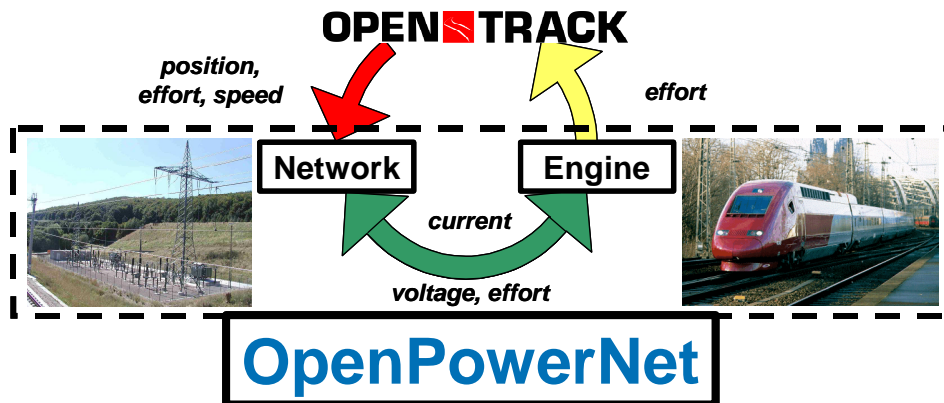


## Simulation of Railway Power Supply Systems



- Calculation of electrical load flow
- Energy balance
- Load analysis of equipment
- Touch voltage
- Electromagnetic field
- Interaction of operation and design
- Examination of different layouts
- Simulation results provide a basis for rating

Beijing Starbamboo Tech

Tel: +86-10-68946373

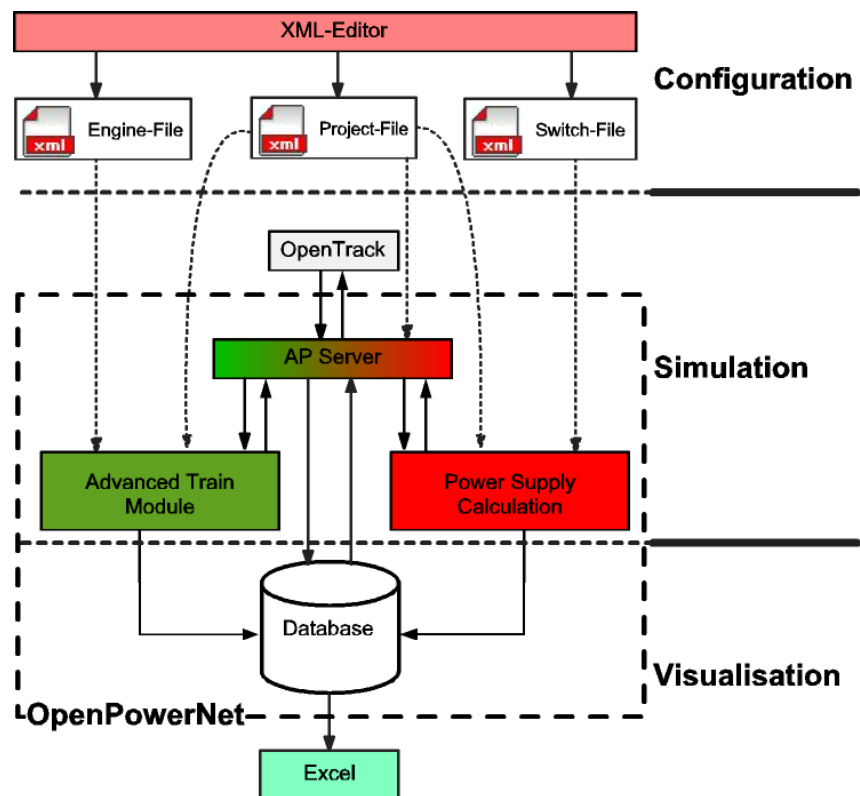
Fax: +86-10-68946373

Fax: +8613910083694(24 Hours)

Email: [sale@opentrack.com.cn](mailto:sale@opentrack.com.cn)

