

RF::Suite®



accredited
modular
integrative
field-tested

Order is half the battle

Preparation - Validating data



Early detection of invalidity data

During the preparation for a virtual commissioning it is important to quickly recognize faulty or incomplete data in order to be able to correct them at an early stage.

The individual products of RF::Suite were designed especially for this requirement. Using freely definable rules, a project can be automatically generated for virtual commissioning as well as for the virtual shadow, error lists can be generated, faulty data can be determined and, if necessary, the data can be corrected by simple handling.

Order is half the battle

Preparation - Validating data

The head office



RF::MAX²

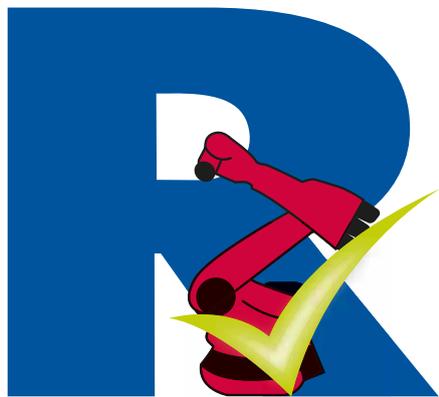
RF::MAX² is the flexible assistant tool for efficient creation and management of projects for virtual commissioning and virtual shadows.

With RF::MAX² projects for 3D visualization RF::YAMS, robot simulation RF::RobSim and peripheral simulation RF::ViPer can be generated at the push of a button.

RF::MAX² can be adapted to any PLC and robot standard with the help of import and control files.

Projects can also be set up across manufacturers.

The robot control



RF::RobCheck

RF::RobCheck checks robot programs and their robot configurations.

Point accessibility and syntax are controlled at the push of a button. Thus, even before the virtual world, a very high data quality of the robot programs is achieved for real commissioning.

The integrated 3D display shows the robot realistically. This gives visual inspections a high degree of maturity.

Order is half the battle

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The 3D Geometric Models



RF::SGEdit

RF::SGEdit is the module for editing 3D geometry models of RF::Suite.

RF::SGEdit displays the hierarchical data structure of 3D geometry models clearly. The edit function removes unneeded model parts or adds additional ones. Missing kinematizations are easily added and existing ones are easily tested.

RF::SGEdit's integrated measurement capabilities make it easy to determine the dimensions of 3D geometry models. These features make RF::SGEdit indispensable for model preparation for virtual commissioning.

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The Exporter



RF::TIAExporter

RF::TIAExporter is the export tool for the data required for virtual commissioning from the TIA portal.

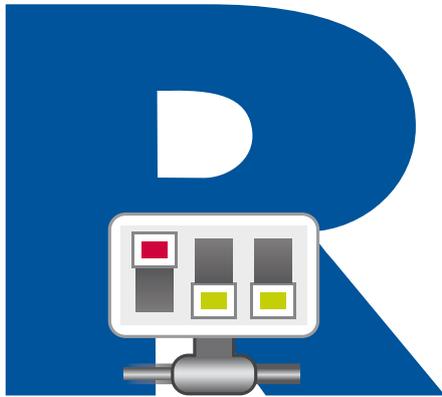
PLC signal lists, hardware configuration and further information are automatically exported from the PLC project using RF::TIAExporter. The "TIA Openess" interface provided by Siemens is used for this purpose.

The exported data is processed directly by the RF::Suite wizards. This makes RF::TIAExporter the ideal tool for preparing PLC data for virtual commissioning and virtual shadows.

Order is half the battle

Preparation - Validating data

The interface



RF::HMI

RF::HMI is the dynamic human-machine interface of RF::Suite.

Signals can be displayed or written using RF::HMI. For this purpose, an interface is available which can be flexibly adapted and clearly structured.

The ShM and WinMod interfaces, which are freely configurable, are available as signal interfaces. RF::HMI is mainly used to create and delete components, to display and test the material flow or to display or move axes.

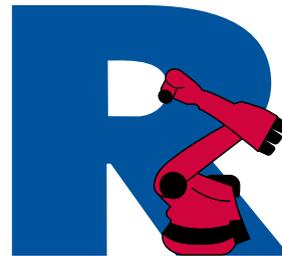
Another large area of application is the display and operation of complete robot interfaces, whereby robots can be started and run through even without PLC signals.

RF::HMI is therefore perfectly tailored for use in the RF::Suite.

However, other applications are also possible. There are no limits to the possible applications of RF::HMI.

The RF::Suite Foundation

Virtual Commissioning



More than just new possibilities

With the RF::Suite software modules, real systems can be put into virtual operation. With the virtual system through the RF Suite logo it is possible to depict a realistic behaviour of the system and to control it with real PLC and robot programs.

The virtual plant serves as a quality gate for the plant development process.

Virtual Commissioning

The 3D visualization



RF::YAMS

RF::YAMS is the dynamic 3D visualization of the RF::Suite and is used for the representation of complex 3D geometries.

