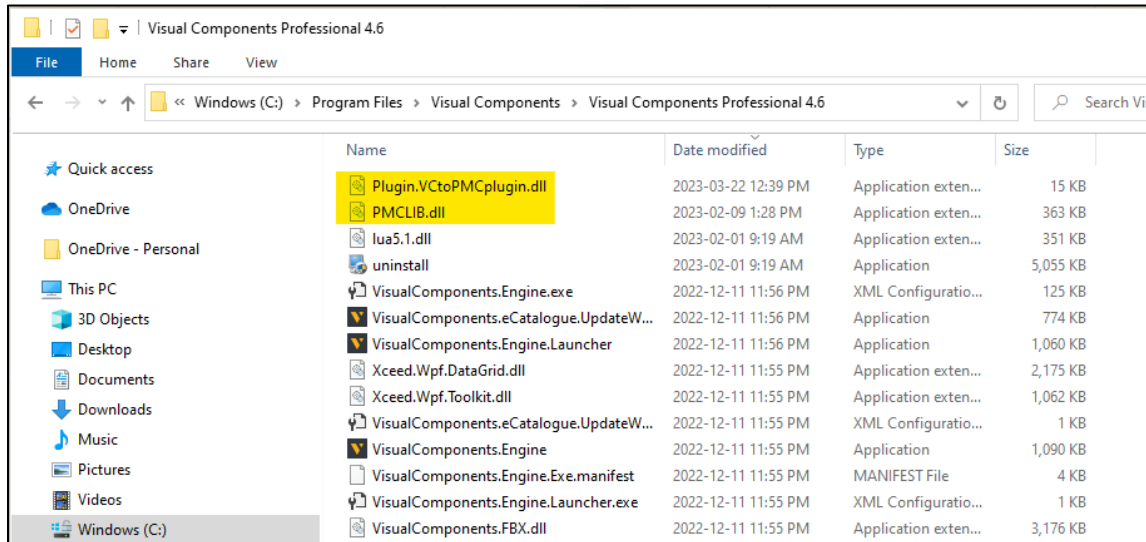


# Using Planar Motor XBots and Flyways in Visual Components

## Getting Started

1. If Visual Components is running, please close the application before proceeding
2. Add *Plugin.VCtoPMCplugin.dll* and *PMCLIB.dll* to the Visual Component root folder, which should roughly be located at C:\Program Files\Visual Components\Visual Components Professional 4.6



3. Open Visual Components

Note: This plug-in only works with Planar Motor components, which will be available starting from version 4.6

## Using the components

### Flyways

The Flyways are the tracks upon which the XBots move. The Flyway components can be arranged in a custom layout to create the desired configuration.

