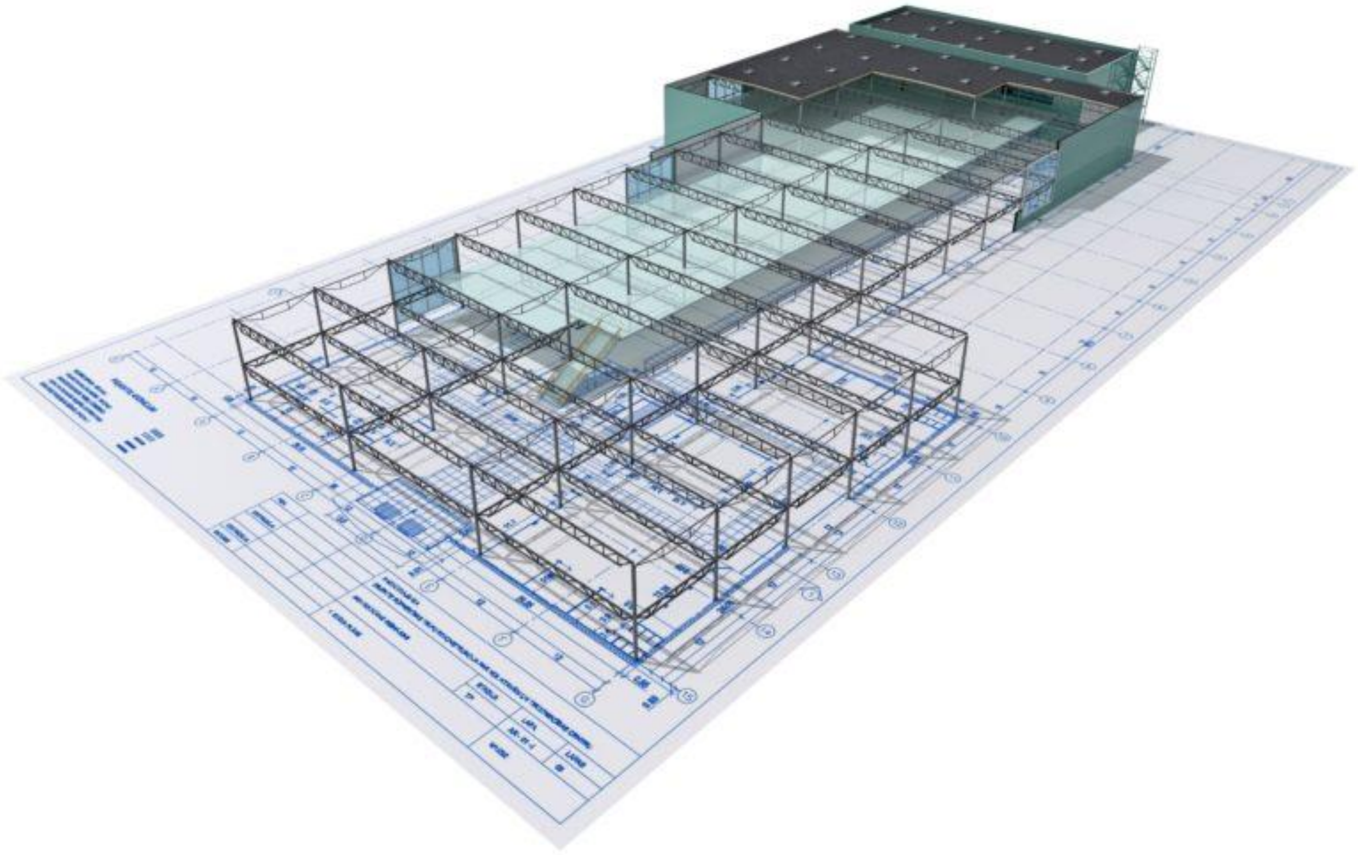
02.10.2023

LuArtX

CARF



CARF product overview

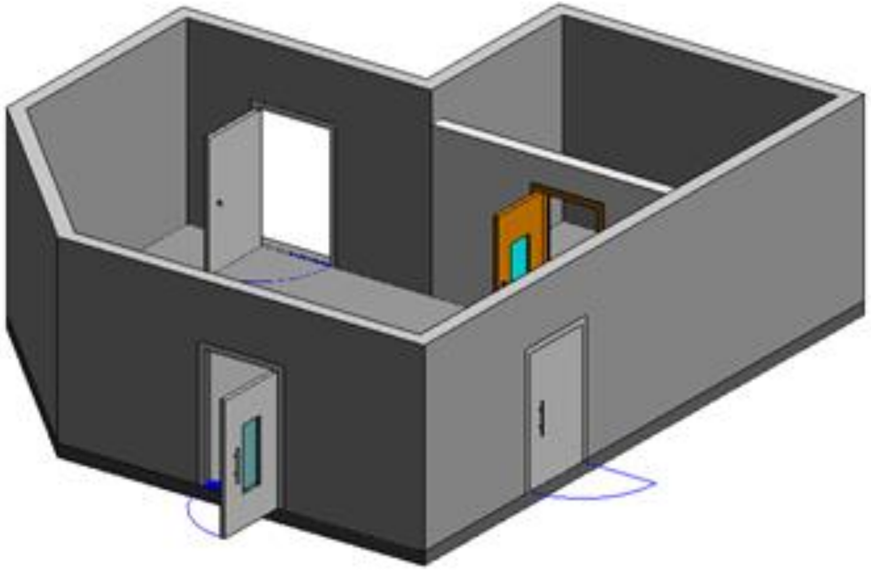
Many disciplines–
One tool for the digital factory

About Us
Leading in the automotive industry

LuArtX was founded in 2018; our team has long years of experience in software development for MicroStation. We provide the best consulting for this software, your project environment and everything that has to do with MicroStation. Here we can also rely on long years of expertise, can react rapidly and solution-oriented. Our software CARF is an application on MicroStation.

Our target is to constantly expand the success history of factory planning software, adapt to changing conditions and so be able to offer the best solution in the automotive sector. We start with a small team that works well together, operates close to the customer and reacts quickly to his needs. We are proud of having the largest German automotive companies in our customer base.

CARF
Construction Module



Buildings, from construction hall to skyscraper, can be easily and quickly planned using the **CARF Construction module.**

The CARF construction model is just right when you would quickly like to plan a hall or building yourself but have no model from the architect.

A wall in 3D can be quickly created from a 2D plan by clicking on lines, regardless from which the CAD system the data come. One line is sufficient. Should you yourself create a building or a hall, an axis grid can be easily created in the first step. A start can naturally be made with the placing of the floor panel and the walls. The floor panel can be created just from the corner points. Walls can be created as straight or free-form. The user decides himself how he wants to proceed.

Walls and columns can be simply placed in the axis grid. Penetrations can be created. A large number of parametric built-in parts such as windows, doors, stairs, roller doors etc. are available. Lifts and various Attica variants are implemented. As in other modules, a bill of quantities can be extracted at any time.

