



# **ADVANCED** MOTION CONTROLS

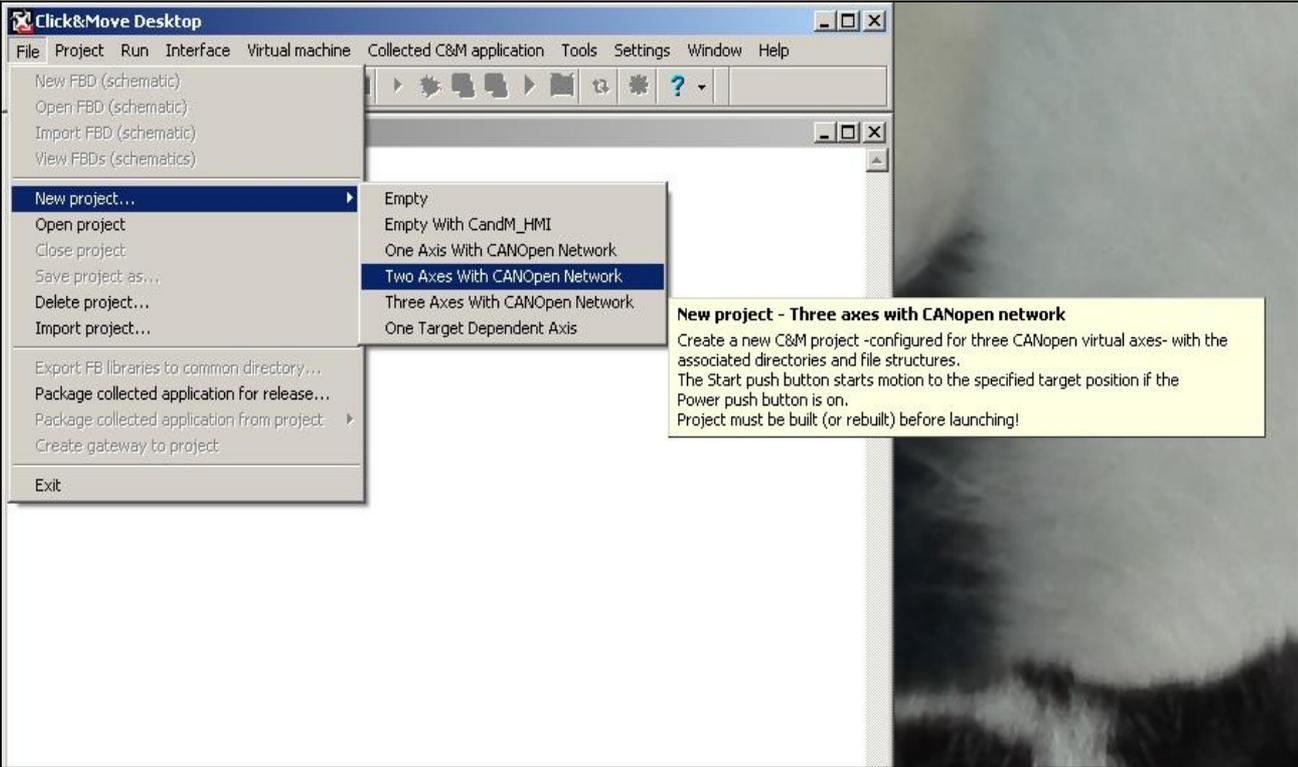


Click & Move<sup>®</sup>

Two Axis Virtual

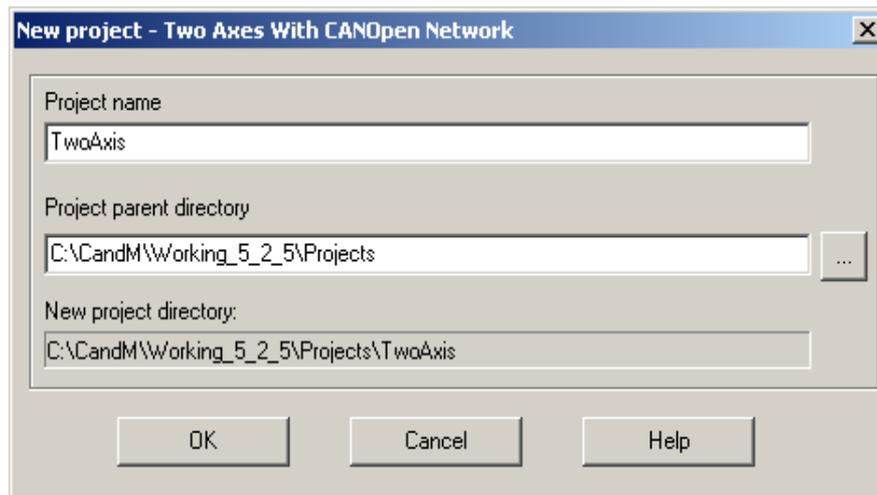
# New Two Axis Project

Start C&M, close the currently open project (if any) then click File, New Project, Two Axis With Can Open.