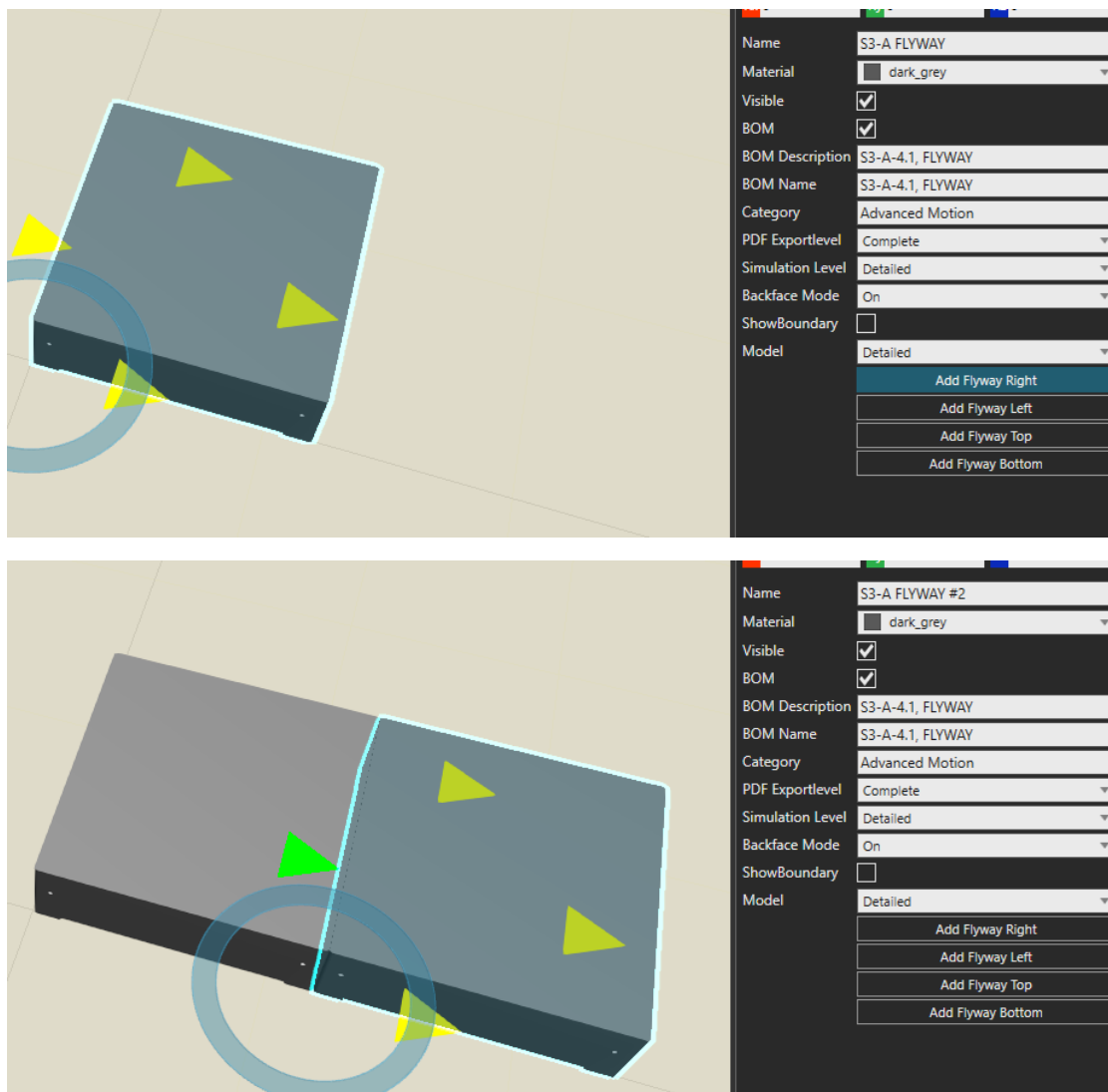
If you already have a Planar Motor Configuration file and would like to import it, please skip to [Importing a Planar Motor Configuration file](#).

### Inserting a Flyway

To manually create a layout, drag and drop, or double-click a Flyway model from the eCatalog into the world. It will be under **Planar Motor Inc > S3-A Flyway**.

### Adding Flyways for Small Configurations

To add an adjacent Flyway quickly, use the buttons available in the Component Properties window to create a Flyway in the desired direction.

