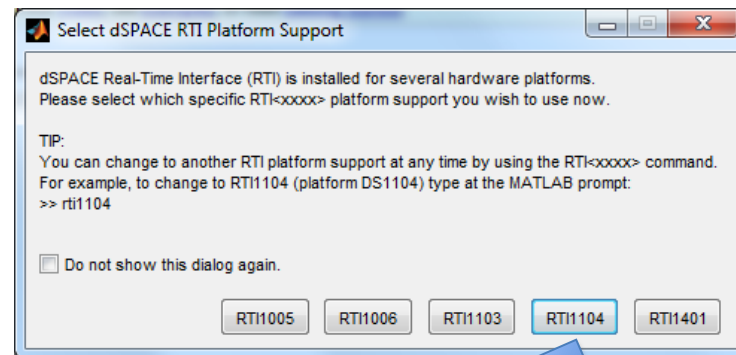


# **Produktionstechnik Praktikum –** Matlab Simulink / dSpace

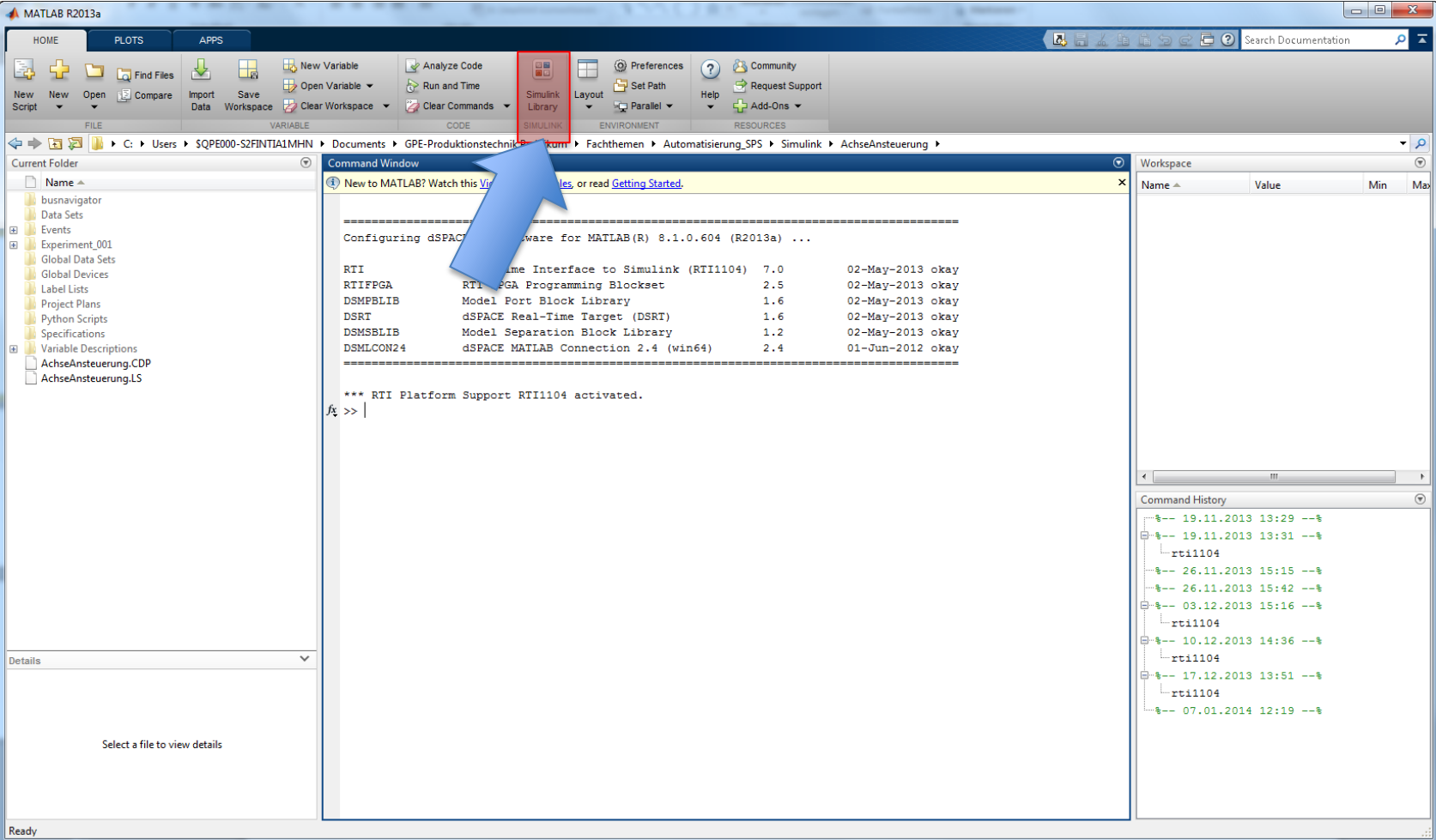
## Verknüpfung mit dSpace Box

Zu Beginn:

- dSpace Box am PC einstecken
- Dongel einstecken
- Projektordner anlegen
- Matlab R2013a starten



