FUTURE-DRIVEN SIMULATION

CONTINUOUS DIGITAL ENGINEERING WITH ISG-VIRTUOS

ISG virtuos

MINIMIZE RISKS, OPTIMIZE PROCESSES

Secure requirements

ISG-virtuos enables you to secure customer requirements early, extensively test various design scenarios, and perform comprehensive behavioral tests on software and hardware controllers. Due to the continuous parallel validation based on the digital twin, you can shorten your commissioning time enormously.

Stay productive

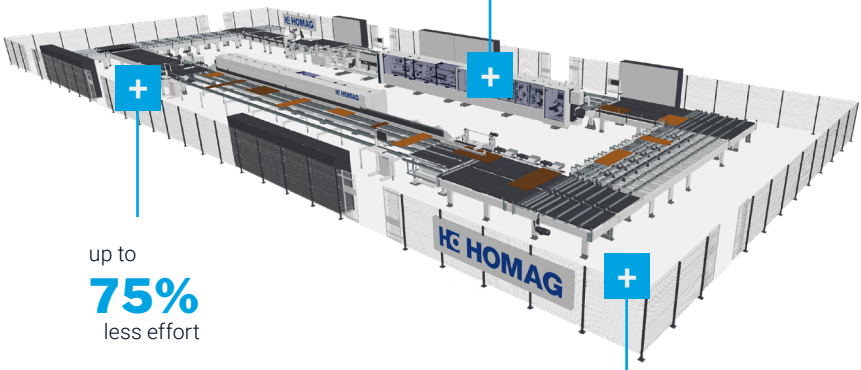
With ISG-virtuos, programming work is shifted from the production hall to the office. In addition, you always remain productive even in the event of hardware delivery bottlenecks as well as staff shortages. Moreover, you can optimize and test your machine or systems parallel to ongoing operation.

VIRTUAL COMMISSIONING IN USE

ONE-TIME EXPENSE, LONG-TERM BENEFIT

Virtual commissioning is playing an increasingly crucial role in the industry due to increasing and more complex requirements as well as shorter timeframes. At HOMAG GmbH, for example, complex plant units including material flow are commissioned virtually and in some cases even technically accepted by the customer on the basis of the digital twin.

up to **75%**
less working time on site



up to
75%
less effort

up to **66%**
shorter commissioning times

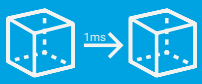
Source of percentage data: VDMA Leitfaden: Virtuelle Inbetriebnahme, 2020 and and customer references.

DIGITAL ENGINEERING WITH ISG-VIRTUOS

The end-to-end and all-in-one solution

Our simulation software offers an industry-independent, all-in-one solution across the entire engineering process: From planning and sales to development and operation. Virtual commissioning happens at the highest possible level of validation as we are able to simulate in deterministic real-time (1 ms).

- Virtual commissioning
- Entry into digitalization
- Feasibility and cycle time analysis
- Testing and error analysis on the digital twin
- Remote commissioning support



Real-time (1ms)
incl. MFphys

Continuous
Digital Twin

Automatic
Model Generation

Reality-like
Behavior
Description

C++

SDK Interface
(Real-time Capable)

TwinStore®
(Online Store for
4D-Models)

