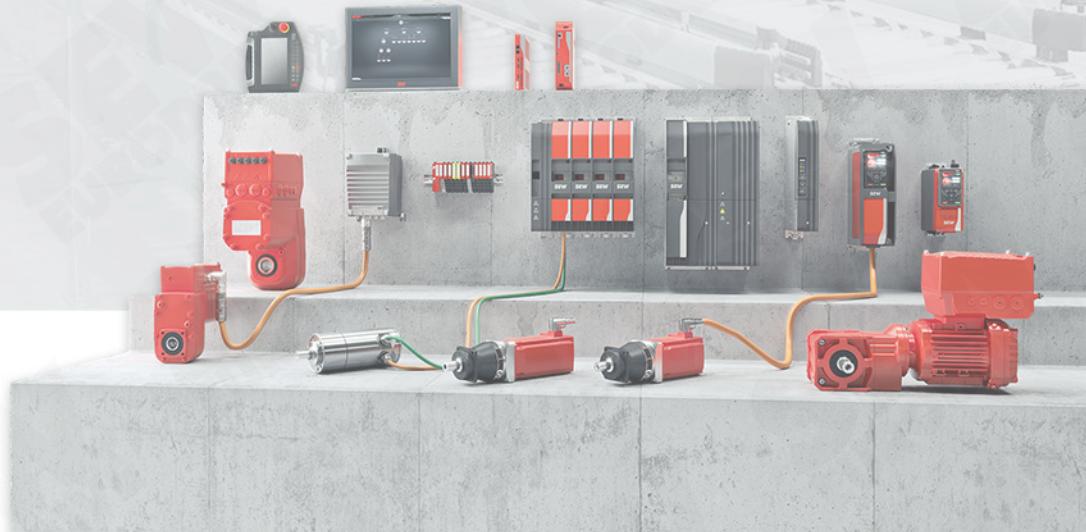


Product Training Workbook



Copyright © SEW-EURODRIVE

MOVI-C® Automation System

MOVIKIT® FlyingSaw Software Module

Parameterization and Diagnostics

C141

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Objectives of this training document

- In this workbook, you will learn to start up the flying saw application on a training model and control it via the process data interface.

Additional documents

- MOVIKIT FlyingSaw software module manual, PDF version
- MOVIKIT® FlyingSaw software module manual, HTML version
- MOVIKIT® FlyingSaw brief information

The product training team will be happy to assist you if you have any questions or suggestions.

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Meaning of the symbols:



Operating notes



Information



Safety-relevant information



Tip



Diagnostics and troubleshooting



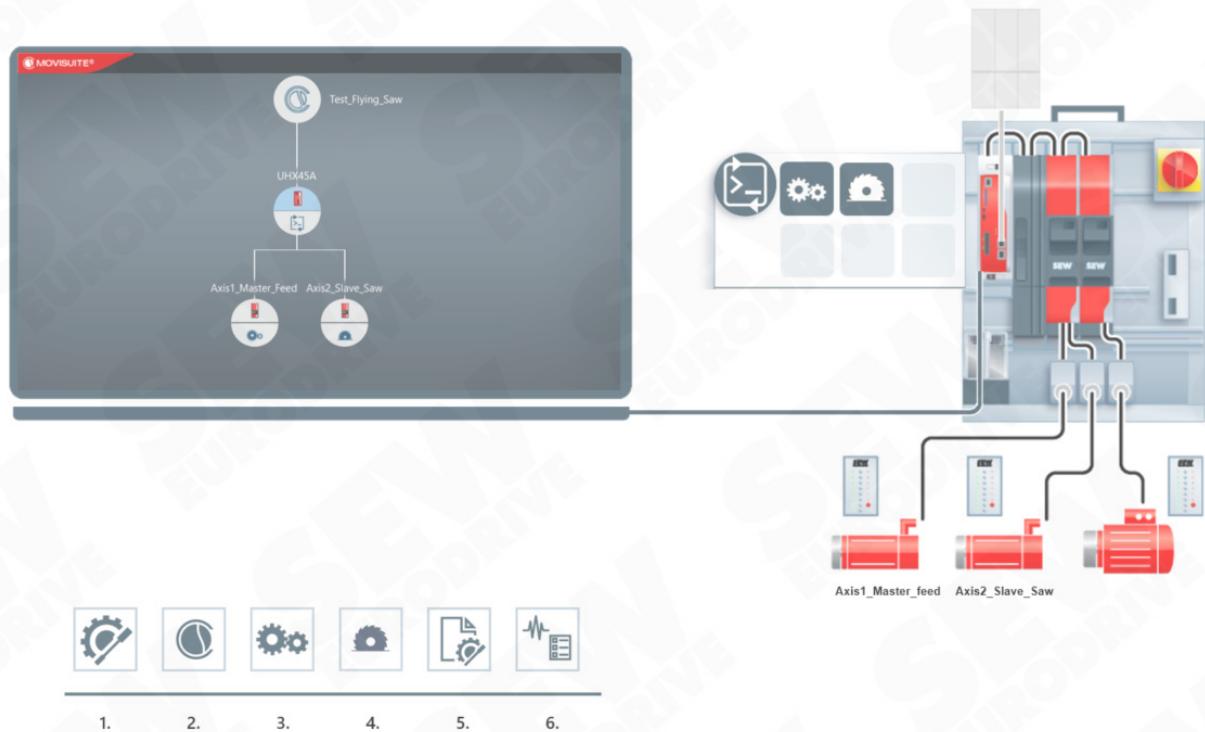
Practical task



Additional documentation

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Workbook steps



1. **Introduction**
2. **Project setup and basic startup in MOVISUITE®**
3. **Configuring the master axis (Axis1_Master_Feed)**
4. **Configuring the slave axis (Axis2_Slave_Saw)**
5. **Creating an IEC project and starting an IEC program**
6. **Control via the process data monitor**

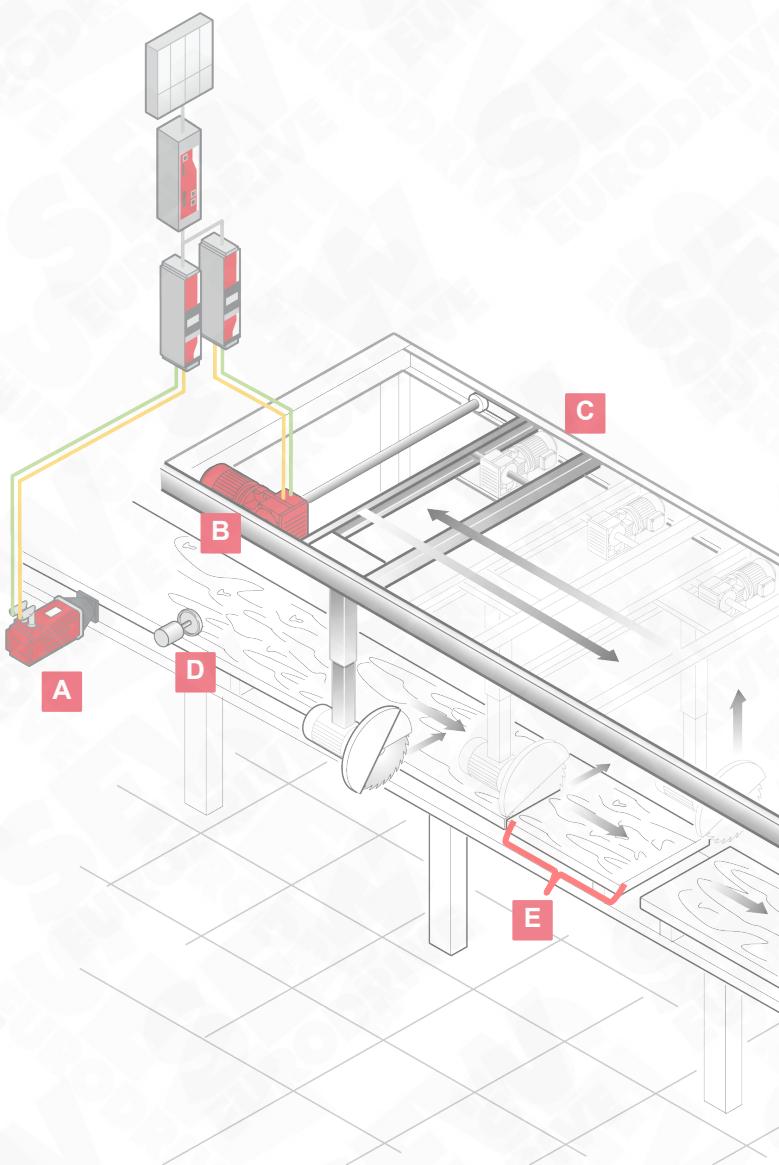
1 Introduction

Objectives:

- Being familiar with the flying saw application with cut length control
- Being familiar with the system configuration with the training model and software used



1.1 Flying saw application



Application: A common industrial application for the MOVIKIT® FlyingSaw is the woodworking industry. In the application example, long pressed particle boards are cut to length. The software module controls the drive for the feed of the saw carriage along the longitudinal axis.

A Material feed drive

The material feed drive is commonly not part of the SEW-EURODRIVE drive solution. In the standard case, the material speed is only recorded via an external encoder. This setup is too hardware-dependent for the workbook. For this reason, an SEW-EURODRIVE axis will be used instead of an external encoder for the simulation of the material feed here.

B Saw carriage feed drive

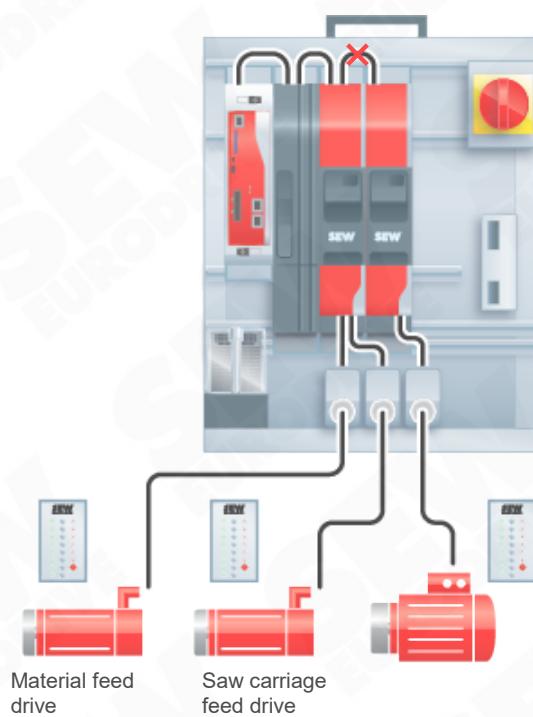
C Saw feed drive

This drive is not controlled by the MOVIKIT® FlyingSaw software module. For simplification, it is disregarded in the application example.

D External encoder: The external encoder provides the speed of the material.

E Cutting length

1.2 Training model



Axis 1 = **Axis1_Master_Feed** drive with motor encoder => MOVIKIT® Gearing

Axis 2 = **Axis2_Slave_Saw** drive with motor encoder => MOVIKIT® FlyingSaw

Axis 3 = not used

Software:

MOVISUITE® 2.40

- IEC Editor 3.5.18.2
- MOVIKIT® Gearing V8.0.41.200
- MOVIKIT® FlyingSaw V8.0.40.200

Hardware:

2 x MOVIDRIVE® modular or system or technology, double axis is also possible.

2 x synchronous or asynchronous motor with encoder. Mixes are also possible.

1 x MOVI-C® UHX CONTROLLER...All classes are possible



If the training model is not available, the exercises can also be done using any MOVI-C® CONTROLLER and MOVIDRIVE® modular/system with drive.

The hardware configuration must then be adapted according to the hardware being used. If no inverter/drive hardware is available, the axes must be operated in a simulation.

2 Project setup and basic startup in MOVISUITER®

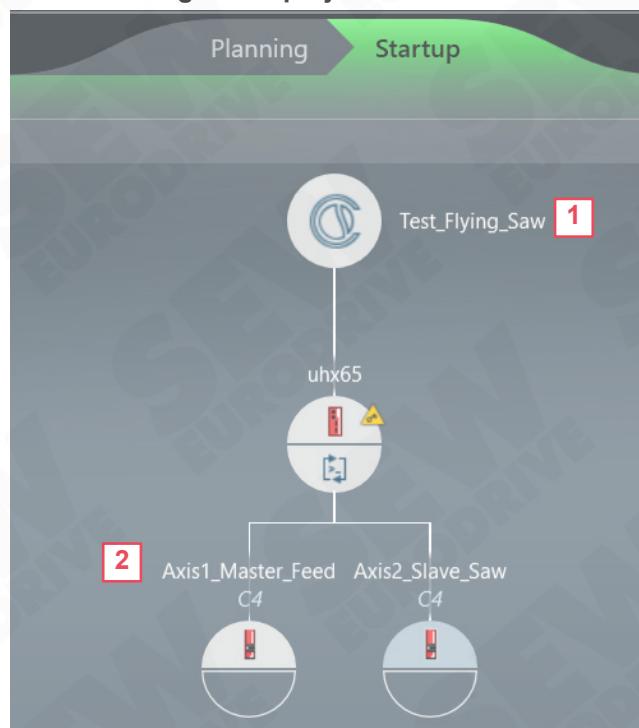
Objectives: ▪ Being able to set up a project and perform basic startup of the axes



2.1

Project setup

1. Creating a new project



1 Create a new project from the network scan and save it under the name "Test_FlyingSaw".

2. Resetting axes to delivery state

Parameter Explorer

Enter search term here

Device properties

- Device data
- Communication
- Basic settings
- Reset device parameters
- Permissions
- Standby mode
- Additional functions
- Data backup

Drive train

Reset device parameters

Delivery state 1

Basic initialization

Reset operating hours counter

Reset active energy counter

Reset device designation

1 Reset each axis to the **delivery state**.

2 Assign the names for the axes exactly as shown here in the workbook.

**Important information:**

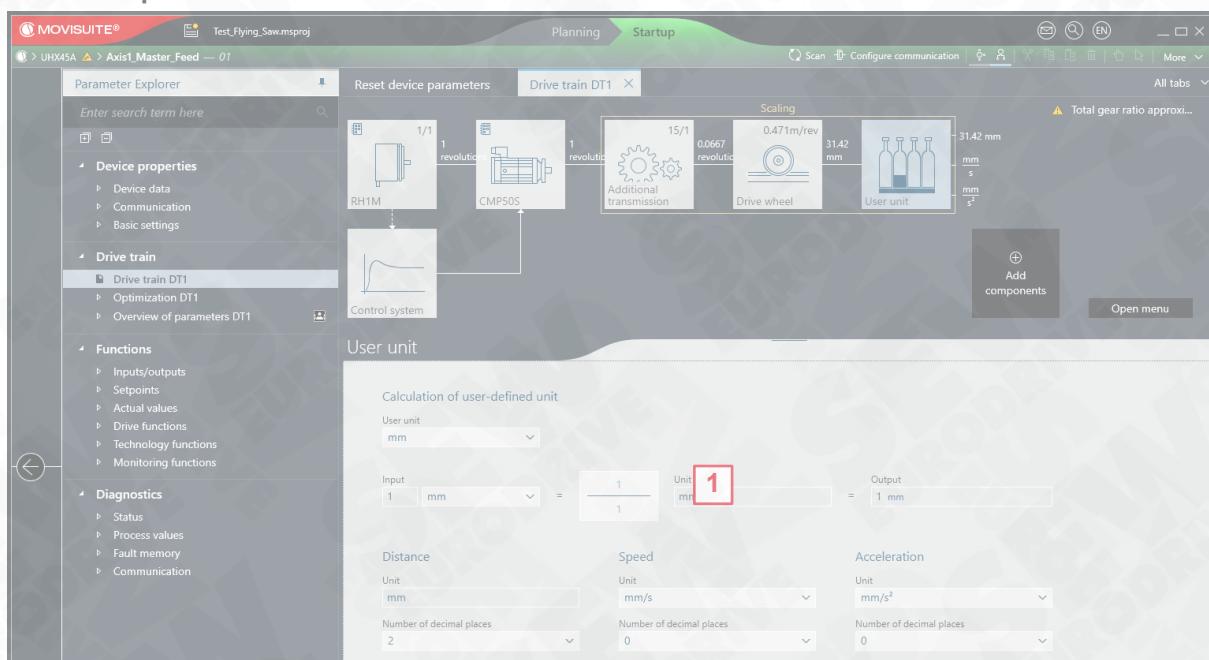
- The names of the axes must not contain any empty spaces between the words. Empty spaces between words lead to errors in the IEC editor.