# Öffnen von Simulink Bibliothek



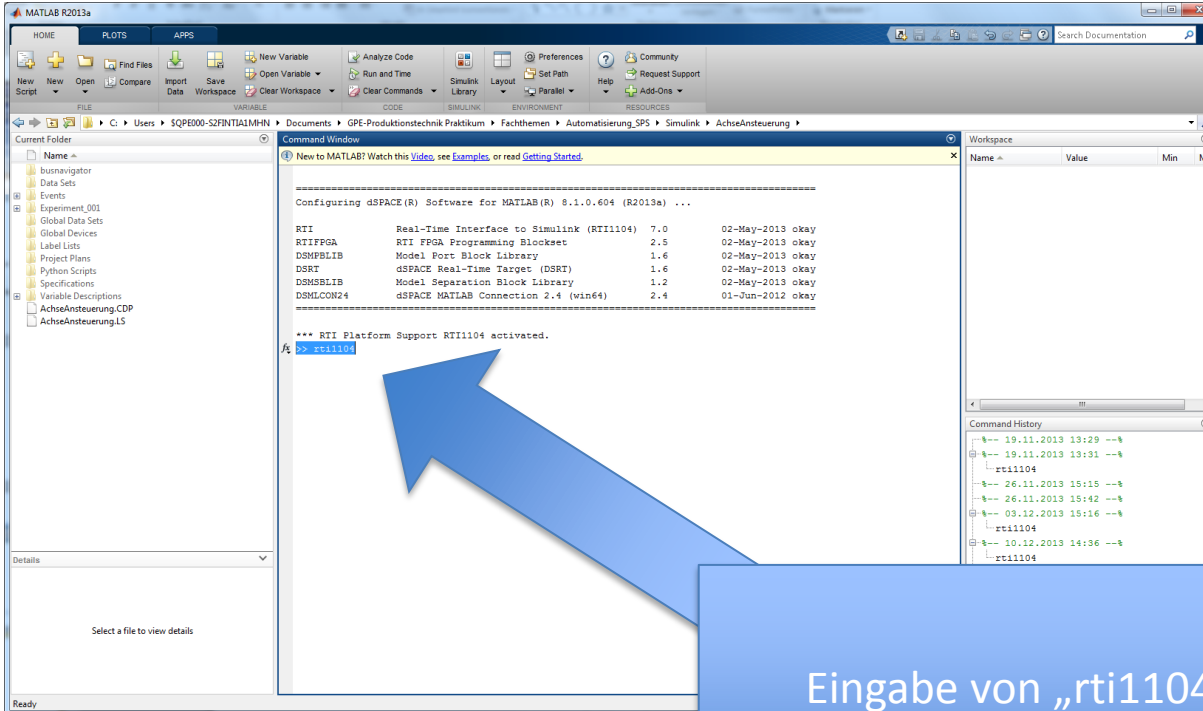
The screenshot shows the MATLAB R2013a interface. The Simulink Library menu item is highlighted with a red box and a blue arrow. The Command Window displays the following output:

```
Configuring dSPACE software for MATLAB(R) 8.1.0.604 (R2013a) ...  
  
RTI Real-Time Interface to Simulink (RTI1104) 7.0 02-May-2013 okay  
RTIFFGA RTI1104 Programming Blockset 2.5 02-May-2013 okay  
DSMPBLIB Model Port Block Library 1.6 02-May-2013 okay  
DSRT dSPACE Real-Time Target (DSRT) 1.6 02-May-2013 okay  
DSMSBLIB Model Separation Block Library 1.2 02-May-2013 okay  
DSMLCON24 dSPACE MATLAB Connection 2.4 (win64) 2.4 01-Jun-2012 okay  
  
*** RTI Platform Support RTI1104 activated.  
fx >> |
```

The Command History window shows the following entries:

```
19.11.2013 13:29 --%  
19.11.2013 13:31 --%  
    rti1104  
26.11.2013 15:15 --%  
26.11.2013 15:42 --%  
03.12.2013 15:16 --%  
    rti1104  
10.12.2013 14:36 --%  
    rti1104  
17.12.2013 13:51 --%  
    rti1104  
07.01.2014 12:19 --%
```

