

# **EOSTATE** Exposure OT Edition 11.23 (1.12)

# Supported machines

- EOS M 290
- EOS M 300-4
- EOS M 400-4
- EOS M 400

# Overview of program versions

Software	Edition 05.23	Edition 11.23
EOSTATE Exposure OT Client Application	1.11.232	1.12.151
EOSTATE Exposure OT Service Application	1.11.232	1.12.151
EOSTATE Exposure OT Health Service	1.11.232	1.12.151
EOSTATE Exposure OT Service Tools	1.11.232	1.12.151
EOS BTSync Service	1.7.0.0	1.7.0.0
PCO USB 3.0 Driver	2.04	2.04
IDS Driver (Camera)	4.92.2	4.92.2
IDS Peak Driver (Camera)	2.2.0.0	2.2.0.0
WIBU CodeMeter Runtime	7.51.5429.500	7.60.5625.503
Win loT Image	3.4.0.0	3.5.1.0

# **Customer Compatibility Matrix**

# (EOSTATE Exposure OT - EOSYSTEM, EOSTATE Exposure OT - EOSPRINT 2)

- The tables below do not represent compatibility between EOSYSTEM and EOSPRINT 2.
- EOSPRINT 1 is not supported anymore.

OT	EOSYSTEM	EOSPRINT 2
v. 1.8.283 (Edition 11.21)	v. 2.14 (Ed. 05.21)	v. 2.9 (Ed. 11.20) v. 2.10 (Ed. 05.21) v. 2.11 (Ed. 11.21)
v. 1.9.194 (Edition 05.22)	v. 2.15 (Ed. 11.21)	v. 2.10 (Ed. 05.21) v. 2.11 (Ed. 11.21) v. 2.12 (Ed. 05.22)
v. 1.10.167 (Edition 11.22)	v. 2.16 (Ed. 05.22)	v. 2.11 (Ed. 11.21) v. 2.12 (Ed. 05.22) v. 2.13 (Ed. 11.22)
v. 1.11.232 (Edition 05.23)	, , , , , ,	v. 2.12 (Ed. 05.22) v. 2.13 (Ed. 11.22) v. 2.14 (Ed. 05.23)
v. 1.12.151 (Edition 11.23)	v. 2.17 (Ed. 11.22) v. 2.18 (Ed. 05.23) v. 2.19 (Ed. 11.23)	v. 2.14 (Ed. 05.23)



# Version 1.12.151

# Overview of Microsoft updates installed on the Monitoring IPC (Windows IoT)

• During a comprehensive series of tests, EOSTATE Exposure OT 1.12.151 was tested using the latest Microsoft patch state (date October 2023) without anomalies in relation to the functionality of the overall system. Attached release documents provide details on the latest Microsoft patch state.

#### **General Information**

- EOSTATE Exposure OT Edition 11.23 is compatible to all the other Edition 11.23 software products from EOS. A detailed description of the downward compatibility to other EOS software versions can be found in the Customer Compatibility Matrix.
- All layer heights (given in millimeters) indicated in the EOSTATE Exposure OT client relate to the complete building task. The layer height displayed in the user interface on the machine, however, relates to the building process. Therefore, if a building process is not started in the first layer, the building height displayed by EOSTATE Exposure OT is different to the building height displayed on the machine. In comparison, the layer number relates to the building process.
- Simultaneous access to acquired job data by several processes (e.g. several instances of the EOSTATE Exposure OT client) is not supported.
- The deletion of a building task during acquisition will result in undefined behavior and is not supported.
- The acquisition of building processes with single exposures and/or single recoatings undertaken manually during the building process is not supported.
- Calculations of geometric corrections and process intensity corrections are time consuming. During the calculation the application might become unresponsive. This behavior has no effect on the result.

#### **Important Note**

- Please check the Release Notes thoroughly. Since Edition 05.23 we replaced our database and are using SQLite instead of DB2. This has several implications on the software. Details can be found below, in the section "new functions" of Edition 05.23. Be aware, that from Edition 11.23 the DB2-database will not be migrated anymore! All data in the monitoring database (monitoring job data, calibration data, analysis results and so on) will be deleted. It is necessary to save all monitoring job data and other relevant data before the update. The monitoring jobs can be imported afterwards in the offline use case. If you want to migrate your existing DB2-database from Edition 11.22 or older to SQLite, it is mandatory to install Edition 05.23 first, even if a newer version is already available. Only with Edition 05.23 the monitoring database is partly migrated (only calibration data, analysis results and so on). Also in this case monitoring jobs must be saved by exporting, if they are still needed after migration.
- Version 1.12.151 was tested and released with Windows 10 IoT.
- All components of EOSTATE Exposure OT must be updated at the same time and be on the same version.
- Information regarding the required ports can be found in the latest version of the EOS Industrial Cybersecurity Guide.

