

WORKS Process Expert (R19-1)

Version Description

07/2023 EN

ASMPT

ASMPT GmbH & Co. KG

Rupert-Mayer-Strasse 48 | 81379 Munich | Germany

All names identified by ® are registered trademarks of ASMPT. Other trademarks depicted in this publication may be trademarks whose unauthorised use by third parties for their own purposes may violate the rights of the owner.

The instructions ("Instructions") provided to the user ("User") herein are intended to enable the User to make use of the product ("Product") in relation to, or interactive with, certain third-party equipment ("3/P Equipment"). Though ASMPT has offered the Instructions to User in good faith, and believes the information contained in the Instructions to be reasonably accurate, ASMPT expressly advises and warns the User that the Instructions may contain inaccuracies and may be changed or updated without notice, and that some or all of the Instructions may be potentially inadequate or lacking in essential detail.

ASMPT further expressly advises User and declares that:

(a) all Instructions are and shall remain the exclusive property of ASMPT, and are and shall be provided by ASMPT "as is," with all faults, without warranty of any kind, and ASMPT hereby expressly disclaims all warranties and conditions with regard to any use of the Product in relation to, or interactive with, any 3/P Equipment, or any part thereof or appurtenance thereto, and any Instructions related thereto, including all implied warranties and conditions of merchantability, fitness for a particular purpose, and workmanlike effort; and

(b) the use of the Product in relation to, or interactive with, any 3/P Equipment ("Use of the Product"), or use or reliance on any information presented in any Instructions concerning the use of the Product, is in each case at user's sole risk.

User hereby releases ASMPT from any present or future liability arising out of the Use of the Product. User further covenants not to bring, and to hold ASMPT harmless from, any legal action of any kind against ASMPT relating to the Use of the Product by User or any other person who gains access to the Product engaged in such use by or through User.

In no event shall ASMPT be liable for any direct, indirect, punitive, incidental, special, or consequential damages or damages for loss of profits, revenue, or use, arising out of or in any way connected with the instructions or the Use of the Product, whether based on contract, tort, negligence, strict liability or otherwise.

Contents

| | | |
|------------|--|-----------|
| 1 | Introduction | 5 |
| 1.1 | System Overview | 5 |
| 1.2 | Target Group | 6 |
| 1.3 | Scope of Delivery | 6 |
| 1.3.1 | Software Components and Licenses | 6 |
| 1.3.2 | Basic Documents | 7 |
| 1.3.3 | Languages | 7 |
| 2 | System Requirements | 9 |
| 2.1 | Hardware | 9 |
| 2.2 | Software | 9 |
| 2.2.1 | Operating Environment | 10 |
| 2.3 | Time Sync | 10 |
| 3 | New or Changed Features in WORKS Process Expert 4.0 | 11 |
| 4 | Current Restrictions | 13 |

1 Introduction

This document describes the scope of delivery, the system requirements and the functionality update of WORKS Process Expert 4.0.



NOTICE

Please note the following

As a user of the statistic functionalities of ASMPT's software in this ASMPT's product, you may process personal data. Processing - including analyzing - personal data is subject to data protection and other laws, which might impose restrictions and that might differ by country. You are responsible to ensure that such processing is performed in compliance with data protection and other laws applicable to you and your company. We therefore would like to urge you to consult your supervisor or your legal department as regards the data protection and other legal requirements to be followed.

1.1 System Overview

WORKS Process Expert is a self-learning inline expert system for electronics manufacturing that improves the production of printed circuit boards. WORKS Process Expert version 4.0 provides the functionality to support the printing process and the placement process in all relevant production areas.