# Starten der dSpace Bibliothek



```
Configuring dSPACE(R) Software for MATLAB(R) 8.1.0.604 (R2013a) ...
-----
RTI          Real-Time Interface to Simulink (RTI1104)    7.0    02-May-2013 okay
RTI1104     RTI FPGA Programming Blockset                        2.5    02-May-2013 okay
DSMPBLIB    Model Port Block Library                             1.6    02-May-2013 okay
DSRT        dSPACE Real-Time Target (DSRT)                       1.6    02-May-2013 okay
DSMSBLIB    Model Separation Block Library                       1.2    02-May-2013 okay
DSMLCON24   dSPACE MATLAB Connection 2.4 (win64)                 2.4    01-Jun-2012 okay
-----

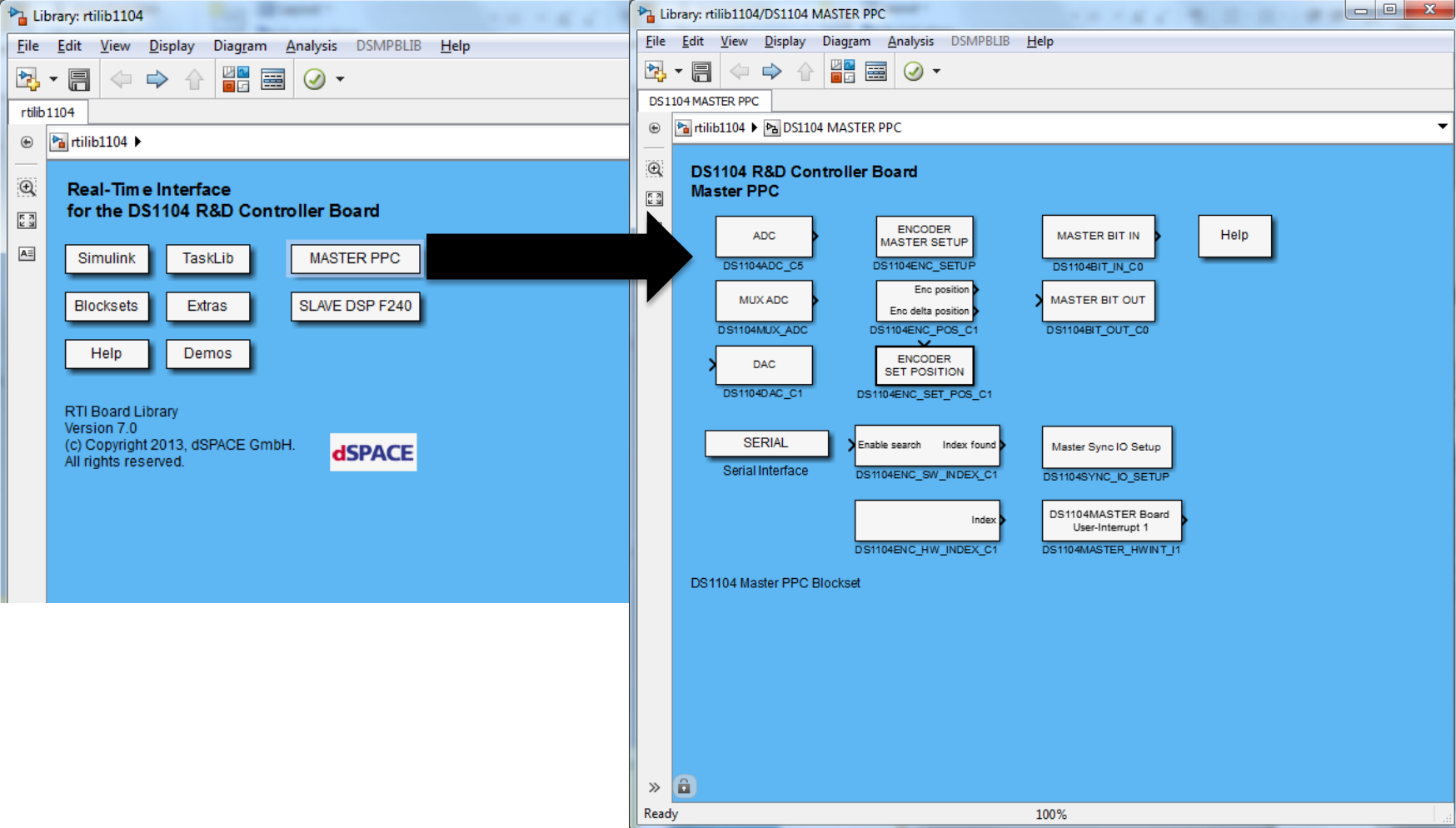
*** RTI Platform Support RTI1104 activated.
>> rti1104
```

Name	Value	Min	Max

```
Command History
-- 19.11.2013 13:29 -->
-- 19.11.2013 13:31 -->
>> rti1104
-- 26.11.2013 15:15 -->
-- 26.11.2013 15:42 -->
-- 03.12.2013 15:16 -->
>> rti1104
-- 10.12.2013 14:36 -->
>> rti1104
```