<http://www.starbamboo.com.cn>

# Workflow



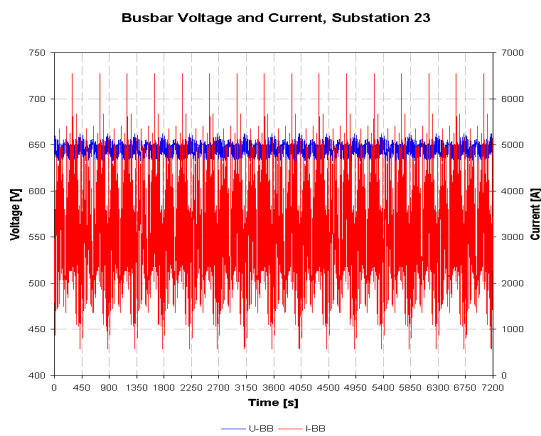
## Key Features

- Specialised network and engine simulation extends the well known railway operation simulator OpenTrack (co-simulation)
- Interdependence of driving dynamics, electrical network and engine simulation in each time step
- Tractive effort calculated by the power supply simulator affects the driving dynamics in the operation simulator
- Electrical network simulation
  - different power supply systems (e.g. DC, 1AC, 2AC)
  - built-in determination of inductive coupling of the conductors (no fixed line impedances)
  - multiple switching states, changeable during simulation
- Engine simulation
  - various performance characteristics
  - modelled by efficiencies, e.g. vs. speed and tractive effort

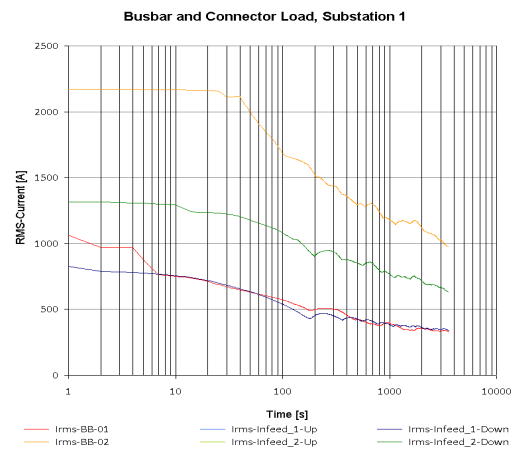
# Output

The simulation results can be visualised by preconfigured Excel sheets or customised reporting sheets. All results are stored in a relational database.

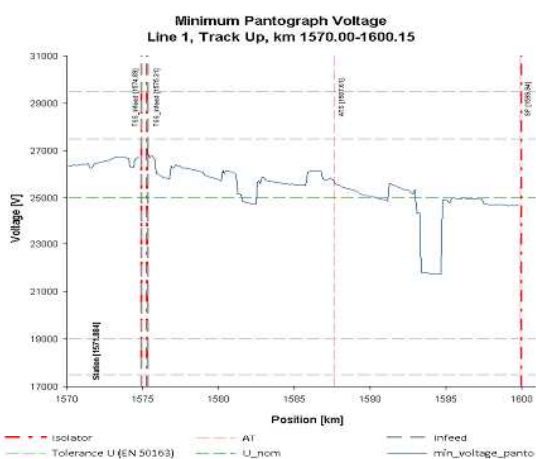
Excel charts and summary tables for common aspects in power supply analysis can also be generated automatically by a post processing tool.



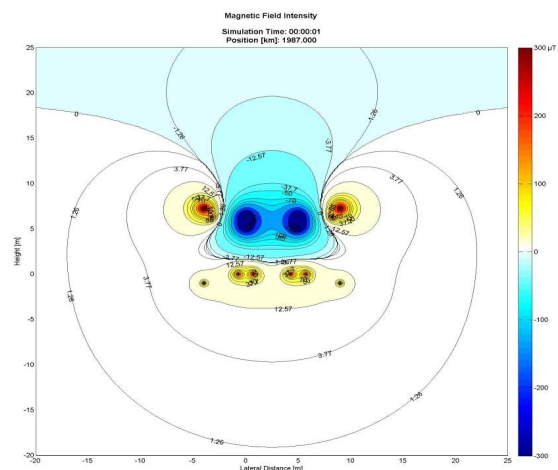
busbar voltage and current of a traction power substation versus time