## Name the new Project and view the parts of the project

Change the project Parent directory to the projects directory. Give the project a name and click 'OK'.



Click and Move builds a two axis skeleton project. The project contains 3 function blocks.

Click the Open Edit icon,  to see list of schematics in the project.

*C\_M\_MAIN.sch*

*TWO\_CAN\_AXIS\_SET\_UP.sch*

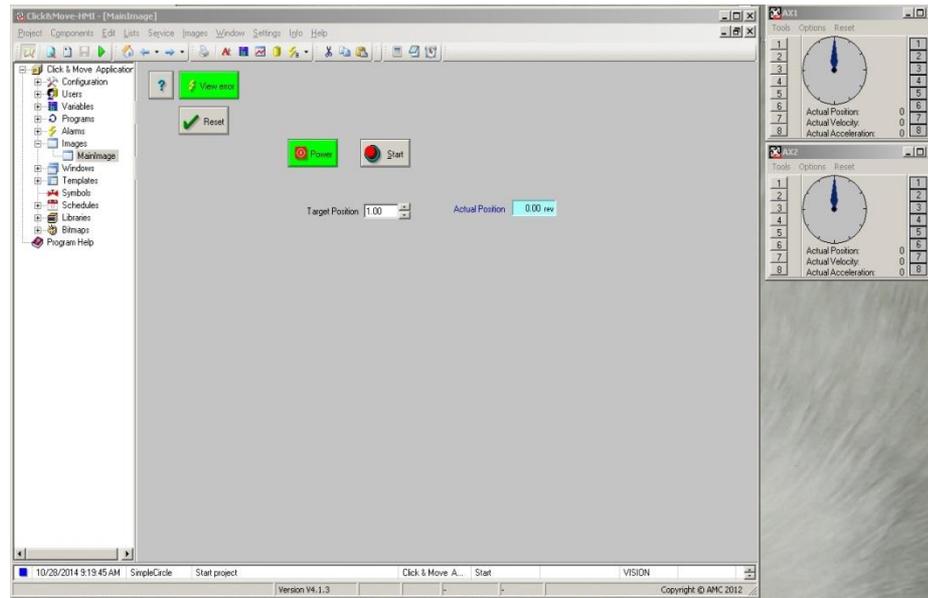
*AXIS\_SET\_UP.sch*

Close the Open Edit window for now.

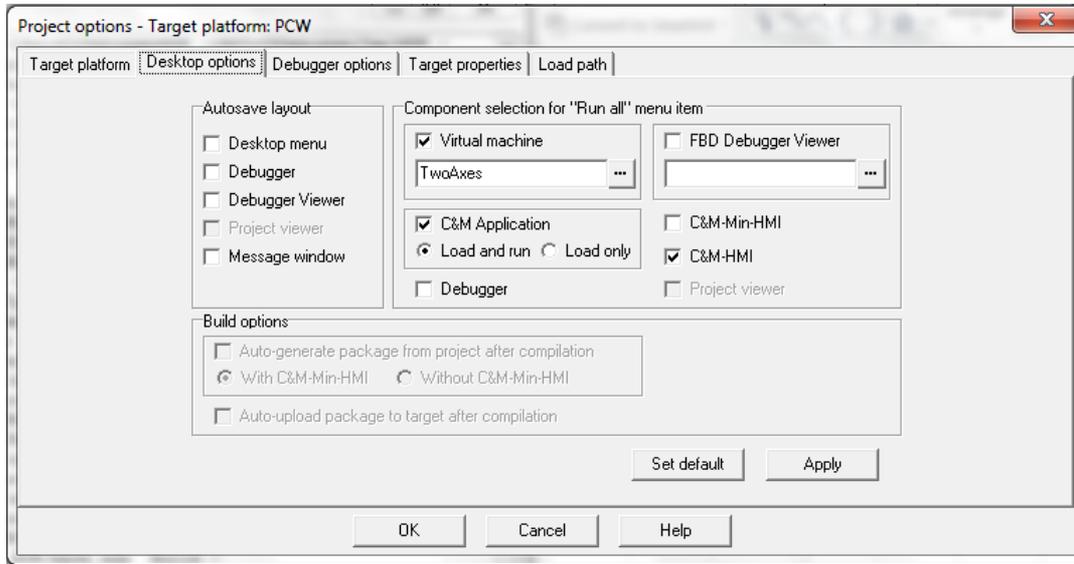
Click and Move also created a simple HMI, click the C&M HMI icon,  to open the HMI. The HMI has controls to run the project, set a target position and start the move to the target position. The View Error button provides a way to view error status and the Reset button a way to reset error conditions. Close the HMI for now. Click the Project Description button,  to open the project description file. We can use this file to describe the project and provide help to the operator. Close the project file.