Eingabe von „rti1104“ und bestätigen mit Enter

# dSpace Ein- und Ausgänge

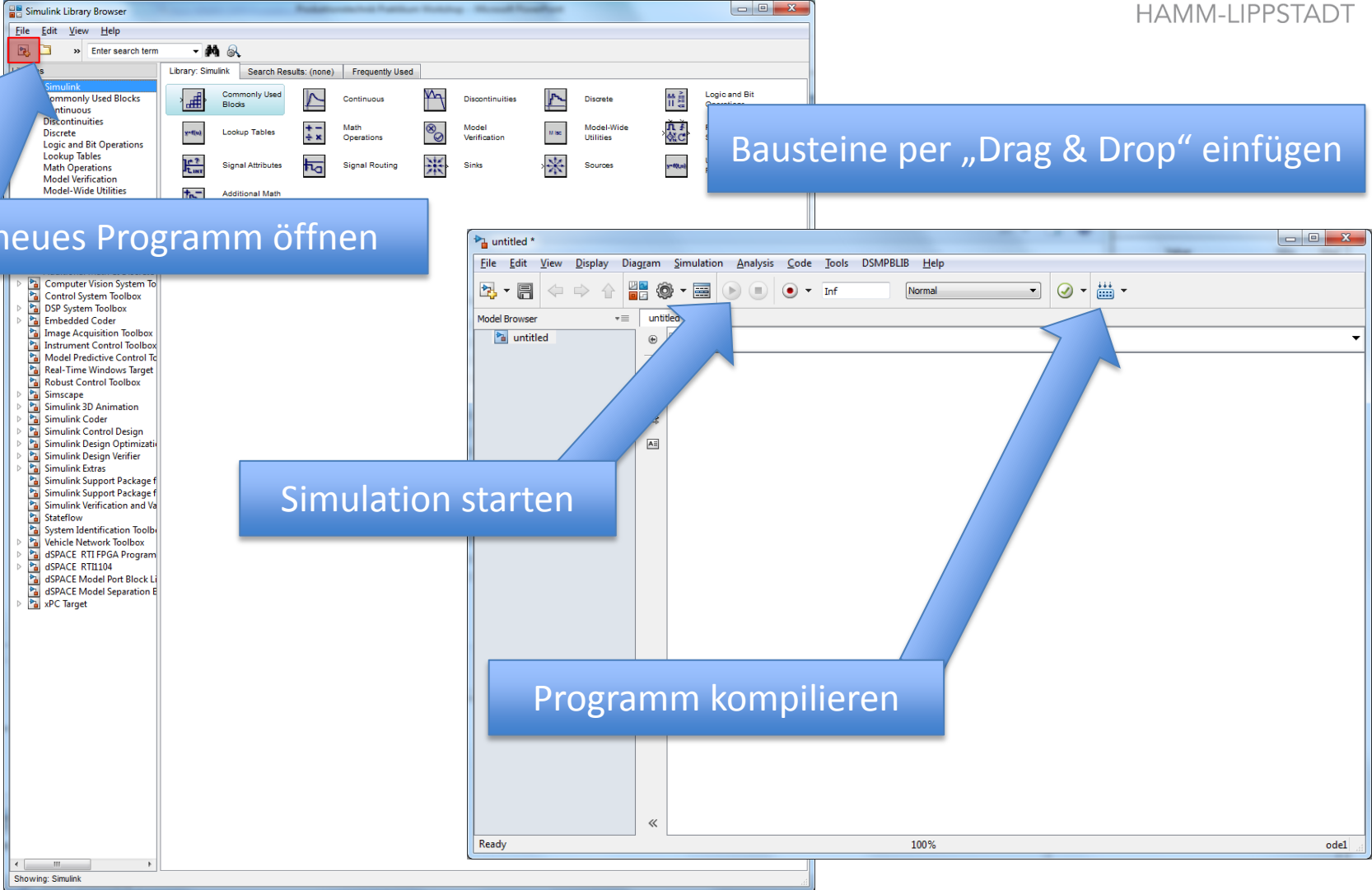


The image displays two windows from the dSPACE software interface. The left window, titled 'Library: rtilib1104', shows the 'Real-Time Interface for the DS1104 R&D Controller Board'. It contains several buttons: Simulink, TaskLib, MASTER PPC, Blocksets, Extras, SLAVE DSP F240, Help, and Demos. A black arrow points from the 'MASTER PPC' button to the right window. The right window, titled 'Library: rtilib1104/DS1104 MASTER PPC', shows the 'DS1104 R&D Controller Board Master PPC' block diagram. The diagram includes the following components and ports:

- ADC (DS1104ADC\_C5)
- MUX ADC (DS1104MUX\_ADC)
- DAC (DS1104DAC\_C1)
- SERIAL (Serial Interface)
- ENCODER MASTER SETUP (DS1104ENC\_SETUP)
- Enc position / Enc delta position (DS1104ENC\_POS\_C1)
- ENCODER SET POSITION (DS1104ENC\_SET\_POS\_C1)
- MASTER BIT IN (DS1104BIT\_IN\_C0)
- MASTER BIT OUT (DS1104BIT\_OUT\_C0)
- Enable search / Index found (DS1104ENC\_SW\_INDEX\_C1)
- Index (DS1104ENC\_HW\_INDEX\_C1)
- Master Sync IO Setup (DS1104SYNC\_IO\_SETUP)
- DS1104MASTER Board User-Interrupt 1 (DS1104MASTER\_HWINT\_1)

At the bottom of the right window, it says 'DS1104 Master PPC Blockset' and 'Ready'.

