



OMAC PackML State Machine

The library “OMAC PackML State Machine” contains a state machine for packaging controls based on the OMAC PackML standard.

Product description

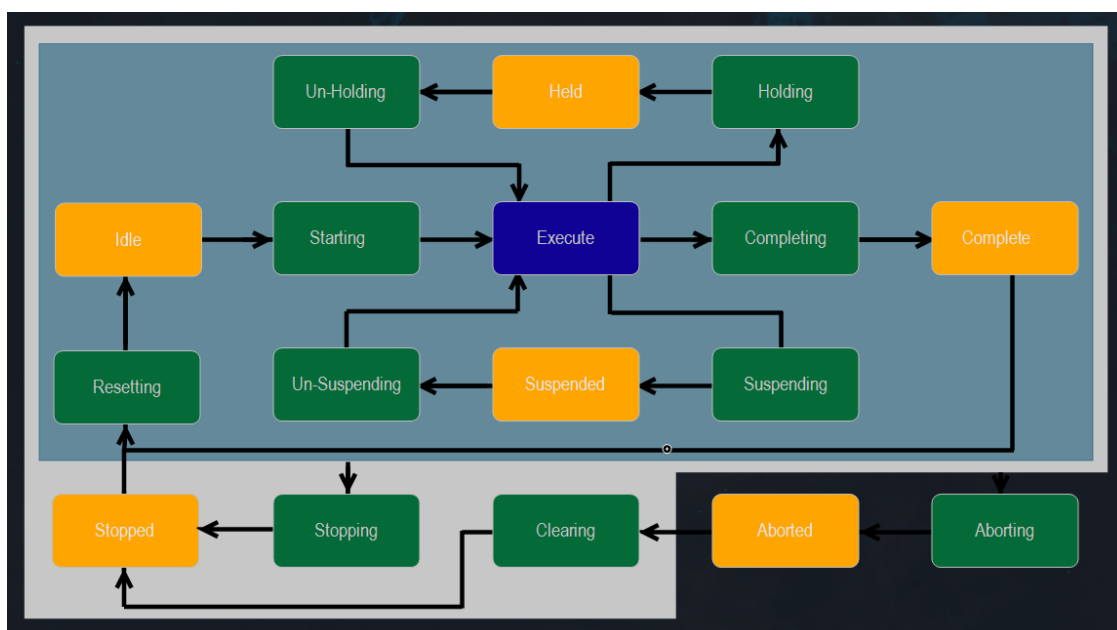
PackML, which stands for Packaging Machine Language, defines a common approach or machine language for automated machines. The primary goals are to encourage a common “look and feel” across a plant floor and to enable and encourage industry innovation.

This library contains an implementation of the OMAC PackML State Machine. An example project shows the usage of the components.

For more information about OMAC and PackML see www.omac.org.

More information

The “PackML State Machine” defines machine states and state transitions for packaging controls. A set of machines states is called “unit mode”. A unit mode can contain a maximum of 17 machine states. The following graphic shows all machine states with the corresponding state transitions.



State transitions of PackML

A machine state defines the current condition of a machine. Three machine state types are proposed:

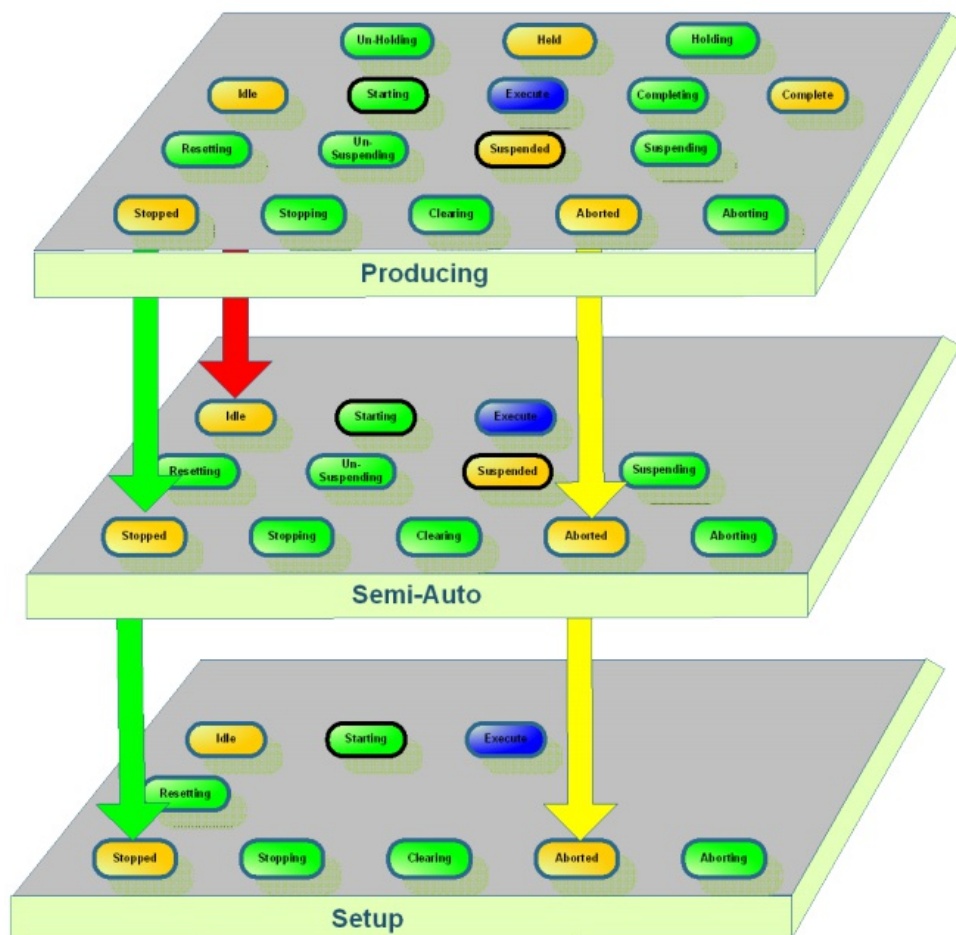
- Acting State (green), which was previously a Transient State, represents some processing activity, i.e. STARTING, HOLDING
- Wait State (olive green), which was previously a Quiescent, or Steady State, is used to identify that a machine has achieved a defined set of conditions, i.e. ABORTED, HELD, SUSPENDED, IDLE
- Dual State (blue) is defined as wait state that is causing the machine to appear as an acting state. There is currently only one dual state: EXECUTE