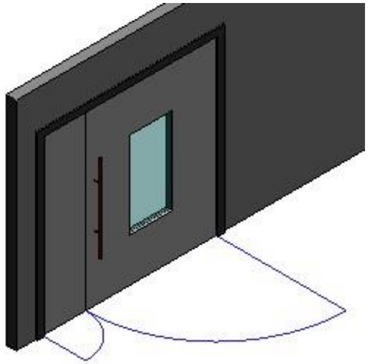
All guidelines can be digitally stored In the environment (env-environment) of the CARF construction module. This means that all participants in the project get the same results for colour, level, line thickness, but also for materials and component sizes.

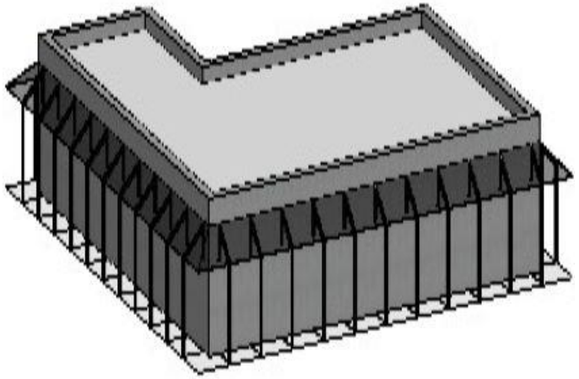
CARF
Construction Module

Overview of the CARF construction module functions:
Building planning simplified using the following toolbox functions:

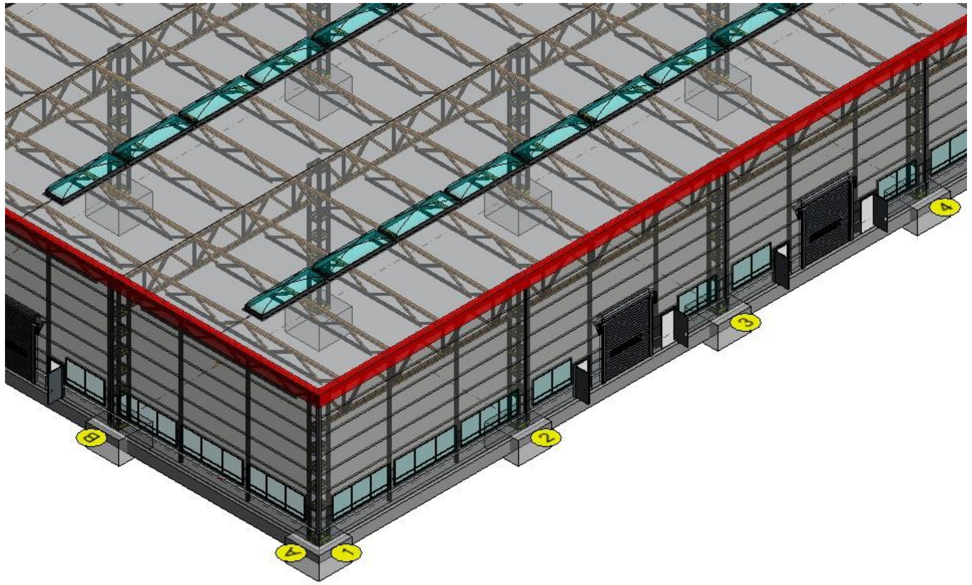
- Place walls
- Place windows, doors
- Create main beams
- Place columns
- Place stairs
- Place lifts
- Place roofs
- Place roof window, roof element
- Place canopies on outside walls
- Place Attica

All building attributes can be defined or adjusted via a dialogue window





CARF
Equipment Layout



You can plan a complete factory, incl. outdoor facilities using the **CARF Equipment Layout** with a few mouse clicks.
Office and social facility planning, logistics, assembly, body construction, works structural planning, painting.

Have you not received any building files for your project from the architects? You yourself can then create the building in 3D, incl. windows and doors, quickly and without complication with the help of the building functions. If you are equipping the offices with furniture, parametrically in 3D, you can plan down to the design of the handles and the interiors of the cupboards.

If you are a logistics planner, the parametric cells for bookshelves, trailers and tanks are available. You can plan using a wide spectrum of predefined cells; you can however also simply combine the objects yourself.

In addition to planning for the logistics area, you can also use the equipment layout facility of CARF to position the assembly areas, working platforms and worker-rider belts.

You can quickly define, without complication, individual floor, wall and overhead cranes using the functions in crane technology. This could be placed in your layout with the necessary attributes such as overhang, maximum load, working space and interference volume. You can also plan bridge cranes in detail. You can also display the associated components and their space requirements using the option for adding catwalks and power supply.

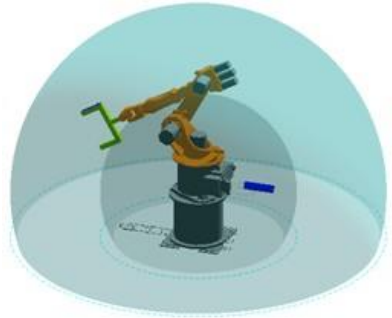
The planning of crane rails incl. trolleys, manipulators and handling devices is a popular application in assembly planning. The planning of crane rails in CARF crane technology is rounded off by the additional placing of holders and hangers, workspace and interference volumes.

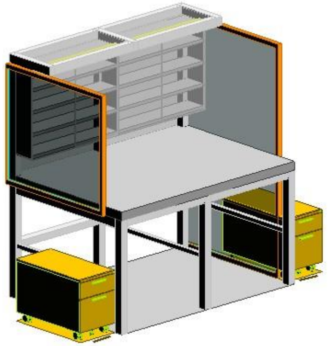
The aggregate planning of machines, incl. their interlinking, can be quickly and easily done using the machine design function. Plan your barrier systems such as fences and partition walls, but also crash barriers and bollards. Even robots in all their different designs can be placed quickly.

The planners in the automotive sector can also be pleased with the CarConfigurator which allows a choice of any vehicle type from all popular manufacturers.

In the planning, do not ignore outdoor area functions such as parking places, parking areas, foot paths, traffic signs, courses of roads and rail systems incl. train signalling symbols, which are extensively covered in this facility.