# Öffnen eines neuen Programms



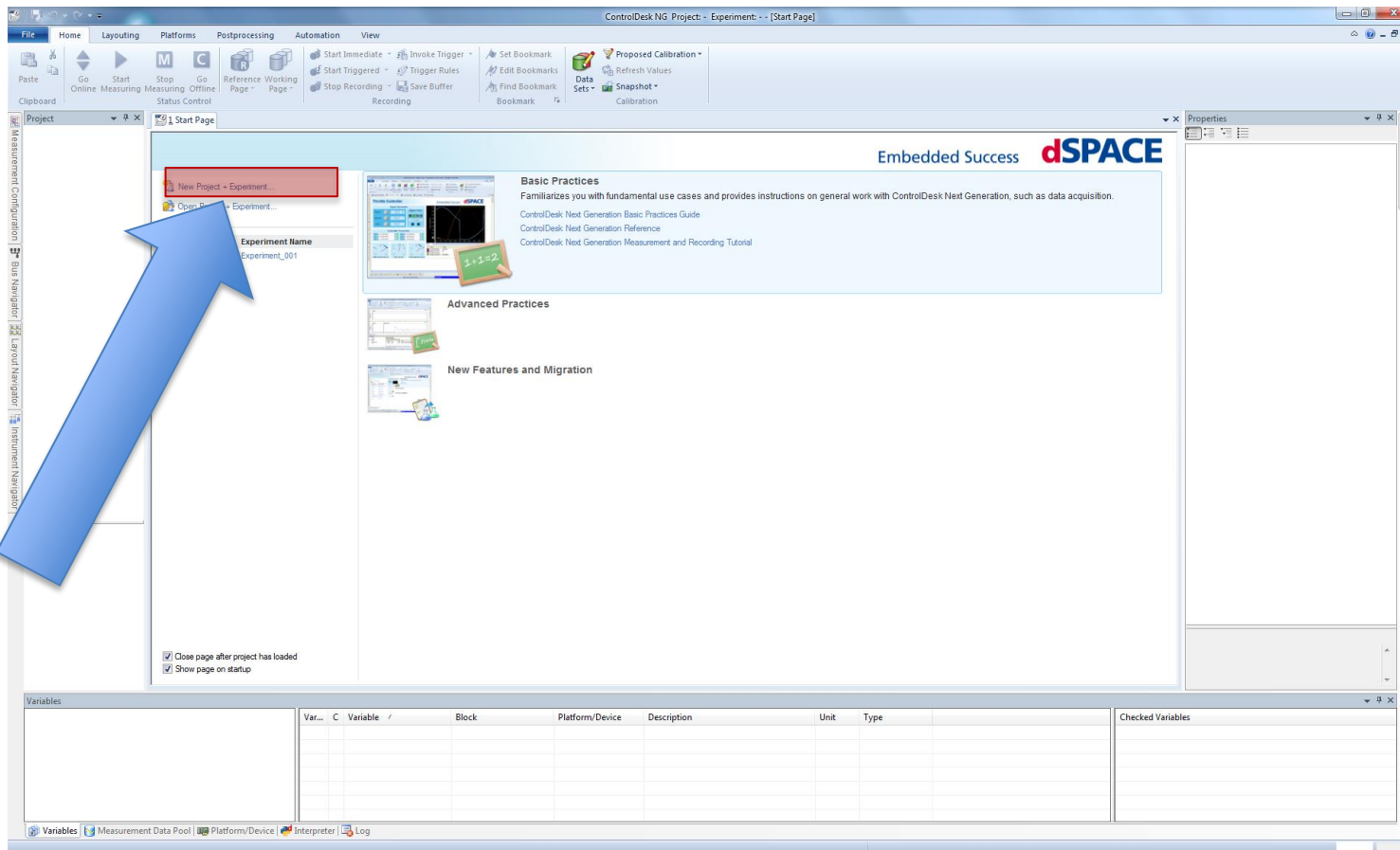
The image shows two windows from the Simulink software. The top window is the 'Simulink Library Browser', which displays a list of blocks on the left and a grid of block icons on the right. A blue arrow points to the 'File' menu icon in the top-left corner of this window. A blue callout box below it contains the text 'neues Programm öffnen'. Another blue arrow points from the right side of the browser window to the main Simulink workspace window below. A blue callout box to the right of the browser window contains the text 'Bausteine per „Drag & Drop“ einfügen'. The bottom window is the main Simulink workspace, titled 'untitled'. It shows a menu bar with 'File', 'Edit', 'View', 'Display', 'Diagram', 'Simulation', 'Analysis', 'Code', 'Tools', 'DSMPBLIB', and 'Help'. Below the menu bar is a toolbar with various icons. A blue arrow points from the 'Simulation' menu to a 'Simulation' button in the toolbar. A blue callout box below it contains the text 'Simulation starten'. Another blue arrow points from the 'Simulation' menu to a 'Compile' button in the toolbar. A blue callout box below it contains the text 'Programm kompilieren'. The workspace area is currently empty.

## Allgemeines Handling

- Blöcke können durch „Drag & Drop“ in das jeweilige Programmfenster gezogen werden
- Bei Doppelklick auf einen Baustein öffnet sich das Einstellungsfenster für ggf. Parametereinstellungen

# ControlDesk

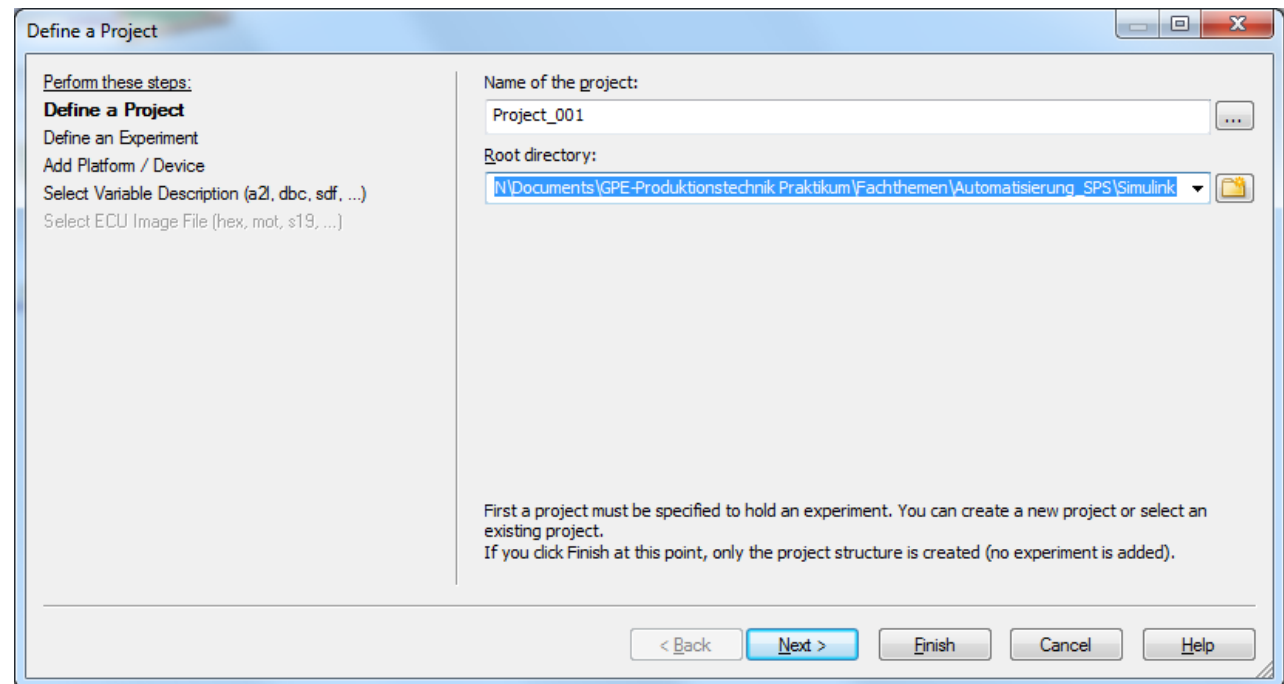
Start via Desktop Icon „dSpace ControlDesk 5.0“