Axis 1	Axis1_Master_Feed
Axis 2	Axis2_Slave_Saw

- Your project should encompass the controller and 2 axes. If there are more than two axes, disconnect all other axes.
- The left one is the master axis with MOVIKIT® Gearing and the right one is the slave axis with MOVIKIT® FlyingSaw.
- Make sure that the master axis is in the first position (to the left of all slave axes).

2.2**Basic startup of master and slave axes**

In this example application, the master and slave axes are started up using the same parameters. Perform the following 3 steps for the master axis and the slave axis.

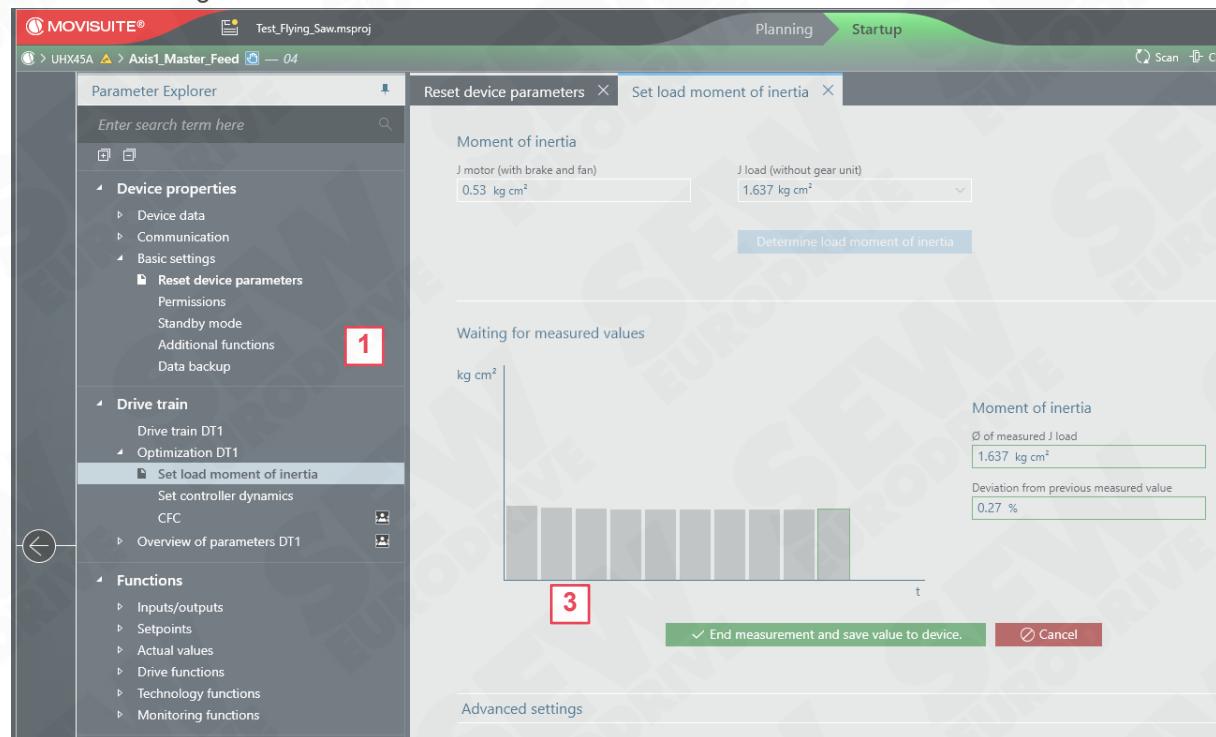
**1. Setup of the drive train****1**

Enter the depicted components into the drive train and parameterize them as follows:

Component	
Additional transmission	i-total = 15
Drive wheel	Diameter = 150 mm
User unit	Distance, rotational speed, and acceleration must be in the same units: mm, mm/s, mm/s ² Leave the decimal places unchanged. They will be automatically adjusted by MOVIKIT® Gearing

2. Optimization of the axis "Axis1_Master_Feed"

- Determining the load moment of inertia



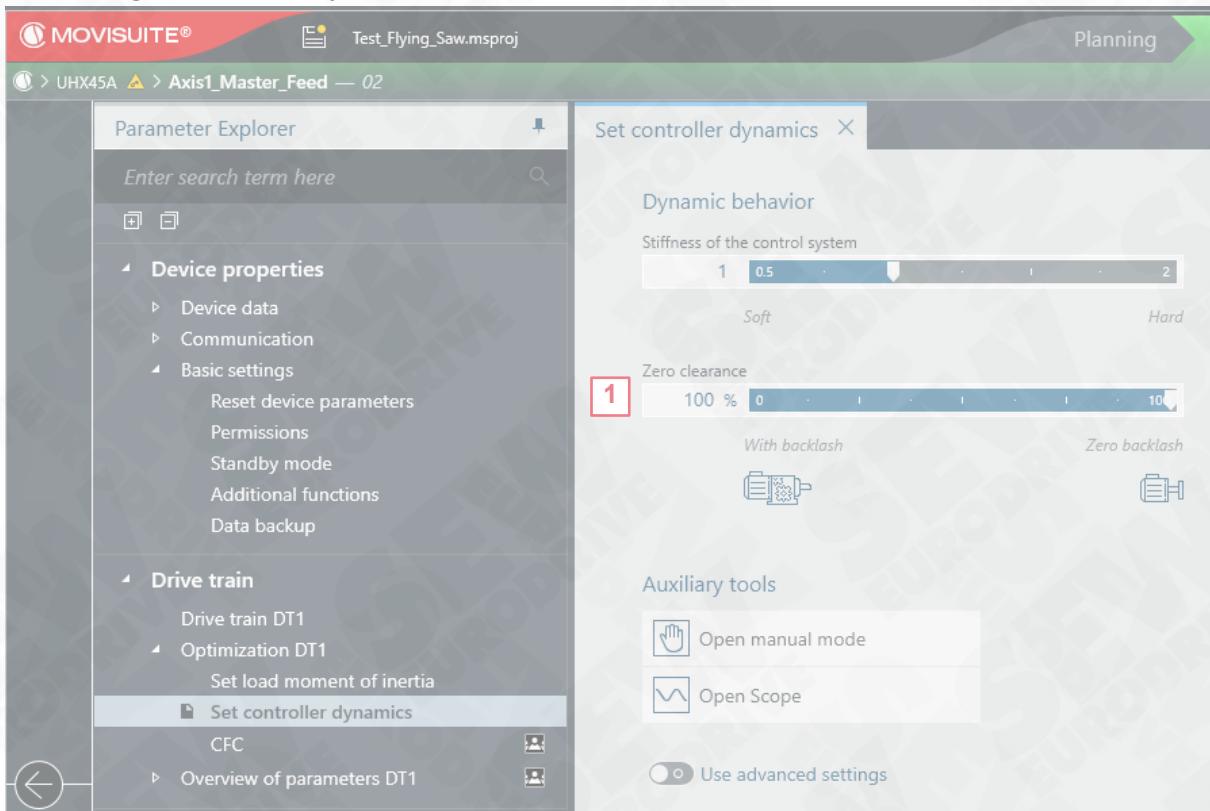
1 Determine the load moment of inertia through a measurement



2 To do so, move the axis to the absolute position in manual mode using load cycling

3 Adopt the determined load moment of inertia of the load (without gear unit)

- Setting the controller dynamics



2 Set the controller dynamics and check the configuration in manual mode.
The motor should be well optimized.

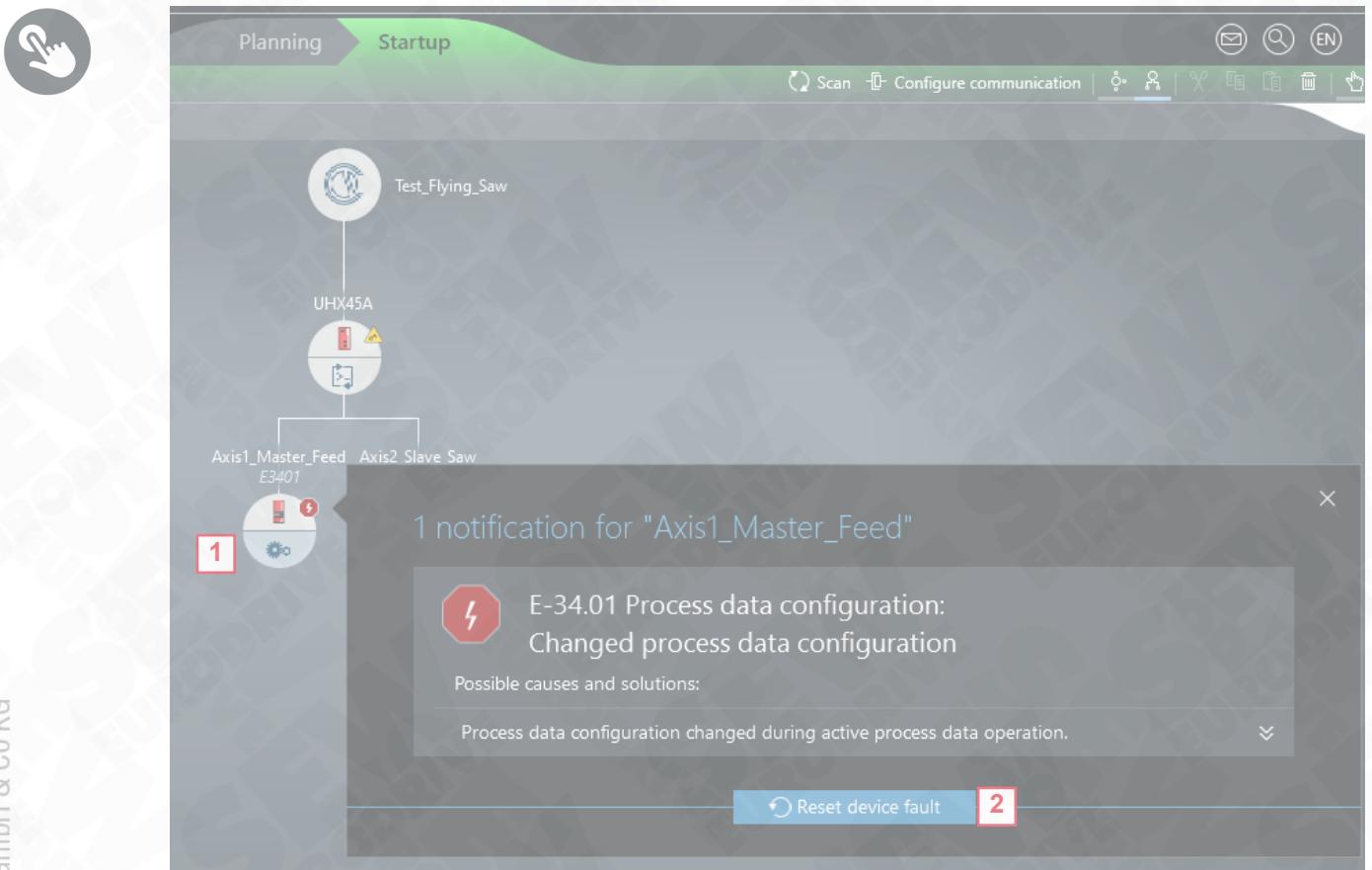
3 Configuring the master axis (Axis1_Master_Feed)

Objectives:

- Being able to assign the MOVIKIT® Gearing to the master axis
- Being able to parameterize the master axis



3.1 Assigning the MOVIKIT® Gearing software module



- 1 Assign the MOVIKIT® Gearing from the catalog to the master axis
- 2 Acknowledge the "Changed process data configuration" message

3.2 Activating the fieldbus interface

1. Configuring the fieldbus interface



The screenshot shows the MOVISUITE software interface with the following details:

- Parameter tree:** The 'Fieldbus interface' tab is selected. The tree view shows:
 - 2 Device properties
 - 3 Drive train
 - 4 Functions
 - 6 Diagnostics
 - 7 MOVIKIT® Gearing
 - 7.1 Module configuration
 - 7.1.1 Basic settings
 - 7.1.2 Fieldbus interface** (selected, highlighted in blue)
 - 7.2 Inputs/outputs
 - 7.5 Monitoring functions
 - 7.6 Drive functions
 - 7.7 Controller functions
 - 7.9 Advanced settings
 - 7.10 MOVIKIT® information
- Fieldbus configuration:**
 - Activate fieldbus connection: Yes (marked with a red box 1)
 - Start address: 1 (marked with a red box 2)
- Process data length:**

	Value
Basic process data	8
Process data of additional functions	0
Process data for additional process values of the inverter	0
Optional process data	0
Additional process data user program	0
Process data length	8
- Decimal places via fieldbus:**

Number of decimal places	Position	Speed	Acceleration	Jerk
2	0	0	0	0
- PROFINET diagnostic alarms:**
 - Activate diagnostic alarms:
- Fieldbus interface:**

PLC	PLC output data	PLC input data	MOVIKIT®
	>>>	<<<	
Control word	PO 1	PI 1	Status word
Setpoint speed	PO 2	PI 2	Actual speed
Setpoint acceleration	PO 3	PI 3	Status or fault/subfault
Setpoint deceleration	PO 4	PI 4	Torque [0.1% nominal motor torque]
Digital outputs	PO 5	PI 5	Digital inputs
Setpoint application mode	PO 6	PI 6	Actual application mode
Target position – high word	PO 7	PI 7	Actual position – high word
Target position – low word	PO 8	PI 8	Actual position – low word

- 1 Activate the fieldbus interface by choosing **Yes**
- 2 Set the start address to **1**

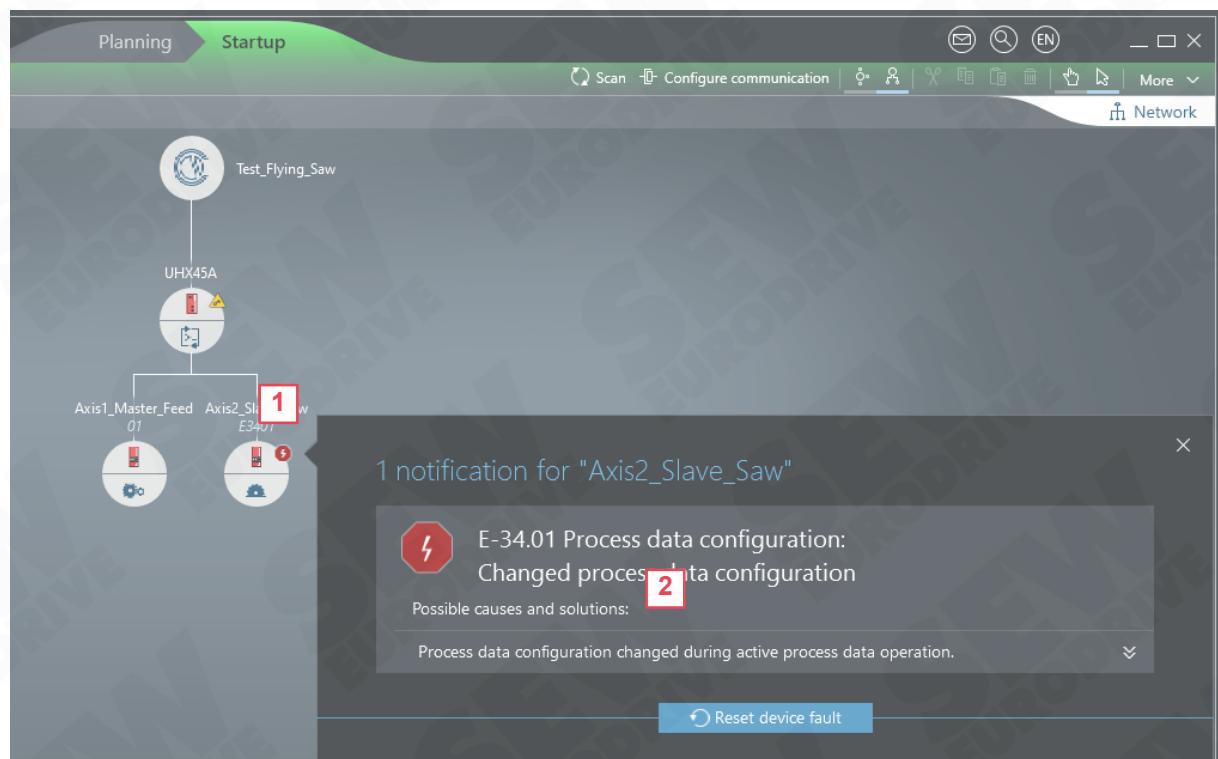
4 Configuring the slave axis (Axis2_Slave_Saw)