## Build and test New Project in Virtual Mode

Click the rebuild button,  to build the project. Do not interrupt Click and Move while the build is in progress. Upon completion the message “Project is successfully built” is displayed at the bottom of the Message Window. After the build completes, click the Run All button,  (the large triangle) to launch all components of the project at the same time.



Click the Power button to start the application and establish CAN communication to the virtual axes. Enter a target position into the Target Position window and click the Start button. The pointers on the virtual axes will spin to represent motion and stop when the Actual Position matches the Target Position.



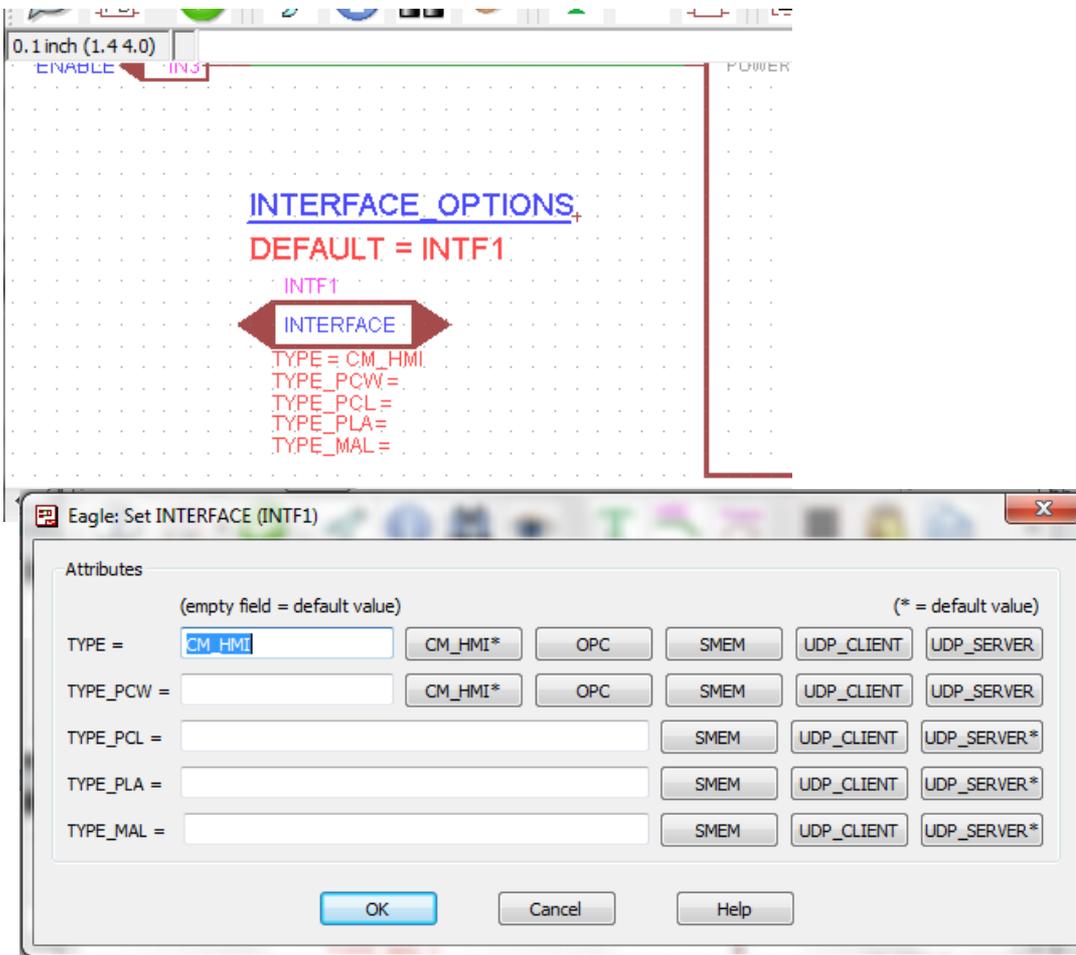
## C&M Runtime Parts

The project we created works with virtual axes which represent real hardware. Each virtual axis is an independent executable program. The HMI is another executable program and can be run independently from the other programs.