CARF
Equipment Layout

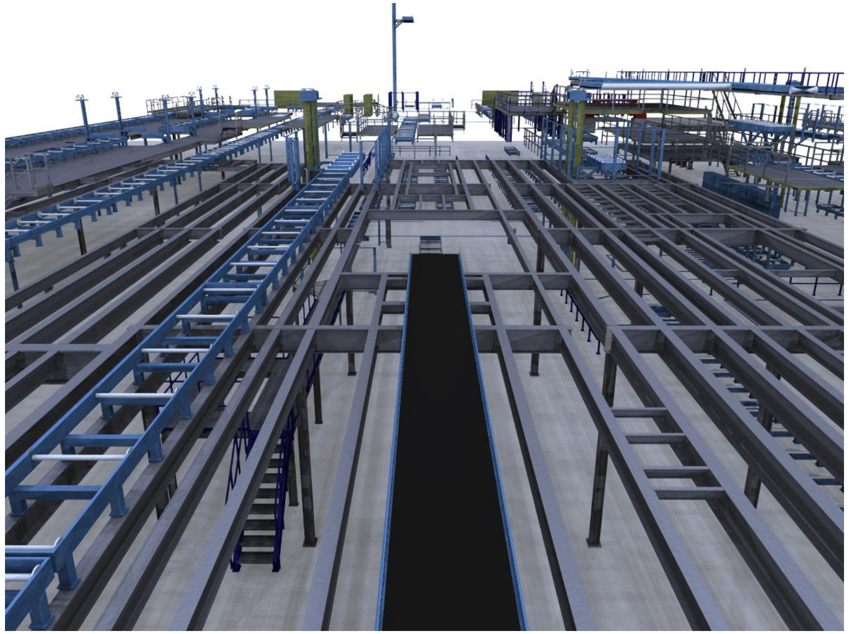




Overview of some CARF equipment layout benefits:

- Generate the complete production halls, including walls, doors, windows and Attica roofing
- Use the terrain functions and partition wall systems
- Generate work platforms, simple steel platforms and working platforms
- Outfit the building with furniture, crane systems, robots, logistic objects and machine constructions
- Define paths, border markings, area identifiers
- Benefit from automatic legend functions
- CarConfigurator
- Outdoor area functions such as parking areas, footpaths, road courses, traffic signs, rail systems etc.

CARF
Conveyor Layout



With **CARF conveyor layout** you can easily and quickly plan parametrically designed conveyor systems for several disciplines, regardless of whether for the interlinking of machines, roller conveyors for logistics or conveyor systems in the automotive area.

With the CarF conveyor layout, you can plan all normal conveyor types, regardless of whether they are floor or overhead/suspended conveyor systems. Even the interlinking of machines in a unit design is possible with the help of the vertical and horizontal indexing belts. The planning of paternosters can be done for every branch of industry using the conveyor layout.

Define your own components using masks that can be filled in easily and intuitively, regardless of whether tables or lifting/transfer platforms. A complete conveyor system can be created quickly and easily using preset basic values such as roller spacing or hanger spacing, track width and spacing of the feet.

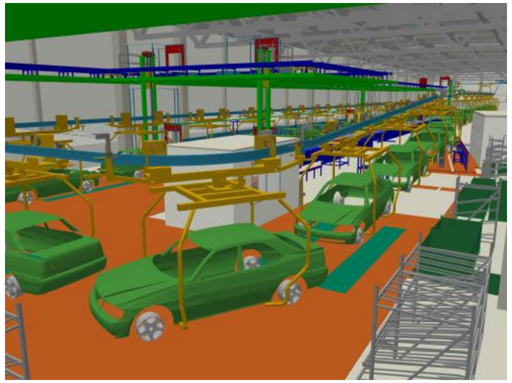
Even subsequent changes to these values can be made across the entire system with a mouse click.

Complete your system with consoles and control cabinets as well as the placing of your material to be transported – all done via integral functions in the equipment layout.

With the help of the envelope curve functions for all conveyor systems, you can consider and solve collisions with other disciplines from the very beginning and so avoid alteration costs on site.

You can simulate, and also animate, your conveyor system at any time using the GSL/AML/Collada interface, which supports the trouble-free planning of a factory.

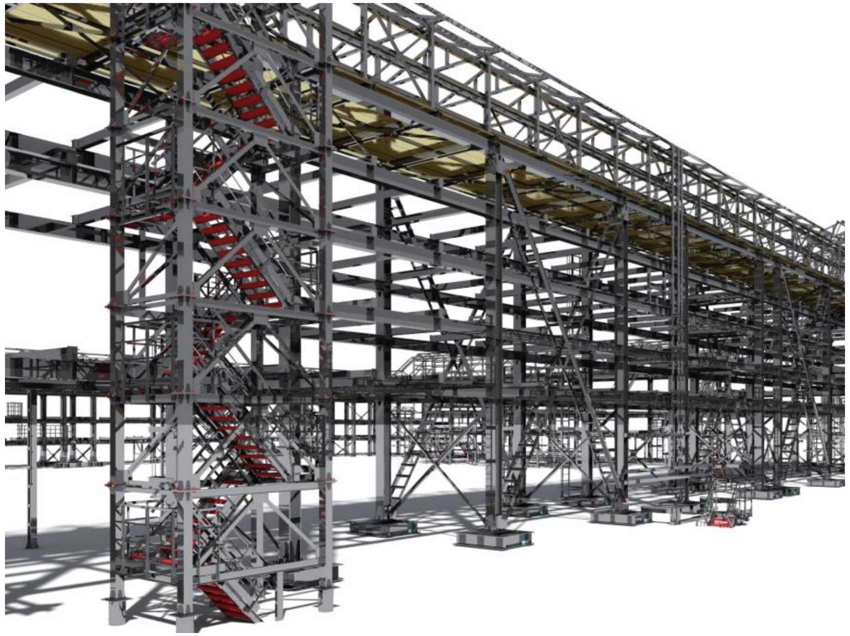
CARF
Conveyor Layout



Overview of some CarF functions in conveyor layout:

- Floor conveyor systems with all the necessary components such as tables, lifters and transfer platforms
- Suspended conveyor systems with all necessary components such as rails, bends (horizontal and vertical), lifters and rail-changeover points
- Envelope curves for lower containers, overhead/suspended conveyor systems, FTS and shuttle conveyors
- Individual placing of drives and other add-on components
- Rack feeders
- Paternosters
- Control consoles and switchboards
- Cell selector with diverse add-on parts or material to be transported
- Determining dimensions or evaluation using Excel, incl. the ability to enter prices
- Labelling or positioning of system elements

CARF
Steel Structure Layout

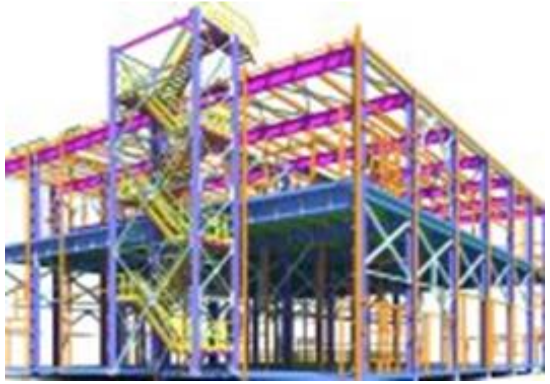


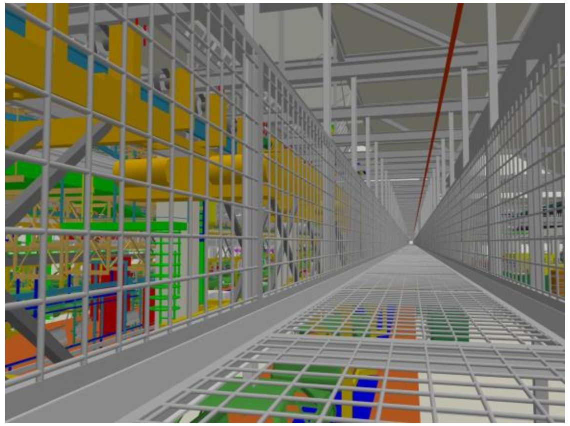
In the **CARF steel structure module**, you can generate steel structures using simple routine layouts, in both 2D and 3D models. The associated reporting and dimensioning of all components is naturally available to you. You find all common DIN profiles as well as other country-specific steel profiles stored in catalogues. Design the steel girders in any MicroStation window, either in a 2D or 3D view.