Objectives:

- Being able to assign the MOVIKIT® FlyingSaw to the slave axis Axis2_Slave_Saw
- Being able to parameterize the slave axis



4.1 Assigning the MOVIKIT® FlyingSaw software module



- 1** Assign the MOVIKIT® FlyingSaw from the catalog to the slave axis
- 2** Acknowledge the "Changed process data configuration" message

4.2

Configuring the master/slave connection

1. Configuring the master source

Parameterbaum

Enter search term here

Master source

Value

Master source: Configured axis

Master axis name: Axis1_Master_Feed

Master axis type: Linear axis – linearly increasing position

Flying saw

Value Info

Alignment of the flying saw: Parallel

Synchronicity return value: Distance

Monitor repositioning: No

Project Devices

- 1 Go to **Controller functions Flying saw**
- 2 Set the parameters for the flying saw as shown here

2. Configuring the Touchprobe

Parameterbaum

Enter search term here

General

Value

Touchprobe source: Configured axis

Name of touchprobe axis: Axis1_Master_Feed

Mode: Single

Status

Value

Wait for trigger

Trigger tripped

Detected value: 0

Trigger

Value

Source: DI 04

Event: Rising edge

Sensor dead time rising edge: 0.000 ms

Counter: 0

Data source

Value

Data source: PO data word 13

PO data format: 32 bit – Little Endian

Project Devices

- 1 Go to **Additional functions Touchprobe 1**
- 2 Enter the **Touchprobe source** and the **Name of touchprobe axis** as shown

4.3 Activating the fieldbus interface

1. Configuring the fieldbus interface



PLC	PLC output data	PLC input data	MOVIKIT®
	>>>	<<<	
Control word	PO 1	PI 1	Status word
Setpoint speed	PO 2	PI 2	Actual speed
Setpoint acceleration	PO 3	PI 3	Status or fault/subfault
Setpoint deceleration	PO 4	PI 4	Torque [0.1% nominal motor torque]
Digital outputs	PO 5	PI 5	Digital inputs
Setpoint application mode	PO 6	PI 6	Actual application mode
Target position – high word	PO 7	PI 7	Actual position – high word
Target position – low word	PO 8	PI 8	Actual position – low word
Control word application	PO 9	PI 9	Status word application
Nominal cutting length – high word	PO 10	PI 10	Active cut length – high word
Nominal cutting length – low word	PO 11	PI 11	Active cut length – low word

1 Activate the fieldbus connection by choosing **Yes**

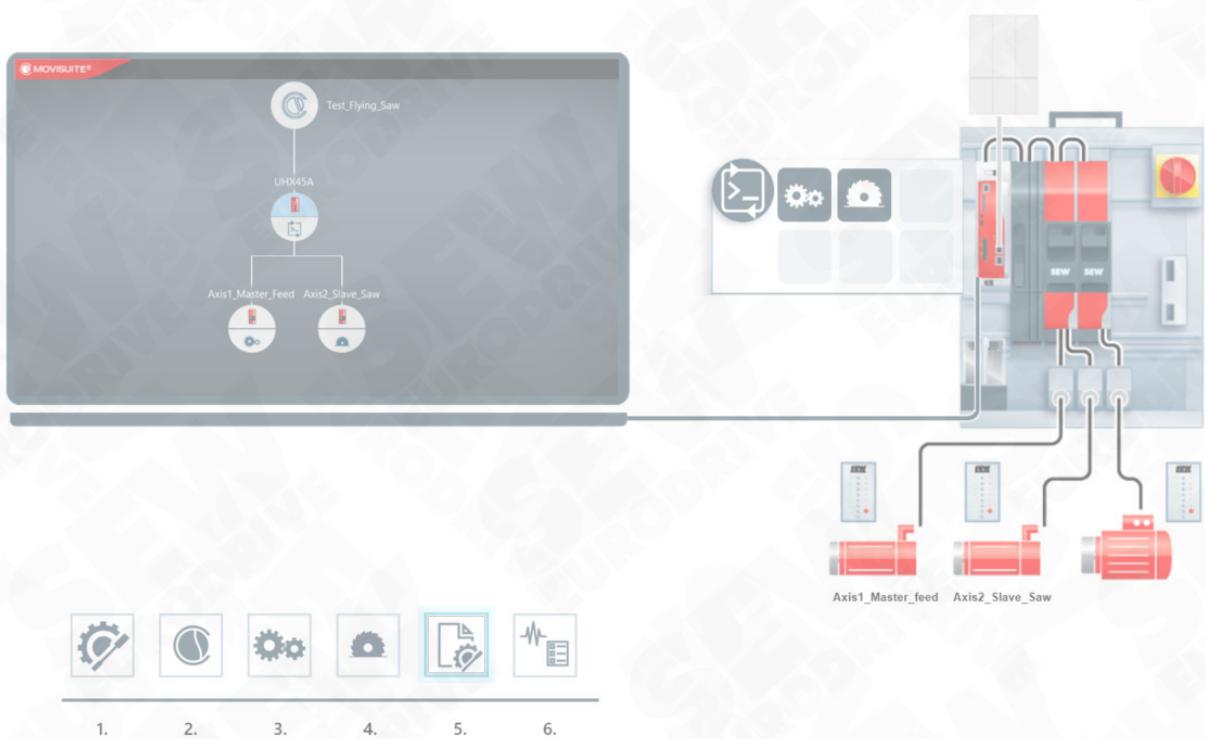
2 Set the start address to **9**

Start address = master axis 1 + 8PD = 9

5 Creating and starting the IEC project

Objectives:

- Being able to parameterize the fieldbus
- Being able to operate the license manager tool and select the appropriate licenses
- Being able to activate the trial licenses and load them onto the MOVI-C® CONTROLLER
- Be able to create an IEC project



5.1 Configuring the fieldbus of the MOVI-C® CONTROLLER

1. Activating the fieldbus interface



1 Select the **fieldbus protocol**

2 Activate **fieldbus connection via IEC function blocks: Yes**.

5.2 Creating the IEC project

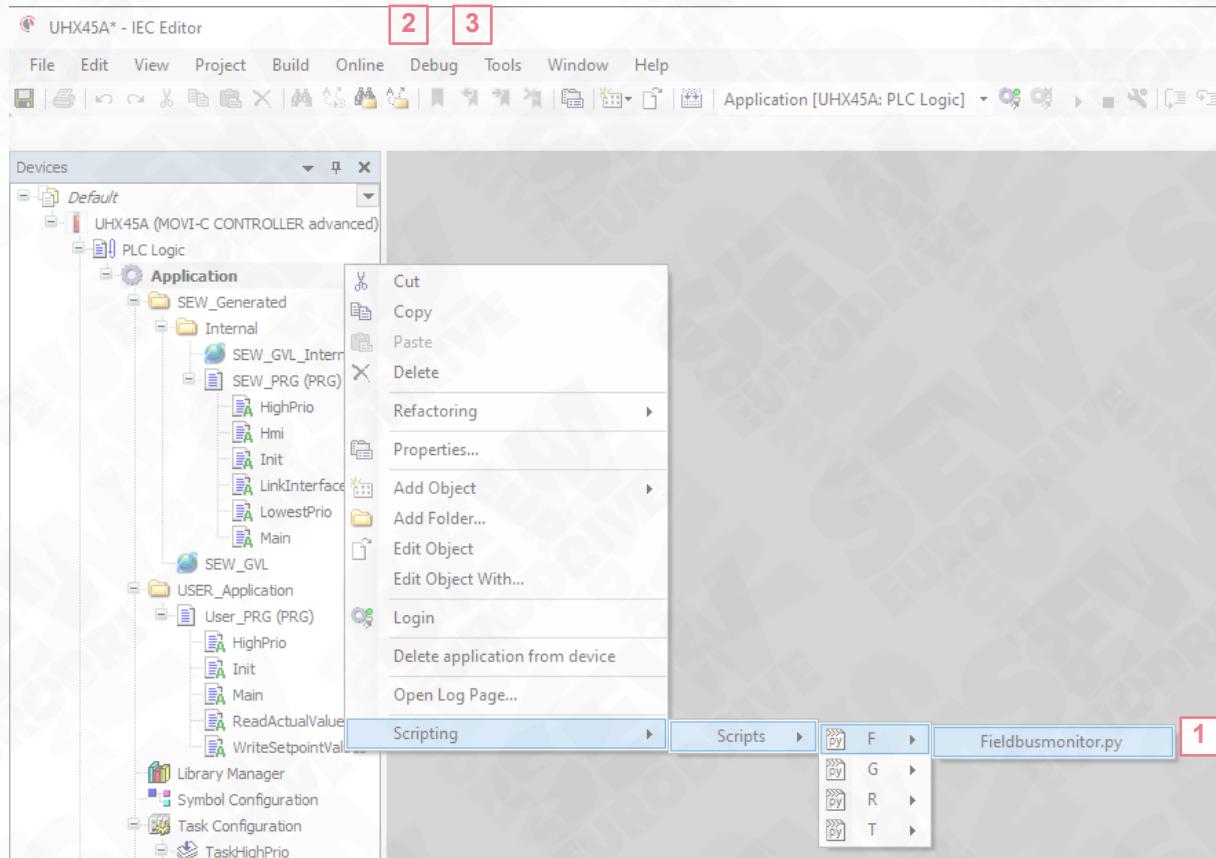
1. Creating a new IEC project



1 Click **Create new IEC project** to start the code creation process.

A When you create a new IEC project, the existing project is deleted. Even the self-programmed part is then overwritten/deleted.

2. Activating the process data monitor



1 Right-click **Application** and select **Scripting** **Scripts** **F** **Fieldbusmonitor** to insert the fieldbus monitor

3. Starting the IEC program

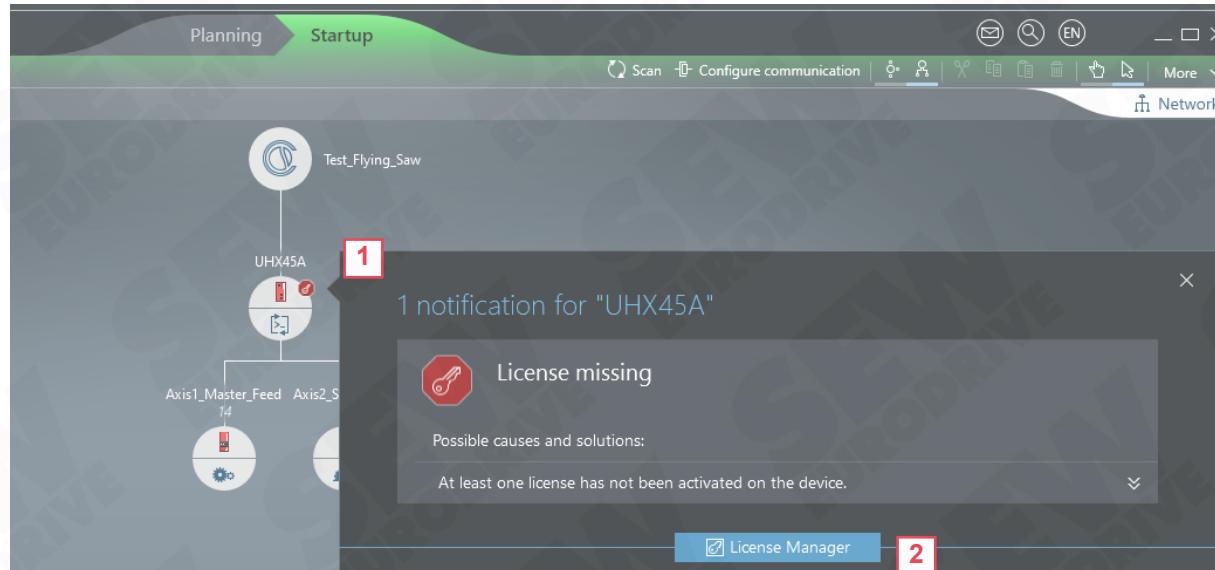
2 Compile the IEC program with **Online** **Log in**
3 Start the IEC program with **Debug** **Start**

5.3

Licensing the MOVI-C® CONTROLLER

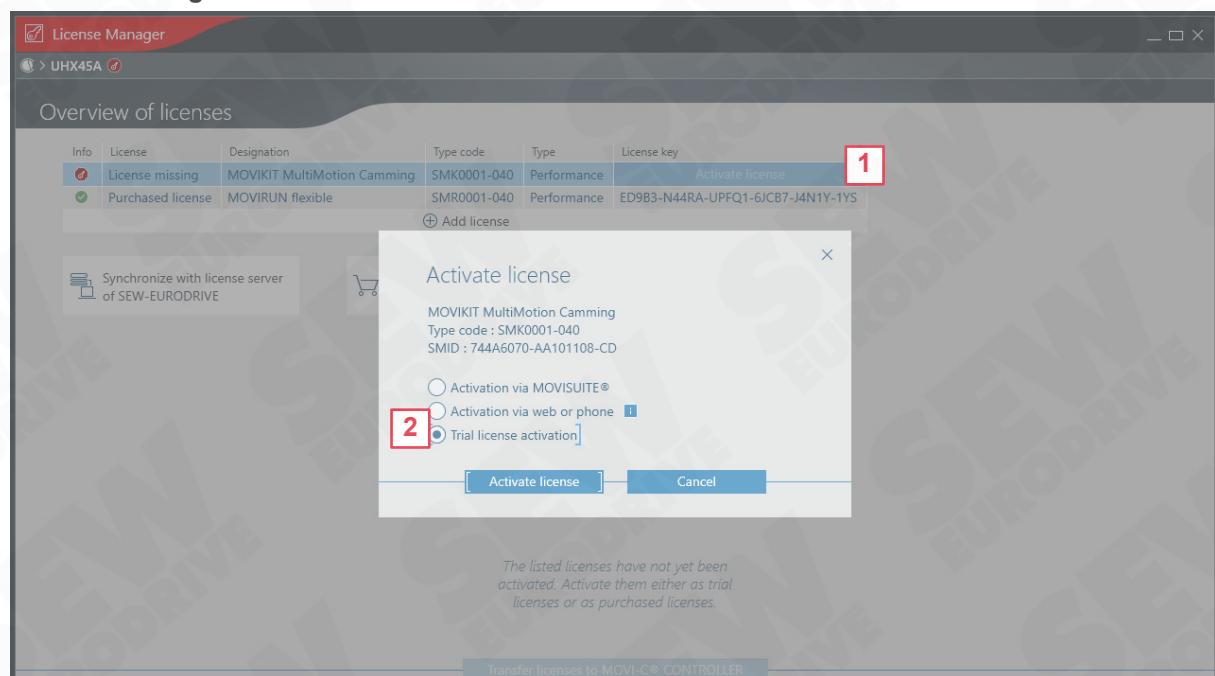
1. Starting the License Manager

An Internet connection is required to activate the licenses.



- 1 Right-click the MOVI-C® CONTROLLER or select the symbol
- 2 Start the **License Manager** in **Tools**

2. Selecting the licenses



The missing license is automatically displayed in the License Manager

- 1 Click **Activate license** in the line of the missing license
- 2 Select **Trial license activation**
- 3 Click **Activate license**



A trial license allows for software functions to be tested before purchase. It is valid for 7 days and can be reactivated at any time. After the trial license expires, the program continues to run and is not shut down. A message regarding the expired trial license will be displayed on the MOVI-C® CONTROLLER.

3. Activating a license

A Info License Designation Type code Type License key
 Trial license MOVIKIT MultiMotion Camming SMK0001-040 Performance Activate purchased license
 Purchased licen... MOVIRUN flexible SMR0001-040 Performance ED9B3-N44RA-UPFQ1-6JCB7-J4N1Y-1...