+

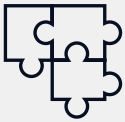
1:1

Detailed
3D Visualization

C#

Online Scripting

Training of the
Operating Staff



Integration
Capability

ONE DIGITAL TWIN FOR ALL AREAS OF APPLICATION

01

Searching for solutions

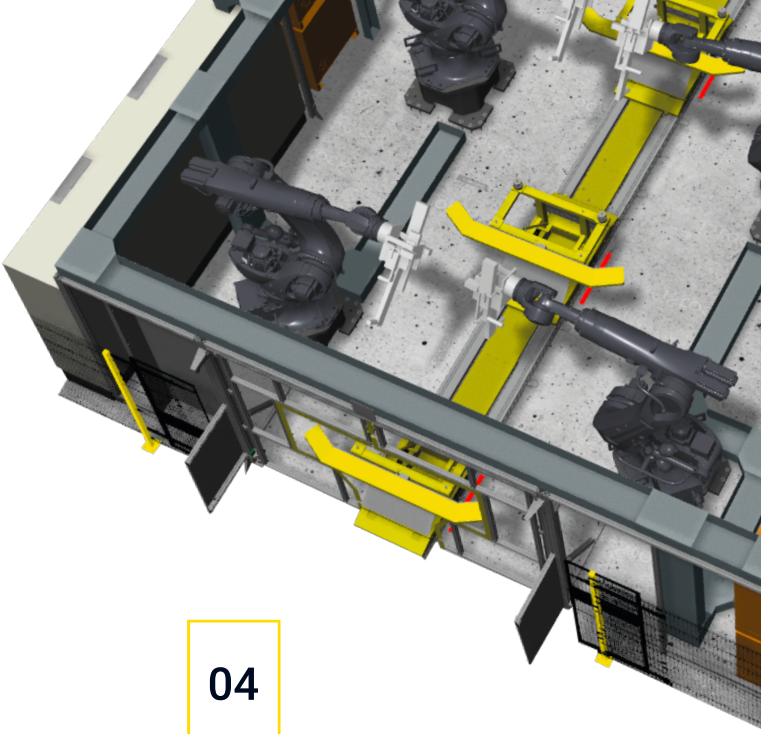
Are you planning the commissioning of a machine or plant with a heterogeneous control landscape and would like to test processes and arrangements virtually in advance?
Are you already operating an authentic machine/plant and would like to test guaranteed functions or processes and perform retrofits?

02

In a few clicks to the model

Thanks to model catalogs that are already available in ISG-virtuos and the ready-made 4D simulation models provided by various manufacturers in our TwinStore®, your digital twin is created within a very short time.

Scan the code for more detailed information about the TwinStore



03

MIL – The first model is created

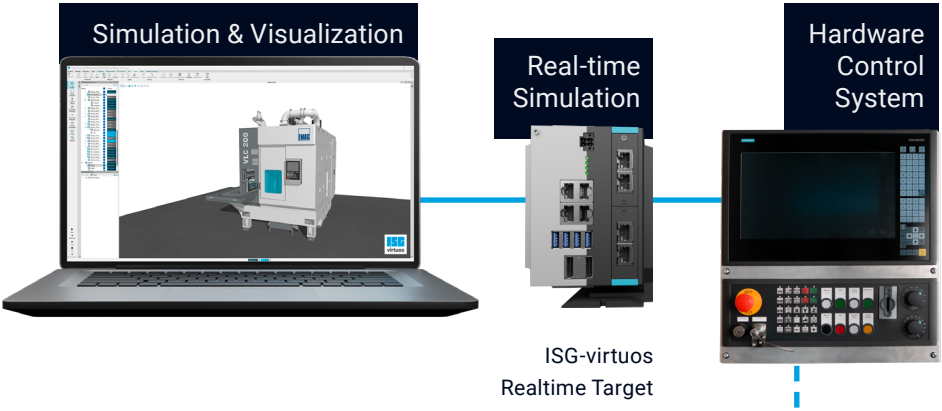
In the **M**odel-**I**n-the-**L**oop simulation, the digital twin already has the necessary control logic to check the configuration, functionality, and composition of the plant or machine and to display motion sequences. The simulation model is used for feasibility studies, sales, and teaching robots.

04

SIL – The programming begins

For early testing the digital twin can be connected to software control systems (**S**oftware-**I**n-the-**L**oop simulation). The following software control systems are compatible with ISG-virtuos:

_ Beckhoff TwinCAT
_ KUKA.OfficeLite
_ ABB RobotStudio
_ Universal Robot
_ Siemens PLCSim Adv.
_ Fanuc RoboGuide
_ Siemens Sinumerik ONE
_ and many more



05

HIL – Connecting the real world

Real controllers can be connected to ISG-virtuos as Hardware-In-the-Loop simulations via the real-time target (RTT). Thanks to our real-time capability of 1 ms, the created digital twin can no longer be distinguished from other fieldbus participants or from the PLC as a simulation model when integrated into the fieldbus.

Source: EMAG GmbH & Co. KG, 2023.