RF::YAMS is the successor of the previous 3D visualization RF::S-GView and is even more flexible and performant. With RF::YAMS complete production plants can be visualized. In addition, a numerical kinematics simulation is integrated in RF::YAMS, allowing the mechanical behavior of complex production systems to be

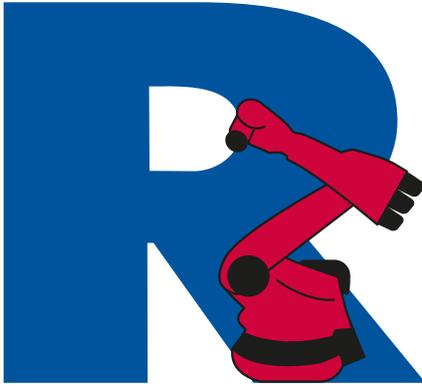
perfectly simulated. Due to the volume collision detection, even minimal collisions between the displayed volume bodies can be detected and displayed.

Using the action script integrated in RF::YAMS, sensors and even a complex material flow can be mapped without problems. RF::MAX² (the successor of RF::MAX) is used to easily implement the action script. The signal exchange with other software products takes place alternatively via Shared Memory or via WinMod interface.

Thus, RF::YAMS is perfectly integrated into the RF::Suite and is ideal for use in virtual commissioning. RF::YAMS can also be used as 3D visualization for the Virtual Shadow.

Virtual Commissioning

The robot compiler



RF::RobSim

RF::RobSim is the flexible robot compiler of RF::Suite. This allows new robot programs to be simulated and tested even before actual commissioning. Existing robot programs can also be loaded and executed.

It is possible to load kinematics models and programs of all known manufacturers of industrial robots or to create new kinematics. The most frequently used robot kinematics are already stored in

RF::RobSim. The integrated syntax check of RF::RobSim makes it easy to correct syntax errors. In addition, all movements are calculated exactly and thus the accessibility of all points called up in the program is ensured.

Through the interfaces of WinMod and ShM RF::RobSim can communicate externally with various programs. This enables the virtual robots to interact with real or virtual plant controllers (PLC) and the signal play between the systems can be optimized. RF::RobSim is the perfect tool for virtual commissioning of robot programs.

A variety of tools are available during program processing to facilitate debugging of the robot programs. The intuitive user interface of RF::RobSim allows the program to be operated by any user.

Virtual Commissioning

The peripheral simulation



RF::ViPer

RF::ViPer is the modern peripheral simulation of RF::Suite. RF::ViPer is especially used in virtual commissioning for the simulation of peripheral elements in virtual systems.

Individual program blocks can be developed and combined in libraries. Once programmed, standard elements can be used again and again. An RF::ViPer project usually consists of special programs and a multitude of library elements, which can come from different libraries. Projects can be made executable in the form of virtual devices. It is possible to use not only one, but several devices in a project.

Programming in RF::ViPer is possible in different programming languages. All programming languages known from IEC 61131 are available.

2D visualizations can be set up to operate the programs. Several standard elements are available for this purpose. However, you can also create your own visualization elements for special tasks. In addition, higher-level visualizations can be created with which complete projects can be operated.

An integrated, freely configurable ShM interface is available for exchanging I/O signals with other programs. This makes RF::ViPer perfectly integrated into the RF::Suite and serves as a central element for virtual commissioning.

Virtual Commissioning

The Profinet simulation



RF::FSBox

RF::FSBox (Fast Simulation Box) is THE solution for Profinet simulation of the RF Suite logo in white.

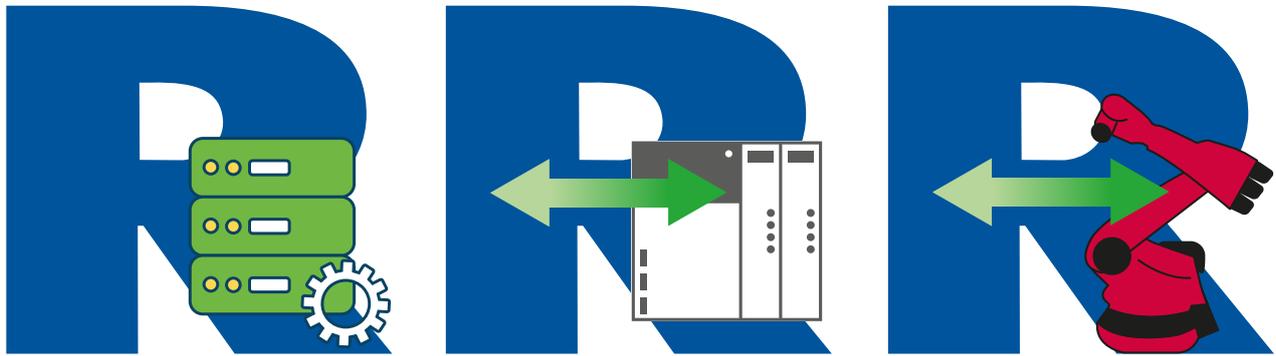
With the RF::FSBox, Profinet participants can be simulated easily. The participants are realistically simulated so that the connected controller cannot detect any difference between the simulated or real participants.

The RF::FSBox is thus the perfect simulation box for use in virtual commissioning. The configuration of the RF::FSBox can be easily determined from the hardware configuration of the PLC. This keeps the effort for the simulation of the Profinet participants very low.

