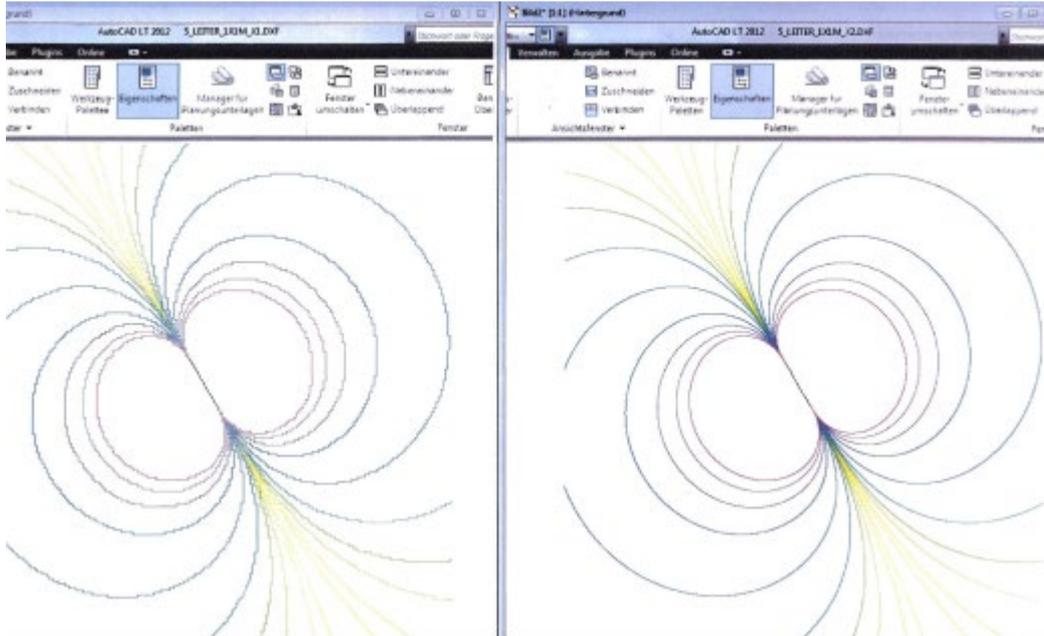
- After a calculation, both, induced currents and induced voltages are displayed in the geometry list. A log-file with the name 'induction\_tab.log' is created in the work directory. This file contains complex currents and voltages as well as the complex impedance per unit length.

	A	B	C	D	E	F	G	H	I	J	K
1	GW #n[]	U[V]	U_phi[deg]	U_re[V]	U_im[V]	I[A]	I_phi[deg]	I_re[A]	I_im[A]	Z_re[Ohm]	Z_im[Ohm]
2	7	3.533	28.8	3.097	1.7	34.291	333.2	30.6	-15.475	0.05822	0.08501
3	14	4.994	28.1	4.405	2.354	44.129	332.5	39.153	-20.359	0.06394	0.09338
4	21	2.991	5.9	2.975	0.308	33.465	310.3	21.651	-25.517	0.0505	0.07374
5	28	3.485	14	3.382	0.84	37.008	318.4	27.657	-24.591	0.0532	0.07769
6	35	2.687	6.7	2.668	0.316	37.639	311.2	24.768	-28.341	0.04033	0.0589
7	42	2.521	15.6	2.428	0.679	34.963	320	26.791	-22.465	0.04075	0.0595
8	49	11.173	23.3	10.264	4.414	51.278	327.7	43.329	-27.422	0.12311	0.17977
9											

Fig.: presentation of ,induction\_tab.log' in EXCEL

## Cartographical Data:

- The export of calculation data as DXF-isolines was modified from the number format single (left picture) to double (right picture), so that rounding errors do not occur anymore in exported isolines, when working with UTM-coordinates.



- In the dialog box for background map import, the resolution is now set to 300 dpi and the map scale to 1:10.000 by default.

## New Construction Functions:

- In the function 'Construct cable' it is now possible to insert 1 as the number of phases of a cable. Using 'Connect', the 1-conductor-cable is rounded at the corners, too.