1 Transfer licenses to MOVI-C® CONTROLLER

0 Faulty licenses 1 Transferrable licenses 0 Active trial licenses 1 Active purchased licenses SMID: 744A6070-AA101108-CD

A Info License Designation Type code Type License key
 Trial license MOVIKIT MultiMotion Camming SMK0001-040 Performance Activate purchased license
 Purchased licen... MOVIRUN flexible SMR0001-040 Performance ED9B3-N44RA-UPFQ1-6JCB7-J4N1Y-1...

1 Transfer licenses to MOVI-C® CONTROLLER

0 Faulty licenses 1 Transferrable licenses 0 Active trial licenses 1 Active purchased licenses SMID: 744A6070-AA101108-CD

A The activated license must still be transferred to the MOVI-C® CONTROLLER

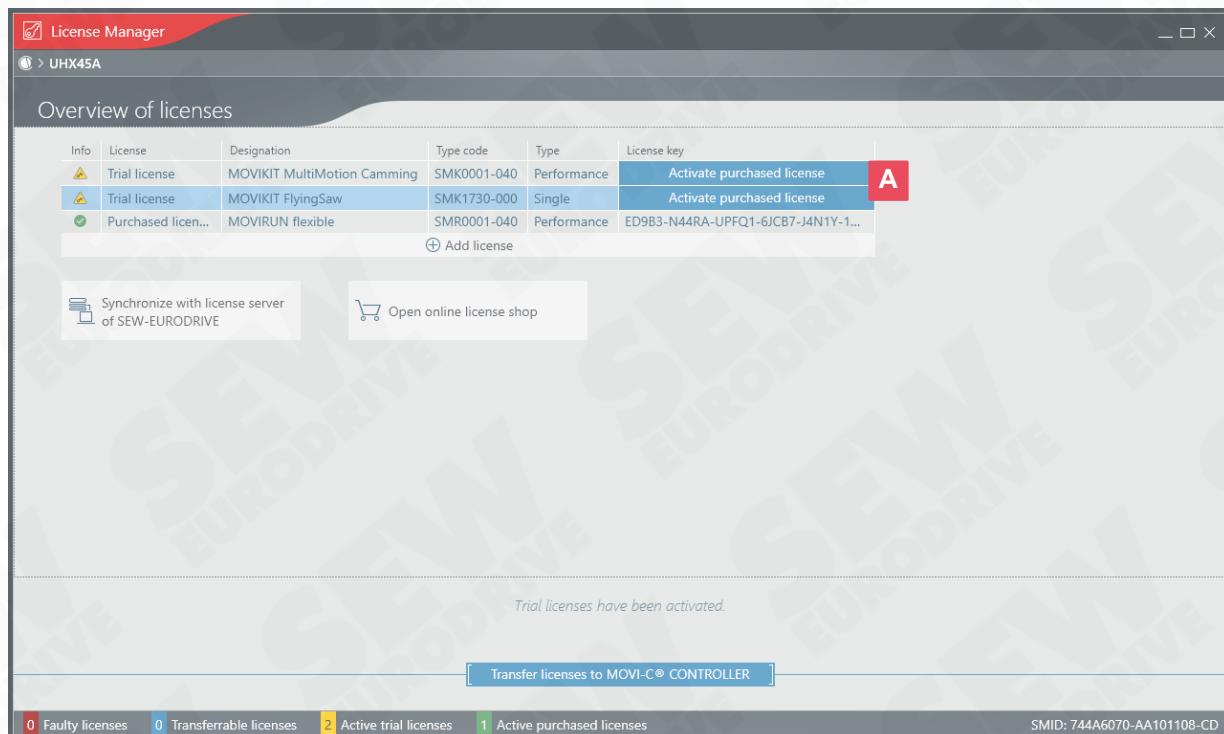
1 Click **Transfer licenses to MOVI-C® CONTROLLER**.

2 Click **Yes, I agree with the license terms**

After activating the licenses, the controller must be reset. The IEC program must then be restarted.

When **updating an IEC project**, the missing licenses are automatically displayed sequentially. Repeat the procedure for MOVIKIT® FlyingSaw.





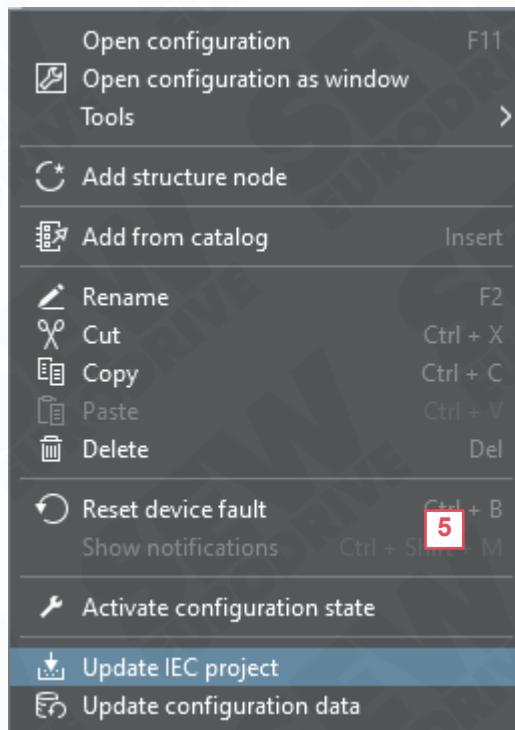
Load and activate the shown licenses for the flying saw application:

A **MOVIKIT® MultiMotion Camming:** The MOVIKIT® MultiMotion Camming license is required because the MOVIKIT® FlyingSaw also contains a curve-based solution for cyclically operating flying saws. The license for MOVIKIT® Gearing is included in the MOVIKIT® MultiMotion Camming license.

MOVIKIT® FlyingSaw: One license is required for each rotation axis.

MOVIRUN® flexible: The MOVIRUN® flexible license contains the license for the EncoderInterface software module.

4. Updating the IEC project



5 Then click **Update IEC project**

6 Control via process data monitor

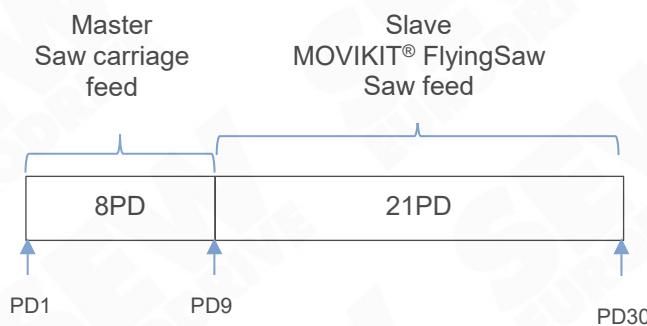
Objectives:

- Opening and operating the process data monitor
- Controlling the flying saw application using the process data monitor

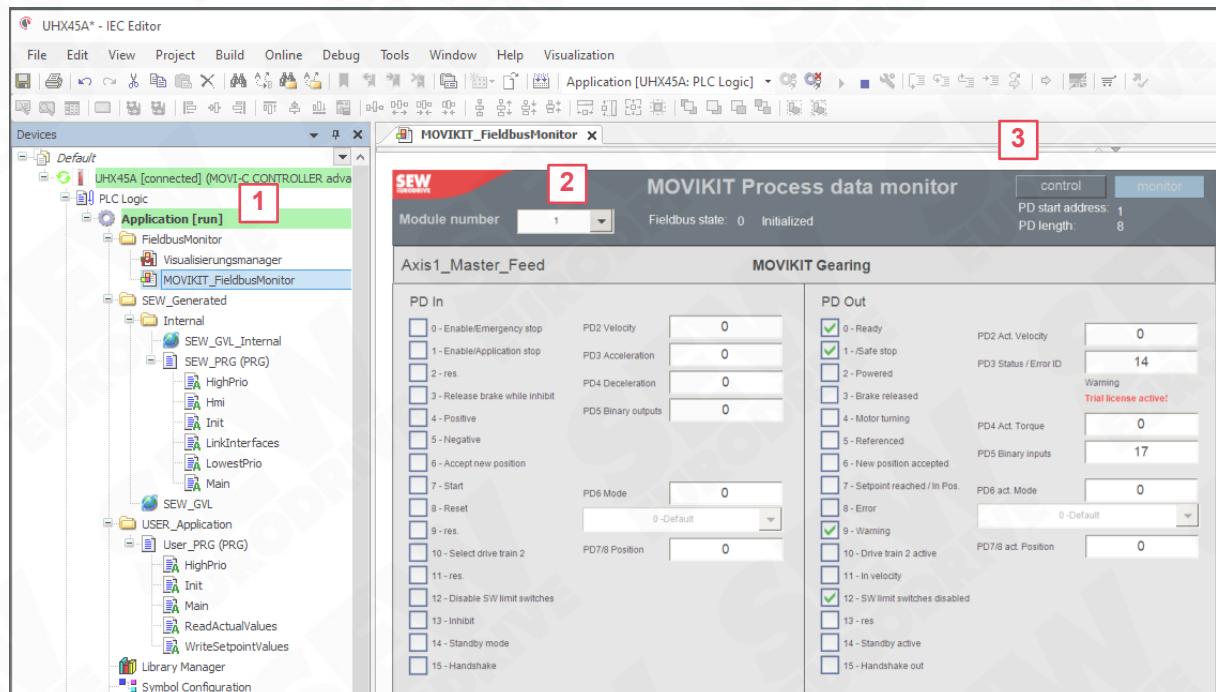


6.1 Opening and operating the process data monitor

The configuration results in the following process data assignment:



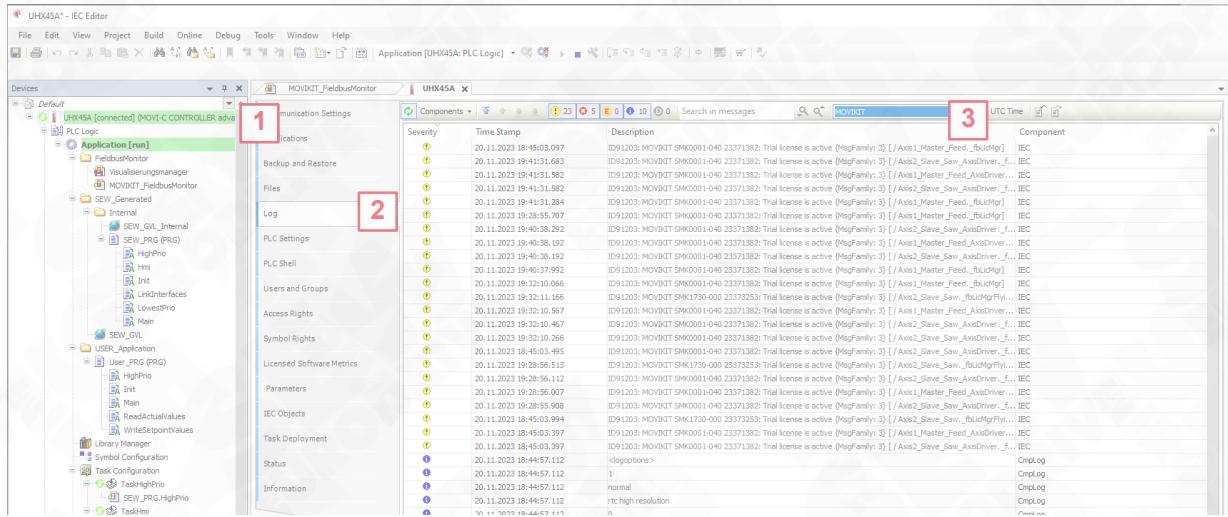
1. Opening the process data monitor



- 1 Double-click **MOVIKIT_FieldbusMonitor**.
- 2 Change the process data monitor by selecting the module number:
Saw carriage feed: MOVIKIT® Gearing Module number: **1**
Saw feed: MOVIKIT® FlyingSaw Module number: **2**
- 3 Click **control** to start the control mode



2. Opening the log file



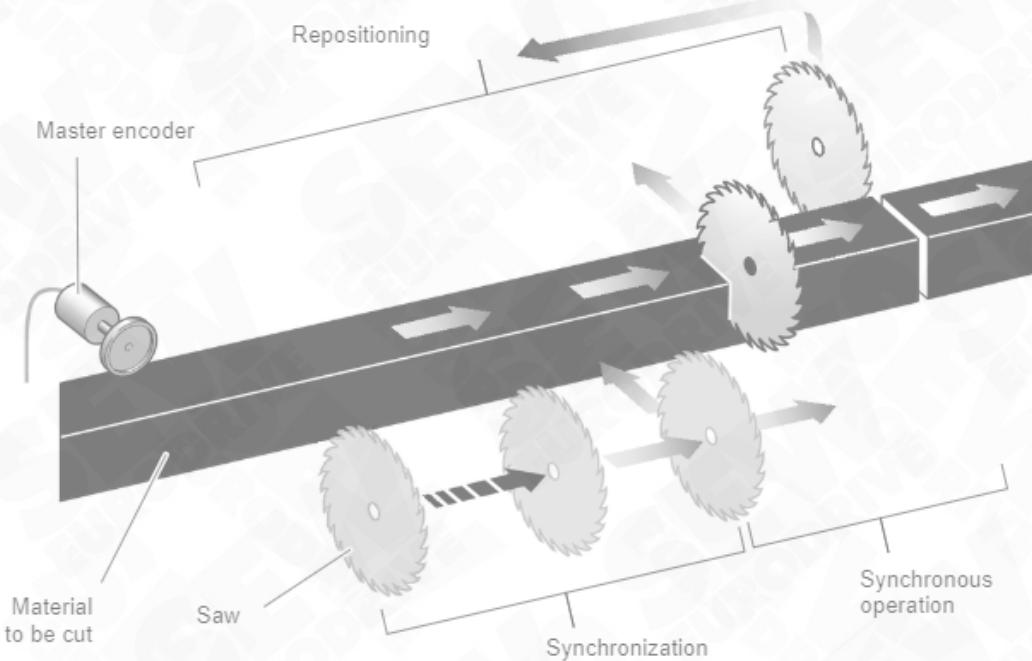
- 1** Double-click **UHX45A**
- 2** Click **Log**
- 3** Select **MOVIKIT** to display the error/status messages of the MOVIKIT® software module

6.2



Flying saw with cut length control

In cut length control, a master encoder measures the feed of the material to be cut. This information is processed by the inverter and is used for calculating the start position of the saw carriage. There need not be any cut marks on the material.



