

ENGEL

ENGEL sim link[®]

Connecting two worlds:

Simulation and production

About ENGEL

Our world is injection moulding

We are one of the leading injection moulding machine manufacturers and offer complete solutions for any kind of plastics applications, innovative technologies, robotics and customised system solutions from a single source. We are world market leader in creating customer value.



ENGEL Group

Facts and figures



Founded 1945 in Austria by Ludwig Engel



1,6 billion Euro turnover worldwide (FY 23/24)



100% family-owned in the 4th generation



over 500 Mio. Euro Investment volume (FY 18-22)



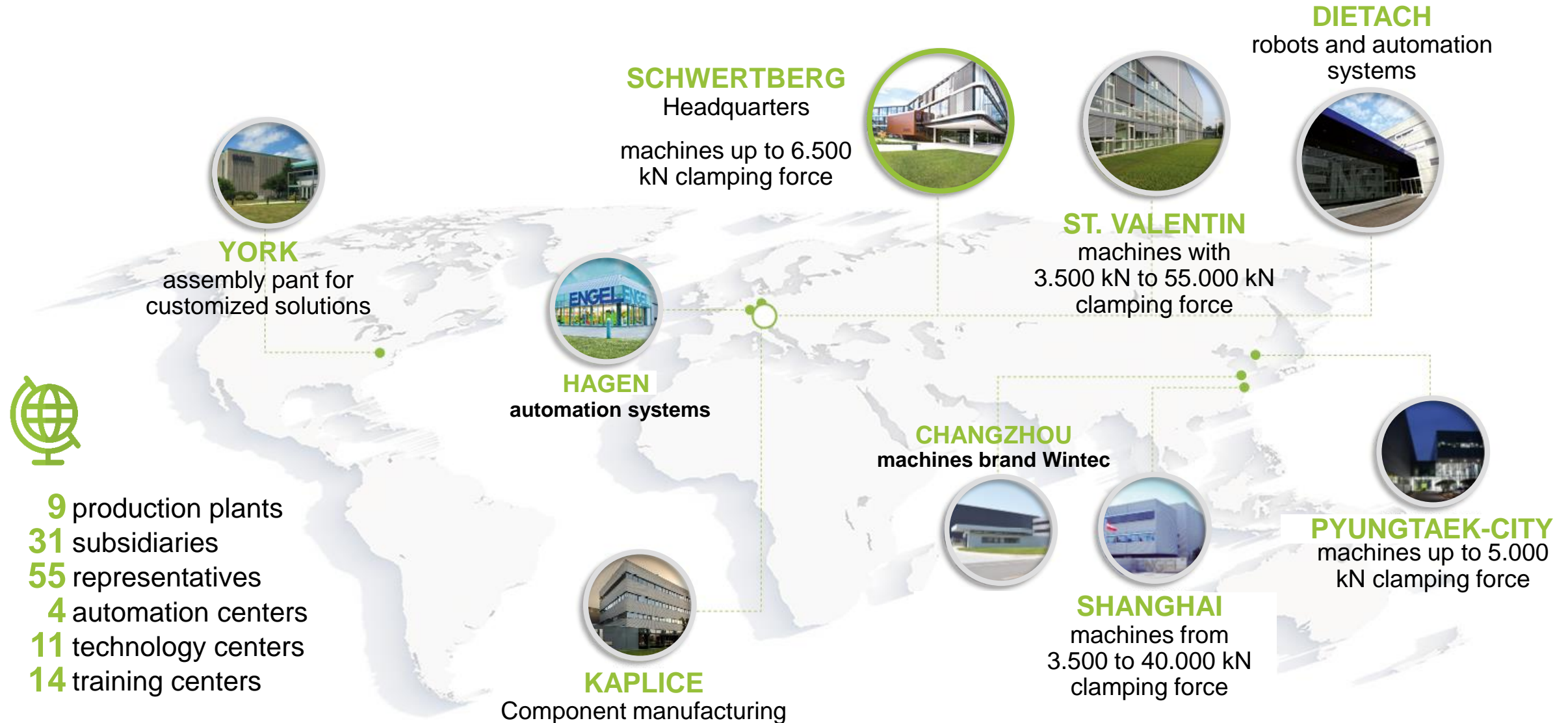
7.400 employees worldwide (FY 22/23)



70 Mio. Euro R&D investment per year

ENGEL Group

The worldwide production presence



Market expertise

Specialized experts for all business sectors



AUTOMOTIVE

Customised and trend-setting solutions for all areas of the mobility industry



PACKAGING

Sophisticated solutions for efficient production of packaging articles in any shape, colour or size.