Real-time capability with the ISG-virtuos Realtime Target

Our multicore technology enables deterministic real-time simulation of even complex models with cycle times down to 1 ms. The RTT can be connected to various controllers, field buses, and many other connections:

Fieldbus connections

_ EtherCAT
_ PROFINET
_ PROFIBUS
_ POWERLINK
_ CANopen
_ and many more

Hardware control systems

_ Siemens S7-300
_ Siemens Simatic
_ B&R
_ Beckhoff
_ KUHNKE
_ Trio
_ KUKA (Acontis)
_ Eckelmann
_ TW_Control (SBV, Acontis)
_ Siemens S7-15xx
_ Siemens Sinumerik
_ Baumüller
_ NUM
_ HOMAG (Acontis)
_ KEB
_ YASKAWA
_ Schneider Electric
_ and many more

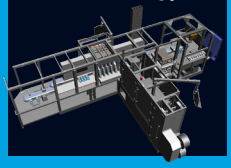
Other connections

_ Ethernet (TCP/IP, UDP)
_ Ethernet RT (TCP/IP, UDP)
_ Shared Memory (SHM)
_ *.dll / *.sys
_ OPC UA
_ FMI/FMU
_ MQTT
_ and many more

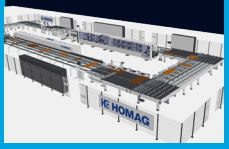
APPLICATION INDEPENDENT OF INDUSTRY

In ISG-virtuos, various types of material flow can be mapped in the simulation. In addition to the tool handling of a system and the removal of materials (milling or drilling), assembly and cutting processes (e.g., the attachment of screws) can also be simulated.

Packaging technology

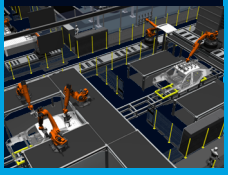


Wood processing industry



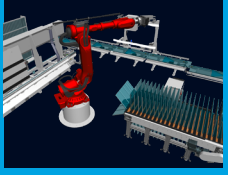
Machine tools

Automotive



(Intra-) Logistics

Handling



and many more customizable solutions

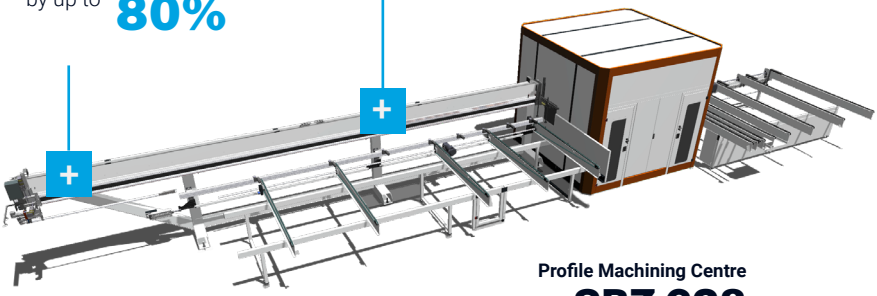
elumatec

Technology partner of ISG for more than 10 years

Elumatec AG is one of the world's leading manufacturers and suppliers of machines for processing steel, aluminum as well as plastic profiles in the premium segment.

Shortening of commissioning by up to **80%**

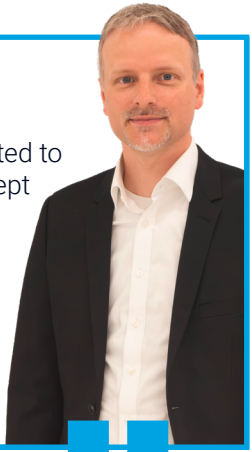
Reduction of downtimes from assembly to delivery by up to **5 DAYS**



Profile Machining Centre
SBZ 628

"Thanks to ISG-virtuos, we can completely commission machines with their real-time behavior with the simulation model connected to the real controller. This enables us to intercept any collisions already within the virtual commissioning and thus avoid damages and long commissioning times at the machine, which leads to enormous cost savings."

Felix Schlachter, Head of Software Development

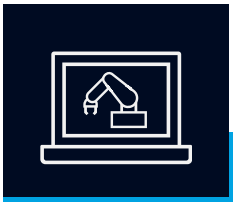


CONTINUOUSLY BY YOUR SIDE

YOUR ROADMAP TO DIGITAL ENGINEERING WITH ISG-VIRTUOS

Product presentation

During the product presentation, you will receive all the information about us and ISG -virtuos. At the same time, we develop a roadmap for the next steps.



Pilot phase

In our workshop, we offer you an introduction to virtual commissioning with ISG-virtuos. In addition, you will implement a first project with us based on a specific reference project. This forms the basis for the successful independent implementation of further projects.

Milestone
Project analysis completed

Milestone
First project implemented

Productive phase

You are now ready to implement simulation projects independently in ISG-virtuos.

If desired, our simulation experts at ISG Solutions will gladly continue supporting you. In addition to workshops as well as consulting sessions, they will take over the control connection or the implementation of your simulation projects. This allows you to quickly get started with digital engineering.