A state transition is executed by a corresponding command like “Start” or “Stop”.

PackML allows to define custom unit modes. For example it is possible to create your own unit mode for setup or maintenance. The machine states of the defined unit modes are a subset of the 17 machine states.

There is only one active unit mode allowed, but it is possible to switch between unit modes. This is handled by a component called unit mode manager. Before the unit mode will be switched, the unit mode manger checks if

the current machine state allows leaving and if the target state allows entering.



Unit mode transitions

Library OMAC_PackML_State_Machine

The package contains a library named `OMAC_PackML_State_Machine`, which includes all required components to build a state machine based on PackML.

Unit modes can be defined with the function block `UnitMode`. The desired machine states can be set by the input field `dwSupportedStates`. The permissions to switch between unit modes are handled by the input fields `dwAllowsLeavingFromStates` and `dwAllowsEnteringIntoStates`. The machine state can be changed by calling the corresponding method in folder `Commands` (Start, Stop, Abort etc.).

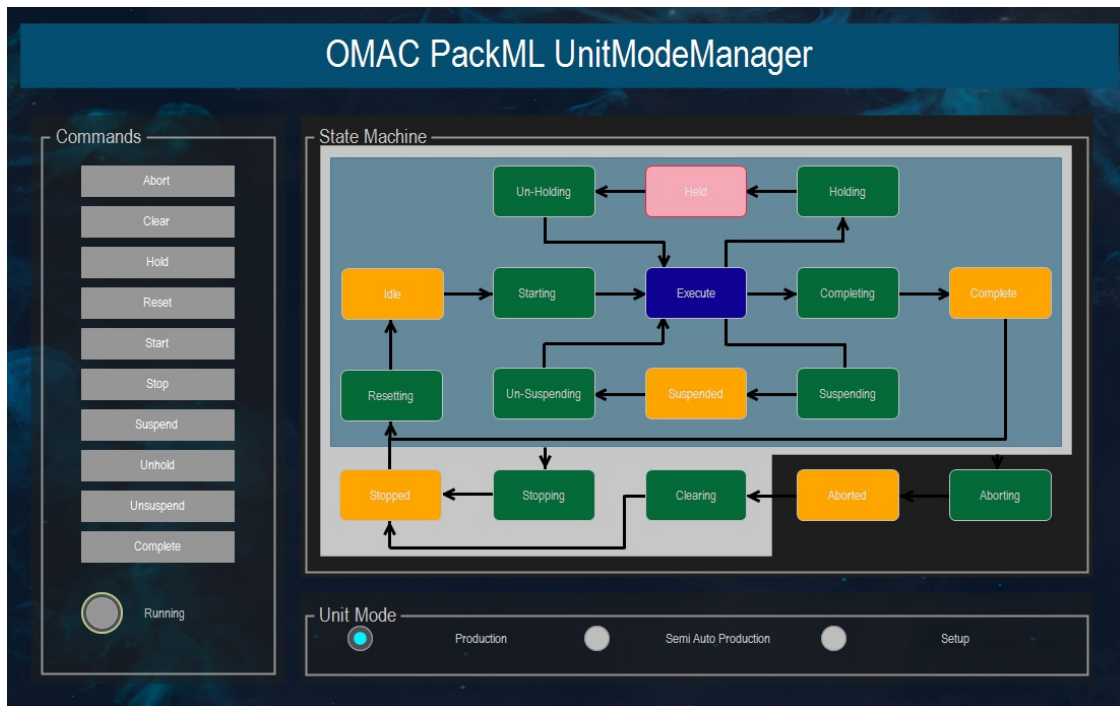
The function block `UnitModeManager` enables the switching of unit modes. All unit modes and the current state are managed by this function block.