# Solved Items

- Item 98058: When importing job files of Edition 10.19 the progress in the status bar was not displayed correctly. The job import itself is not affected by this. With Edition 05.23 the possibility to import job files of Edition 10.19 was removed due to the switch to the SQLite with Edition 05.23. Therefore this error does not occur anymore.
- Item 195396: In some cases, when a job was being imported while also a job was being built a the same time, in the operator role the display of the images of the two jobs might not have worked as expected. However, the storage of the data and all the other functions of the monitoring software regarding data acquisition were not affected by this. Now, the images are displayed correctly.
- Item 195843: If a remote analysis was triggered in the client during the Remote Use Case the analysis was started but the analysis results were not stored in the database. To perform an analysis on a job it had to be exported first and then imported in the Offline Use Case. Then the analysis can be performed without issues and the results are stored correctly.
- Item 198242: In very rare cases during Smart Fusion jobs and only for jobs with a high fill rate, it was possible that some camera frames were lost due to a high processor load on the EOSTATE Exposure OT IPC caused by the Smart Fusion calculations. Now the priority and the order of exectuion for some calculations, which were causing the high processor load at certain times, have been optimized to prevent frame loss caused by high processor load on the EOSTATE Exposure OT IPC.
- Item 199172: Smart Fusion did not work correctly if not all lasers were exposing parts in a layer on multi laser machines during a job. This is now fixed and Smart Fusion works correctly independent of the number of lasers that are exposing parts.

### **New Functions**

- Item 185169: The Smart Fusion Image is now available via the EOSCONNECT Core REST interface.
- Item 189300: EOSTATE Exposure OT software now also supports EOS M 400-1. A separate hardware installation is required.
- Item 197795: In very rare cases, the transfer of the Smart Fusion Image from EOSTATE Exposure OT to EOSYSTEM failed due to OPC/UA connection errors. In this case, the job stopped. Now we implemented a retry mechanism to prevent the image loss in case of connection errors that can be fixed with the retry mechanism.
- Item 199848: In some cases the user was not notified that the quality of the geometric correction of the EOSTATE Exposure OT system was not sufficient for Smart Fusion to work properly. This is now fixed and the user is notified accordingly if the quality of the geometric correction is not sufficient.



- Item 200643: The Max-Image of the geometric correction job(s) is now used by default to calculate the geometric correction. The default parameters have also been improved. The same applies for the geometric verification.
- Item 203327: The volume segmentation which is availabe in EOSPRINT 2.15 is not fully supported by the monitoring software (This also applies to the Smart Fusion functionality of EOSTATE Exposure OT). The user is notified at the job start, that the monitoring software might not be fully functional regarding monitoring analytics (This also applies to the Smart Fusion functionality of EOSTATE Exposure OT). The data acquisition is fully functional.

- Item 39279: The progress indication while importing/exporting data acquired for a job with a large number of anomalies does not indicate the actual progress during individual steps.
- Item 43597: If there is not enough free disk space on the system partition (C:) for the temporary data while importing job data, the job data cannot be imported and the message 'Import failed. See log file for details' appears.
- Item 56839: In the support role the live image of the building process is not updated during the recoating or during the layer change. This situation has no effect on recording.
- Item 80376: In the QA Engineer role, when adding comments with the comment function 'from layer ... to layer ...' it may happen that not all selected layers are provided with the corresponding comment.
- Item 119627: The machine display shows an error message "Buildjob was cancelled after 0 layers" after having built the job for the geometric correction although the job for the geometric correction has been built correctly and the geometric correction can be calculated.
- Item 161335: It is not possible to use a network path for the automatic export. The images, indications and part statistics can only be exported to the monitoring IPC when the automatic export feature is being used.
- Item 169076: The job duration shown in the report is off by one hour if the clock change occurred whilst the job was being built.
- Item 194564: Floating point values are not displayed in the Storage Management tool in the Client software. If a floating point value is
  entered the value is stored and applied correctly but it's not going to be displayed. If an integral number is entered the value is displayed
  correctly.
- Item 195029: In rare cases, after the deletion of a job, the according message in the Event Log is stored and displayed twice. However, the deletion of the job itself is not affected by this.
- Item 196391: If the monitoring system is disabled at the machine during a build job, the notification in the monitoring event log does not show the corresponding JobID and layer height.
- Item 208138: In very rare cases it might happen that the layer time increases by up to 5 seconds for isolated layers. The probability for the occurrence is increased if it's a Smart Fusion Job with a significant misalignment of the OT images and with short layer times.