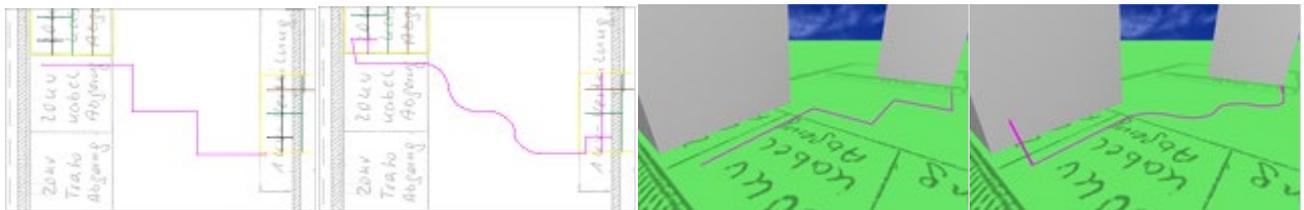


Fig.: Connection of a 1-phase-cable rounded off automatically while connected

## General Improvements:

- Projects are always saved and opened together as geometry (\*.geo) and configuration (\*.cfg). If the configuration is missing, e.g. during 'third-party-export', an error message: 'Configuration (\*.cfg) not found!' is displayed to indicate that the processing/calculation is carried out with an arbitrary - the last loaded - configuration.
- In addition to the function '/autoclose' there is now the function '/saveclose' which saves the calculation data before closing the program. The present '/autoclose' function has not become redundant by that, since it is useful when calculations are carried out in order to export data without saving the calculation results themselves.
- On the CMD, not only the filename of a geometry can now be specified for the calculation, but alternative a directory from which all geometries are calculated one after the other.
- There is a new CMD parameter '/LFHF' with which the simultaneous LF and HF calculation is carried out.

```

Administrator: C:\Windows\system32\cmd.exe
WinField - Electric and Magnetic Field Calculation Version 2024
Copyright (C) Berlin 1995-2024 Forschungsgesellschaft fuer Energie und Umwelttech
nologie - FGBE mbH

Call >>> WinField [LOption]..[Option] [InFile]..[InFile]
or >>> WinField [Directory] [LOption]..[Option]

Options:
/Help <show this message>
/AUTOCORRMD <load if file with same name as project exists>
/AUTOPRP <load if file with same name as project exists>
/LOCALHFHFD <only for catanator - calc only area with source change>
/RTICM <execute program as icon>
/AUTOCLOE <close program automatically>
/AUTOCLOE <close program automatically and save calc-data>
/B /E /DBR <calculate B-field, E-field or audible-Noise-Level>
/SP /EP <calculate Peak-value for B-field, E-field>
/CLH#_-.+ <calculate B-, E-field with HH-Guideline or -del/*add>
/LFHF <calculate B-, E-field as summary of LP- and HF-field>
/EXPORTDEF <line-line export directories_work_path\out.def 4 Excel>
/EXPORTT <2D-array export directories_work_path\out.txt 4 Excel>
/EXPORTXLS <2D-array export directories_work_path\out.xls 4 Excel>
/EXPORTCSV <2D-array export directories_work_path\out.csv 4 Excel>

InFiles:
*.geo <load project - note! that more than 1 file is possible>
*.cfg <load cfg-file>
*.ini <load ini-file>
*.inp <load coordinate list and update on /AUTOCORRMD>
*.gpc <load coordinate list and update on /AUTOCORRMD as *.inp>
*.dxf <load topographic map, more than 1 file is possible>
*.gpx <load topographic map>
*.jpg <load topographic map>
*.bmp <load topographic map>
*.tif <load topographic map>
*.prj <load 3D-surface model as array, more than 1 file is possible>
*.dat <load 3D-surface model as array, more than 1 file is possible>
*.txt <load 3D-surface model as points, more than 1 file is possible>
*.xyz <load 3D-surface model as points, more than 1 file is possible>
*.ndt <data table to load multi experimental data sets>

>>> press ENTER to continue
  
```

**Narda Safety Test Solutions GmbH**  
 Sandwiesenstrasse 7  
 72793 Pfullingen, Germany  
 Phone +49 7121 97 32 0  
 info@narda-sts.com

**Narda Safety Test Solutions**  
 North America Representative Office  
 435 Moreland Road  
 Hauppauge, NY11788, USA  
 Phone +1 631 231 1700  
 info@narda-sts.com

**Narda Safety Test Solutions S.r.l.**  
 Via Benessea 29/B  
 17035 Cisano sul Neva, Italy  
 Phone: +39 0182 58641  
 nardait.support@narda-sts.it

**Narda Safety Test Solutions GmbH**  
 Beijing Representative Office  
 Xiyuan Hotel, No. 1 Sanlihe Road, Haidian  
 100044 Beijing, China  
 Phone +86 10 6830 5870  
 support@narda-sts.cn

www.narda-sts.com

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