MEDICAL

Hygienic solutions with zero error strategy in the medical environment



TECHNICAL MOULDING

Flexible solutions for daily use products to get quickly ready for the global market



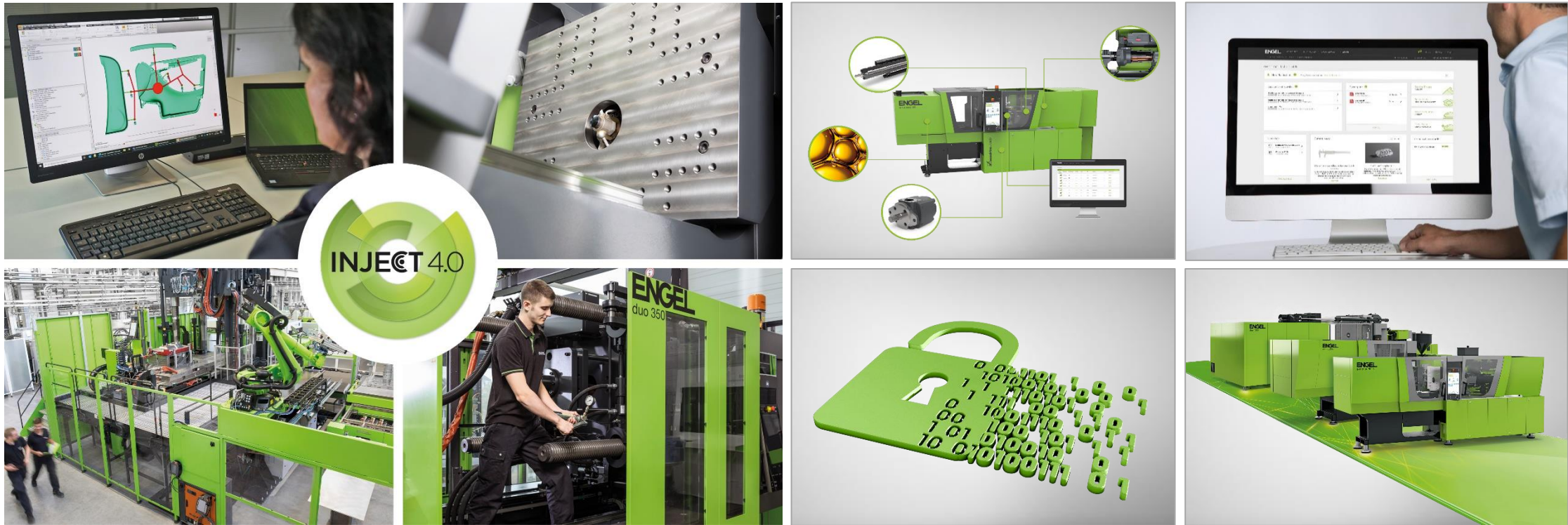
TELETRONICS

Innovative solutions for smart communication products & consumer electronics

ENGEL inject 4.0

Digital solutions for the smart factory

Process stability, productivity and availability together with maximum data security and flexibility remain the guiding principles of ENGEL's inject 4.0 solutions. Superior and reproducible quality, significantly fewer rejects and optimized energy efficiency will help you to maximize productivity and reduce downtime costs.