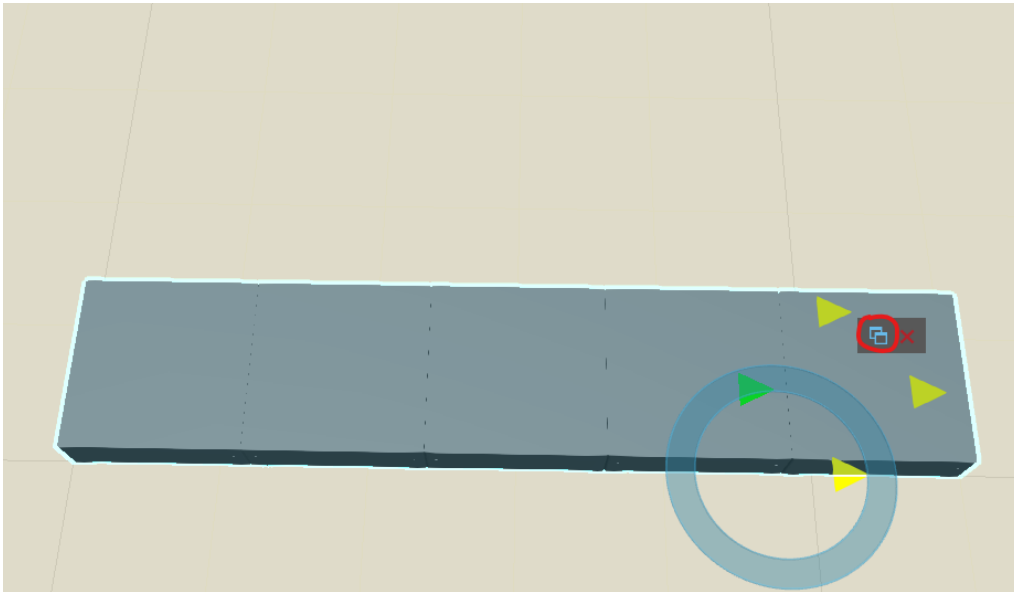


### Adding Flyways for Large Configurations

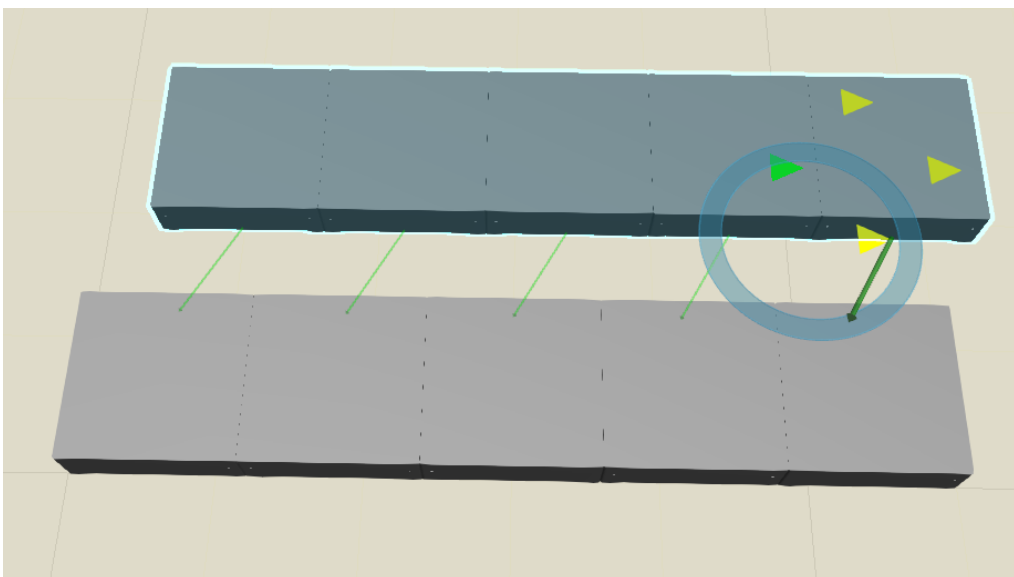
To create large and rectangular configurations, it is recommended to use the Clone (or Copy and Paste) or the Pattern features.

#### Clone (or Copy and Paste):

1. Select the Flyways by holding the Ctrl key and clicking on the components, or by using the Select tool in the Manipulation section of the Home tab
2. Click on the **Clone** icon or **Right-click > Copy** or **Ctrl + C**

