

Axis3D SP3 – Swept Path 3D

3D-Path Optimization for the Simulation of Transportation through Cavities and for Pipe-Relining



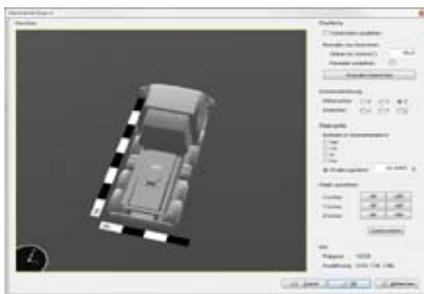
Precise simulation with complete 3D modeling.

Cost reduction: eliminates the expense of constructing models and test driving.

Economic viability: space requirements are carefully determined, considerably reducing required tolerances.

The **maximum pipe diameter** is achieved for relining projects, eliminating retroactive modifications.

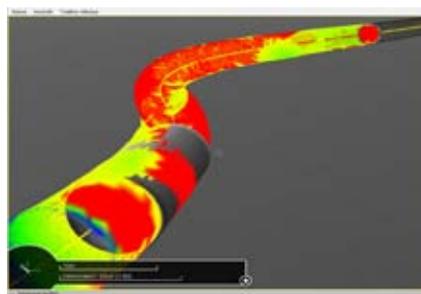
Data Processing



Triangulation of 3D point clouds, e.g. from laser scans of the cavities (lines, ducts, chutes, etc.). Scan data's original resolution is maintained.

Import and triangulation of transportation vehicle- and pipe-model: support of all standard CAD formats (IGES, STEP, STL, ASE, OBJ, etc.).

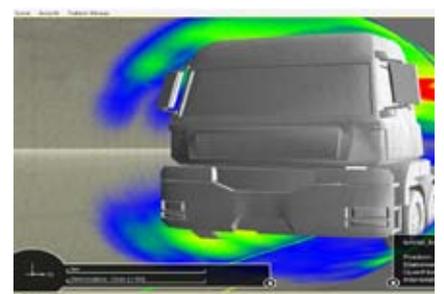
Optimization



By using sophisticated adjustment routines with variable weighting, accurate results are achieved in different situations, e.g. ground contact of transport vehicles, even distribution of clearance when relining.

Achieved by solving a system of equations with millions of constraints.

Analysis and Visualization



Distances between object (vehicle, pipe) and cavity are calculated at every position. Distances are displayed as color gradient in the 3D model and as developed surface.

Areas of surplus- and insufficient volumes are determined.

Systeminformation

- **Hardware (not included)**
- PC with at least 2 USB ports
- 21" screen (recommended)
- Three-button mouse
- 4GB Ram minimum

Software

- PC software, incl. USB or SD dongle
- Languages: German, English; French (coming soon)
- Operating systems: Windows 7, Windows 8 (32-bit and 64-bit, respectively, 64-bit recommended)

Axis3D – Swept Path 3D Functionality

General

- Easy to use, flexible user interface
- Store settings and parameters for further calculations

Processing of Scan Data

- Import of scan data as 3D point cloud
- Consolidation of scan data from any number of files
- Formats: XYZ and OBJ
- Triangulation taking into account maximum triangle side length, etc.
- Options: scaling, recalculation of the normal, selection of axis-orientation

Import of CAD Models

- Import of CAD Models (Solid Modelling)
- Formats: IGES, STEP, STL, ASE, OFF, OBJ
- Options: scaling, recalculation of the normal, selection of axis-orientation

Track Optimization

- Robust and highly optimized adjustment algorithms for systems of equations with millions of side conditions
- Original resolution of scan data is maintained
- Variable weighting allows determination of best-fit optimization results in different situations (e.g. ground contact of transport vehicles, even distribution of clearance when relining).
- Vehicle track optimization: accident-free driving through cavities, keeping a maximum distance to walls with minimum volume of additional construction work. Maintaining vehicle ground contact.
- Relining: determine ideal pipe position and -orientation at every point of the lining installation.
- Accuracy of calculated distances and volumes corresponds to the scan data resolution.

3D-Visualization

- Representation of entire 3D situation
- Easy operation with three-button mouse (pan, zoom, rotate)
- User-defined color-coding of distances between object and cavity
- The camera can be tied to the object path for convenient navigation through the entire cavity
- 2D-plans
- Export as high-resolution jpg

Geometrie Manager (Axis3D GeoMan)

- Analytical or discrete definition of the approximation path

Additional Services

- Cavity scanning
- Clean-up and processing of scan data
- Development of 3D models from scan data

Applications



Track simulation of transport through a cavity:

Transportation of bulky machines and parts through existing access galleries and machine halls.



Relining of hydraulic galleries, potable water pipes, sewer ducts:

Determination of maximum pipe diameter considering the exact pipe geometry.



Transport companies: Reliable planning of abnormal loads:

Transportation of machines, wind turbines, airplane parts, railway vehicles.

Contact Information

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