Digital solutions in injection moulding

With intelligent machines to a smart factory

1



Design

sim link
VirtMould

2



Sampling

iQ clamp control
iQ hold control
iQ melt control
iQ motion control

3



Production

iQ process observer
iQ weight control
iQ flow control
TIG authentig
iQ vibration control
parameter limits

4

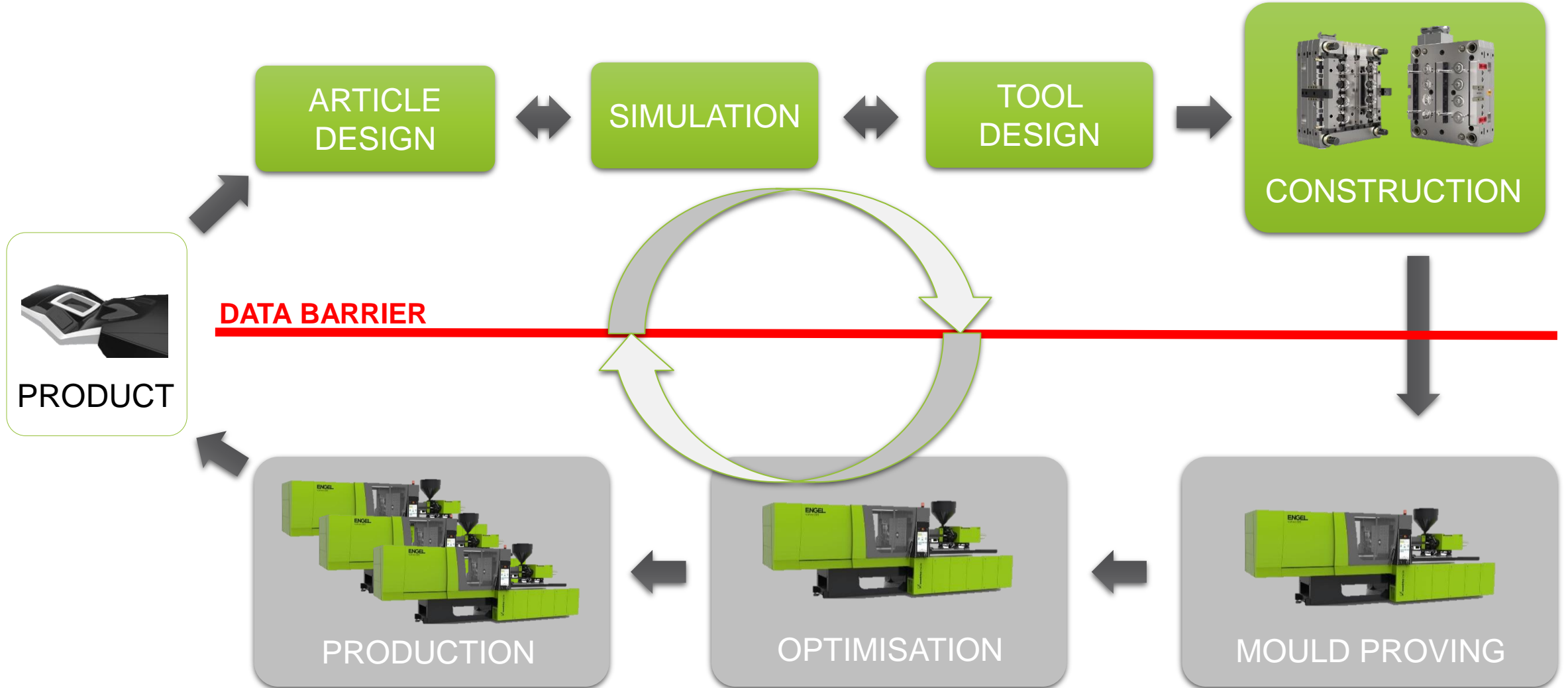


Maintenance & Service

e-connect.24
e-connect.monitor
e-connect.expert view
TIG authentig
iQ.boost

ENGEL sim link®

Status Quo: situation at injection moulding production



Cooperation between **ENGEL** and **Moldex3D** :

- Strategic alignment of global leaders
- Bridging the gap between simulation and production
- Improvement of customers workflows