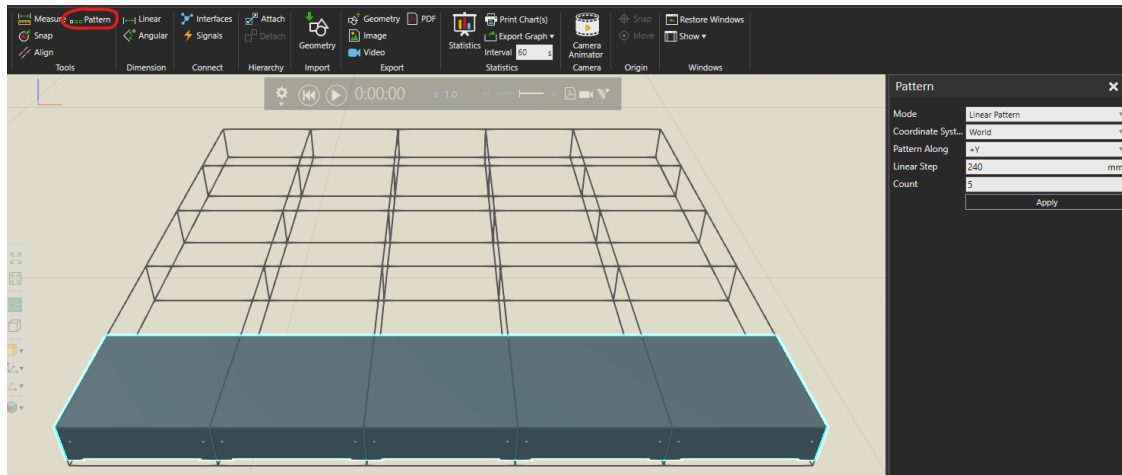


3. If the Flyways were copied, **Right-click > Paste** or **Ctrl + V** to paste the components
4. Drag the new Flyways to the desired location



## Pattern:

1. Select the Flyways by holding the Ctrl key and clicking on the components, or by using the Select tool in the Manipulation section of the Home tab
2. Click on the **Pattern** button in the Tools section of the Home tab
3. Choose the correct direction and desired count for the pattern



4. Click **Apply**

## Key Properties

- **ShowBoundary** – Toggles the visibility of a boundary indicating the edges of the Flyway
- **Model** – Switch between a more detailed visualization of the Flyway or a simpler one

## XBots

XBots move on top of Flyways in 6 Degrees of Freedom and are controlled by the Planar Motor Controller (PMC). In Visual Components, it is possible to control the XBots without the need for a PMC.

## Inserting an XBot

There are 11 different types of XBots available to use. They differ in size and payload capacity. Similar to the Flyway, simply drag and drop, or double-click an XBot model from the eCatalog into the world. It will be under **Planar Motor Inc > M3-XX XBOT**.

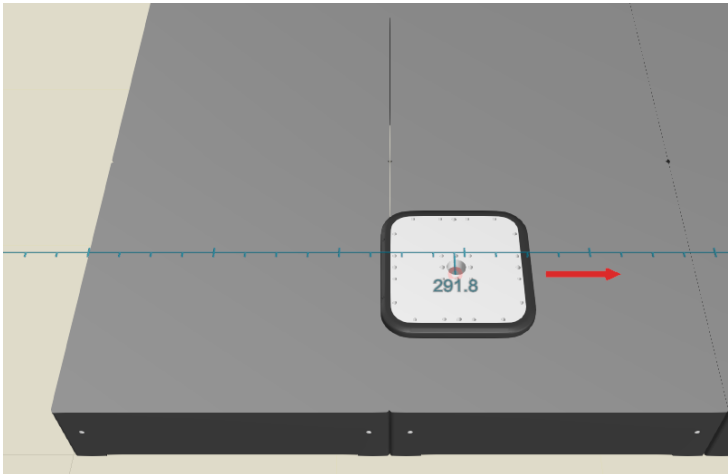
XBot Type	Dimensions (mm × mm × mm)	Payload (kg)
M3-06	120 × 120 × 10	0.6
M3-08	120 × 180 × 10	1.0
M3-09	120 × 240 × 10	1.5
M3-10	180 × 180 × 10	1.8
M3-11	180 × 210 × 10	2.0
M3-12	210 × 210 × 10	2.4
M3-13	240 × 240 × 10	3.6
M3-15	210 × 330 × 12	4.2
M3-17	300 × 300 × 12	6.0
M3-18	330 × 330 × 12	7.2
M3-25	450 × 450 × 16	14.4

Additional XBotS can be cloned from existing XBotS in the world if they are to be of the same type, or inserted from the eCatalog for other types.