6.2.1

Testing the function



Module no. 1: Material feed (Axis1_Master_Feed) is the master axis with MOVIKIT® Gearing
 Module no. 2: Saw carriage feed (Axis2_Slave_Saw) is the slave axis with MOVIKIT® FlyingSaw



1. Referencing the saw carriage feed slave axis

SEW **MOVIKIT Process data monitor** control monitor

Module number: 2 Fieldbus state: 0 Initialized PD start address: 9
 PD length: 21

Axis2_Slave_Saw		MOVIKIT FlyingSaw	
PD In <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> 0 - Enable/Emergency stop <input type="checkbox"/> 1 - Enable/Application stop <input type="checkbox"/> 2 - res. <input type="checkbox"/> 3 - Release brake while inhibit <input type="checkbox"/> 4 - Positive <input type="checkbox"/> 5 - Negative <input type="checkbox"/> 6 - Accept new position <input checked="" type="checkbox"/> 7 - Start 2 <input type="checkbox"/> 8 - Reset <input type="checkbox"/> 9 - res. <input type="checkbox"/> 10 - Select drive train 2 <input type="checkbox"/> 11 - res. <input type="checkbox"/> 12 - Disable SW limit switches <input type="checkbox"/> 13 - Inhibit <input type="checkbox"/> 14 - Standby mode <input type="checkbox"/> 15 - Handshake </div> <div style="width: 45%;"> PD2 Velocity: 0 PD3 Acceleration: 0 PD4 Deceleration: 0 PD5 Binary outputs: 0 </div> </div>		PD Out <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input checked="" type="checkbox"/> 0 - Ready <input checked="" type="checkbox"/> 1 - Safe stop <input type="checkbox"/> 2 - Powered <input type="checkbox"/> 3 - Brake released <input type="checkbox"/> 4 - Motor turning <input checked="" type="checkbox"/> 5 - Referenced 3 <input type="checkbox"/> 6 - New position accepted <input type="checkbox"/> 7 - Setpoint reached / In Pos. <input type="checkbox"/> 8 - Error <input checked="" type="checkbox"/> 9 - Warning <input type="checkbox"/> 10 - Drive train 2 active <input type="checkbox"/> 11 - In velocity <input checked="" type="checkbox"/> 12 - SW limit switches disabled <input type="checkbox"/> 13 - res. <input type="checkbox"/> 14 - Standby active <input type="checkbox"/> 15 - Handshake out </div> <div style="width: 45%;"> PD2 Act. Velocity: 0 PD3 Status / Error ID: 14 <small>Warning Trial license active!</small> PD4 Act. Torque: 0 PD5 Binary inputs: 1 PD6 act. Mode: 300 <small>300 - Homing offset configured</small> PD7/8 act. Position: 0 3 </div> </div>	
FlyingSaw Parameters			
PD9: <input type="checkbox"/> 0 - Direct cut <input type="checkbox"/> 1 - Move to start position <input type="checkbox"/> 2 - Reserved <input type="checkbox"/> 3 - Select Gear-in-Gear-out on the fly		PD9: <input type="checkbox"/> 0 - Busy <input type="checkbox"/> 1 - in gear <input type="checkbox"/> 2 - Reserved Gearing state: 0 STOPPED PD10/11 act. Cutting length [UserUnits Master]: 0 PD12 act. Cutting angle [°]: 0 PD13 Reserved: 0 PD14/15 act. Sensor distance [UserUnits Slave]: 0 PD16/17 act. Master Velocity [UserUnits Master]: 0 PD18/19 act. Synchronization Distance [UserUnits Master]: 0 PD20/21 act. Synchronous Distance [UserUnits Master]: 0	

- 1 Select the operating mode **PD6 Mode = 300**
- 2 Start the referencing with **PD7=1**
- 3 Check PD Out: **PD5 Referenced = 1** and **PD7/8 Position = 0**
- 5 Then reset the start bit to 0 **PD7=0**

2. Parameterizing the saw carriage feed slave axis

SEW-EURODRIVE **MOVIKIT Process data monitor** **control** **monitor**

Module number: 2 Fieldbus state: 0 Initialized PD start address: 9 PD length: 21

Axis2_Slave_Saw **MOVIKIT FlyingSaw**

PD In		PD Out	
<input type="checkbox"/> 0 - Enable/Emergency stop	PD2 Velocity	<input checked="" type="checkbox"/> 0 - Ready	PD2 Act. Velocity
<input type="checkbox"/> 1 - Enable/Application stop	PD3 Acceleration	<input checked="" type="checkbox"/> 1 - Safe stop	PD3 Status / Error ID
<input type="checkbox"/> 2 - res.	PD4 Deceleration	<input type="checkbox"/> 2 - Powered	Warning
<input type="checkbox"/> 3 - Release brake while inhibit	PD5 Binary outputs	<input type="checkbox"/> 3 - Brake released	Trial license active!
<input type="checkbox"/> 4 - Positive	PD6 Mode	<input type="checkbox"/> 4 - Motor turning	PD4 Act. Torque
<input type="checkbox"/> 5 - Negative	PD7/8 Position	<input checked="" type="checkbox"/> 5 - Referenced	PD5 Binary inputs
<input type="checkbox"/> 6 - Accept new position	300	<input type="checkbox"/> 6 - New position accepted	PD6 act. Mode
<input type="checkbox"/> 7 - Start	300 - Homing offset configured	<input type="checkbox"/> 7 - Setpoint reached / In Pos.	300
<input type="checkbox"/> 8 - Reset	0	<input type="checkbox"/> 8 - Error	300 - Homing offset configured
<input type="checkbox"/> 9 - res.		<input checked="" type="checkbox"/> 9 - Warning	0
<input type="checkbox"/> 10 - Select drive train 2		<input type="checkbox"/> 10 - Drive train 2 active	
<input type="checkbox"/> 11 - res.		<input type="checkbox"/> 11 - In velocity	
<input type="checkbox"/> 12 - Disable SW limit switches		<input checked="" type="checkbox"/> 12 - SW limit switches disabled	
<input type="checkbox"/> 13 - Inhibit		<input type="checkbox"/> 13 - res	
<input type="checkbox"/> 14 - Standby mode		<input type="checkbox"/> 14 - Standby active	
<input type="checkbox"/> 15 - Handshake		<input type="checkbox"/> 15 - Handshake out	

FlyingSaw Parameters

PD9	<input type="checkbox"/> 0 - Direct cut <input type="checkbox"/> 1 - Move to start position <input type="checkbox"/> 2 - Reserved <input type="checkbox"/> 3 - Select Gear-in-Gear-out on the fly	PD9	<input type="checkbox"/> 0 - Busy <input type="checkbox"/> 1 - In gear <input type="checkbox"/> 2 - Reserved
PD10/11 Cutting Length [UserUnits Master]	100000 1	PD10/11 act. Cutting length [UserUnits Master]	0
PD12 Cutting Angle [°]	0 2	PD12/13 Elapsed cutting length [UserUnits Master]	0
PD13 Reserved	0	PD14/15 act. Sensor distance [UserUnits Master]	0
PD14/15 Sensor Distance [UserUnits Slave]	0	PD16 act. Master Velocity [UserUnits Master]	0
PD16/17 Touchprobe Window [UserUnits Master]	0	PD17 res.	0
PD18/19 Synchronization Distance [UserUnits Master]	10000 3	PD18/19 act. Synchronization Distance [UserUnits Master]	0
PD20/21 Synchronous Distance [UserUnits Master]	0	PD20/21 act. Synchronous Distance	0

Cutting length:	Start with 1000.00°mm
Cutting angle:	0°
Synchronization distance:	100 mm

- 1 Set the cutting length: **PD10/11 = 100000**
- 2 Set the cutting angle: **PD12 = 0**
- 3 Set the synchronization distance: **PD18/19 = 10000**

3. Activating automatic mode for saw feed slave axis

The setpoints for speed, acceleration, and deceleration are used when the flying saw returns to the start position.

MOVIKIT Process data monitor

Module number: 2 | Fieldbus state: 0 Initialized | control | monitor | PD start address: 9 | PD length: 21

Axis2_Slave_Saw

MOVIKIT FlyingSaw

PD In

- 3 - 0 - Enable/Emergency stop
- 3 - 1 - Enable/Application stop
- 2 - 2 - res.
- 3 - 3 - Release brake while inhibit
- 4 - 4 - Positive
- 5 - 5 - Negative
- 6 - 6 - Accept new position
- 4 - 7 - Start
- 8 - 8 - Reset
- 9 - 9 - res.
- 10 - 10 - Select drive train 2
- 11 - 11 - res.
- 12 - 12 - Disable SW limit switches
- 13 - 13 - Inhibit
- 14 - 14 - Standby mode
- 15 - 15 - Handshake

PD Out

- 2 - 0 - Ready
- 2 - 1 - /Safe stop
- 2 - 2 - Powered
- 2 - 3 - Brake released
- 4 - 4 - Motor turning
- 5 - 5 - Referenced
- 6 - 6 - New position accepted
- 7 - 7 - Setpoint reached / In Pos.
- 8 - 8 - Error
- 9 - 9 - Warning
- 10 - 10 - Drive train 2 active
- 11 - 11 - In velocity
- 12 - 12 - SW limit switches disabled
- 13 - 13 - res.
- 14 - 14 - Standby active
- 15 - 15 - Handshake out

FlyingSaw Parameters

PD9	<input type="checkbox"/> 0 - Direct cut	PD9	<input type="checkbox"/> 0 - Busy
	<input type="checkbox"/> 1 - Move to start position		<input type="checkbox"/> 1 - In gear
	<input type="checkbox"/> 2 - Reserved		<input type="checkbox"/> 2 - Reserved
	<input type="checkbox"/> 3 - Select Gear-in-Gear-out on the fly		
PD10/11 Cutting Length [UserUnits Master]	100000	PD10/11 act. Cutting length [UserUnits Master]	0
PD12 Cutting Angle [°]	0	PD12/13 Elapsed cutting length [UserUnits Master]	0
PD13 Reserved	0	PD14/15 act. Sensor distance [UserUnits Slave]	0
PD14/15 Sensor Distance [UserUnits Slave]	0	PD16 act. Master Velocity [UserUnits Master]	0
PD16/17 Touchprobe Window [UserUnits Master]	0	PD17 res.	0
PD18/19 Synchronization Distance [UserUnits Master]	10000	PD18/19 act. Synchronization Distance [UserUnits Master]	0
PD20/21 Synchronous Distance [UserUnits Master]	0	PD20/21 act. Synchronous Distance	0

FlyingSaw Status

Gearing state: 0 STOPPED

- 1 Select the operating mode **PD6 Mode = 1400**
- 2 Enter the dynamic values:
Speed: 1000 mm/s
Acceleration: 1000 mm/s²
Deceleration: 1000 mm/s²
- 3 Enable the drive **PD0 and PD1 = 1**
- 4 Start automatic mode with **PD7 - Start = 1**
- 5 PD9 shows **WAITING_FOR_STARTPOSITION** -> The slave axis is waiting for a suitable master position.

4. Starting the material feed master axis

The master axis simulates a linear axis with endless material. The linear axis operates in speed mode. Set the speed to 100 mm/s for a gentle start.

- 1 Select the operating mode **PD6 Mode = 200**
- 2 Enter the dynamic values:
Speed: 100 mm/s
Acceleration: 100 mm*s²
Deceleration: 100 mm*s²
- 3 Enable the drive **PD0 and PD1 = 1** and start the operating mode with **PD7 - Start = 1**

5. Slave axis (saw carriage feed) waits until master axis (material feed) cutting length is reached

FlyingSaw Parameters			
PD9	<input type="checkbox"/> 0 - Direct cut <input type="checkbox"/> 1 - Move to start position <input type="checkbox"/> 2 - Reserved <input type="checkbox"/> 3 - Select Gear-in-Gear-out on the fly	PD9	<input checked="" type="checkbox"/> 0 - Busy <input type="checkbox"/> 1 - In gear <input type="checkbox"/> 2 - Reserved
PD10/11 Cutting Length [UserUnits Master]	100000	PD10/11 act. Cutting length [UserUnits Master]	100000
PD12 Cutting Angle [°]	0	PD12/13 Elapsed cutting length [UserUnits Master]	39100
PD13 Reserved	0	PD14/15 act. Sensor distance [UserUnits Master]	0
PD14/15 Sensor Distance [UserUnits Slave]	0	PD16 act. Master Velocity [UserUnits Master]	100
PD16/17 Touchprobe Window [UserUnits Master]	0	PD17 res.	0
PD18/19 Synchronization Distance [UserUnits Master]	10000	PD18/19 act. Synchronization Distance [UserUnits Master]	0
PD20/21 Synchronous Distance [UserUnits Master]	0	PD20/21 act. Synchronous Distance	0

A The slave axis (saw carriage feed) waits until the master axis reaches the set cutting length. This is displayed by the state **Gearing state = 1** "WAITING_FOR_STARTPOSITION"

6. Slave axis (saw feed) synchronizes with the master axis (material feed)

FlyingSaw Parameters			
PD9	<input type="checkbox"/> 0 - Direct cut <input type="checkbox"/> 1 - Move to start position <input type="checkbox"/> 2 - Reserved <input type="checkbox"/> 3 - Select Gear-in-Gear-out on the fly	PD9	<input checked="" type="checkbox"/> 0 - Busy <input type="checkbox"/> 1 - In gear <input type="checkbox"/> 2 - Reserved
PD10/11 Cutting Length [UserUnits Master]	100000	PD10/11 act. Cutting length [UserUnits Master]	100000
PD12 Cutting Angle [°]	0	PD12/13 Elapsed cutting length [UserUnits Master]	91540
PD13 Reserved	0	PD14/15 act. Sensor distance [UserUnits Master]	0
PD14/15 Sensor Distance [UserUnits Slave]	0	PD16 act. Master Velocity [UserUnits Master]	100
PD16/17 Touchprobe Window [UserUnits Master]	0	PD17 res.	0
PD18/19 Synchronization Distance [UserUnits Master]	10000	PD18/19 act. Synchronization Distance [UserUnits Master]	0
PD20/21 Synchronous Distance [UserUnits Master]	0	PD20/21 act. Synchronous Distance	0

A The slave axis (saw carriage feed) synchronizes with the master before the PD18/19 cut length setpoint = 100 mm. The cut begins as soon as the set length is reached.

Gearing state = 2 GEAR_IN -> Synchronization is active. To synchronize with the master, the slave axis follows a transition function.

7. Slave axis (saw carriage feed) is synchronized with master axis (material feed)

FlyingSaw Parameters			
PD9	<input type="checkbox"/> 0 - Direct cut <input type="checkbox"/> 1 - Move to start position <input type="checkbox"/> 2 - Reserved <input type="checkbox"/> 3 - Select Gear-in-Gear-out on the fly	PD9	<input checked="" type="checkbox"/> 0 - Busy <input checked="" type="checkbox"/> 1 - In gear <input type="checkbox"/> 2 - Reserved
PD10/11 Cutting Length [UserUnits Master]	100000	PD10/11 act. Cutting length [UserUnits Master]	100000
PD12 Cutting Angle [°]	0	PD12/13 Elapsed cutting length [UserUnits Master]	8470
PD13 Reserved	0	PD14/15 act. Sensor distance [UserUnits Master]	0
PD14/15 Sensor Distance [UserUnits Slave]	0	PD16 act. Master Velocity [UserUnits Master]	100
PD16/17 Touchprobe Window [UserUnits Master]	0	PD17 res.	0
PD18/19 Synchronization Distance [UserUnits Master]	10000	PD18/19 act. Synchronization Distance [UserUnits Master]	0
PD20/21 Synchronous Distance [UserUnits Master]	0	PD20/21 act. Synchronous Distance	0

A

As soon as the cut length setpoint is reached, the gearing state changes to **Gearing state = 3 ACTIVE** -> The slave axis is synchronized with the master axis and the processing/cutting can begin. The flying saw itself does not know the duration of the processing/cutting. As soon as the processing is completed and the tool is no longer in contact with the material, the higher-level controller must send the "MoveToStartPosition" signal to the flying saw.