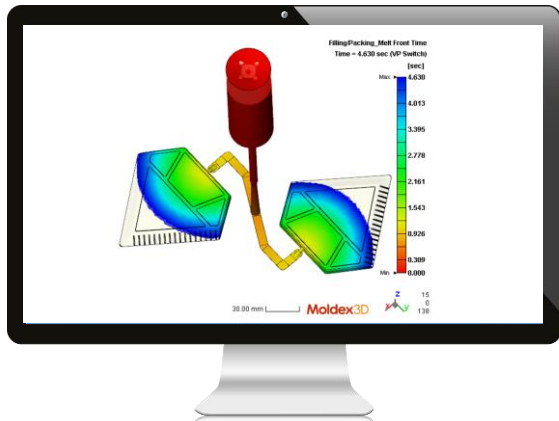


Moldex3D

ENGEL

ENGEL sim link[®]

Key features: data interface



Moldex3D

MODIFICATION

of simulation parameters/profiles and verification of the constraints on base of the chosen machine



EXPORT

of simulation data to a ENGEL machine



IMPORT

of real production data into Moldex3D



ENGEL machine

ENGEL sim link®

When and how to use sim link

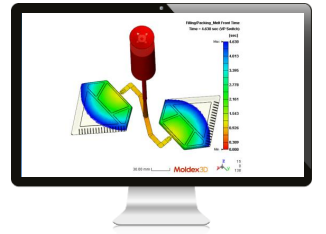


Tool layout is prepared and simulation results are OK
integrating machine behaviour/
dynamics into simulation

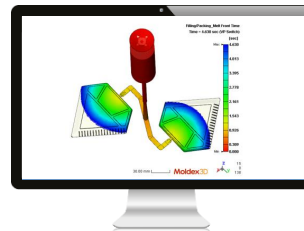


MODIFICATION

of simulation parameters/profiles and
verification of the constraints on base
of the chosen machine



Re-simulation with modified settings is ok
export initial data set for
mould proving



EXPORT

of simulation data to a ENGEL machine
(initial partdata settings)