Click Project, Options from the C&M desktop and click the Desktop Options Tab. This window controls the programs launched when you click the run button.

Lets swap out the Graphical HMI for the MINI-HMI. The MINI-HMI automatically displays controls for each input and output of the project. Un-check the C&M HMI and check the C&M Min-HMI.

Click Apply and OK.



## Using Mini-HMI

Open the main schematic of the project and locate the INTERFACES object. Right click the INTERFACE object and choose SET CONNECT.

Clear the TYPE = field, with no type defined the MINI-HMI will be free to communicate with the project IO's. Click OK and save and close the schematic.

**NOTE:** Multiple HMI's can read project outputs, but only one HMI may talk to project inputs. If you have problems using an HMI check the interface object!

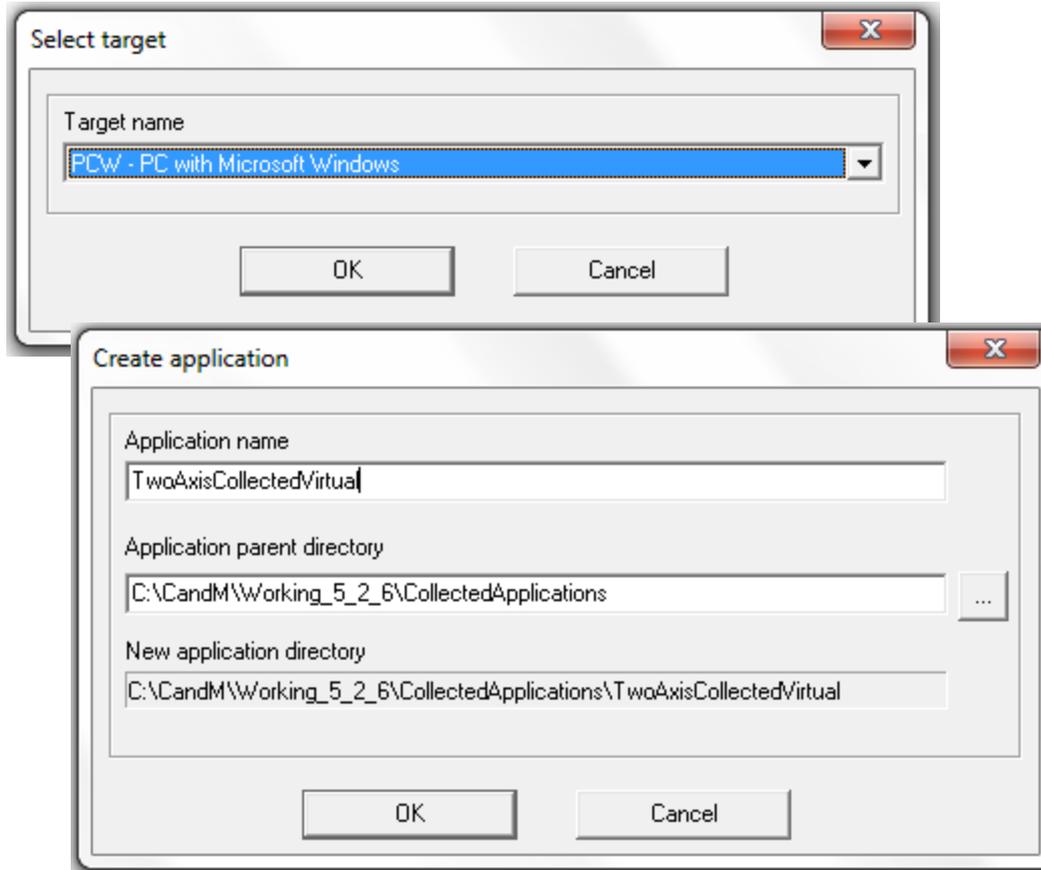
## Use the Mini-Hmi

Rebuild the project and click the run-all button.

Play with the MINI-HMI.

The screenshot displays the C&M Min-HMI interface, which is divided into several sections:

- Inputs:** A table with four rows: START (FALSE, Toggle), POSITION (0), ENABLE (FALSE, Toggle), and RESET (FALSE, Toggle).
- Outputs:** A table with six rows: FB\_ERROR (FALSE), FB\_ERROR\_ID (0), FB\_ERROR\_LOCATION (No error), AXIS1\_ACT\_POS (0), SETTING\_UP\_AXES (FALSE), and POWER\_ON (FALSE).
- Terminal:** A window at the bottom left showing a list of command-line arguments for various debuggers and executables, ending with `end.o`.
- AX1 and AX2 HMI Panels:** Two panels on the right, each featuring a circular gauge with a blue needle, a 'Tools' menu, an 'Options' menu, and a 'Reset' button. Below the gauges, numerical readouts for 'Actual Position', 'Actual Velocity', and 'Actual Acceleration' are shown, all currently at 0.

