## Release Notes Palletizing PowerPac 5.14.02.01

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### CHANGES IN PALLETIZING POWERPAC 5.14.02.01

- **Fixed Bugs**
  - Production rate calculation is not reset after simulation stop and started again
  - Exception occurs when attached tool is detached or deleted
  - RAPID error of ambiguous routine name happens sometime

### FEATURES IN PALLETIZING POWERPAC 5.14.02

- **Differences with PM5**
  - Concept of “Shape” is discarded and merged into “Item”
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**Remaining Limitations**
- Verify library files
- Simulation does not start sometimes
- PzPP does not support DPI other than 96
- Auto generated pick/place sequence may be wrong when a multi-column product group is used
- Project backup file is not available in controller

**INSTALLATION OF PZPP**
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Release Information

Release Name

The release name is RobotStudio Palletizing PowerPac 5.14.02.01 (PzPP 5.14.02.01).

The installed program version is displayed in the About Palletizing PowerPac dialog box which can be launched from the Help group on the Palletizing ribbon tab. The version information can also be accessed from the Add or Remove Programs tool of the Windows Control Panel. The build number of Palletizing PowerPac 5.14.02.01 is 5.14.1807.2031.

Release Information

The information should be considered as last minutes information and most up-to-date.

For more information please visit the support web site at http://www.robotstudio.com/community.

Release Time

Release time 2011-11
**Supported Platforms**

Before you install PzPP, make sure your system conforms to the following requirements:

**Required Software**

- RobotStudio 5.14.02
- RobotWare 5.14.02

**Supported Operating Systems**

- Microsoft Windows XP Professional 32-bit and 64-bit edition with Service Pack 2 or higher.
- Microsoft Windows Vista Business or Enterprise 32-bit and 64-bit edition
- Microsoft Windows 7 Business or Enterprise 32-bit and 64-bit edition

**Recommended Hardware**

- High performance desktop or laptop workstation:
  - **CPU:** 2.0 GHz or faster processor
  - **Memory:** 1 GB system memory at minimum, 2 GB if running Windows Vista, stations with several robot systems, or large CAD-models.
  - **Free disk-space:** 5+ GB free space
  - **Graphics card:** High performance DirectX 9 or OpenGL-compatible graphics card with the corresponding up-to-date drivers installed
  - **Display settings:** Screen resolution: 1280 x 1024 pixels or higher
  - **DPI:** Normal size (96 dpi)
Changes in Palletizing PowerPac 5.14.02.01

This section describes the changes that have been made in PzPP 5.14.02.01 since PzPP 5.14.02.

**Fixed Bugs**

**Production rate calculation is not reset after simulation stop and started again**

If you started a next simulation directly without clicking Reset, the production information from last simulation was not cleared. This is fixed.

**Exception occurs when attached tool is detached or deleted**

If you opened Pick Setting dialog once, and removed the attached tool later, an exception would happen. This is fixed.

**RAPID error of ambiguous routine name happens sometime**

The default PmMain and PmUtility modules are dynamically loaded when simulation is started. This, however, may sometimes cause RAPID error of ambiguous routine name afterwards, since both PmMain and PmProjMgr modules contain main routine. This is fixed that now after clicking Reset, the dynamically loaded PmMain will be removed.
Features in Palletizing PowerPac 5.14.02

This section describes the features in PzPP 5.14.02.

Differences with PM5

PzPP is largely based on PM5. A PM5 user should not find much difficulty in understanding and using PzPP.

In general, the software supports all functions in PM5, and additionally add the functions of 3D programming visualization and simulation, based on RobotStudio.

While the concepts of item, pallet pattern, operation sets, flows are kept in PzPP, there are certain others that are discarded, hidden, separated or merged.

Following is a list of changed concepts:

Concept of “Shape” is discarded and merged into “Item”

“Shape” is not used in PzPP anymore, and is merged into item. Accordingly, the pallet pattern in PzPP is referencing item instead of shape.

Concepts of “Line” and “Project” are combined into one RobotStudio station

In PzPP, there is not separation of line and project files. They are all included into one RS staton. However, the work flow of PzPP is somewhat similar, that you need to first add gripper and feeders to the robot (similar to line information in PM5), then start programming by adding products, patterns, and operation sets.

Concepts of “Work area” and “Position source” are combined into “Feeder”

In PzPP, there is not separation of line and project files. They are all included into one RS staton. However, the work flow of PzPP is somewhat similar, that you need to first add gripper and feeders to the robot (similar to line information in PM5), then start programming by adding products, patterns, and operation sets.