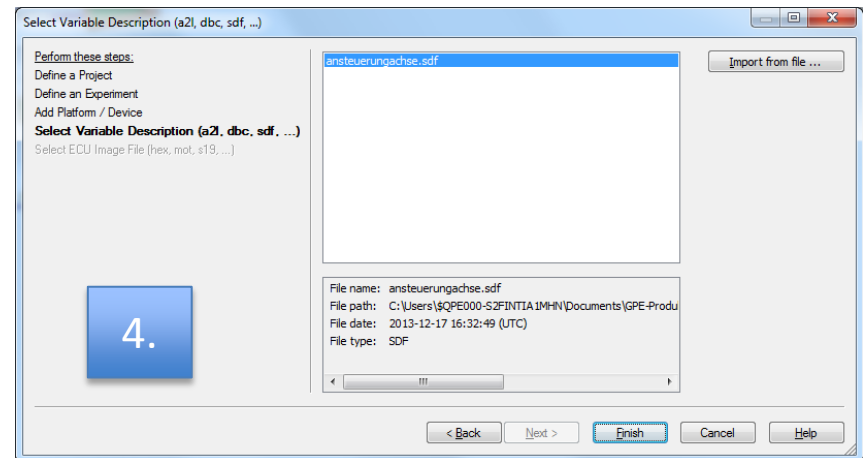
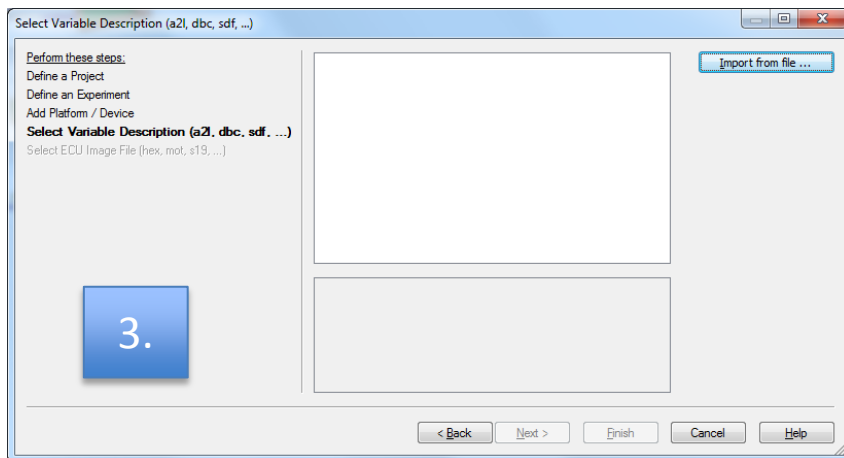
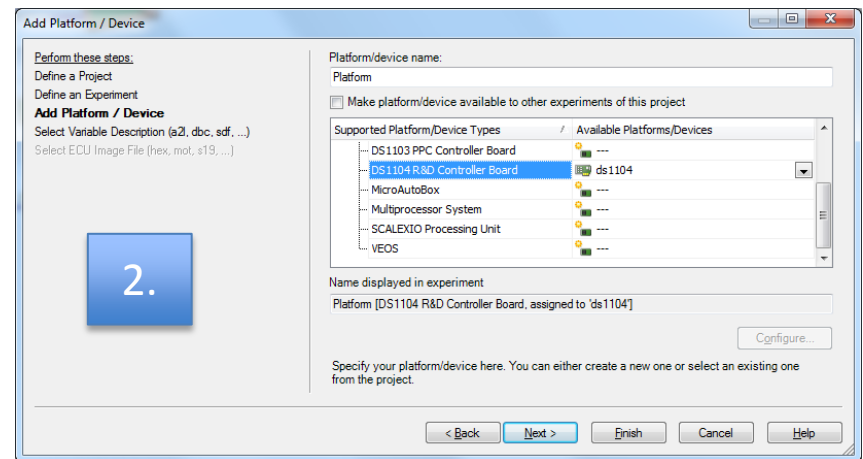
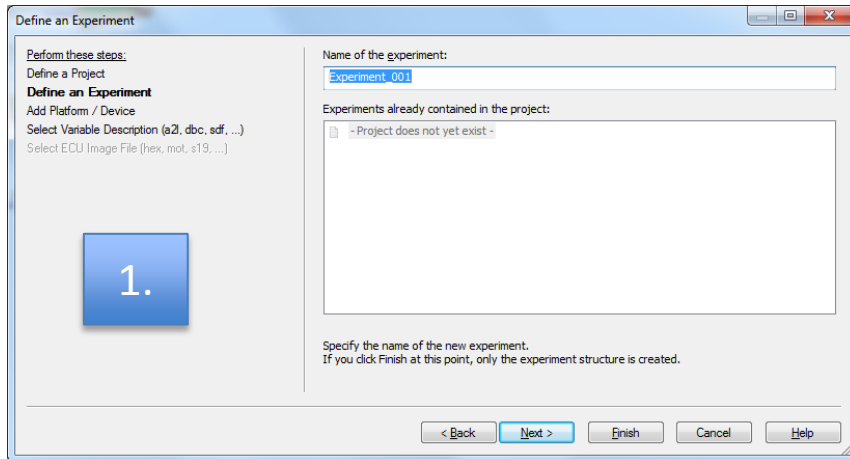