8. Moving the slave axis (saw carriage feed) back to the start position

PD In

<input checked="" type="checkbox"/> 0 - Enable/Emergency stop	PD2 Velocity	1000
<input checked="" type="checkbox"/> 1 - Enable/Application stop	PD3 Acceleration	1000
<input type="checkbox"/> 2 - res.	PD4 Deceleration	1000
<input type="checkbox"/> 3 - Release brake while inhibit	PD5 Binary outputs	0
<input type="checkbox"/> 4 - Positive	PD6 Mode	1400
<input type="checkbox"/> 5 - Negative	1400 - Application automatic	
<input type="checkbox"/> 6 - Accept new position	PD7/8 Position	0
<input checked="" type="checkbox"/> 7 - Start		
<input type="checkbox"/> 8 - Reset		
<input type="checkbox"/> 9 - res.		
<input type="checkbox"/> 10 - Select drive train 2		
<input type="checkbox"/> 11 - res.		
<input type="checkbox"/> 12 - Disable SW limit switches		
<input type="checkbox"/> 13 - Inhibit		
<input type="checkbox"/> 14 - Standby mode		
<input type="checkbox"/> 15 - Handshake		

PD Out

<input checked="" type="checkbox"/> 0 - Ready	PD2 Act. Velocity	0
<input checked="" type="checkbox"/> 1 - Safe stop	PD3 Status / Error ID	10
<input checked="" type="checkbox"/> 2 - Powered	Warning	
<input checked="" type="checkbox"/> 3 - Brake released	Trial license active!	
<input type="checkbox"/> 4 - Motor turning	PD4 Act. Torque	-12
<input checked="" type="checkbox"/> 5 - Referenced	PD5 Binary inputs	1
<input type="checkbox"/> 6 - New position accepted	PD6 act. Mode	1400
<input checked="" type="checkbox"/> 7 - Setpoint reached / in Pos.	1400 - Application automatic	
<input type="checkbox"/> 8 - Error	PD7/8 act. Position	0
<input checked="" type="checkbox"/> 9 - Warning		
<input type="checkbox"/> 10 - Drive train 2 active		
<input type="checkbox"/> 11 - In velocity		
<input checked="" type="checkbox"/> 12 - SW limit switches disabled		
<input type="checkbox"/> 13 - res.		
<input type="checkbox"/> 14 - Standby active		
<input type="checkbox"/> 15 - Handshake out		

FlyingSaw Parameters

PD9	<input type="checkbox"/> 0 - Direct cut	PD9	<input type="checkbox"/> 0 - Busy
1	<input checked="" type="checkbox"/> 1 - Move to start position	B	<input type="checkbox"/> 1 - In gear
	<input type="checkbox"/> 2 - Reserved		<input type="checkbox"/> 2 - Reserved
	<input type="checkbox"/> 3 - Select Gear-in-Gear-out on the fly	Gearing state	
PD10/11 Cutting Length [UserUnits Master]		100000	100000
PD12 Cutting Angle [°]		0	38020
PD13 Reserved		0	0
PD14/15 Sensor Distance [UserUnits Slave]		0	100
PD16/17 Touchprobe Window [UserUnits Master]		0	0
PD18/19 Synchronization Distance [UserUnits Master]		10000	20000
PD20/21 Synchronous Distance [UserUnits Master]		0	0

FlyingSaw Status

PD10/11 act. Cutting length [UserUnits Master]		100000
PD12/13 Elapsed cutting length [UserUnits Master]		38020
PD14/15 act. Sensor distance [UserUnits Master]		0
PD16 act. Master Velocity [UserUnits Master]		100
PD17 res.		0
PD18/19 act. Synchronization Distance [UserUnits Master]		20000
PD20/21 act. Synchronous Distance		0

1 Set **Bit 9 Move to start position = 1**

2 The signal **Bit 9 Move to start position = 0** must be reset again as soon as the saw carriage has reached the start position **A PD 1.7 Setpoint reached / in Pos = 1** so that the slave axis moves back to the start position.

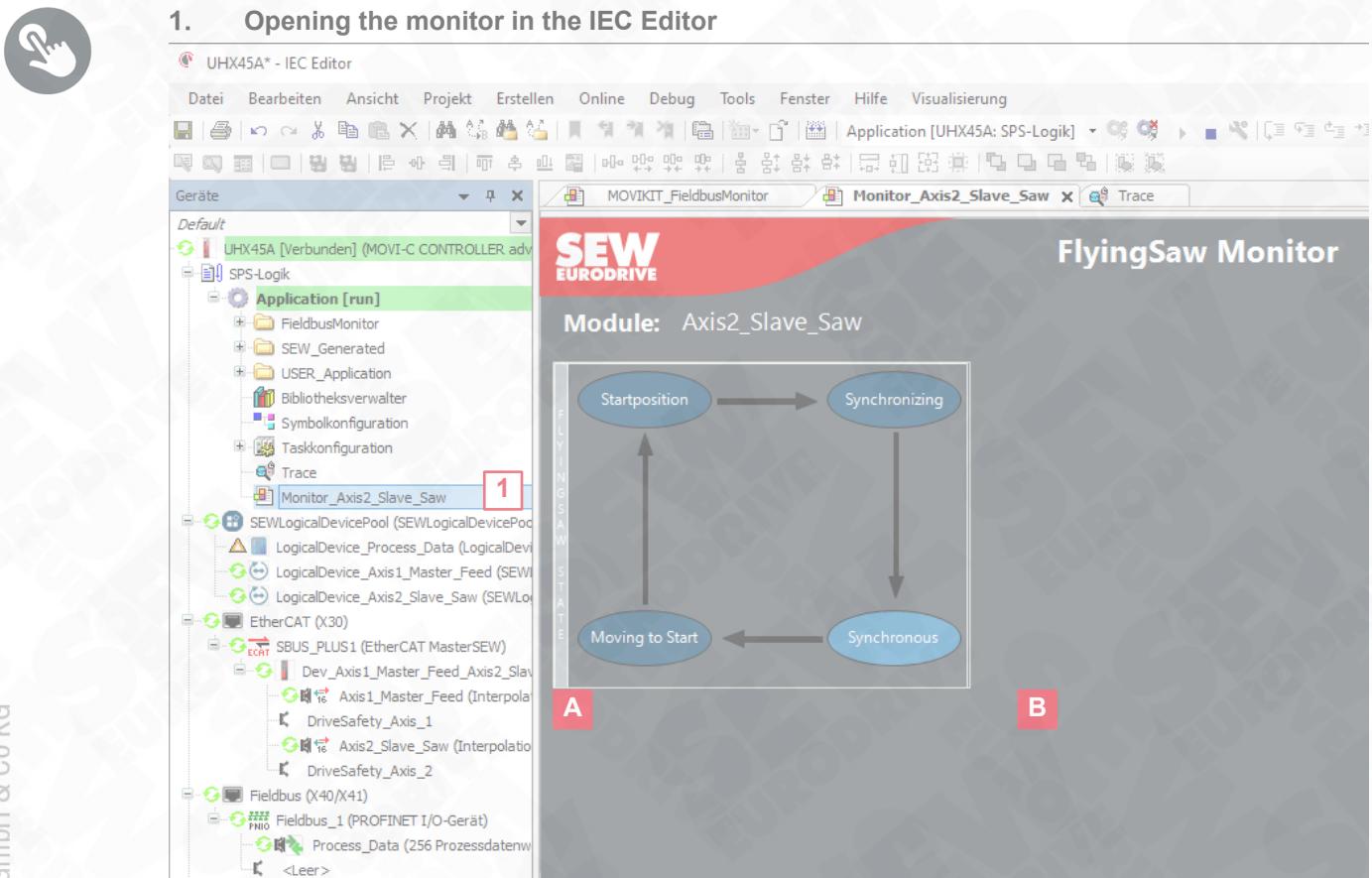
The saw carriage must reach the start position early enough before the material feed reaches the calculated synchronization position of the next cut. Otherwise the saw reports an error or the current product becomes longer than the setpoint. You can parameterize this with the "Monitor back-positioning" parameter in MOVISUITE®.

A **Gearing state = 0 STOPPED** -> The slave axis is desynchronized and does not follow the master axis

6.2.2

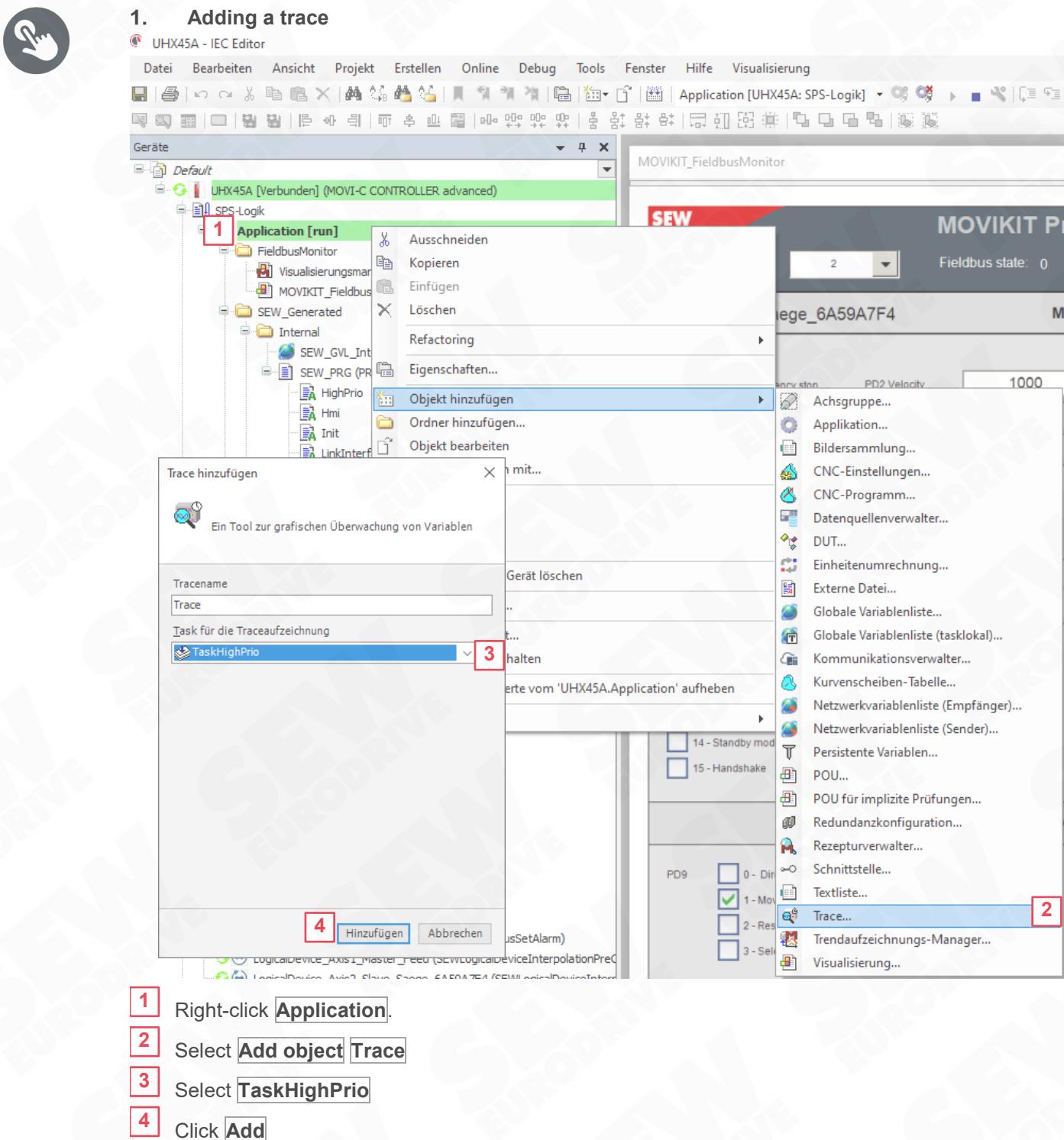
Activating and monitoring the FlyingSaw monitor

1. Opening the monitor in the IEC Editor



6.2.3 Performing a trace recording

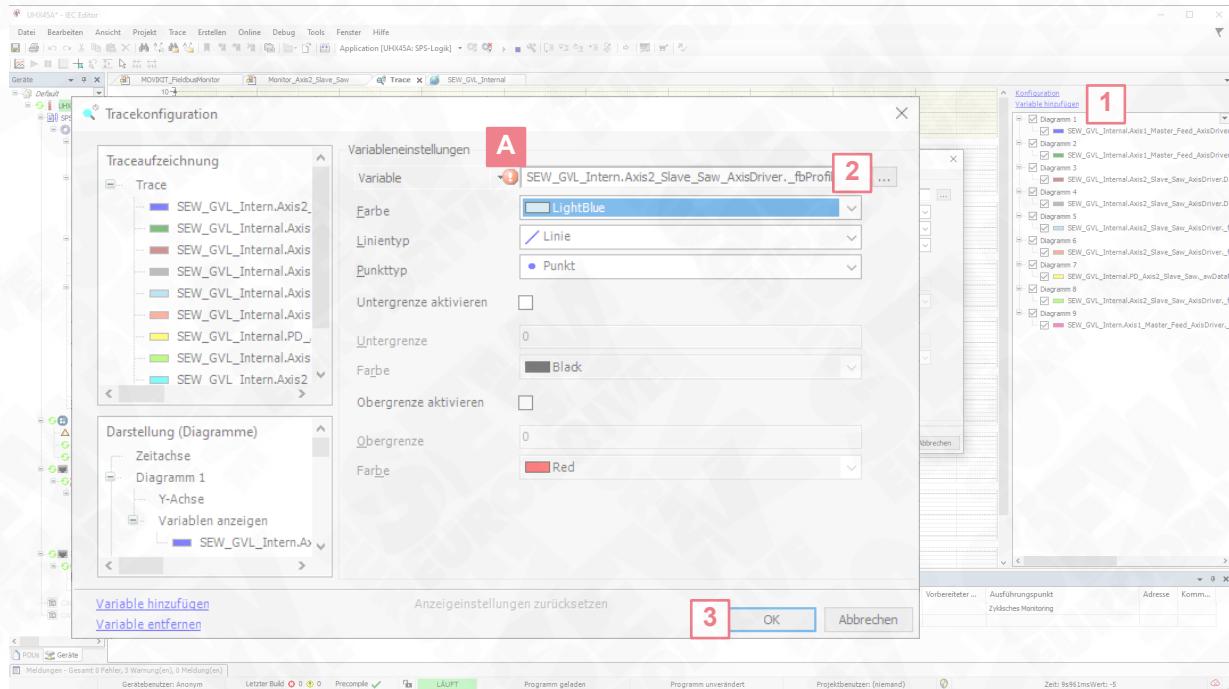
1. Adding a trace



2. Adding variables

There are multiple ways to add variables to the trace:

Copying and pasting the text strings into the input assistant

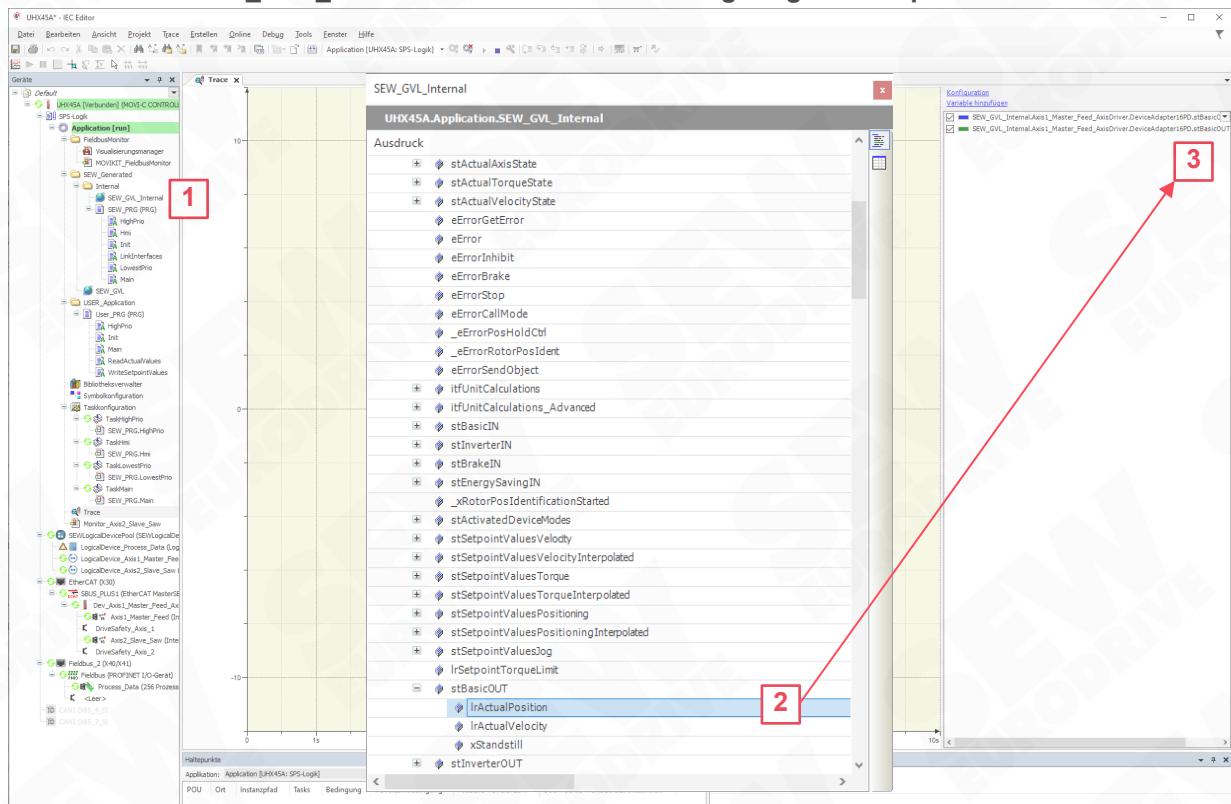


- 1 Click **Add variable**
- 2 Copy the correct variable from the workbook and paste it into the Variable input field
- 3 Click **OK**

A The exclamation point symbol before the Variable input field is also displayed for traceable variables in Codesys Version V3.5.18.2 and is therefore irrelevant to the variables displayed below.