Erect flexible staging, areas and penetrations on the basis of freely definable polygons. Penetration borders can also be automatically generated as 2D polygon, with 3D steel girders. Here, you can take the intersection priority of the supports and penetrations into account – in addition to the selected reference edge such as “top centre” or “centreline of gravity”. Use the various versions of the profile ends in the form of head plates, mitres, or weld gaps for pre-setting during the subsequent design and adjustment. Cover walk-on areas either with detailed grid and sheet metal panels or simple overlay.

You can create erection staging, large conveyor stages or steel structures for the erection or dismantling of system components such as robot tarpaulins by means of the stage module.

CARF
Steel Structure Layout

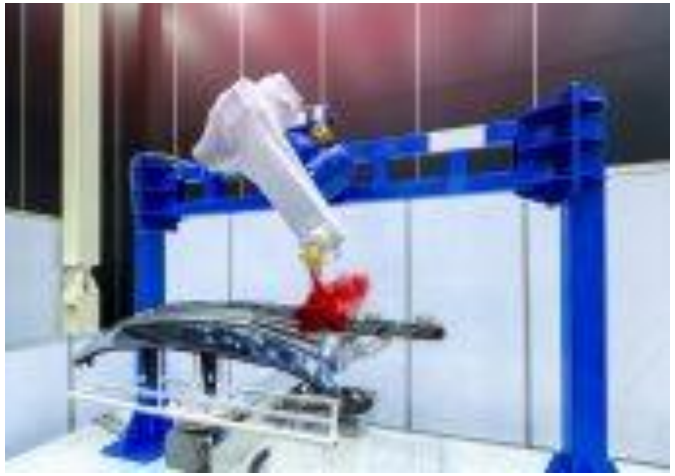




Overview of the CarF steel Struture functions:

- Semi-automatic design of railings including definition of hand rails, knee bars, side protection, foot bars and post profiles and Placing of parametric steel stairs with storage of limiting values for step size, comfort and safety
- System-side checking of these limits during the construction Implementation of the stairway steps as normal sheet metal or tear plate
- Easy generation of ladders as well as flexible change and representation of main dimensions, distance between rungs, wall fixing, back protection and flared bottom corresponding to the profile
- “Free-form” entry of any steel structures in the space with variable handling of the degree of detailing of the graphic representation
- Transfer of the layout models created via the SDNF interface to manufacturing-oriented steel structure programs such as “bocad” and the possibility of reading in adjusted profile values
- Selection of components from a database of examples with more than 100 stairs, more than 25 ladders and 10 different variants of railing

CARF
Paint and Coating Layout



Illustrate all processes in a painting system with the help of the **CARF painting module.**

Starting with the pretreatment and going up to the checking of workplaces. It does not matter whether it is tunnel, basin, dryer, cabins or open workplaces; you will find all functions concerning this discipline in the painting module.

Design all workplaces individually open with steel gantries or closed with wall systems incl. doors and windows.

Plan the tunnel enclosures with the aid of cross-section polygons and a preselection of wall thicknesses and circumferential, stiffening steel profiles with regular spacings along the line.

Painting cabins can be generated complete with all components. Define quickly and easily your wall systems with doors, windows and media connections. Add parametrically the filter cover, plenum and washing out as well as the equipment involved in the painting process.

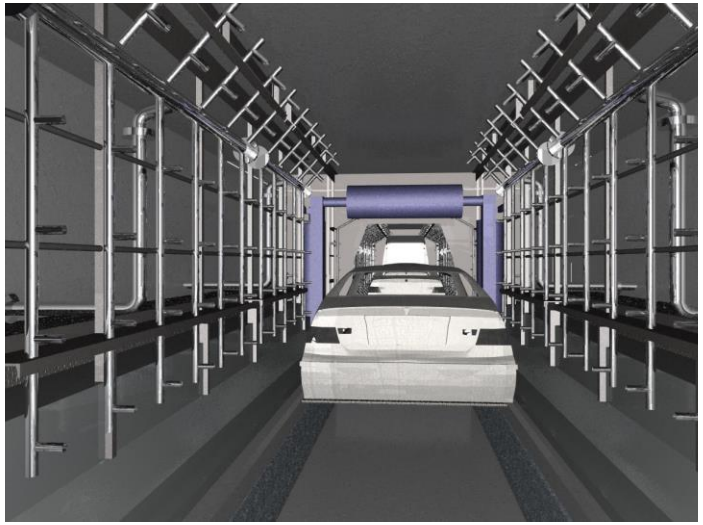
You will even find robots from all established manufacturers in our CARF painting module. These can be placed, with or without base, anywhere in the space; even the variant with axis and slide is no problem.

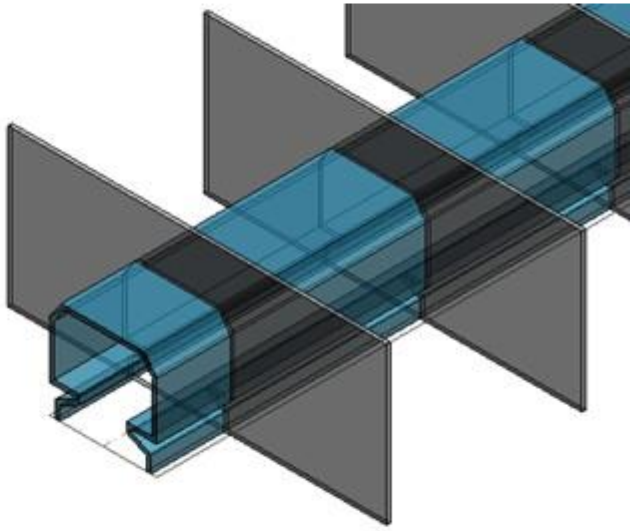
Dryers and cooling zones with nozzles and filters are also included in the painting module. You will even find basins, pumps and catchment trays for the VBH and KTL planning in the CARF painting module. An easy and intuitive tank planning rounds off the subject.