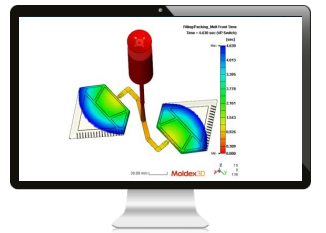


After start of production
feedback of real production
data to simulation



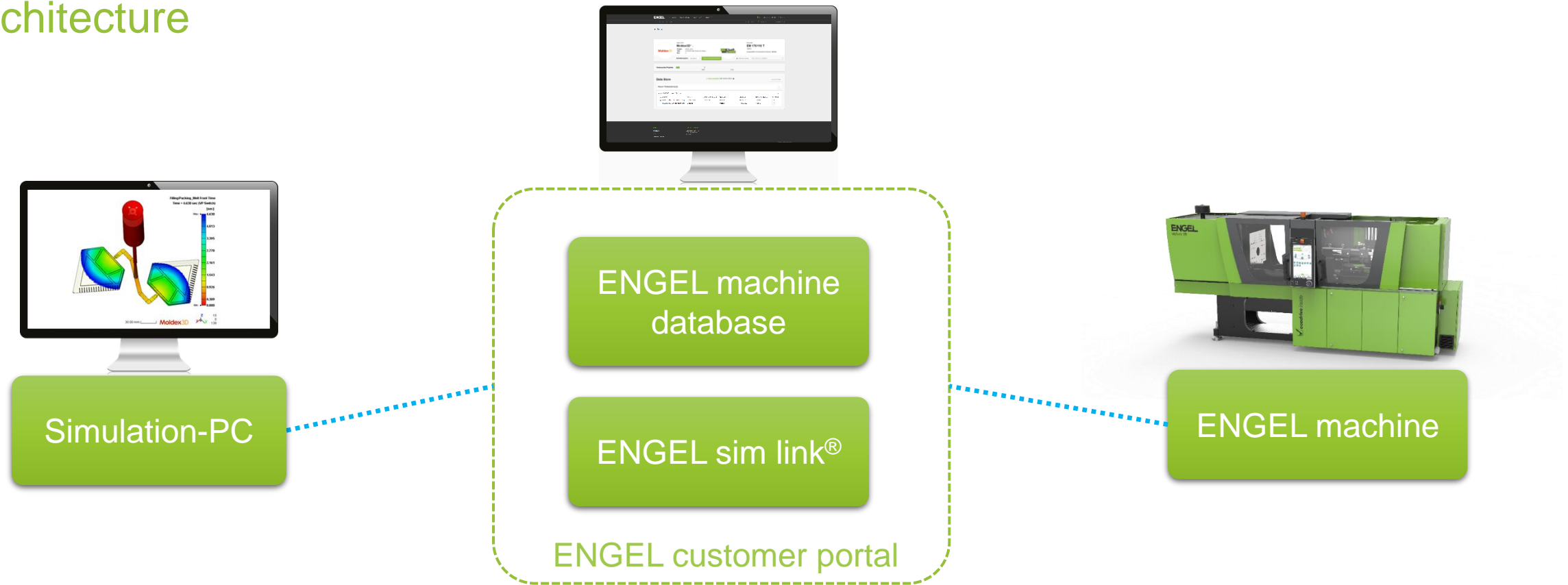
IMPORT

of real production data into Moldex3D



ENGEL sim link®

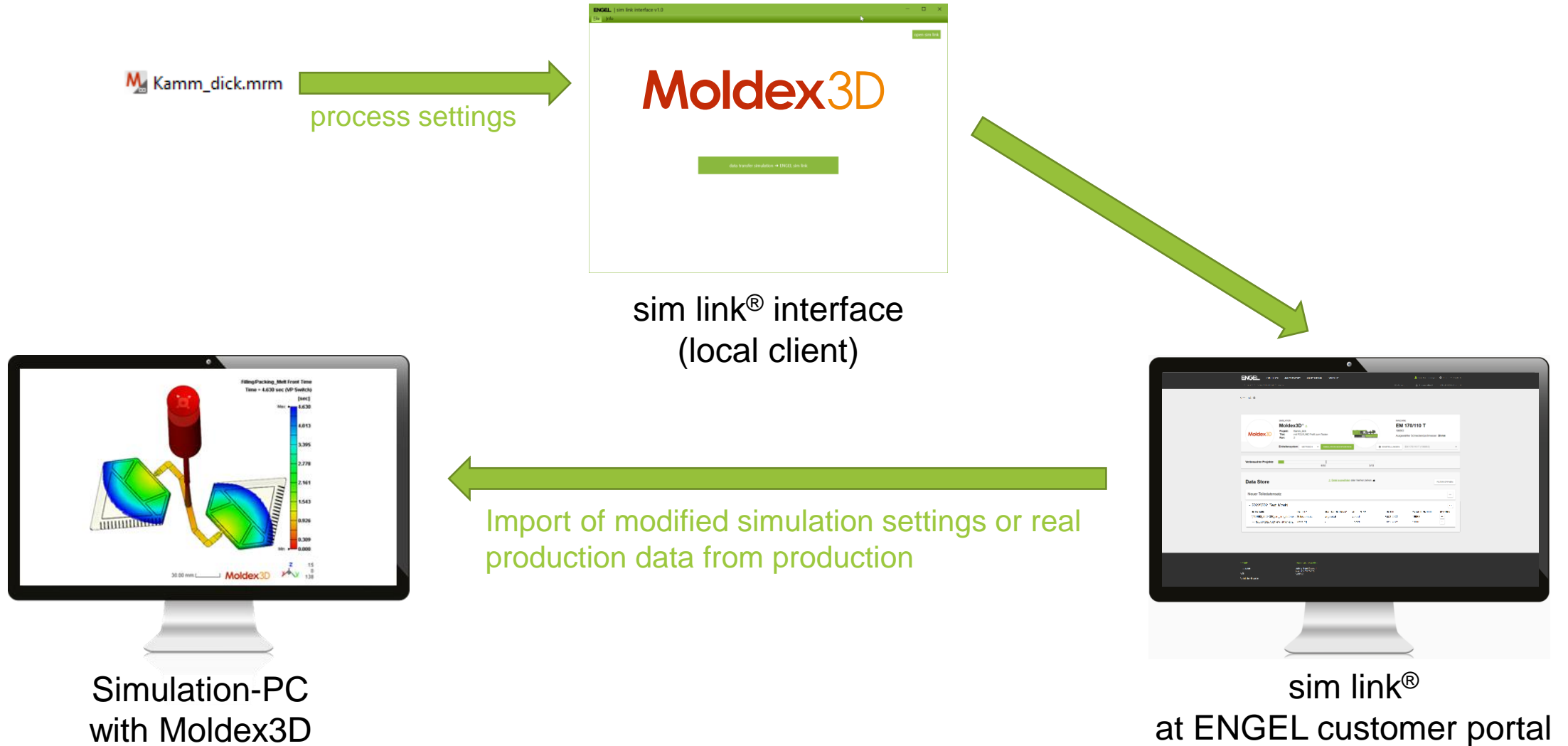
Architecture



NO upload of CAD models or Moldex3D projects to the ENGEL customer portal necessary!