- From the **SEW_GVL_Internal** variable structure using drag-and-drop



- 1 Double-click **SEW_GVL_Internal**
- 2 Choose the correct variable
- 3 Drag the variable into the trace

Variables:

- Virtual linear axis, actual position, and speed:**

```
SEW_GVL_Internal.Axis1_Master_Feed_AxisDriver.DeviceAdapter16PD.StBasicOUT.IrActualPosition
SEW_GVL_Internal.Axis1_Master_Feed_AxisDriver.DeviceAdapter16PD.StBasicOUT.IrActualVelocity
```

- FlyingSaw, actual position, speed, and machine state:**

```
SEW_GVL_Internal.Axis2_Slave_Saw_AxisDriver.DeviceAdapter16PD.StBasicOUT.IrActualPosition
SEW_GVL_Internal.Axis2_Slave_Saw_AxisDriver.DeviceAdapter16PD.StBasicOUT.IrActualVelocity
```

- FlyingSaw, setpoint position, and speed:**

```
SEW_GVL_Internal.Axis2_Slave_Saw_AxisDriver.fbProfileGenerationControl._stOUTInterpolation.St
SetpointsUserUnits.IrPosition
SEW_GVL_Internal.Axis2_Slave_Saw_AxisDriver.fbProfileGenerationControl._stOUTInterpolation.St
SetpointsUserUnits.IrVelocity
```

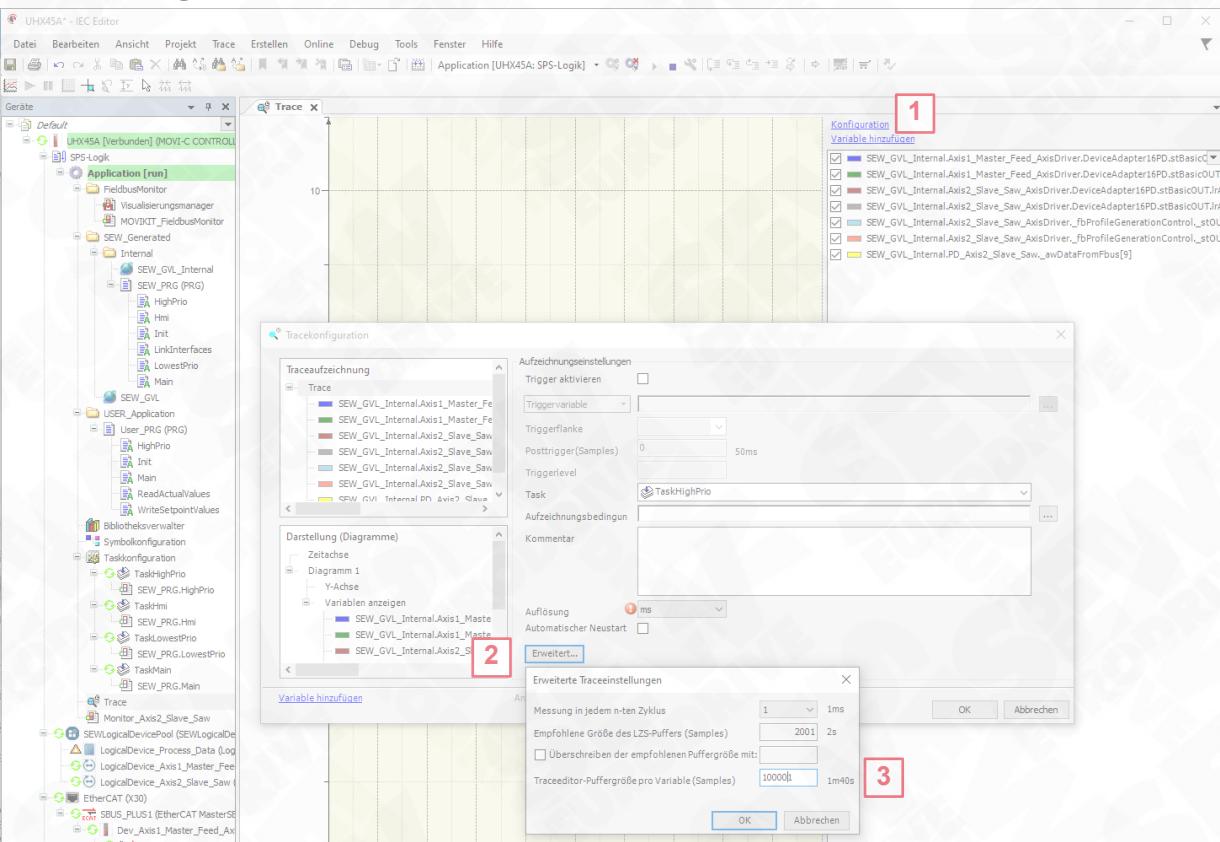
- Synchronous operation state:**

```
SEW_GVL_Internal.Axis2_Slave_Saw_AxisDriver.fbGearingProfile._stOUTSignals.eGearingState
Info: This variable can only be entered by copying and pasting it into the input assistant
```

- Moving to start position:**

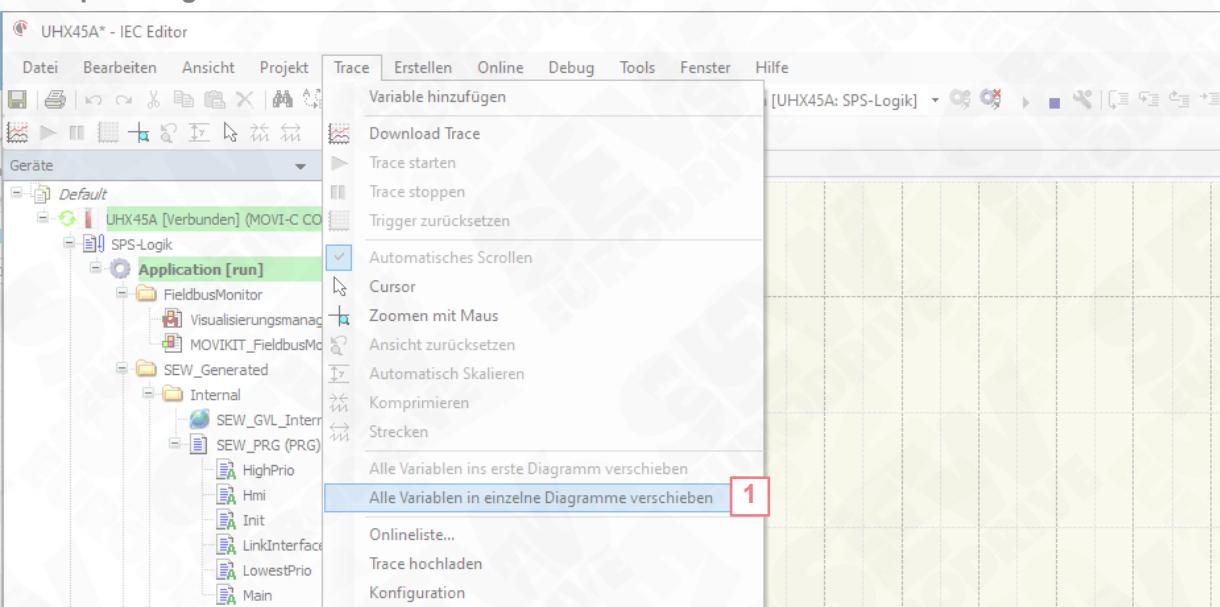
```
SEW_GVL_Internal.PD_Axis2_Slave_SAW._awDataFromFBus[9]
```

3. Increasing the buffer size



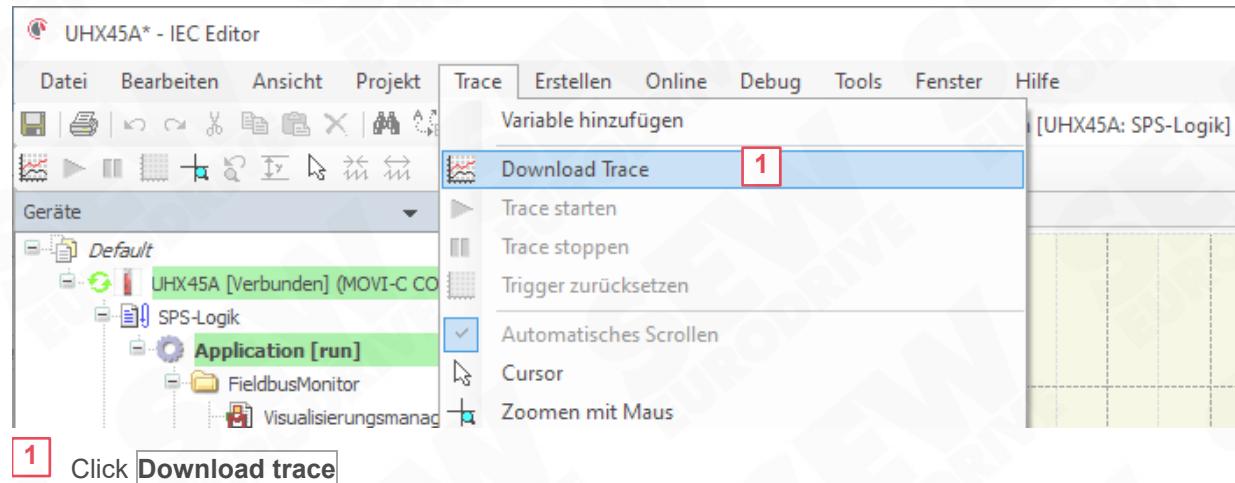
- 1** Click **Configuration**
- 2** Click **Advanced**
- 3** Change the buffer size to **Buffer size = 100001**

4. Optimizing the view

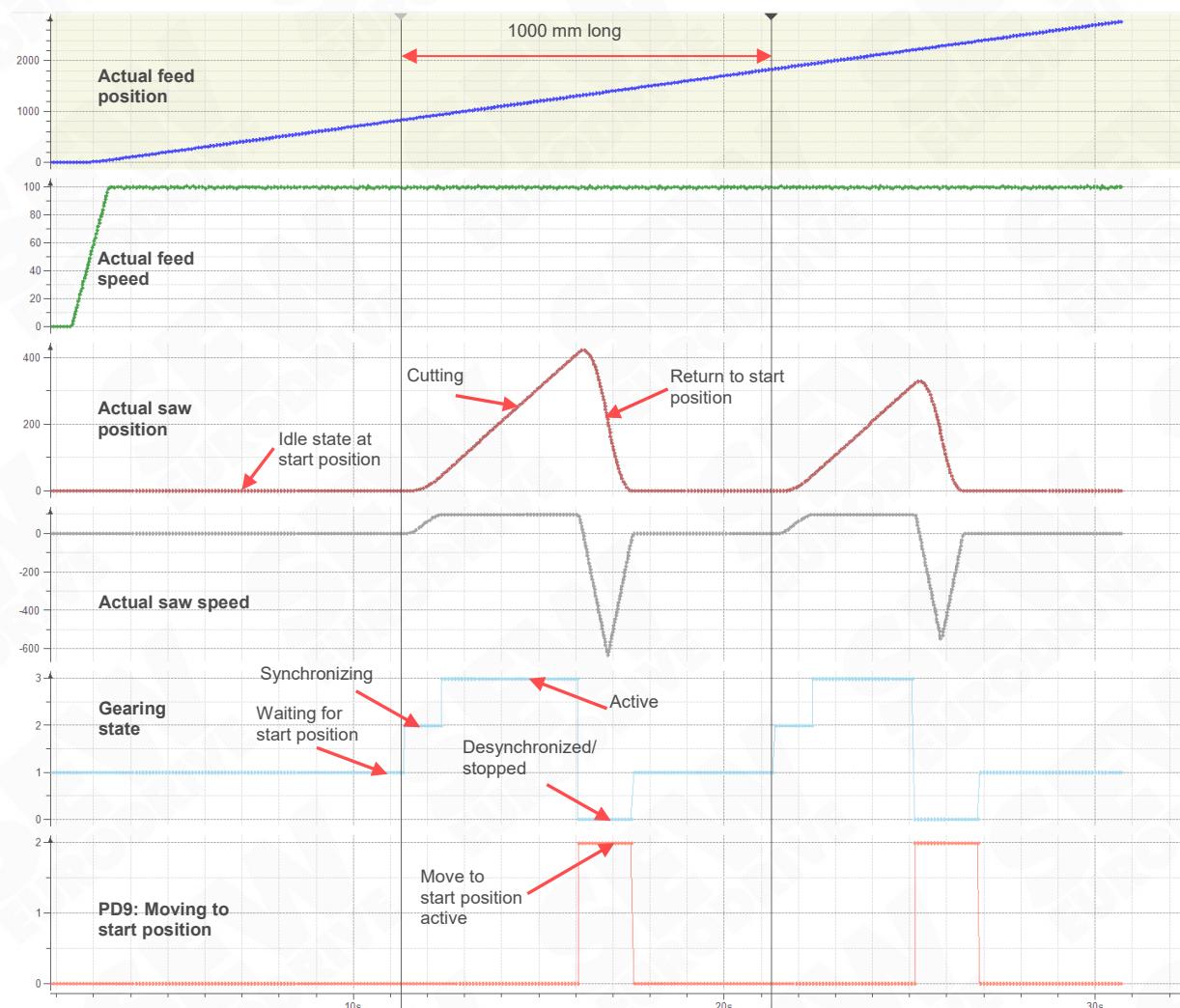


- 1** Click **Move all variables to individual diagrams**

5. Starting the trace



6. Results of the trace measurement

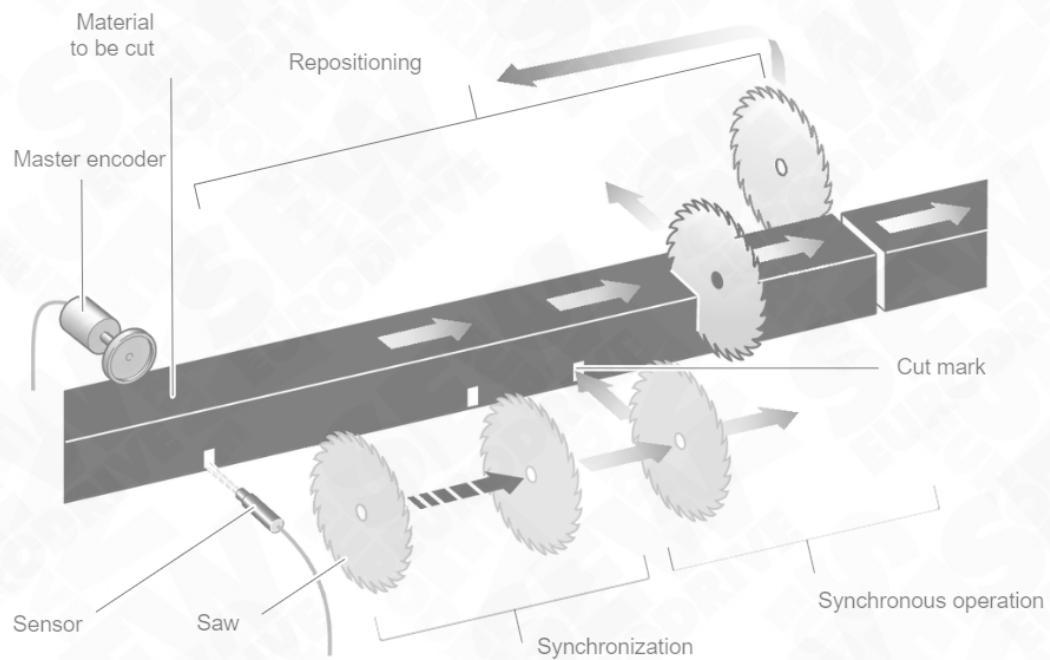


6.3

Flying saw with cut mark control



In cut mark control, a sensor detects the cut marks on the material. This sensor signal is processed in the MOVI-C® CONTROLLER and is used for starting the saw carriage.



6.3.1

Testing the function



The Touchprobe input DI04 is wired to the flying saw. When the Touchprobe is activated (positive edge at DI04), the position of the master axis (Axis1_Master_Feed) is adopted. The following steps show how cut mark control mode is used.