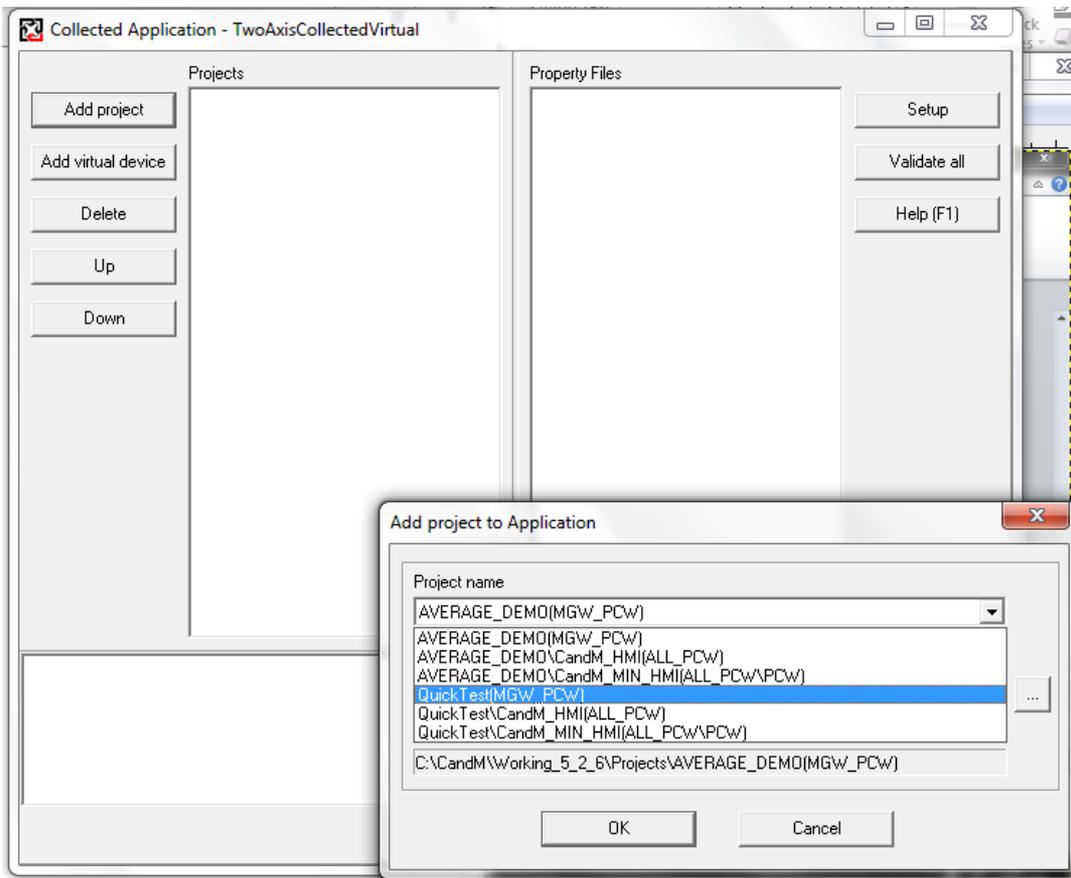


## Collected Application

We can combine the separate parts into a collected application. The collected application build time files cannot be changed but it can be run without opening it under C&M.

On the Desktop click Collected C&M application, and the choose create.

Click OK on PCW-PC with Microsoft Windows. Enter TwoAxisCollectedVirtual into the Application Name window.