Concepts of “Format” is separated as “Item group” and “Pick setting”

In PM5, a format contains both geometry information (row and column number of products), and tool picking information (tool location, product/zone match, format events). In PzPP, the geometry information is separately as “Item group”, and tool picking information as “Pick setting”.

This helps to separate product feeding information (row & column of products) from robot program setting (tool position, and control events).

Extended tool function support

In PM5, only vacuum gripper (with or without search) are defaultly supported. In PzPP, it is extended to support other “tool functions”, such as clamp, claw, unit mover, etc.
Tool information is saved in tool SmartComponent model

In PzPP, to use a tool, you need to import a compatible tool SmartComponent, which contains information of tool functions (claw, vacuum, clamp, etc.), and tool events (i.e., which signals to trigger during picking and placing). The tool SmartComponent can be saved as RobotStudio library file and reused in other palletizing stations.

Accordingly, in Pick setting, you can choose to use other tool functions to pick products than vacuum, and the corresponding tool signal events will be created automatically.

Feeder information is saved in tool SmartComponent model

In PzPP, to use a feeder, you need to import a compatible feeder SmartComponent, which contains information of hotspots (i.e., special locations on the feeder model where you can attach work object). For each hotspot, you can also define the wobj rotation and alignment (similar as PM5 work area orientation, you can choose Alignment of Left or Right, and rotation of 0, 90, 180, and 270 degrees).

Product Features

Build Cell – Add tool, add feeder

PzPP supports several standard SmartComponent models of grippers and feeders, that can be directly imported to work with ABB robots.

To use customized models of tool and/or feeder, PzPP will leads to the dialog to build up a PzPP compatible SmartComponent model based on the customized CAD model.

Define product information – Create box, bag, pallet, and sheet, and their groups and stacks

PzPP supports four types of products: box, bag, pallet and sheet. For each type of product, you can add item groups or stacks for them, which will later be used to define pick settings.

Define pallet pattern

Using the products, pallet patterns can be created. A list of auto-calculated patterns will be generated and can be selected to edit or use directly in the pattern. A set of mirror options can also be used to mirror the layout for interlocking.

Define pick setting

After tool is added to the robot, products and patterns are defined, default pick settings are created for products that are used in patterns. You can change the tool picking location, picking match between tool functions and product, and additional pick events.

Add palletizing program

After tool and feeders are added to the robot, a palletizing program can then be added. PzPP provides a job wizard for user to easily allocate pallet patterns and product groups and stacks from/to feeders, and create pick/place operation sets accordingly.
You can also use the right click menu on feeder treenode to separately add group operation sets and/or pattern operation sets.

Check reachability and preview palletizing programs
With one click, PzPP will check through all pick/place, search and safe targets in the project.
PzPP also provides function to preview palletizing programs, with which you can see for each operation sets, how robot with tool goes through all positions to pick/place each product.

Simulate
With one click, you can download the program to virtual controller and start each flow with default jobs. You can also change the job sequence to run a customized set of jobs.
During simulation, the products fed in and out are recorded and throughput is calculated at the same time.

Transfer program to online controllers
Using functions from RobotStudio Online to connect to online controllers, you can then to download the whole program and tune information to the connected controllers with one click.

Modelling of PzPP compatible gripper and feeder models
In order to build customized gripper and feeder CAD models into PzPP compatible SmartComponent models, PzPP provides functions for you to define certain tool and feeder settings and then the corresponding SmartComponent models will be created, which you can simply add to the robot to start working.

Utility functions
Besides the above functions from building cell and programming, PzPP also provides certain utility functions like project report, overview on operation sets and I/O interfaces, etc.

Software Work Flow

Typical work flow
To use PzPP, you need a system with “Prepare for PickMaster” (642-2) selected; otherwise, the simulation function cannot be used.
After you have a blank station with robot system only, you can go to Addins tab and click Palletizing button to start using the PowerPac.
The general work flow is to use ribbon functions from left to right:
1. Add Tool: click the drop-down arrow to choose from standard ABB grippers for the robot.

2. Add Feeders: click the drop-down arrow to choose in feeders, pallet feeders, sheet feeders, and out feeders to work with your robot. As default, 4 in and out feeders, 1 pallet feeder and 1 sheet feeder are supported for each system (i.e., corresponding work objects and signals are ready in controller). To work with more feeders, you have to add additional signals to the system first.