WORKS Process Expert

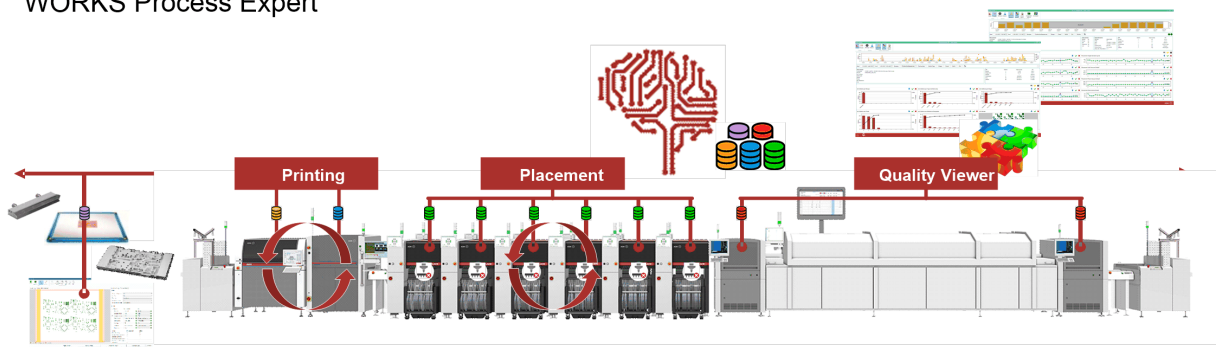


Fig. 1: System overview of a placement line in combination with WORKS Process Expert

Printing Module

With the **Printing** module, WORKS Process Expert improves the production by:

- Analyzing the stencil layout and its output in combination with the printer setup.
- Stabilizing the processes.
- Automatically optimizing the processes or confirming that the best printing parameters for a given stencil layout and printer setup have already been achieved.
- Proactively controlling the processes
- Collecting DEK printer process data + SPI measurement data in deployment scenarios with the product module Process Expert Quality Viewer

The **Printing** module works in combination with a compatible DEK printer and a Solder Paste Inspection machine (SPI) which can be a Process Lens PL SPI machine or a compatible 3rd party SPI.

Placement Module

With the **Placement** module, WORKS Process Expert improves the production by:

- Optimizing the placement process by monitoring the pickup performance.
- Directing the line operator to the largest causes of quality variations from within the placement process.
- Providing the line operator with a list of possible corrective actions if the pickup performance decreases below a certain threshold.
- Collecting placement process data in deployment scenarios with the product module Process Expert Quality Viewer

Quality Viewer Module

With the **Quality Viewer** module, WORKS Process Expert improves the production by:

- Integrating 3rd-party AOI machines (**A**utomated **O**ptical **I**nspection).
- Collecting historical quality data and process data in a single database.
- Providing defect analysis and root-cause finding in a single tool
- Providing inter-device quality and process data correlation across the complete SMT process.



NOTICE

Deployment scenarios

For an overview of deployment scenarios and involved products, refer to the WORKS Process Expert User Guide [00900549-xx] or Installation Manual [00900553-xx].

1.2 Target Group

WORKS Process Expert can be used by any process engineer or operator who is responsible for monitoring and improving the production process.



CAUTION

Qualified personnel

This work may only be carried out by staff with appropriate training for the specific software part.

- ▶ All tasks must be carried out by trained and qualified personnel. All warning, caution and danger notes **MUST** be observed!



NOTICE

This software manual

We would like to draw your attention to the fact that the contents of these software instructions are not part of a previous or existing agreement, commitment or legal contract, neither is this intended to modify one of the above. All obligations may be taken from the appropriate sales contract, which also contains a complete and valid warranty agreement. These contractual statements are neither extended nor restricted by this software guide.

1.3 Scope of Delivery



NOTICE

Customer Download Center

It is possible to download the Process Expert Media Package from the Customer Download Center without any further costs.

1.3.1 Software Components and Licenses

- WORKS Process Expert Server V4.x (one license per factory) [00117350-xx]
- WORKS Process Expert Printing (one license per client) [00117352-xx]
or
WORKS Process Expert DFM Health Check Standalone (one license per client) [00117368-xx]
- WORKS Process Expert Placement (one license per client) [00117353-xx]
- WORKS Process Expert Quality Viewer (one license per client) [00117354-xx]
- WORKS Process Expert Media Package V4.x [00117361-xx]

For possible combination of licenses and deployment scenarios, refer to Deployment Scenarios And Involved Products.