## Add projects to the collection

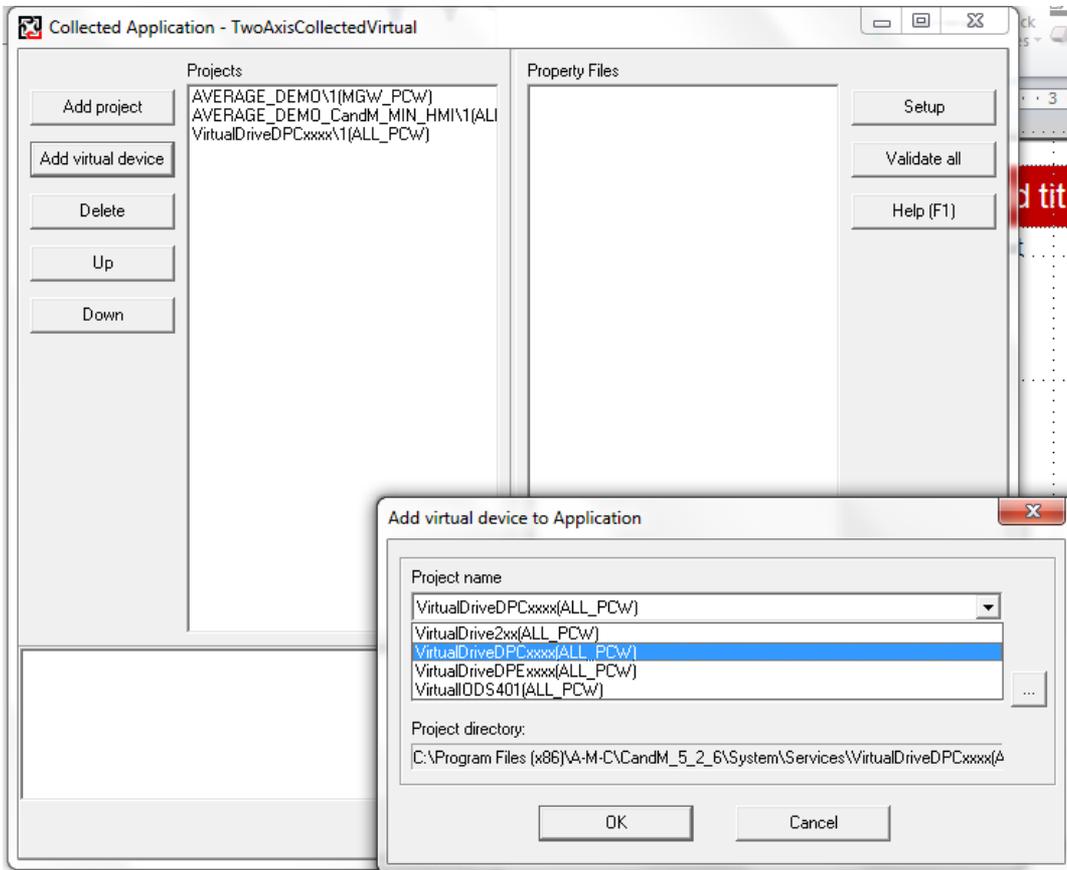
Click Add Project button on the next window and the Add project to Application window pops up.

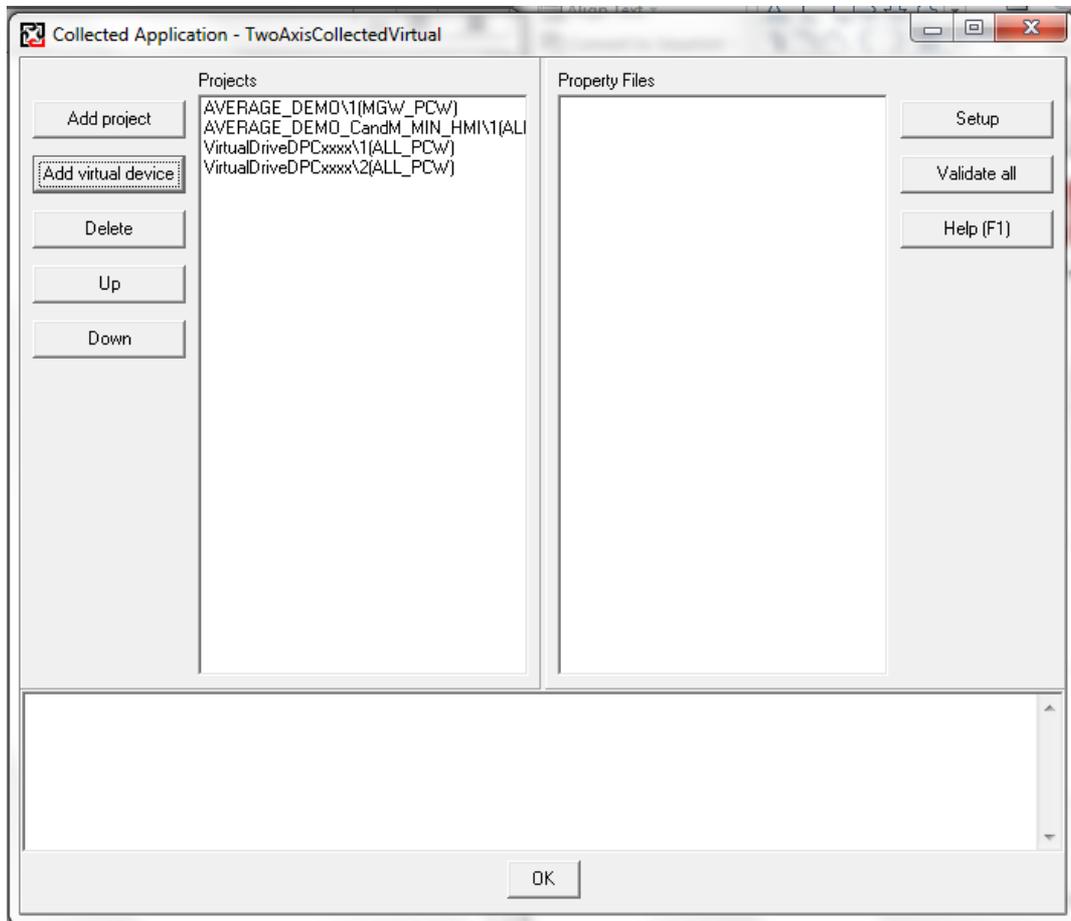
Click the button with the 3 dots and change the folder to the projects folder.