Example project PackML_Example

The project `PackML_Example` in the installation folder of the package includes two example applications with implemented PackML state machines.

Application 'PackMLUnitModeManager':

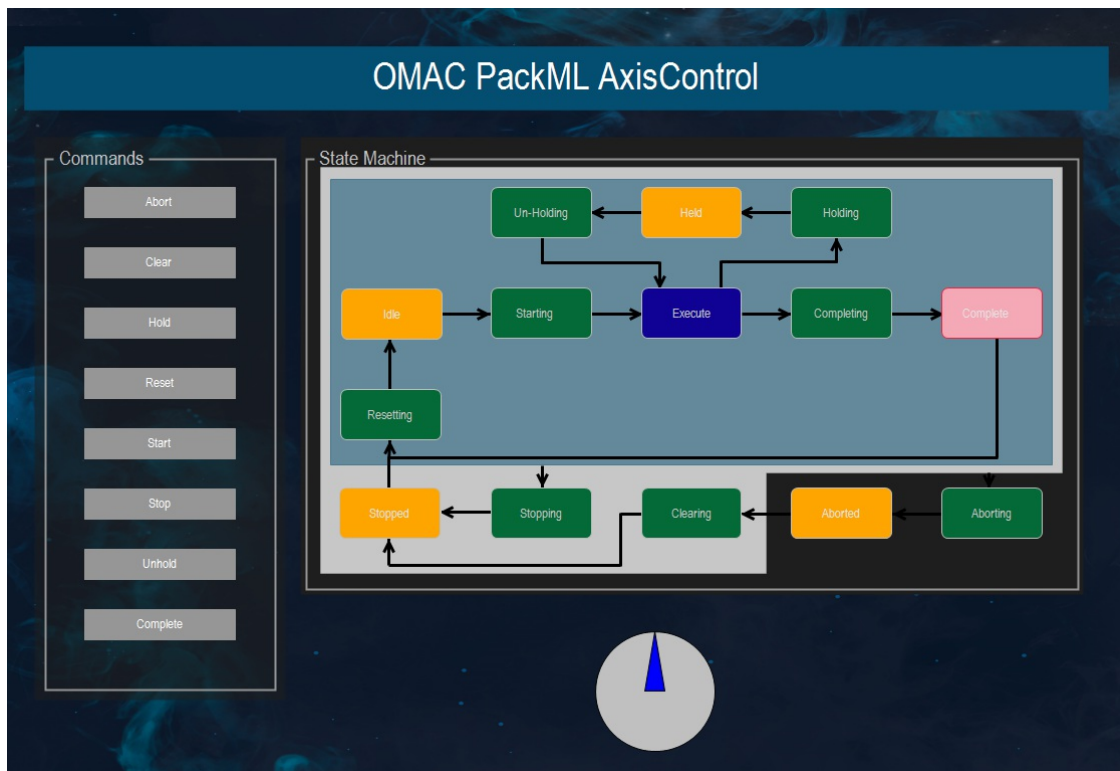
The application shows how to define own unit modes. The program `PLC_PROG` defines three unit modes (Production, Semi Auto and Setup). At first the unit modes must be registered at the `UnitModeManager`. After that the current machine state and the current unit mode can be requested via the `UnitModeManager`. The current machine state and current unit mode are displayed by visualization.



Visualization of the application PackMLUnitModeManager

Application 'PackMLAxisControl':

The application PackMLAxisControl shows how to set the execution state of a virtual SoftMotion axis via the PackML state machine. The function block AxisControl represents an axis, which is controlled according to its active unit mode.



Visualization of the application PackMLAxisControl

General information

Manufacturer:

3S-Smart Software Solutions GmbH
 Memminger Strasse 151
 87439 Kempten
 Germany

Support:

<https://support.codesys.com>

Item:

OMAC PackML State Machine

Item number:

000060

Sales:

CODESYS Store

<https://store.codesys.com>

Included in delivery:

Package with library and example

System requirements and restrictions

Programming System	CODESYS Development System V3.5.10.0 or higher
Runtime System	CODESYS Control Version 3.5.10.0 or higher
Supported Platforms/ Devices	Note: Use the project "Device Reader" to find out the supported features of your device. "Device Reader" is available for free in the CODESYS Store.
Additional Requirements	-
Restrictions	-
Licensing	-
Required Accessories	-

Note: Not all CODESYS features are available in all territories. For more information on geographic restrictions, please contact sales@codesys.com.

Note: Technical specifications are subject to change. Errors and omissions excepted. The content of the current online version of this document applies.