Additionally, several upgrade options exist depending on the current type of your WORKS Process Expert configuration.

1.3.2 Basic Documents

- WORKS Process Expert Installation Guide [00900553-xx]
- WORKS Process Expert User Guide [00900549-xx] / WORKS Process Expert Benutzerhandbuch [00900550-xx]
- WORKS Process Expert - DFM Health Check Standalone User Guide [00900551-xx] / WORKS Process Expert – DFM Health Check Standalone Benutzerhandbuch [00900552-xx]
- WORKS Process Expert Version Description [00900554-xx]
- ASM Support Media 2.9 (R19-1) Administration Manual [00900053-xx]



NOTICE

Accessing the Support Media

Please use the Navigation Guide button of the Support Media Launcher for navigating through the documentation. The navigation guide and all related documents are available on the Support Media.

1.3.3 Languages

WORKS Process Expert supports the following languages:

- English
- German
- Chinese (Simplified)
- Japanese

2 System Requirements

WORKS Process Expert 4.0 can be deployed in production lines with single lane line layout or a dual lane line layout including DEK printer, Process Lens PL or 3rd party SPI, SIPLACE placement machines as well as Pre- and Post-Reflow AOIs.

WORKS Process Expert is installed on a computer that must meet specific hardware requirements. [2.1 "Hardware" \[▶ 9\]](#)

It is possible to install WORKS Process Expert, for example, as an additional application on the SIPLACE Line Computer or on the same computer with the Process Lens Offline programming package, or on a separate computer.

WORKS Process Expert must be integrated into the SIPLACE LAN to be able to configure and establish all required connections.

For licensing, the License Manager application is required. You can install the License Manager application on any customer computer on the SIPLACE LAN.

For possible deployment scenarios of WORKS Process Expert, refer to Deployment Scenarios And Involved Products.

2.1 Hardware

The following hardware configuration is recommended:

- Processor: Intel Xeon E3 / Intel Core i5 or higher
- Memory: 16 GB
- Hard disc: 2x SSD 512 GB (or 1x SSD 256 GB and 2x HDD 512 GB)
- Network: 1 Gbit
- Graphic: Full HD (1920 x 1080) or higher

Less powerful configurations are possible. However, the optimum performance cannot be guaranteed then.

2.2 Software

The Support Media included in the installation package checks the necessary system requirements of your system and installs them. Amongst others, e.g. Microsoft .NET Framework, the License Manager and the Error Reporting tool.



NOTICE

Support Media

The use of Support Media 2.9 (R19-1) or higher is mandatory.

Detailed information on the installation procedure can be found in the Administration Manual Support Media, item no. [00900053-xx] (R19-1).

From R22-1 onwards, refer to the Administration Manual Support Media, item no. [009000537-xx].

The system requirements (supported operating systems and database variants) and an overview of the interoperable products can be found in the Support Media Version Description, item no. [00900052-xx] (R19-1).

From R22-1 onwards, refer to the Support Media Version Description, item no. [009000537-xx].

2.2.1 Operating Environment

For an overview of supported combinations of Windows versions and SQL Server, refer to the Version Description of the Support Media 2.9 (R19-1) [00900052-xx].

From R22-1 onwards, refer to the Support Media Version Description, item no. [00900537-xx].

2.3 Time Sync

To ensure that you can trace board production data properly at a later date, it is important that all systems involved have synchronized time keeping. The individual times in the various systems can be automatically synchronized with the ASMPT Time Sync tool.

Time Sync is a client server application, which helps to synchronize the time at all SIPLACE machines and all traceability or line computers (client). Time Sync is installed and configured on one particular computer (e.g. the SIPLACE Pro server) as a time server and on one or more other computers as a client.



NOTICE

Time Sync

After installing the Time Sync server and Time Sync client, check the settings for "Time Sync" and correct the times where necessary, at the Time Sync client.

The current Time Sync software and software instructions can be found on the WORKS Support Media, supplied with each software product.