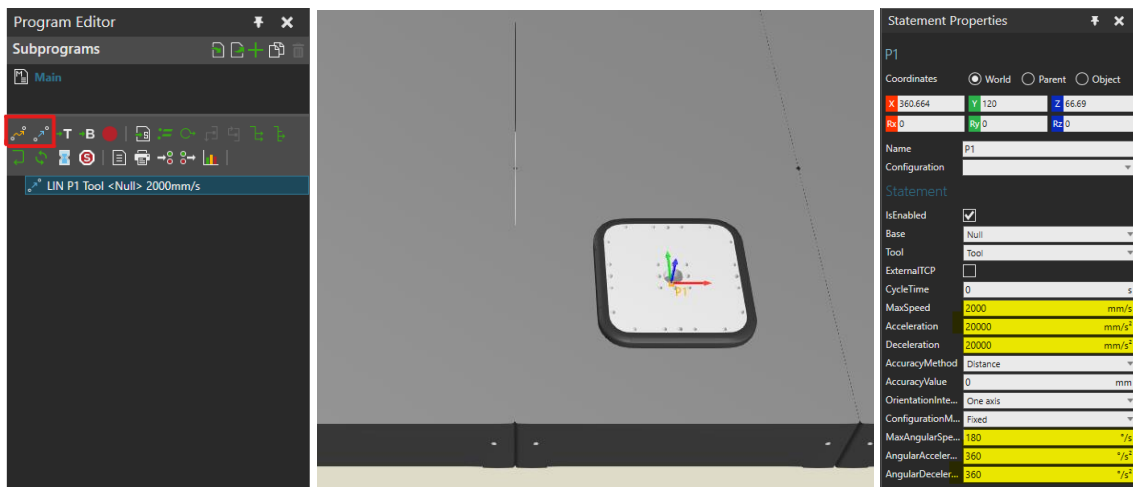
### Controlling XBotS via Visual Components

To move the XBot along a specific path during simulation, the **Program Editor** from the Program tab can be used.

1. Select the XBot to program and change the Manipulation to **Jog**
2. Use the arrows to drag the XBot to the desired location



3. Click on **PTP Statement** or **Linear Statement** buttons to create the motion, and change the speed and acceleration as needed in the Statement Properties window



4. Repeat until all motions have been created

Other statements can also be used with the XBotS, such as Wait for Binary Input, similar to other robots available in Visual Components. Before running the simulation, ensure that the **RobotExecutor** of the XBot is enabled.

## Digital Twinning XBots with the PMC

To visualize the XBots being controlled by the PMC, [insert a PM Controller component](#) and then [Connect to the PMC](#).

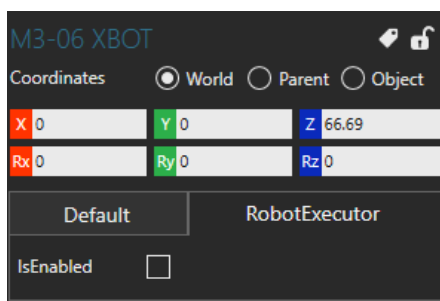
Before running the simulation, make sure the following properties of the XBot component are correct:

- The **XBotID** matches that of the XBot in the PMC it will follow
- The origin of the XBot in the World (blue ring) corresponds to the user-defined origin in the PMC



This can be changed by dragging the XBot or by entering the adequate values in the **X** and **Y Coordinates** field at the top of the Component Properties window

- The **RobotExecutor** is not enabled



## Key Properties

- **XBotID** – Unique ID of the XBot, starting at 1. It is automatically generated when the component is inserted. It is used to follow the corresponding XBot when connected to the PMC
- **RobotExecutor** – Toggles whether the XBot is controlled through the Program context. It should be off when connected to the PMC
- **X, Y, Z, RX, RY, RZ** – Indicates the XBot position relative to its origin

## PM Controller

The PM Controller component is used to connect with the Planar Motor Controller (PMC). It can also be used to load a layout from a Planar Motor Configuration file into the world.

