



*Danfoss*

ENGINEERING  
TOMORROW

## HIGHLIGHTS

### Simulation for iC7 series: MyDrive® Virtual

# Want to de-risk while speeding up **product development?**

#### Get started faster

With MyDrive® Virtual, we offer you the same product insights achievable by physically testing a real iC7 drive.

MyDrive® Virtual gives you drive models which you can use in your preferred simulation environment. MyDrive® Virtual uses the same source models as the physical drive software, to guarantee high fidelity.

Just imagine a new approach to development, which gets you to market faster. Which gives you the freedom to act on the thought: 'what if?' Imagine testing every corner of your idea with no risk of downtime, and without paying for prototypes.

By eliminating the constraints of the physical environment, you can achieve higher test coverage, and thoroughly test automation to reduce time to market.

#### Save cost and time

The prototypes used in new product development are very costly and time-consuming to develop, build, and maintain. With MyDrive® Virtual, you

can eliminate prototypes and de-risk project execution by identifying and removing sources of failure much earlier in the development phase. You also save on laboratory time, space, and energy consumption.

With MyDrive® Virtual you can optimize the performance down to parameter level and thereby save money thanks to faster on-site commissioning.

#### 1:1 Digital Twin

Use the same firmware control software and application software as the physical drive, for best-in-class simulation results, with no room for error.

#### Use your preferred environment

The simulation models are available in a standardized format compatible with over 150 major simulation tools, worldwide. So there's no need to invest in a new simulation environment. Just use your existing tool.

#### Optimize your overview

- Maintain full transparency by simulating the drive at parameter level
- Assess product and system performance before prototyping
- Software always up-to-date

#### Design efficiently

- Use only the simulation modules you need
- Balance speed and level of detail as required

#### Speed up and de-risk

- Speed up product development
- De-risk project execution by avoiding potential issues early
- Reduce time and cost of lab testing and on-site commissioning
- Improve safety for personnel

**1:1**

Digital Twin with  
simulation models  
based on actual  
drive code

# What can I use it for?

Use MyDrive® Virtual to

- De-risk project execution throughout the product lifecycle
- Assess overall performance of the whole system before using physical components
- Eliminate cost of developing prototypes and transporting them
- Reduce commissioning time on site
- Freely choose the iC7 simulation model that best meets the demands of your application.

## Engineering

- Optimize system performance and energy consumption
- Evaluate diverse configurations
- Reduce the overall testing time and less needs of physical test-setups due to virtual testing
- Enable end-to-end system simulations to increase system performance

## Testing

- Increase test coverage with test automation
- Remove time spent on building up the physical test setup
- Benchmark different drive sizes and motor types without physical hardware
- Reduce laboratory time for testing
- Reduce need for equipment
- Improve safety by testing critical scenarios in an un-stressful environment and without risk of damaging the equipment

## Installation and commissioning

- Reduce commissioning time thanks to less need for physical testing
- Fine tune up-front to optimize application performance
- Run learning and testing activities on virtual applications

## Maintenance and service

- Build digital twins of your products to continuously improve and monitor performance and processes
- Save process data for later use in optimization
- Improve the product with no production stop
- De-risk software updates by virtually testing first
- Test different scenarios to optimize them
- Identify sporadic failures with reduced effort
- Share configuration data and results easily

# How does it work?







With the modular concept, you can choose the MyDrive® Virtual models which best reflect your requirements. In this way, you can simulate a wide variety of use cases.

MyDrive® Virtual is built from the same source models as the physical drive software, to guarantee high accuracy. Each application model behaves identically to the drive, making it ideal for configuration and logic simulations.







The iC7 drive-train model includes control firmware, enabling you to simulate actual control algorithms in the drive to evaluate power sizes and machine performance.