3 New or Changed Features in WORKS Process Expert 4.0

This section describes the main changes of WORKS Process Expert 4.0 compared to ASM Process Engine 3.1:

- ASM Process Engine has been renamed to WORKS Process Expert, including the tiles in the Studio software:
 - Process Expert Configuration
 - Process Expert Desk
 - Process Expert Printing
 - Process Expert Placement
 - Process Expert Inspection
 - Process Expert Analyzer
- Renaming has been done accordingly within the Process Expert software modules.
- Product variants are supported in Process Expert:
 - by removing the naming restrictions for projects, recipes, and boards
 - by allowing a one-to-many assignment of a Process Expert project to DEK printer recipes and SPI recipes (**SPI Recipe Assignment** functionality)
- The Process Engine Action Viewer tile has been removed. The Action Viewer functionality is mainly covered in Process Expert Analyzer.
- In Process Expert Analyzer, a separate **Printing** view has been added to account for printing-only deployment scenarios.
- 3rd party SPI machines are supported. To be compatible with WORKS Process Expert, a 3rd party SPI or AOI system needs to support Equipment Connector and the IPC-CFX standard.
- The multi panel barcode option of Process Lens is now supported.
- The fractional factorial experiment is now also supported for V01 printer.
- The Experiment parameters in DFM process have been restructured.
- The Barcode search function has been added.
- The Placement view has been added.
- The “Now” button has been added to the filter options in the Analyzer module.
- AOI Defect pictures are now available in Analyzer module and Inspection Viewer.
- A dual line view is now provided in the Inspection Viewer.

For more information, refer to the WORKS Process Expert User Guide [00900549-xx] or the DFM Health Check Standalone User Guide [00900551-xx].

4 Current Restrictions

The following restrictions regarding the line configuration must be observed:

- Line configurations with pre- and post-reflow AOIs are supported for Process Expert Inspection. However, for Process Expert Analyzer, only one AOI and one verification station are supported. If a pre-reflow AOI or verification station is used, it must be defined as post-reflow station in the configuration module!
- Line configurations with additional machines between DEK printer, SPI or AOI, for example conveyor, shuttle or repair station, are only supported with barcode reading OR IPC-HERMES-9852, both providing a unique PCB ID (PCB barcode or IPC-HERMES-9852-ID). In this case, boards are tracked via physical barcodes.
- DEK printers equipped with ProFlowHead are not supported.
- DEK Printers equipped with High Throughput Conveyor (HTC) systems are not supported unless configured in Single Stage Conveyor mode.
- On DEK printers equipped with the Automatic Paste Dispenser (APD) option, the automatic paste dispensing feature must be disabled before an experiment is started.

The following operation restrictions must be observed:

- Operation with mixed board batches/vendors is not supported.
- Process Expert Printing does not support **Clean Mode 2**.
- Bad Mark restriction (including iSkip)
 - Board populations used for Process Control and DFM Process workflows must not include known bad boards or panels.
 - Boards or boards with panels that are identified as bad within a batch via physical marks or iSkip must not be used in Process Expert workflows as they may produce variable pad counts within Process Lens inspection results and will therefore detrimentally affect Process Expert workflows relating to DFM Process and Process Control.
- Panel Barcode Support (Barcode Scanners)
 - Panel level barcodes are supported only by Process Lens machines. In this scenario, the panel barcode associated with the panel defined as '1' in the Process Lens recipe will be provided to Process Expert as a Master barcode.

To avoid data integrity errors, it is critical that barcode scanner positions at the printer are located correctly in order to ensure that the correct barcode is read.

The following restrictions for WORKS Process Expert with DEK TQ platform must be observed:

- With the TQ's object model programming where multiple customer products use a common object (for example the "deposition process" containing some printing parameters), running the WORKS Process Expert fractional experiment workflow will adjust the parameter values in the object model. All customer products linked to the updated object model will be impacted.

ASMPT

ASMPT GmbH & Co. KG
Rupert-Mayer-Strasse 48 | 81379 Munich | Germany

Item No. 00900554-02 | 07/2023 EN | All rights reserved | © 2023 ASMPT



smt.asmpt.com