Milestone
Ready for the implementation of further simulation projects

VIRTUAL COMMISSIONING IN TERMS OF DIGITAL ENGINEERING

With your end-to-end digital twin, you can secure customer requirements early, program in advance as part of virtual commissioning, and thus increase quality and minimize risks.

GET STARTED WITH ISG-VIRTUOS

Do you want to implement your projects with us and learn how you can achieve a lasting competitive advantage with us as your technology partner? Then arrange a free consultation now via

+49 711 22992 30

info@isg-stuttgart.de

www.isg-stuttgart.de/en

ISG-virtuos - Extensively field-proven with virtual commissioning

and many more

ISG – YOUR TECHNOLOGY PARTNER

For the implementation of your requirements in the area of digital engineering and motion control, ISG-virtuos and our other products as well as our simulation and control experts are at your disposal:

ISG solutions

Your service partner in matters of simulation, digital engineering and VC

ISG dirigent

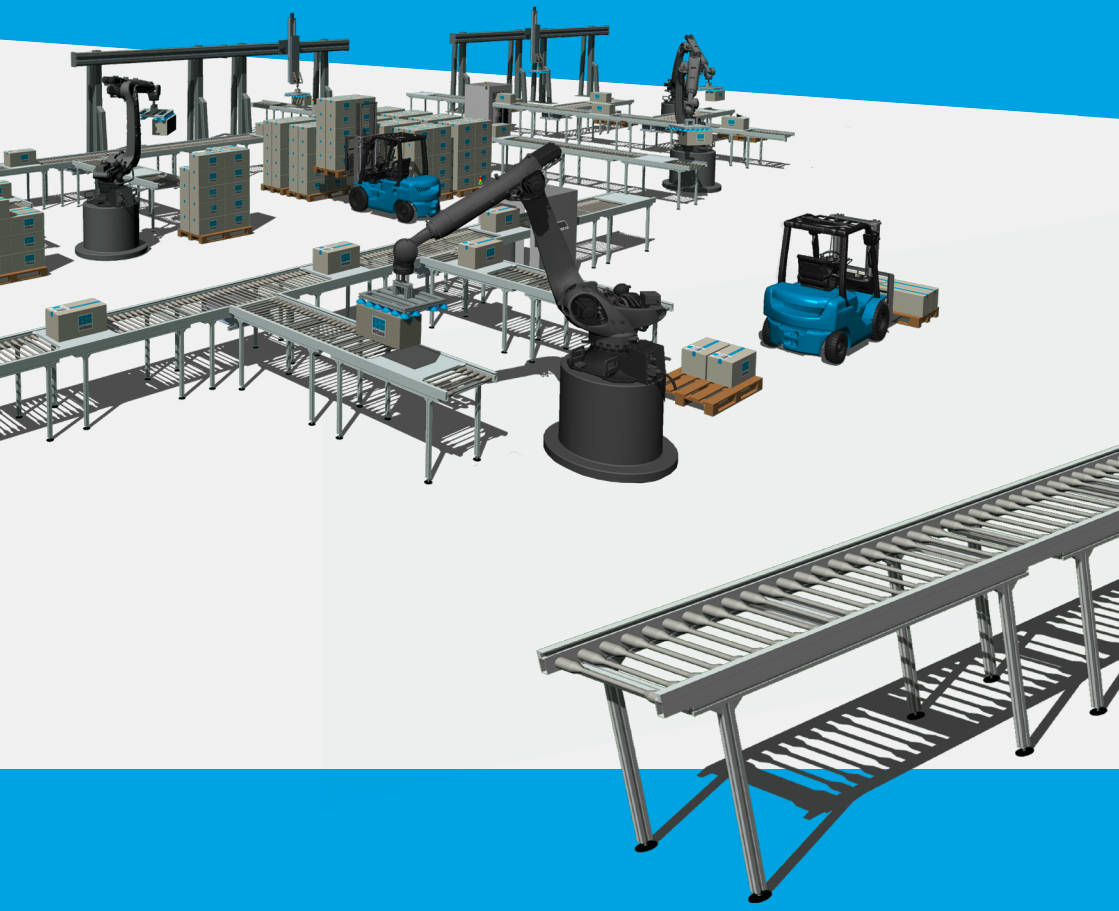
The test automation software for control systems and simulation models

ISG kernel

The control software for CNC, Motion Control and robotics

TwinStore

The online store for 4D-simulation models



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