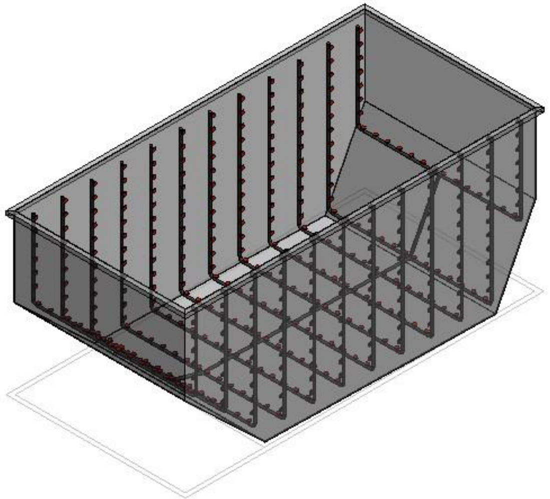
CARF
Paint and Coating Layout

Overview of the functions of the CARF painting module:

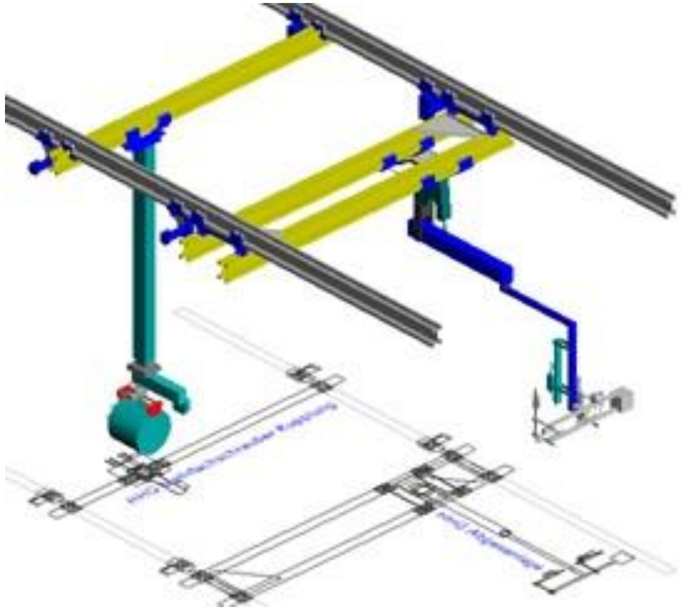
- Cabin housing
- Create cabin walls with wall systems
- Dryer and dryer tunnel incl. nozzles and filters
- Dip basin incl. media connections
- Robot
- Tanks and pumps
- Control consoles and switchboards







CARF
Crane module



Use the **CARF crane module** to place individual floor, wall and overhead cranes – quickly and without complication.

A selection of predefined crane models is available for your use. This could be placed in your layout with the necessary attributes such as overhang, maximum load, working space and interference volume.

Would you like to provide the crane with its own attributes or change these? No problem; all parameters of the crane can be represented in the crane definition mask and adjusted to your requirements. The crane is updated in the drawing.

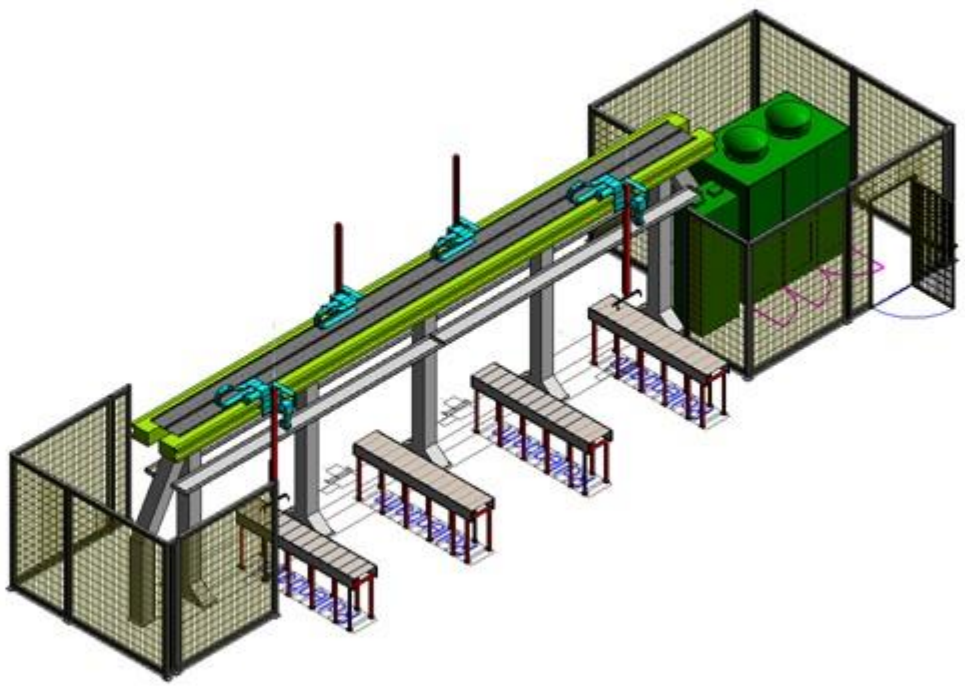
You can also plan bridge cranes in detail. Individual, associated components can be defined for each bridge to enable this space requirement also to be displayed. Plan trolleys, crane hooks, power connections, catwalks, switchboards crane driver’s cabin.

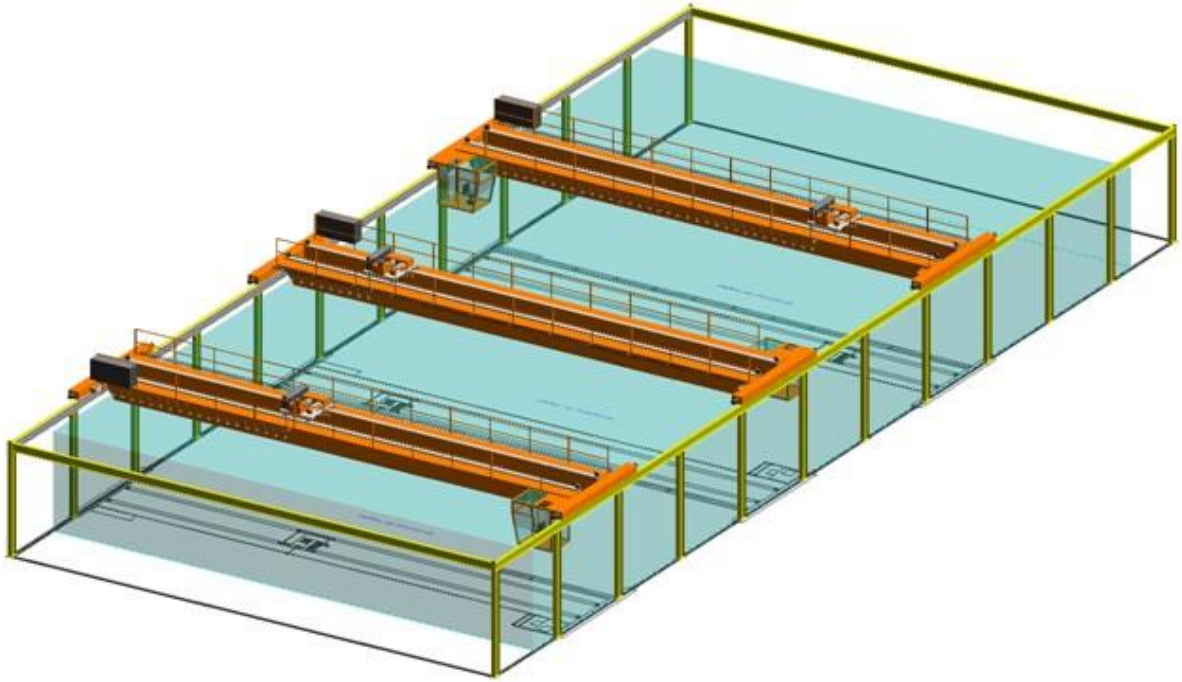
Various support and beam forms can be added.