time weighted current in busbars and feeders of a substation

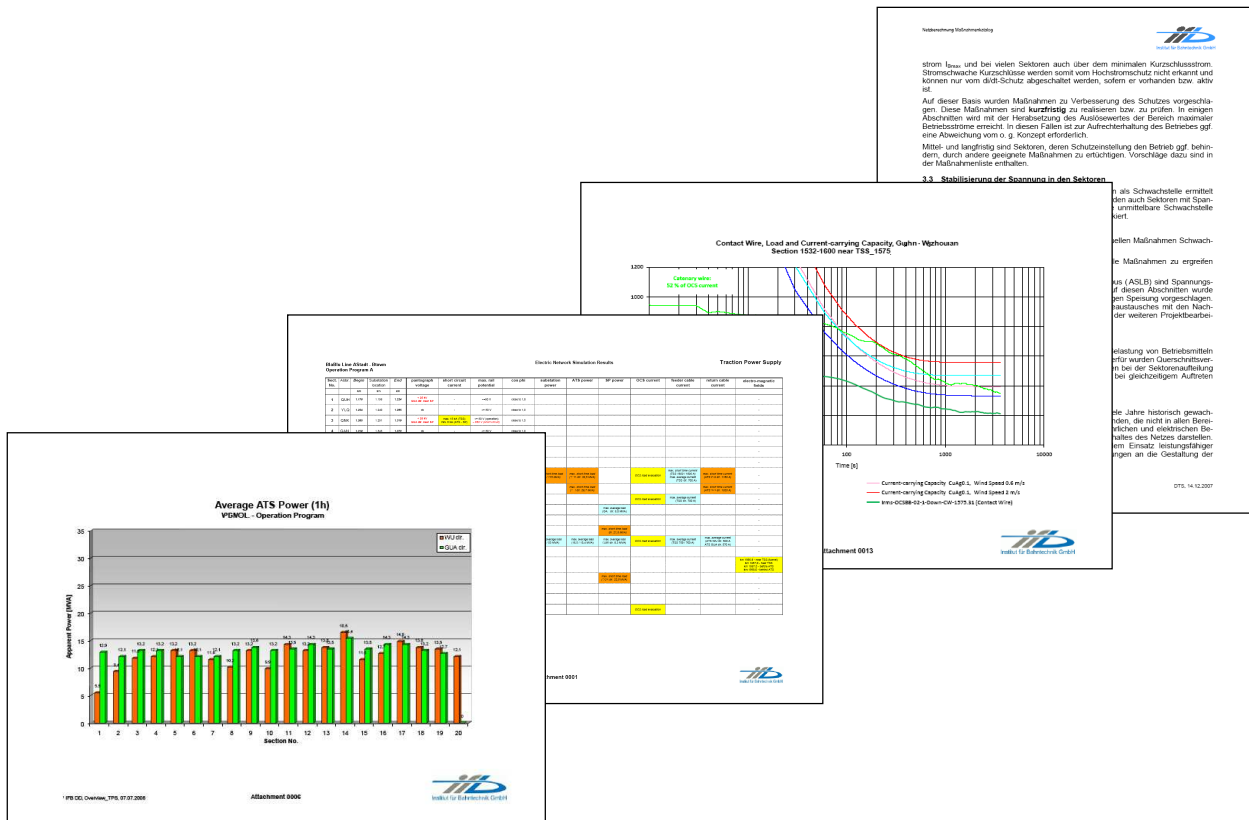


minimum voltage at pantograph of all trains versus position on a railway line



magnetic field intensity of cross-section of a railway line at particular position and time step

# Report



- Simulation service will be provided.
- Operation modelling can be included or excluded (existing OpenTrack models can be used).
- Analysis of calculation results, conclusions and recommendations will be given.
- A report collects and presents all information for the customer.