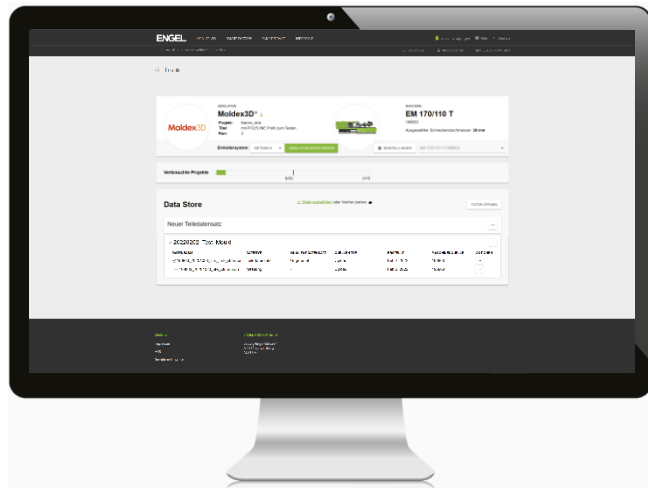
ENGEL sim link®

Data transfer between simulation und sim link®



ENGEL sim link®

Data exchange between sim link® and machine



sim link®
at ENGEL customer portal



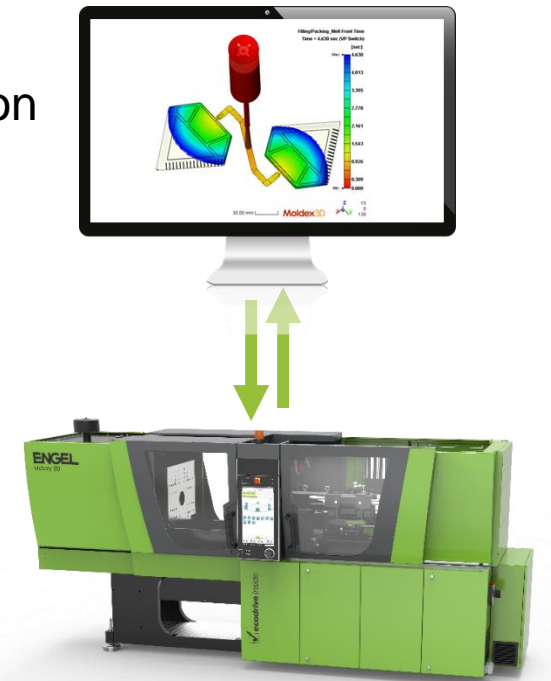
ENGEL injection moulding machine
from controller CC200-A02

ENGEL sim link®

Key messages/Benefits

ENGEL sim link®...