CARF
Crane module

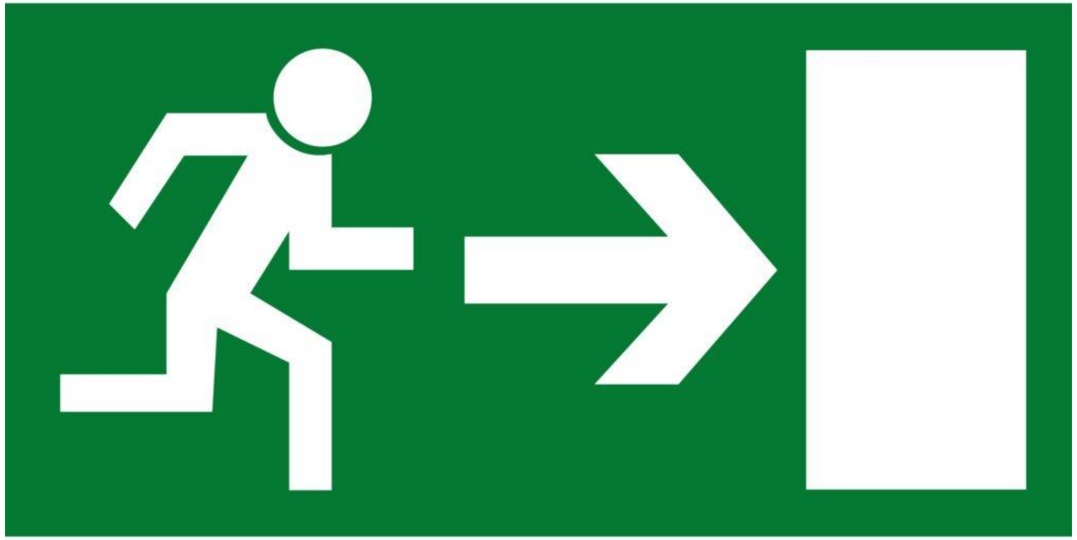
Overview of the CARF Crane module functions:

- Place the crane rails, suspensions, electrical chain hoists, manipulators etc.
- Predefined crane models (pillar jib crane, wall slewing crane, bridge crane)
- Easy adjustment of the crane attributes
- Place the loading gantries and add-on elements





CARF
Fire Protection Layout



Nothing is so important in the company as the correct and easily legible escape and emergency route diagrams and fire service action plans, regardless of whether in the production or in offices. With our **CARF Fire protection layout**, we support you in the generation of plans, easy and uncomplicated.

Benefit from the cell libraries that have already been created, with all normal pictograms from the standards DIN 7010 safety symbols, DIN 1403-6 fire brigade and DIN 14675 fire detection and fire alarm systems which are updated regularly by us.

You can scale and place them in order to design your layout so that every employee can recognise everything immediately and react in accordance with the plans in an emergency.

Furthermore, you can create an escape route plan in 3D using the CarF Fire protection layout, to show important routes, e.g. fire brigade access routes, at an early stage in the project for other planning partners from other disciplines and so avoid collisions.

with a few other parametric functions such as border marking, area identifier, arrows and legend, you can quickly and intuitively complete your escape and rescue routes, fire brigade plans and safety layouts, print these at the point provided in the office and in the hall.

CARF
Fire Protection Layout

Overview of the CARF Fire protection layouts:

Cell selectors with pictograms from DIN standards 710, 14036-6 and 14675

Instruction line for pictograms

Labelling

Edge marking

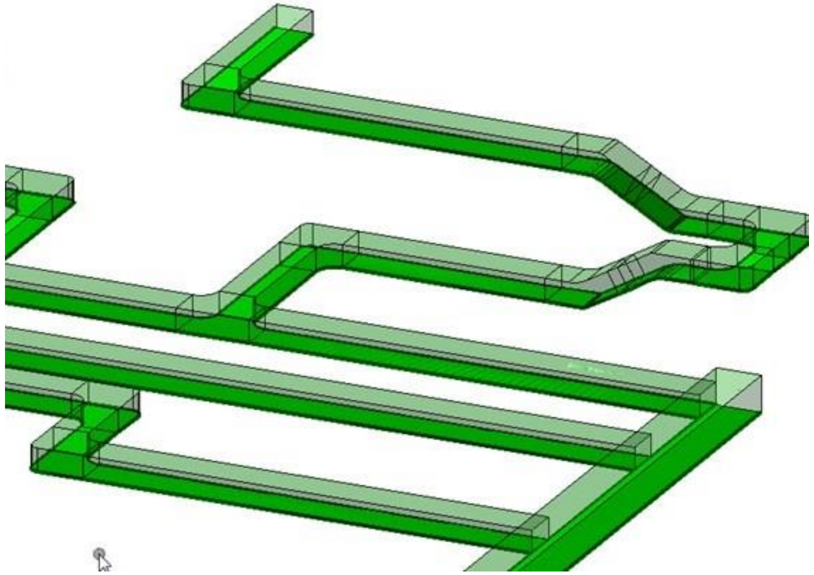
Area identification

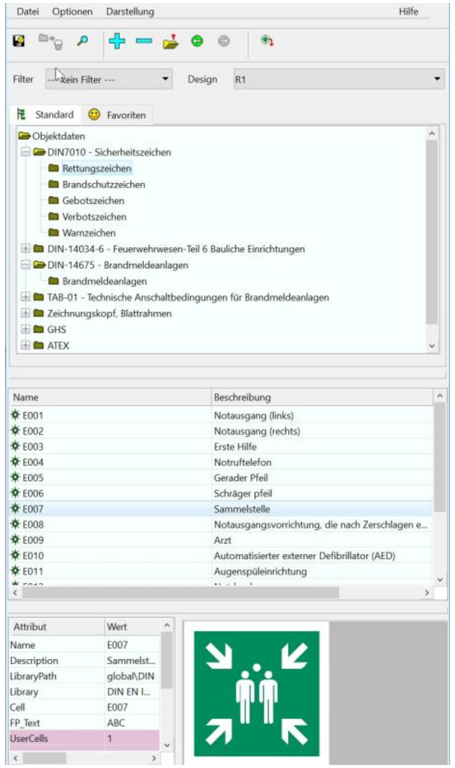
Arrows for escape and rescue routes

Legend

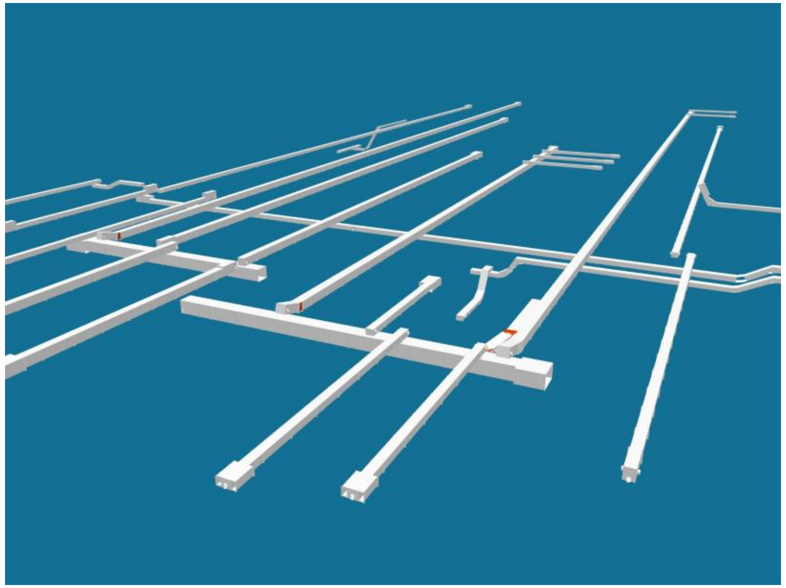
Axis grid

Randmarkierungen
Sicherheit, Sicherheitskennzeichnung
Linie, Markierungslinie
Band, Bandabdeckungen
Explosiv, Explosions Kennzeichnung
Fluchtweg, Fluchtweg Kennzeichnung
Kleber, Markierung geklebt
Farbe, Markierung gestrichen
Fußgänger, Fußgänger Überweg





CARF
Chip Conyevor Layout



Apart from the equipment and setting up of machines, we are also glad to help you in planning the disposal of product waste – using the **CARF Chip Conveyor module.**

Everyone knows the motto: “You cannot make an omelette without breaking eggs”. We have developed a module to plan in 3D exactly for the disposal of these chips.

You have the choice here between a scraper conveyor, hinges, push-rod conveyors, flushing gutters, scrap conveyor or feeding and reject hoppers.

Regardless of which disposal conveyor you would like to plan, you always have the facility to plan these with media outlets, tensioning stations and drive stations.

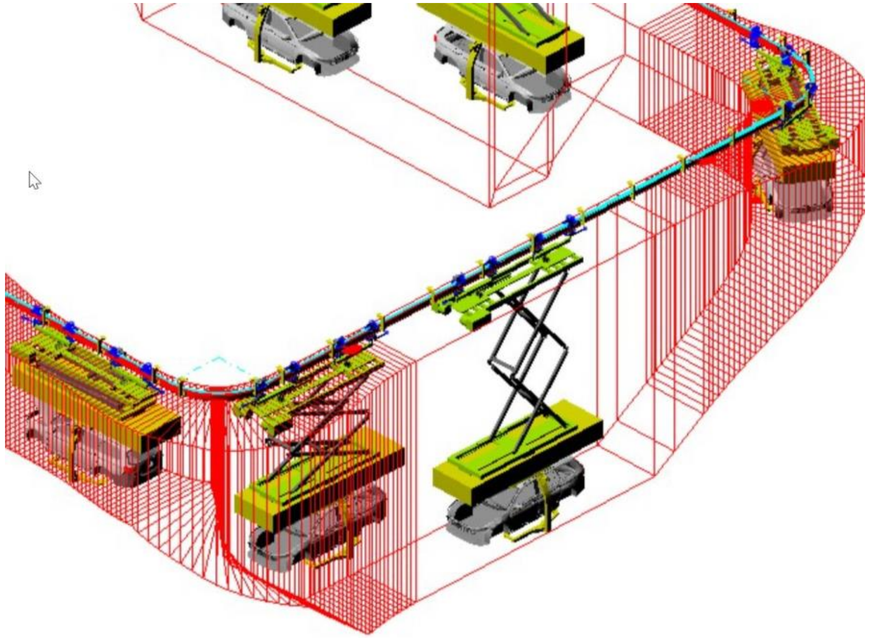
You can also assign a reference to a particular medium from your company environment so that your colleagues and planning offices can be directly connected to the medium lines at your exits from the gutters.

CARF
Chip Conyevor Layout

Overview of the CARF chip conveyor functions:

- Scrapers incl. basins, bends, media outlets, tensioning stations and drive stations
- Hinges incl. basins, bends, media outlets, tensioning stations and drive stations
- Push-rods incl. trays, media outlets and drive stations
- Flushing gutters, incl. trays, elbows, flushing connections, nozzle offsets and outlets
- Scrap conveyor incl. trays, elbows, tensioning stations, drive stations and adjustable feet
- Feed/reject hoppers with round and angular frames, incl. locking slider and
- hinges/push-rod transition
- Labelling and dimensioning

CARF
Tractrix Curve Layout



A just as important aspect of factory planning is the calculation of tractrix and envelope curves. You can have the tractrix and envelope curves calculated and generated for road and rail vehicles using the **CARF Tractrix curve module.**

Benefit from a very extensive preselection of vehicles of all types, be it cars, lorries or trailers – with and without trailers. Even buses and articulated lorries, with all their axles, can be calculated using the tractrix curve module. Gigaliners in various forms can also be calculated.

Reversing manoeuvres are also possible with the CARF Tractrix curve module.

In addition to road vehicles, you can also calculate and represent the tractrix and envelope curves for rail vehicles. The gradients are taken into account in the curves. All calculations are based on precise kinematic and graphical values so that you get an exact result for better planning.

