

OpenPowerNet
Release Notes Version 1.1.0

Institut für Bahntechnik GmbH
Branch Office Dresden

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Author	Review	Release
_____ Date Martin Jacob	_____ Date Harald Scheiner	_____ Date Dr. Jörg von Lingen

1 Introduction

1.1 Overview

The purpose of this document is to describe the changes and the status of OpenPowerNet version 1.1.0. The document contains:

- List of delivered files on CD,
- Description of the main functionality,
- Any restrictions known,
- List of corresponding documentation and
- Known issues.

1.2 Configuration

See document Installation Instruction version 1.1.0 for required third-party software versions.

1.3 Acronyms and abbreviations

The following abbreviations are used within this document.



Abbreviation	Description
CD	Compact Disk
DC	Direct Current
AC	Alternating Current

2 List of files on CD delivery

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II_OPN_33_01.01.00.pdf
RN_OPN_01.01.00.pdf
OpenPowerNet\my.ini
OpenPowerNet\OpenPowerNet-1.1.0.zip
ThirdPartyPrograms\HASPUserSetup.exe
ThirdPartyPrograms\jre-6u14-windows-i586.exe
ThirdPartyPrograms\MCRInstaller_R2009a_win32.exe
ThirdPartyPrograms\MCRInstaller_R2009a_win64.exe
ThirdPartyPrograms\mysql-connector-odbc-3.51.27-win32.msi
ThirdPartyPrograms\mysql-connector-odbc-5.1.5-win32.msi
ThirdPartyPrograms\mysql-connector-odbc-5.1.5-winx64.msi
ThirdPartyPrograms\mysql-essential-5.0.67-win32.msi
ThirdPartyPrograms\mysql-essential-5.0.67-winx64.msi
ThirdPartyPrograms\mysql-gui-tools-5.0-r14-win32.msi
ThirdPartyPrograms\odbcad32 (x86).lnk
ThirdPartyPrograms\odbcad32.lnk
ThirdPartyPrograms\vcredist_x64.exe
ThirdPartyPrograms\vcredist_x86.exe

```

OPN/RN/1.1.0	 OpenPowerNet	 Institut für Bahntechnik GmbH
Page 3 of 4	Release Notes Version 1.1.0	Issue 2009-06-26

3 Main functionality

OpenPowerNet version 1.1.0 has the following main functionality:

- Calculation of AC, 2AC and DC power supply system
- Calculation of magnetic coupling of conductors is done internally
- Calculation of tractive effort used by OpenTrack and analysis
- Calculation of braking effort for analysis
- Evaluation of tractive and braking current limitation
- Calculation of electrical engines with single or multiple propulsion systems
- Division of power consumption for multiple Train Operating Companies
- Evaluation of energy storage for stabilisation of line voltage
- Calculation of short circuit currents
- Quick evaluation of network structure using constant current engine model
- Visualisation of results using analysis of data with prepared Excel-Files

The latest changes since version 1.0.0 are as follows:

- first version with Graphical User Interface including Help System
- new PSC Viewer to visualise the electrical network model
- additional load between busbars in substation possible
- added DC network model
- added simple energy storage model
- additional TypDef-File to define energy storage types
- added leakage model for conductors
- added short circuit calculation
- added constant current engine model
- possibility to specify start and end time of OpenPowerNet simulation
- possibility to record data into dump files to speed up simulation
- possibility to set a name for feeder cable
- OpenPowerNet for 64 Bit architecture
- renamed database table `trafo` to `powerSupply`
- new concept to define the recorded data
- Engine-, Switch- and TypDef-File now specified in Project-File, instead of config.txt
- engine model has changed $\cos(\phi)$ to ϕ
- added $\Phi=f(u)$, $\Phi=f(i)$, $\Phi=f(u,i)$ to the engine ϕ model
- possibility to return the requested effort instead of returning the calculated
- improved the engine auxiliary model: now constant power, resistance and constant power, resistance only while braking available
- possibility to define the maximum allowed number of failed ATM \Leftrightarrow PSC iterations
- write engine data used for network calculation and data sent to OpenTrack into separate database tables

4 Known restrictions

OpenPowerNet is tested with OpenTrack version 1.5.5 and should only be used with this version.

OpenPowerNet is a single user application. It is not tested to use the same database for multiple users at the same time.

The Engine-File uses the RailML rollingstock schema version 1.03 with OpenPowerNet specific extensions and is therefore not 100% compatible with the mentioned version 1.03.

5 Version of corresponding documentation

The following table lists the version of the documents related to OpenPowerNet 1.1.0.

Document	Version
Installation Instruction	1.1.0
User Manual	1.1.0

6 Known issues

The following table contains all known but unsolved bugs.

ID	Summary	Status
252	Currents and voltages will not be recorded to the database in case that there is no train in the network. This might lead to the wrong value of the energy storage load if the loading should end at a time with no trains in the network. Workaround: Park one course with electrical engine but without auxiliary power on a track in the network.	OPEN
263	In case that the initial load of an energy storage is less than the maximum load the loading will always start at 00:00:00. If the simulation starts at 01:00:00 then the storage may be already fully loaded. Workaround: Start the simulation at 00:00:00.	OPEN

A comprehensive Analysis Tool is under development and will be available later this year in release 1.2.0.