3. Product/Pallet/Sheet: Add boxes, bags, pallets, and sheets as needed.

4. Pallet patterns: Based on your added products, pallets and sheets, you can start to add a pallet pattern. Choose layouts from the auto-generated list into “Selected Layouts” list, and then build them as layers of the pattern.

5. Pick setting: You can check how the tool is used to pick up products. You can change the location by aligning items with tool zones or tool functions, adding offsets and rotating. Make sure that the tool is at a position so that the tool’s “sensor” area overlaps with the product, otherwise the product cannot be picked and placed during simulation.

6. Job Wizard:
   a) Page 1: Match products/pallet patterns with feeders. Choose pallet pattern for master feeder (e.g., out feeder for palletizing, in feeder for de-palletizing), and products for slave feeders (e.g., in/pallet/sheet feeders for palletizing).
   b) Page 2: Check program of slave feeders (e.g., in/pallet/sheet feeders for palletizing)
   c) Page 3: Check program of master feeder (e.g., out feeders for palletizing)

7. Check reach: One-click to check reachability of all pick and place targets. Adjust robot or feeder positions if some program contains targets that are not reachable by robot.

8. Simulate: One-click to download the program to controller and automatically start palletizing.

9. Add controller/Download: add an online controller (RobotStudio Online function), and then Download to transfer the program onto the online controller.

**Browser structure**

The project elements are listed in the browser treeview.

Layout tab lists all objects in station.

Programming tab lists all programming elements:

1. Project node
2. System node
   a) Robot node
      i. Tool
ii. Feeders
   1. a specific feeder
      a) program running on the feeder

iii. Flows
   1. a specific flow
      a) a supported job for this flow (i.e. program on master feeder)
      i. programs on slave feeders to support the master feeders

**Remaining Limitations**

**Localized language**
In first release, documentation is supported only with English, and software user interface is supported with English and Chinese. Other languages will be added as needed in next releases.

**Verify library files**
The first time you open the PowerPac, import a gripper or a feeder, RobotStudio will ask you to verify the library.

In that case, check “Always trust this publisher”, and click Yes. There may be around 14 libraries that you need to approve, but you only need to do this once.

**Simulation does not start sometimes**
Sometimes simulation does not start directly, due to RAPID error of ambiguous main routine in different modules. In this case, remove the program modules from RobotStudio Offline ribbon tab, and simulate again.

**PzPP does not support DPI other than 96**
You need to set DPI to 96 (100% as default). Setting to other DPI will cause the dialogs being shown strangely.

**Auto generated pick/place sequence may be wrong when a multi-column product group is used**

When a product group of more than 1 column is created and used in a pattern operation set, the auto-generated sequence could be wrong and the tool position could also be incorrect. User should manually edit the pick/place sequence.

**Project backup file is not available in controller**
In PM5, when a project is transferred to an online controller, the PM5 line and project files are also downloaded to the controller, which can be later retrieved and used to see what was previously programmed.
Currently this is not possible in this version of PzPP, that no project back up information is stored in controller during transferring. You need to use the original RobotStudio station to continue editing the program.

If you need support from ABB engineers, you can make a Pack&Go file of the RobotStudio station and send to us.
Installation of PzPP

**How to Install PzPP**

PzPP 5.14.02.01 can be installed and used after an installation of RobotStudio 5.14.02.

To install PzPP 5.14.02.01, proceed as following:

1. Double-click on the file **Palletizing PowerPac 5.14.02.01.exe** of the Palletizing PowerPac media.
2. Go through the wizard to finish installation.

**How to Install Trial License**

A trial license file is included in the PzPP 5.14.02.01 installation directory, which allows 30-day trial use.

To install PzPP 5.14.02.01 trial license, proceed as following:

1. Go to installation directory, for example, “C:\Program Files\ABB Industrial IT\Robotics IT\Palletizing PowerPac 5.14\Trial License”
2. Find the license bin file “Trial License_Palletizing.bin”

3. Go to RobotStudio-Options-Licensing-Activation Wizard…
4. Choose Manual Activation – Step 3: Install a license file (*.bin)
5. Proceed to browse the PzPP's trial license file and finish the wizard dialog

**How to Uninstall PzPP**

Select to uninstall PzPP from the *Add or Remove Programs* tool of the Windows *Control Panel*. 