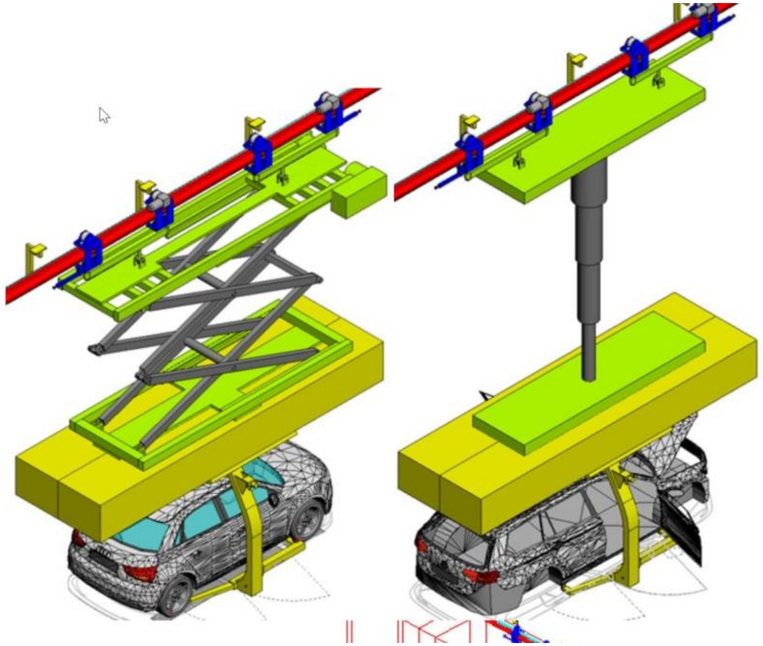
You can also have the calculation results animated to better understand the drive behaviour of the vehicle or train.

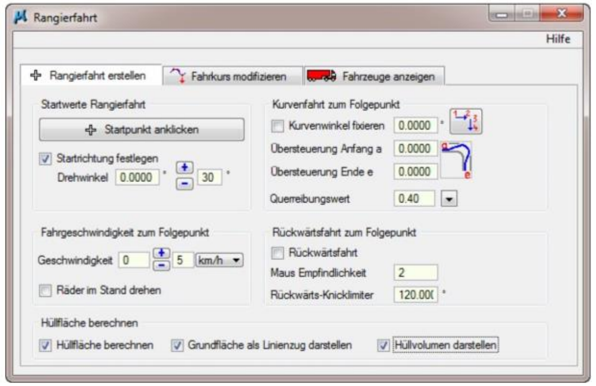
10/2/2023

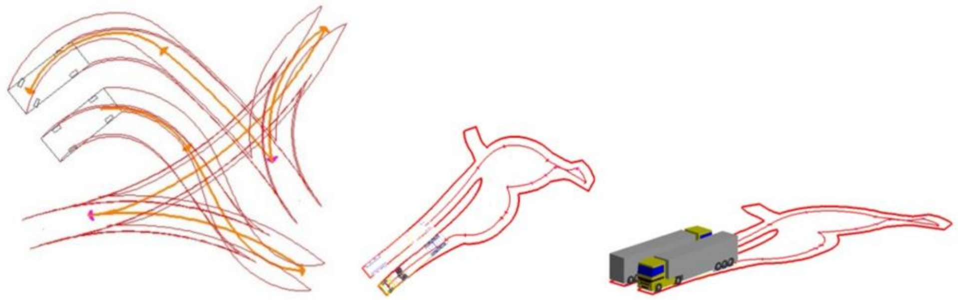
CARF
Tractrix Curve Layout

Overview of the CARF Envelope and tractrix curve module functions:

- Tractrix curve calculation for road vehicles
- Envelope volume generation for road vehicles
- Animation of road vehicles along a path
- Tractrix curve calculation for road vehicles
- Envelope volume generation for rail vehicles
- Animation of rail vehicles along a path







CARF
Infrastructure Layout

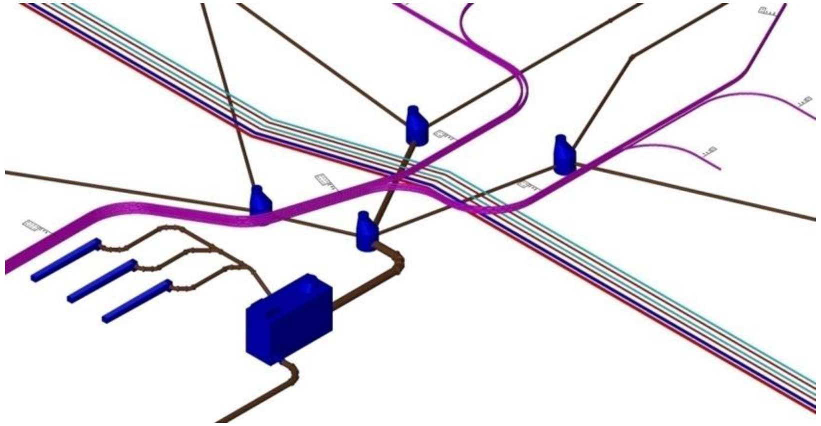
CARF Infrastructure offers you unlimited planning possibilities on the most powerful CAD platform MicroStation and, via integrated interfaces to IFC, to Solar Computer and IDAT for the calculations or together with Isogen, everything you need for a ClosedBIM or OpenBIM.

Building Information Modeling (BIM) is a constantly growing demand to provide information to all project participants from concept, construction, operation to demolition. This means that CAD software has to meet the requirements of the user and the projects and has to be further developed.
With CarF Qualitool you can verify your plans before submission, if there open pipes that are not connected, if the env (CAD guidelines) of the client complied with and much more.

CARF Infrastructure Layout

Overview of the CarF Infrastructure layout functions:

- Ventilation 3D
- Heating 3D
- Sanitary 3D
- Sprinkler 3D
- Electric 3D
- Schematic P&ID
- Calcualtion Tools
- IFC/ Isogen Interface



CARF Qualitool

Do your data meet the requirements?

You can be sure when you use the **CARF Qualitool**. With die automated quality check and the subsequent help with error rectification, your CAD data are guaranteed to meet the required standards.

How can you be sure? One or more files are checked according to rules, each file has a test report with the corresponding test stamp on the drawing. It can be seen immediately from the test stamp whether a drawing has been created with the specified standard.

A very simple and effective tool that makes for quick and clear relationships in the work between client and contractor and is a safeguard for both sides.

CARF Qualitool

Overview of the CARF Qualitool functions:
Creation of individual rules for the testing, e.g. for:

- Open strands
- Coherent service networks
- Component sizes
- Materials for certain media
- Levels, colours, line thicknesses
- Versions
- Testing in a batch run
- Intelligent components (component – attributes)

- Testing in accordance with a CAD standard (e.g. env from Daimler)
- Result evaluation is made via a test report
- Drawing file is given a test stamp
- Storage of a quality stamp for several files (batch) for the check-in a document management system

10/2/2023

CARF References

DAIMLER

BMW GROUP

MINI

Rolls-Royce Motor Cars Limited

DÜRR

DIEHL Aerospace

AIRBUS

Miele

Audi

SEAT

ŠKODA

BENTLEY

BUGATTI

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