## Vorgang zur Erstellung eines neues Projekts

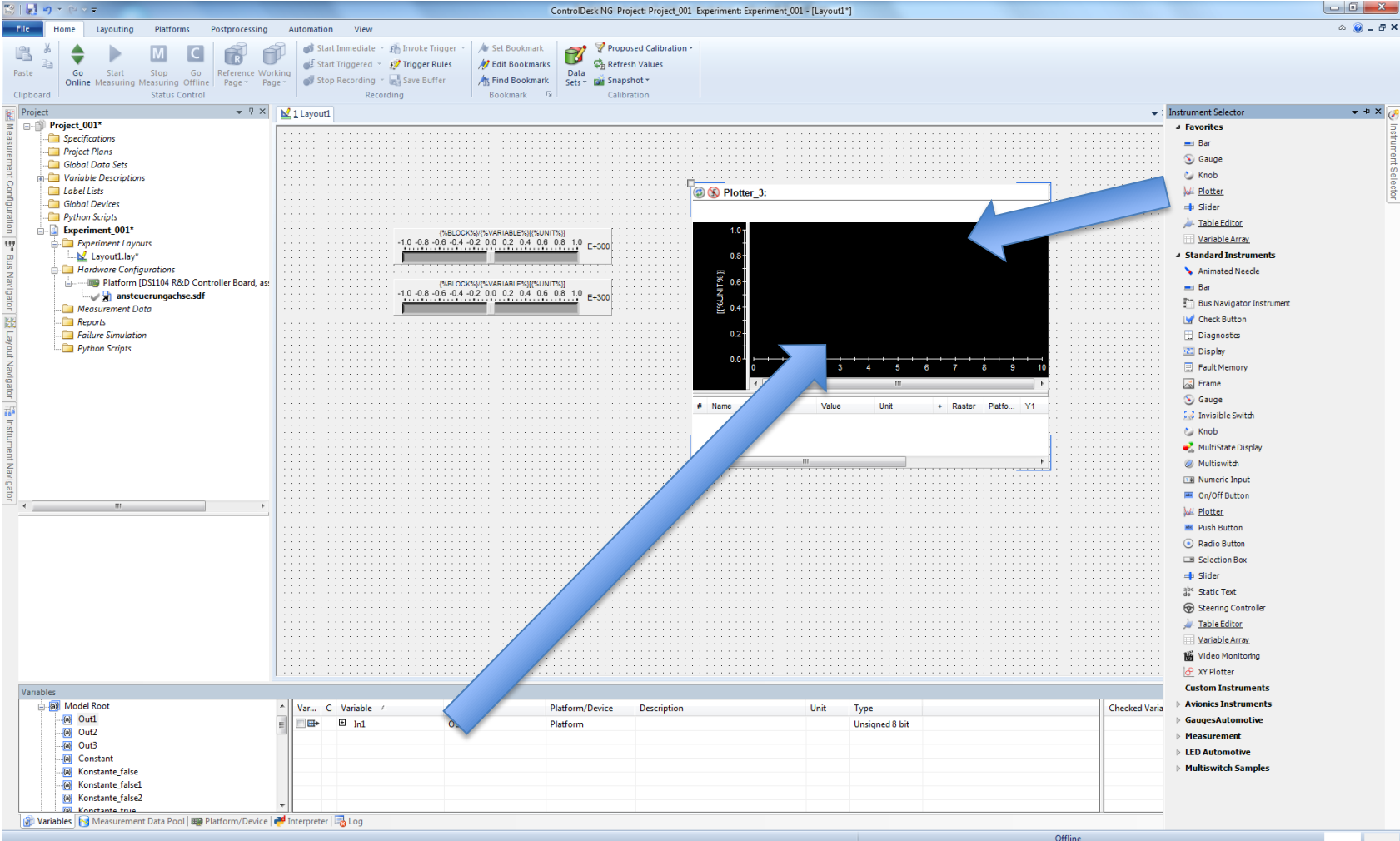
- Projektname definieren
- Testordner erstellen (kann im Nachgang wieder gelöscht werden)