Click the down arrow and choose your project(MGW-PCW). (note: my name in the picture is Quick Test(MGW-PCW) . Click OK. Repeat to add the CandM\_MIN-HMI(ALL-PCW).

## Add Virtual Drives

Click Add virtual device and add two instances of VirtualDriveDPCxxxx(ALL-PCW). These are your virtual CAN drives.

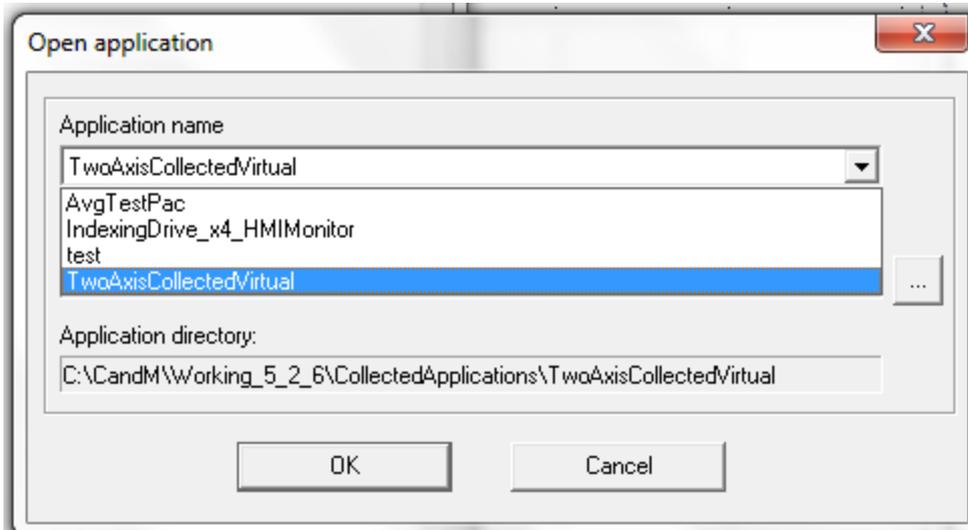




## Complete the collection

Click the OK Button.

You now have a collected application.



## Run Collected App

On the desktop click Collected C&M application and Run. Pick the app we just collected and click OK.

The entire program will load and run.