In addition, several simulation projects can be loaded simultaneously on one RF::FSBox. This enables the virtual commissioning of several PLC controls with only one RF::FSBox in parallel.

The hard-working helpers

The Connect-Tools



Easy to connect

The RF::Suite Connect tools close the gap between the virtual and the real system.

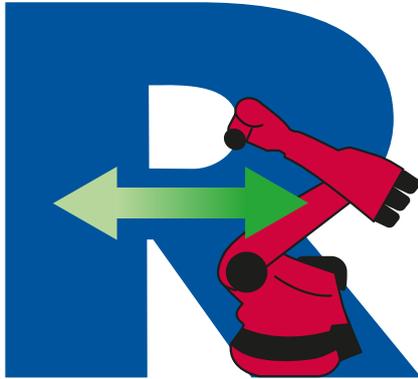
This results in new benefits for the virtual system.

The Connect tools allow a connection to the system at any time. The current system status is transferred to the virtual twin or digital shadow.

The hard-working helpers

The Connect-Tools

RF::ABBConnect | RF::FANUCConnect | RF::KUKAConnect



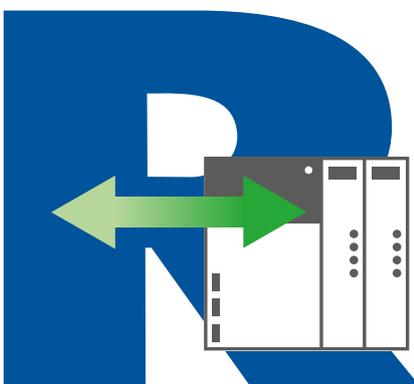
RF::RobotConnect

RF::RobotConnect is the connection to virtual or real robot controllers of the RF::Suite. RF::RobotConnect makes it easy to connect to real or virtual robot controllers.

This enables the integration of virtual robot controllers into the virtual commissioning. RF::RobotConnect can also be used to read signals from real robot controllers. This function is used for use in the virtual shadow.

RF::RobotConnect provides an interface to ABB, FANUC and KUKA robot controllers. The interface to the virtual system is ensured via a memory image (ShM or WinMod interface). This enables easy communication with the various robot controllers.

RF::AllenBradleyConnect | RF::FSConnect | RF::SiemensRead | RF::SimUnitConnect | RF::PLCSimConnect



RF::PLCConnect

RF::PLCConnect is the connection to virtual or real PLC controllers of RF::Suite.

RF::PLCConnect makes it easy to connect to real or virtual PLCs. This enables the integration of real or virtual PLC controls into the virtual commissioning.

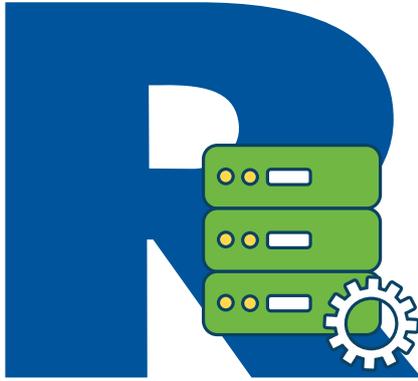
RF::PLCConnect can also be used to read signals from real PLC controllers. This function is used for use in the virtual shadow.

RF::PLCConnect provides an interface to Allen-Bradley controllers, Phoenix controllers, Siemens hardware controllers, Siemens software controllers.

The hard-working helpers

The Connect-Tools

The Pairing



RF::DS

RF::DS is the coupling tool for ShM memory images of RF::Suite.

With RF::DS, memory images can be easily coupled between different systems.

For this purpose, an RF::DSServer is started on one of the systems, which manages the memory images. On other systems, the memory images can then be easily accessed via RF::DSClient.

This means that all applications can be easily distributed to several computers connected by a network during virtual commissioning.

record - play - analyse

The Analysis-Tools



Rapid analysis

The strengths of the RF::Recorder and the RF::Analyser lie particularly in the case of rare errors or in the documentation of virtual commissioning.

The data provided by the Connect tools can be automatically recorded and saved via the RF::Recorder. Based on the recorded data, error analyses, comparison measurements or optimizations can be carried out. Here the RF::Analyser is the optimal support to display signal states of all recorded information, no matter if from PLC or robot.

record - play - analyse

The Analysis-Tools

The analysis tool for signal progressions



RF::Analyser

RF::Analyser is the RF::Suite signal analysis tool.

RF::Analyser can display and analyze signals from any memory image. Signals from the WinMod interface or ShM memory images can be displayed.

The analysis can take place online or as a downstream process. RF::Analyser is a very helpful tool for virtual commissioning.

The recording tool for signal progressions



RF::Recorder

RF::Recorder is the recording tool for the RF::Suite.

RF::Recorder allows any number of interprocess communications (IPCs) to be recorded and replayed at a later time.

This allows a simple analysis of the signal characteristics. The RF::Recorder is a useful tool for optimizing plant processes.

In addition, recorder files can be used as documentation of intermediate or final states during virtual commissioning.



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