SEW
EURODRIVE

MOVIKIT Process data monitor

Module number: 2 Fieldbus state: 0 Initialized

control monitor

PD start address: 9 PD length: 21

Axis2_Slave_Saw		MOVIKIT FlyingSaw	
PD In <input checked="" type="checkbox"/> 0 - Enable/Emergency stop <input checked="" type="checkbox"/> 1 - Enable/Application stop <input type="checkbox"/> 2 - res. <input type="checkbox"/> 3 - Release brake while inhibit <input type="checkbox"/> 4 - Positive <input type="checkbox"/> 5 - Negative <input type="checkbox"/> 6 - Accept new position <input type="checkbox"/> 7 - Start <input type="checkbox"/> 8 - Reset <input type="checkbox"/> 9 - res. <input type="checkbox"/> 10 - Select drive train 2 <input type="checkbox"/> 11 - res. <input type="checkbox"/> 12 - Disable SW limit switches <input type="checkbox"/> 13 - Inhibit <input type="checkbox"/> 14 - Standby mode <input type="checkbox"/> 15 - Handshake		PD2 Velocity 1000 2 PD3 Acceleration 1000 PD4 Deceleration 1000 3 PD5 Binary outputs 0 PD6 Mode 1402 1 1402 - Application automatic variant 2 PD7/8 Position 0	PD Out <input checked="" type="checkbox"/> 0 - Ready <input checked="" type="checkbox"/> 1 - /Safe stop <input type="checkbox"/> 2 - Powered <input type="checkbox"/> 3 - Brake released <input type="checkbox"/> 4 - Motor turning <input checked="" type="checkbox"/> 5 - Referenced <input type="checkbox"/> 6 - New position accepted <input checked="" type="checkbox"/> 7 - Setpoint reached / In Pos. <input type="checkbox"/> 8 - Error <input checked="" type="checkbox"/> 9 - Warning <input type="checkbox"/> 10 - Drive train 2 active <input type="checkbox"/> 11 - In velocity <input checked="" type="checkbox"/> 12 - SW limit switches disabled <input type="checkbox"/> 13 - res. <input type="checkbox"/> 14 - Standby active <input type="checkbox"/> 15 - Handshake out
FlyingSaw Parameters			
PD9 <input type="checkbox"/> 0 - Direct cut <input type="checkbox"/> 1 - Move to start position <input type="checkbox"/> 2 - Reserved <input type="checkbox"/> 3 - Select Gear-in-Gear-out on the fly	PD9 <input type="checkbox"/> 0 - Busy <input type="checkbox"/> 1 - In gear <input type="checkbox"/> 2 - Reserved	Gearing state 0 A STOPPED	
PD10/11 Cutting Length [UserUnits Master] 100000 4 PD12 Cutting Angle [°] 0 PD13 Reserved 0 PD14/15 Sensor Distance [UserUnits Slave] 25000 5 PD16/17 Touchprobe Window [UserUnits Master] 0 4 PD18/19 Synchronization Distance [UserUnits Master] 10000 6 PD20/21 Synchronous Distance [UserUnits Master] 0	PD10/11 act. Cutting length [UserUnits Master] 100000 PD12/13 Elapsed cutting length [UserUnits Master] 0 PD14/15 act. Sensor distance [UserUnits Master] 25000 PD16 act. Master Velocity [UserUnits Master] 0 PD17 res. 0 PD18/19 act. Synchronization Distance [UserUnits Master] 0 PD20/21 act. Synchronous Distance 0		

- 1 Set the cut mark control with **PD6 Mode = 1402**
- 2 Set the speed setpoint **PD2 Velocity = 1000 mm/s**. This is the speed setpoint for returning to the start position.
- 3 Set the acceleration and deceleration to **PD3 Acceleration and PD4 Deceleration 1000 mm/s²**
- 4 Set **PD10/11 Cutting Length = 10000** and **PD 16/17 Touchprobe Window = 0** to receive all Touchprobe signals and simplify the exercise
- A If no Touchprobe is activated when starting the saw, the axis reports an error after one cut length.
- 5 Set the sensor distance to the cut mark to **PD14/15 Sensor Distance = 25000**
- 6 Set the synchronization distance by which the saw is synchronized with the master axis before the cut to **PD18/19 = 10000**

Axis1_Master_Feed		MOVKIT Gearing	
PD In <input checked="" type="checkbox"/> 0 - Enable/Emergency stop <input checked="" type="checkbox"/> 1 - Enable/Application stop <input type="checkbox"/> 2 - res. <input type="checkbox"/> 3 - Release brake while inhibit <input type="checkbox"/> 4 - Positive <input type="checkbox"/> 5 - Negative <input type="checkbox"/> 6 - Accept new position <input checked="" type="checkbox"/> 7 - Start <input type="checkbox"/> 8 - Reset <input type="checkbox"/> 9 - res. <input type="checkbox"/> 10 - Select drive train 2 <input type="checkbox"/> 11 - res. <input type="checkbox"/> 12 - Disable SW limit switches <input type="checkbox"/> 13 - Inhibit <input type="checkbox"/> 14 - Standby mode <input type="checkbox"/> 15 - Handshake		PD Out <input checked="" type="checkbox"/> 0 - Ready <input checked="" type="checkbox"/> 1 - /Safe stop <input checked="" type="checkbox"/> 2 - Powered <input checked="" type="checkbox"/> 3 - Brake released <input checked="" type="checkbox"/> 4 - Motor turning <input checked="" type="checkbox"/> 5 - Referenced <input type="checkbox"/> 6 - New position accepted <input type="checkbox"/> 7 - Setpoint reached / In Pos. <input type="checkbox"/> 8 - Error <input checked="" type="checkbox"/> 9 - Warning <input type="checkbox"/> 10 - Drive train 2 active <input checked="" type="checkbox"/> 11 - In velocity <input checked="" type="checkbox"/> 12 - SW limit switches disabled <input type="checkbox"/> 13 - res. <input type="checkbox"/> 14 - Standby active <input type="checkbox"/> 15 - Handshake out	PD2 Velocity 50 2 PD3 Acceleration 100 3 PD4 Deceleration 100 PD5 Binary outputs 0 PD6 Mode 200 1 PD7/8 Position 0 PD2 Act. Velocity 50 PD3 Status / Error ID 10 PD4 Act. Torque 17 PD5 Binary inputs 1 PD6 act. Mode 200 PD7/8 act. Position -20475089 PD8 Act. Position 200 - Velocity

- 1** Set your master axis to **Mode 200**: Speed
- 3** Set the speed setpoint to **50 mm/s** to get a slow feed.
- 4** Set the acceleration and deceleration to **100 mm/s²**

It is very important that the master axis is not too slow. If the master rotational speed is too slow, the Touchprobe function will not function.

SEW **MOVIKIT Process data monitor** **control** **monitor**

Module number 2 Fieldbus state: 2 Communication PD start address: 9
PD length: 19

Axis2_Slave_Saw **MOVIKIT FlyingSaw**

PD In		PD Out			
<input checked="" type="checkbox"/> 0 - Enable/Emergency stop	PD2 Velocity	1000	<input checked="" type="checkbox"/> 0 - Ready	PD2 Act. Velocity	0
<input checked="" type="checkbox"/> 1 - Enable/Application stop	PD3 Acceleration	1000	<input checked="" type="checkbox"/> 1 - /Safe stop	PD3 Status / Error ID	10
<input type="checkbox"/> 2 - res.	PD4 Deceleration	1000	<input checked="" type="checkbox"/> 2 - Powered	Warning Trial license active!	
<input type="checkbox"/> 3 - Release brake while inhibit	PD5 Binary outputs	0	<input checked="" type="checkbox"/> 3 - Brake released	PD4 Act. Torque	-28
<input type="checkbox"/> 4 - Positive	PD6 Mode	1402	<input checked="" type="checkbox"/> 4 - Motor turning	PD5 Binary inputs	17
<input type="checkbox"/> 5 - Negative	PD7/8 Position	0	<input checked="" type="checkbox"/> 5 - Referenced	PD6 act. Mode	1402
<input type="checkbox"/> 6 - Accept new position			<input checked="" type="checkbox"/> 6 - New position accepted	PD7/8 act. Position	0
<input checked="" type="checkbox"/> 7 - Start			<input checked="" type="checkbox"/> 7 - Setpoint reached / In Pos.		
<input type="checkbox"/> 8 - Reset			<input type="checkbox"/> 8 - Error		
<input type="checkbox"/> 9 - res.			<input checked="" type="checkbox"/> 9 - Warning		
<input type="checkbox"/> 10 - Select drive train 2			<input type="checkbox"/> 10 - Drive train 2 active		
<input type="checkbox"/> 11 - res.			<input type="checkbox"/> 11 - In velocity		
<input type="checkbox"/> 12 - Disable SW limit switches			<input checked="" type="checkbox"/> 12 - SW limit switches disabled		
<input type="checkbox"/> 13 - Inhibit			<input type="checkbox"/> 13 - res.		
<input type="checkbox"/> 14 - Standby mode			<input type="checkbox"/> 14 - Standby active		
<input type="checkbox"/> 15 - Handshake			<input type="checkbox"/> 15 - Handshake out		

FlyingSaw Parameters

PD9	<input type="checkbox"/> 0 - Direct cut <input type="checkbox"/> 1 - Move to start position <input type="checkbox"/> 2 - Reserved <input type="checkbox"/> 3 - Reserved	PD9	<input checked="" type="checkbox"/> 0 - Busy <input type="checkbox"/> 1 - In gear <input type="checkbox"/> 2 - Reserved	Gearing state	1
PD10/11 Cutting Length [UserUnits Master]	100000	PD10/11 act. Cutting length [UserUnits Master]	0		
PD12 Cutting Angle [°]	0	PD12/13 Elapsed cutting length [UserUnits Master]	33175		
PD13 Reserved	0	PD14/15 act. Sensor distance [UserUnits Master]	25000		
PD14/15 Sensor Distance [UserUnits Slave]	25000	PD16 act. Master Velocity [UserUnits Master]	50		
PD16/17 Touchprobe Window [UserUnits Master]	100000	PD17 res.	0		
PD18/19 Synchronization Distance [UserUnits Master]	10000	PD18/19 act. Synchronization Distance [UserUnits Master]	0		

- 1** Start the saw and activate the Touchprobe. The state of the synchronous operation of the axis changes to 1 "Waiting for start position."
- 2** As soon as the material feed axis reaches the calculated synchronization position, the state of the synchronous operation changes to 2 "Gear in" and then to 3 "Active."
- 3** As soon as the saw is synchronous, activate PD9 = 1 "Move to start position" to reset the saw for the next step.
- 4** Activate the Touchprobe again to start a second cut.

6.3.2

Performing a trace recording



Perform the trace recording as described in the chapter above. Enter the following variables into the trace for this:

Variables:

- **Virtual linear axis, actual position, and speed:**

```
SEW_GVL_Internal.Axis1_Master_Feed_AxisDriver.DeviceAdapter16PD.StBasicOUT.IrActualPosition  
SEW_GVL_Internal.Axis1_Master_Feed_AxisDriver.DeviceAdapter16PD.StBasicOUT.IrActualVelocity
```

- **FlyingSaw, setpoint position, and speed:**

```
SEW_GVL_Internal.Axis2_Slave_Saw_AxisDriver.fbProfileGenerationControl.stOUTInterpolation.St  
SetpointsUserUnits.IrPosition  
SEW_GVL_Internal.Axis2_Slave_Saw_AxisDriver.fbProfileGenerationControl.stOUTInterpolation.St  
SetpointsUserUnits.IrVelocity
```

- **Synchronous operation state:**

```
SEW_GVL_Internal.Axis2_Slave_Saw_AxisDriver.fbGearingProfile.stOUTSignals.eGearingState
```

Info: This variable can only be entered by copying and pasting it into the input assistant

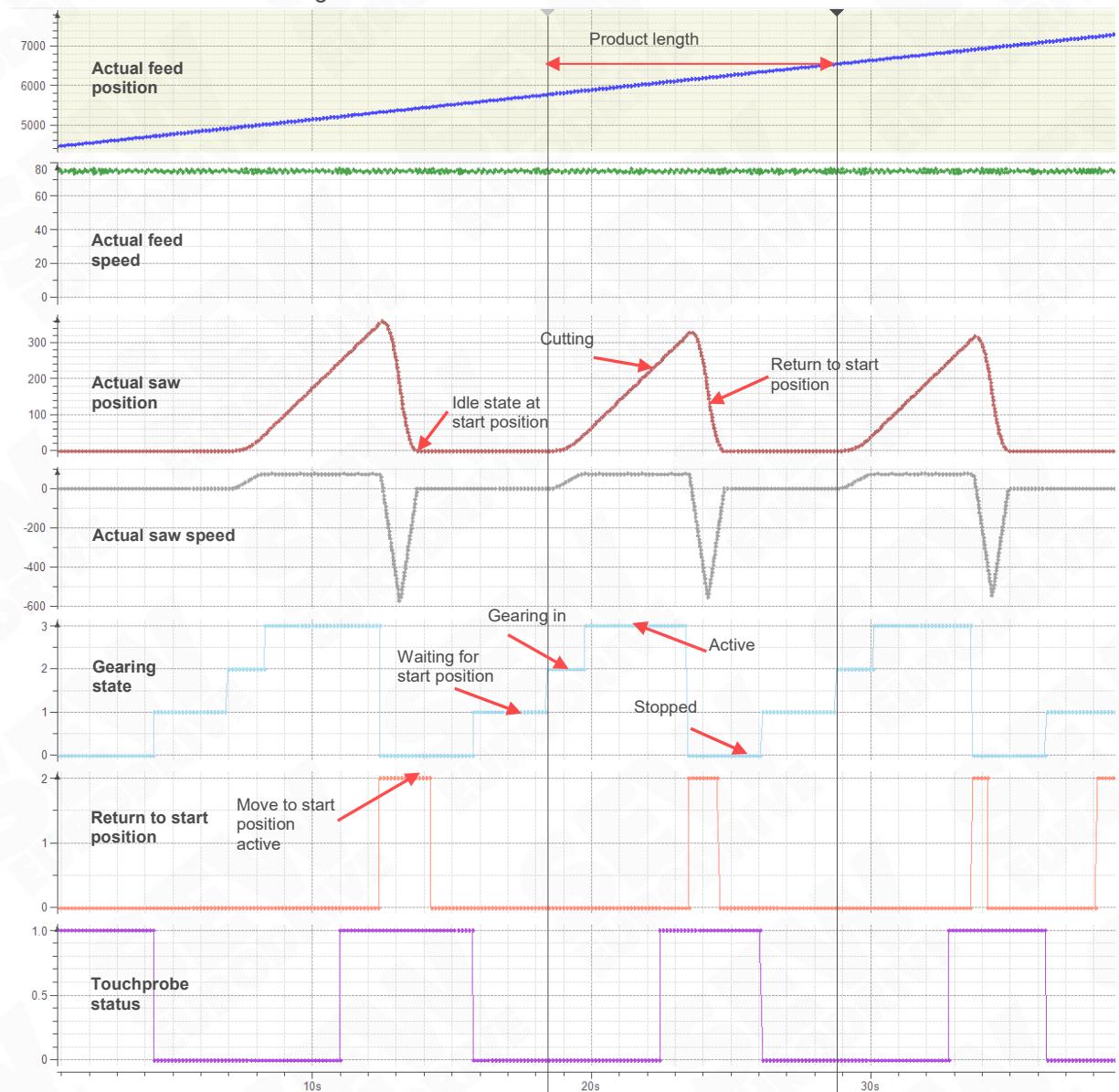
- **Moving to start position:**

```
SEW_GVL_Internal.PD_Axis2_Slave_SAW.awDataFromFBus[9]
```

- **Touchprobe signal:**

```
SEW_GVL_Internal.Axis2_Slave_Saw_AxisDriver.fbTouchprobe.stOUTSignals.xaktiv
```

Results of the trace recording:

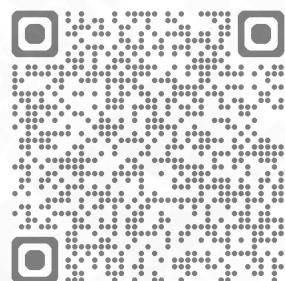


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