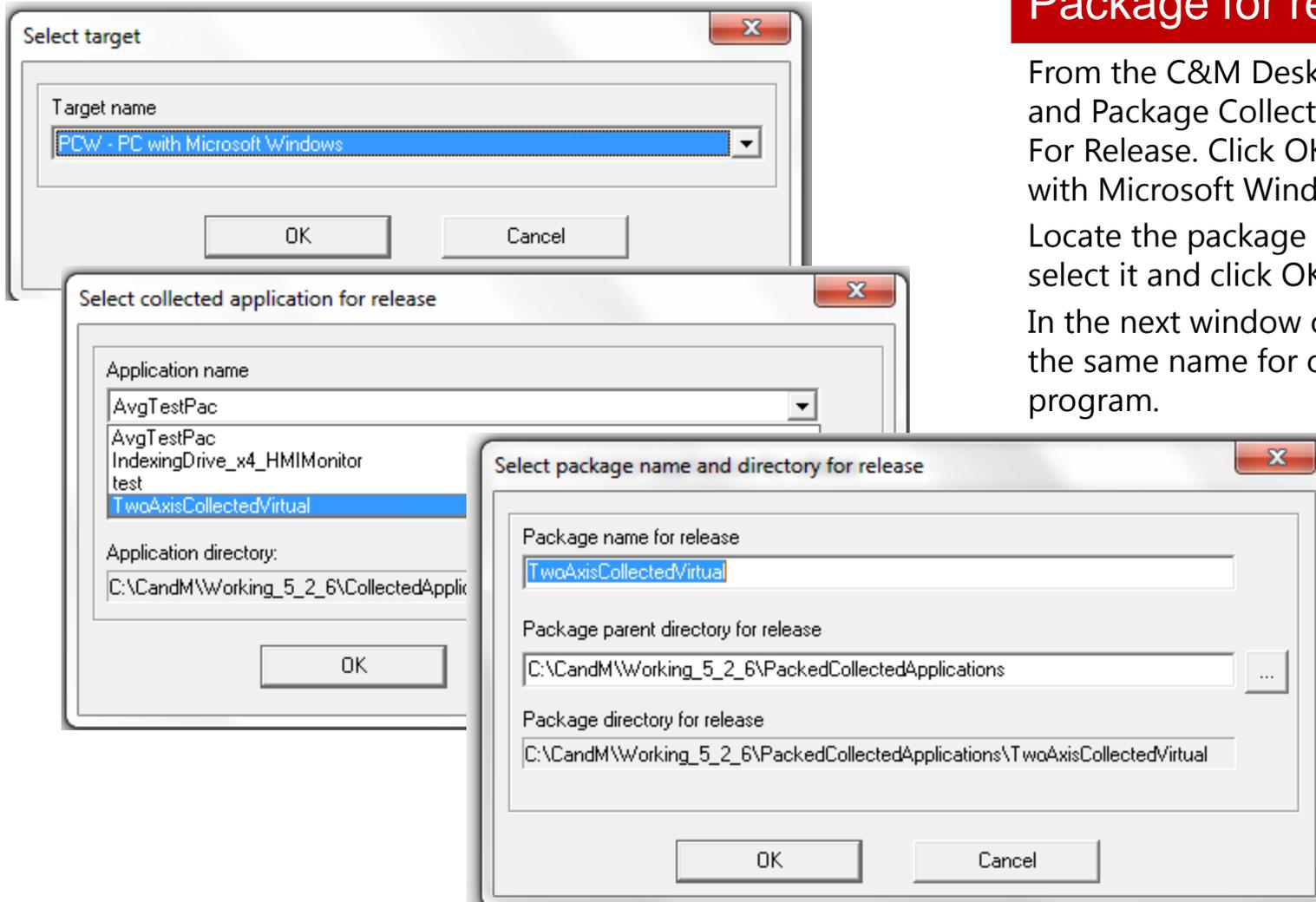
We can also release the collected application. When released the C&M desktop is no longer needed to launch the app.

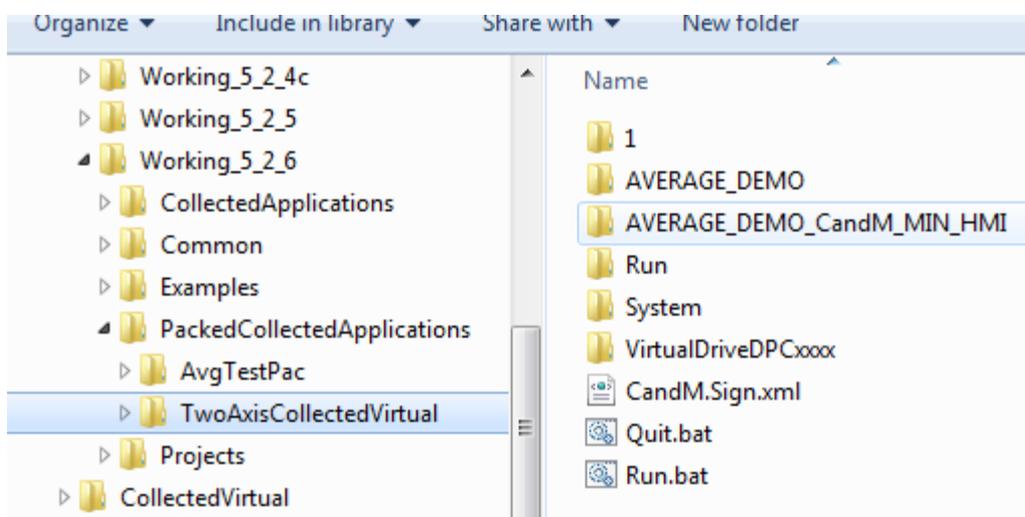
## Package for release

From the C&M Desktop click File and Package Collected Application For Release. Click OK for PCW-PC with Microsoft Windows.

Locate the package application, select it and click OK.

In the next window click OK to use the same name for our released program.





## Run Packaged App

Use windows explorer to find the released app in the PackagedCollectedApplication folder. Two batch files are provided to launch and terminate the application. You can close C&M, it is not needed to run a released application.