### Select the models you need

#### 1. Simulation using AC drive models

Application software	Control firmware	Converter model	Machine models	Load models	Simulation models
					
✓					Application model
✓	✓	✓			Drive model
✓	✓	✓	✓		Drive-train model
✓	✓	✓	✓	✓	Drive system model

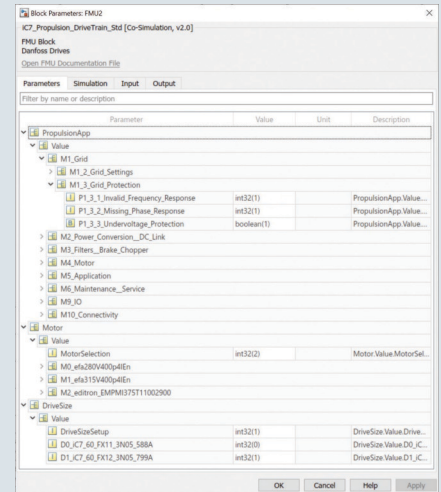
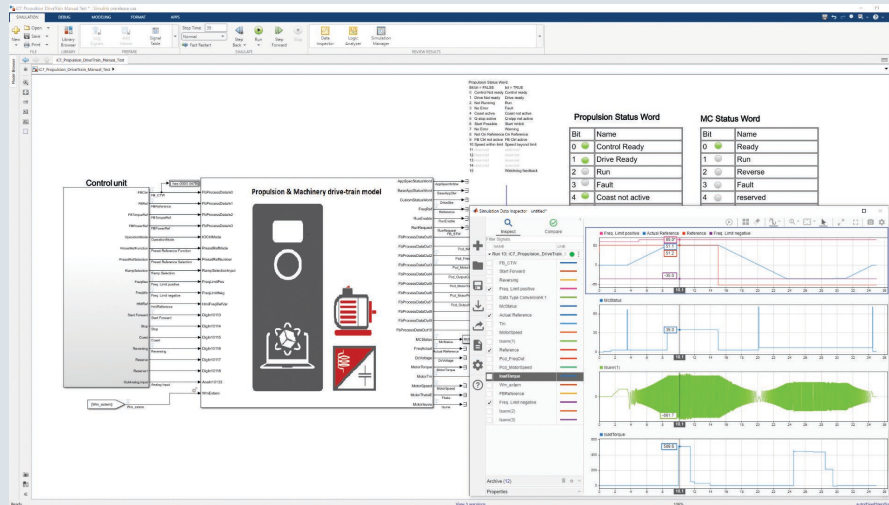
#### 2. Simulation using power converter models

Application software	Control firmware	Converter model	Machine models	Load models	Simulation models
					
✓					Application model
✓	✓	✓			Converter model
✓	✓	✓	✓		Grid-train model
✓	✓	✓	✓	✓	Grid system model

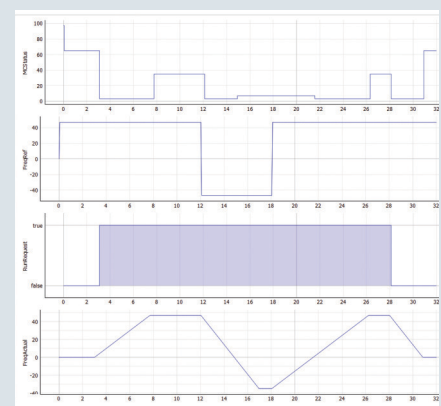
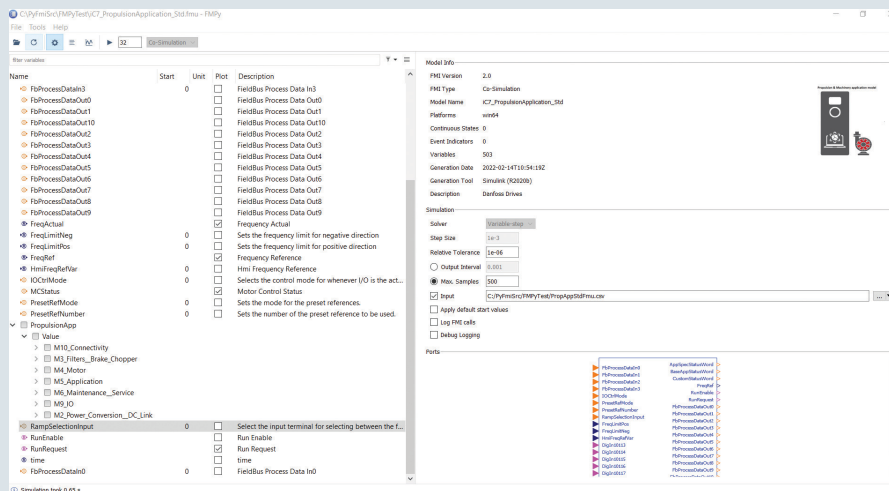
# Your choice of environment

Use the MyDrive® Virtual models in your preferred simulation environment.