- ...increases my simulation quality
- ...reduces startup time by decreasing the number of iteration cycles until production
- ...transfers my simulation expertise directly to production vice versa
→ enabling the closed loop/digital twin
- ...facilitates the collaboration between different technical divisions
- ...works on every ENGEL machine back to controller version CC200-A02



ENGEL sim link®

Test with ProPlast and Moldex3D

proplast
Moldex3D

ENGEL
be the first

- Customer Trials with Proplast
- Ice scraper part with 2 cavities and cold runner
- Complete modelling of the flow path from the barrel into the cavity in Moldex3D
- Use of very good material data
- Comparison:
 - test result with the simulation result (modified and exported)
 - Injection pressure profile: measurement vs. result simulation with imported real process parameters



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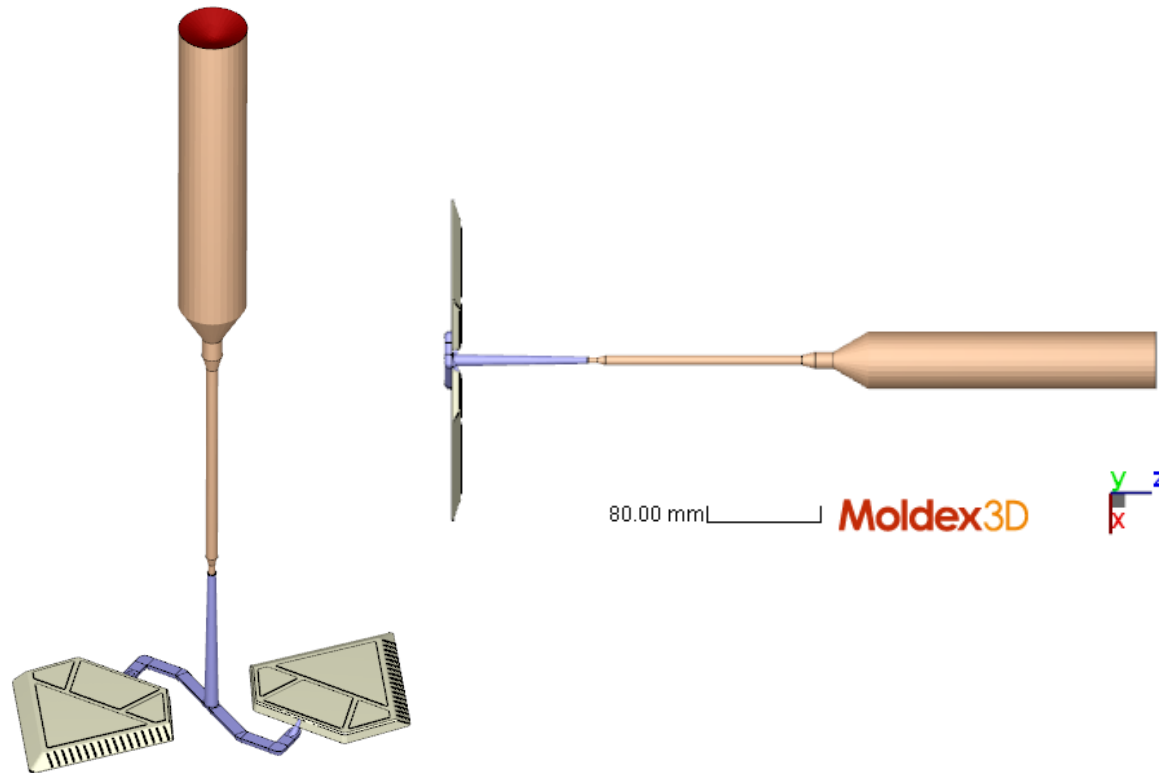
Test with Proplast and Moldex3D

proplast
Moldex3D

ENGEL
be the first

Simulation model:

Comparison filling study
simulation and trial



INSERT COMPARISON
PICTURES

ENGEL sim link®

Test with Proplast and Moldex3D

proplast
Moldex3D

ENGEL
be the first

Results:

- Accuracy of simulations is strictly dependent on the property of polymer and quality of the model to get a reliable output
- sim link supports to get the real process data easily and quick into a new simulation run to close the loop and improving the results of the simulation

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Requirements

- Moldex3D Studio 2024R2 or newer
- Account at ENGEL customer portal + product activation of sim link[®]
- Compatible with all ENGEL injection moulding machines (controller version CC200-A02 and beyond)



ENGEL



THANKS FOR LISTENING

**Get in contact with us and we offer you
the ideal solution!**

We look forward to your feedback!