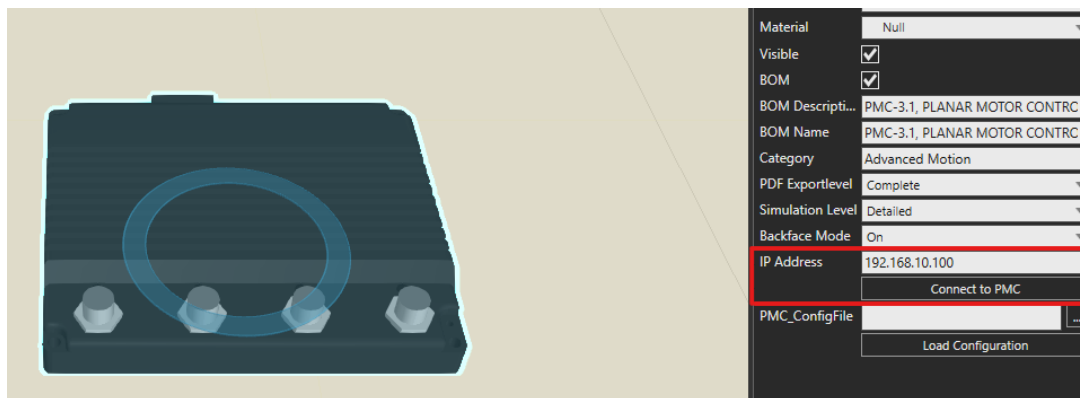
### Inserting a PM Controller

Drag and drop, or double-click the PM Controller from the eCatalog into the world. It will be under **Planar Motor Inc > PM Controller**.

### Connecting to the PMC

Enter the IP Address of the PMC to connect to in the Component properties window. Before clicking on Connect to PMC, make sure that the desired number of XBots have been loaded to the world. (Extra XBots will switch to invisible). The PMC will ignore any XBot component added after connecting.

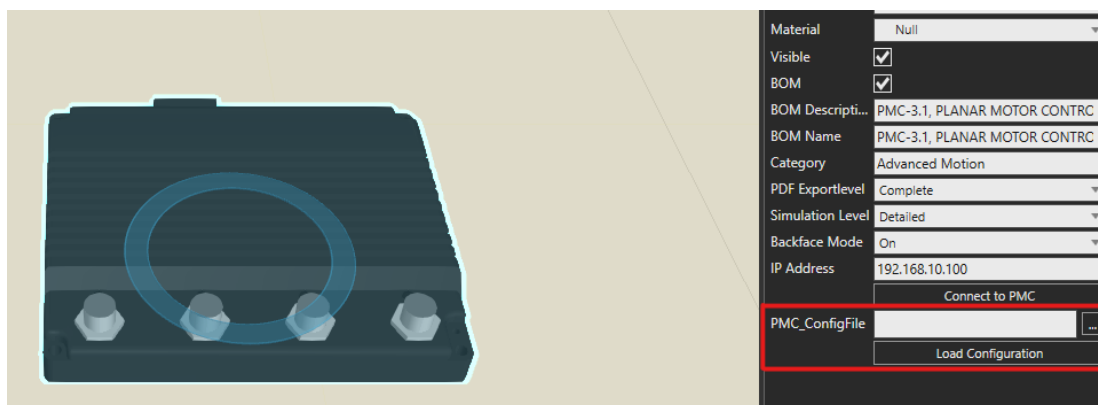
If you wish to add more XBots after having connected, simply disconnect using the same button, add more XBots and connect again.



Pay attention to the Output Window for connection messages and possible connection interruptions.

### Importing a Planar Motor Configuration file

If you already have a Planar Motor Configuration file and you wish to import it into Visual Components, browse for it using the Component properties window and click the button.



Please make sure that the configuration file is valid, as additional checks are not performed. The new configuration will be loaded at the World Origin and will delete the current Flyways and XBots from the world.