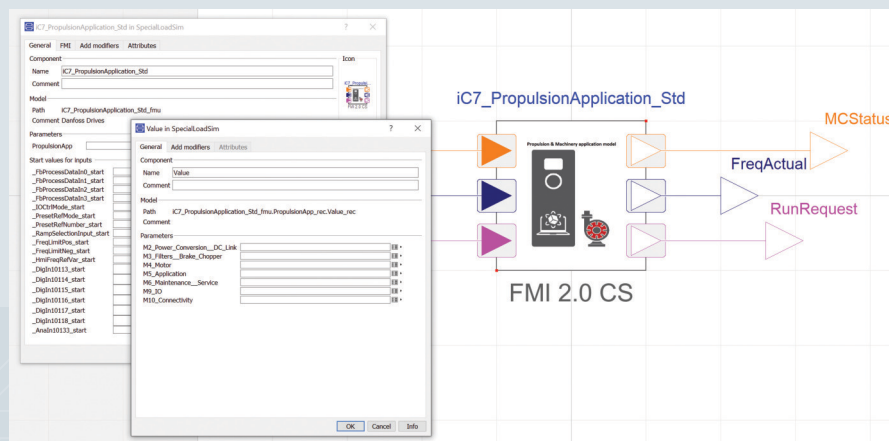
## iC7 series drive-train model in Matlab Simulink simulation environment



## iC7 series model in FMPy simulation environment



## iC7 series model in Dymola simulation environment



## Features and benefits

Feature	Benefit
De-risk project execution in an early phase	Greater reliability in business model
Easily simulate different power sizes together with different motor types, filters, for early integration of individual components	Enables you to invest in the optimal solution both cost- and performance-wise.
Assess efficiency of alternative configurations in the design phase	Reduce energy consumption in the application
Minimize the extent of building test set-ups and performing physical testing by maximizing virtual testing	Reduce overall testing time and cost
Optimize parameters during the design phase	Reduce commissioning time
Capacity to run end-to-end system simulations	Improve system performance and de-risk project execution
<ul style="list-style-type: none"> <li>- High level of automation during testing</li> <li>- Test critical scenarios in a low-stress environment</li> <li>- Eliminate risk of equipment damage</li> </ul>	Improve safety
<ul style="list-style-type: none"> <li>- Capability to build a digital twin of your products to continuously monitor and improve performance</li> <li>- Facilitates virtual system validation of software updates</li> </ul>	Efficiently maintain and improve the application over its lifetime

## Supports over 150 tools globally

### FMI-compliant for maximum compatibility

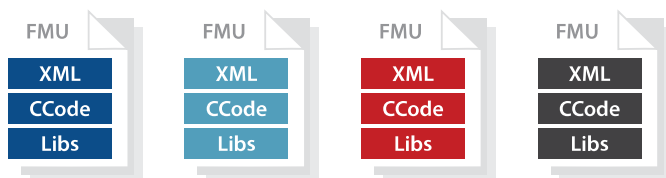
The iC7 models are compatible with over 150 simulation environments due to the Functional Mock-Up Interface Standard. It is used by automotive and non-automotive organizations throughout Europe, Asia and North America.

Many simulation tools are supported:

- MATLAB & Simulink
- Ansys Twin Builder
- SIMIT
- Dymola
- DiGSILENT
- FMPy

FMI is an open standard for exchanging dynamic simulation models between different tools in a standardized format. You can select the tool best suited for each type of analysis, while keeping the same model.

MyDrive® Virtual complies with FMI.



Read more about the [fmi standard here](#)