# Vorgang zur Erstellung eines neues Projekts

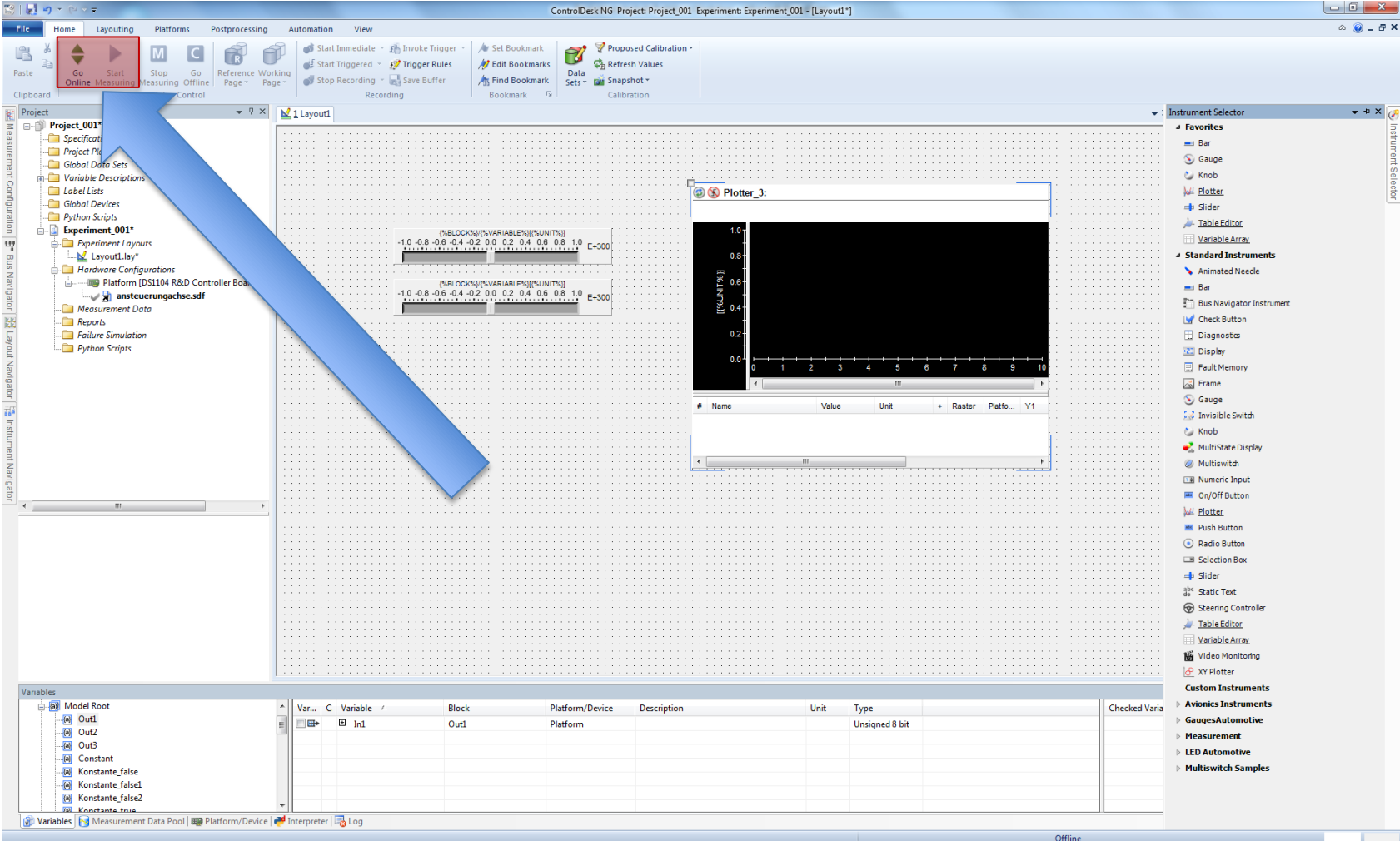


# ControlDesk Oberfläche



The screenshot displays the ControlDesk NG software interface. The main workspace shows a project layout with two plots. A 'Plotter\_3' window is open, showing a graph with a y-axis labeled '[[VALUE]]' ranging from 0.0 to 1.0 and an x-axis with values from 0 to 10. A table below the plot shows columns for '#', 'Name', 'Value', 'Unit', 'Raster', and 'Platfo... Y1'. The 'Instrument Selector' panel on the right lists various instruments like Bar, Gauge, Knob, Plotter, Slider, etc. The bottom status bar indicates 'Offline'.

# Start der Simulation



The screenshot displays the ControlDesk NG software interface. The main window shows a project tree on the left, a central workspace with a grid and two plots, and an instrument selector on the right. A large blue arrow points to the 'Start' button in the 'Control' panel. The 'Start' button is highlighted with a red box. The 'Control' panel also includes buttons for 'Go Online Messung', 'Stop', 'Go', 'Reference Page', and 'Working Page'. The 'Start' button is labeled 'Start' and 'Online Messung'. The 'Control' panel also includes buttons for 'Start Immediate', 'Invoke Trigger', 'Set Bookmark', 'Proposed Calibration', 'Start Triggered', 'Trigger Rules', 'Edit Bookmarks', 'Refresh Values', 'Stop Recording', 'Save Buffer', 'Find Bookmark', 'Data Sets', 'Snapshot', and 'Calibration'. The 'Start' button is highlighted with a red box. The 'Control' panel also includes buttons for 'Go Online Messung', 'Stop', 'Go', 'Reference Page', and 'Working Page'. The 'Start' button is labeled 'Start' and 'Online Messung'. The 'Control' panel also includes buttons for 'Start Immediate', 'Invoke Trigger', 'Set Bookmark', 'Proposed Calibration', 'Start Triggered', 'Trigger Rules', 'Edit Bookmarks', 'Refresh Values', 'Stop Recording', 'Save Buffer', 'Find Bookmark', 'Data Sets', 'Snapshot', and 'Calibration'. The 'Start' button is highlighted with a red box.

Project: Project\_001\*  
Experiment\_001\*  
Layout1.lay\*anssteuerungschse.sdf

Plotter\_3:  
[[[VALUE]]]  
0 0.2 0.4 0.6 0.8 1.0  
0 1 2 3 4 5 6 7 8 9 10

Var...	C	Variable	Block	Platform/Device	Description	Unit	Type	Checked
		In1	Out1	Platform			Unsigned 8 bit	