# **EOSTATE** Exposure OT Edition 05.23 (1.11)

# Supported machines

- EOS M 290
- EOS M 300-4
- EOS M 400-4

# Overview of program versions

Software	Edition 11.22	Edition 11.22 SP1	Edition 05.23
EOSTATE Exposure OT Client Application	1.10.167	1.10.169	1.11.232
EOSTATE Exposure OT Service Application	1.10.167	1.10.169	1.11.232
EOSTATE Exposure OT Health Service	1.10.167	1.10.169	1.11.232
EOSTATE Exposure OT Service Tools	1.10.167	1.10.169	1.11.232
EOS BTSync Service	1.6.1.1	1.6.1.1	1.7.0.0
PCO USB 3.0 Driver	2.04	2.04	2.04
IDS Driver	4.92.2	4.92.2	4.92.2
IDS Peak Driver	2.1.1.0	2.2.0.0	2.2.0.0
WIBU CodeMeter Runtime	7.40.4990.500	7.40.4990.500	7.51.5429.500
Win IoT Image	3.3.0.0	3.3.0.0	3.5.0.0

# **Customer Compatibility Matrix**

# (EOSTATE Exposure OT - EOSYSTEM, EOSTATE Exposure OT - EOSPRINT 2)

The tables below do not represent compatibility between EOSYSTEM and EOSPRINT 1 is not supported anymore.

OT	EOSYSTEM	EOSPRINT 2
v. 1.8.283 (Edition 11.21)	v. 2.13 (Ed. 11.20) v. 2.14 (Ed. 05.21) v. 2.15 (Ed. 11.21)	v. 2.9 (Ed. 11.20) v. 2.10 (Ed. 05.21) v. 2.11 (Ed. 11.21)
v. 1.9.194 (Edition 05.22)	v. 2.14 (Ed. 05.21) v. 2.15 (Ed. 11.21) v. 2.16 (Ed. 05.22)	v. 2.10 (Ed. 05.21) v. 2.11 (Ed. 11.21) v. 2.12 (Ed. 05.22)
v. 1.10.167 (Edition 11.22)	` ,	v. 2.11 (Ed. 11.21) v. 2.12 (Ed. 05.22) v. 2.13 (Ed. 11.22)
v. 1.11.232 (Edition 05.23)		v. 2.12 (Ed. 05.22) v. 2.13 (Ed. 11.22) v. 2.14 (Ed. 05.23)



# Version 1.11.232

# Overview of Microsoft updates installed on the Monitoring IPC (Windows IoT)

• During a comprehensive series of tests, EOSTATE Exposure OT 1.11.232 was tested using the latest Microsoft patch state (date April 2023) without anomalies in relation to the functionality of the overall system. Attached release documents provide details on the latest Microsoft patch state.

#### **General Information**

- EOSTATE Exposure OT Edition 05.23 is compatible to all the other Edition 05.23 software products from EOS. A detailed description of the downward compatibility to other EOS software versions can be found in the Customer Compatibility Matrix.
- All layer heights (given in millimeters) indicated in the EOSTATE Exposure OT client relate to the complete building task. The layer height displayed in the user interface on the machine, however, relates to the building process. Therefore, if a building process is not started in the first layer, the building height displayed by EOSTATE Exposure OT is different to the building height displayed on the machine. In comparison, the layer number relates to the building process.
- Simultaneous access to acquired job data by several processes (e.g. several instances of the EOSTATE Exposure OT client) is not supported.
- The deletion of a building task during acquisition will result in undefined behavior and is not supported.
- The acquisition of building processes with single exposures and/or single recoatings undertaken manually during the building process is not supported.
- Calculations of geometric corrections and process intensity corrections are time consuming. During the calculation the application might become unresponsive. This behavior has no effect on the result.

#### Important Note

- Please check the Release Notes very carefully, we replaced our database and are now using SQLite instead of DB2. This has several
  implications on the software. Details can be found below in the section "new functions". Be aware, that the monitoring job data (images,
  analysis results and so on) will not be migrated. It is necessary to export all monitoring jobs prior to the update. Otherwise the job data will
  be lost. The monitoring jobs can be imported afterwards.
- Version 1.11.232 was tested and released with Windows 10 IoT.
- All components of EOSTATE Exposure OT must be updated at the same time and be on the same version.
- Information regarding the required ports can be found in the latest version of the EOS Industrial Cybersecurity Guide.

#### Solved Items

- Item 182831: In most cases, when the first job was started after a restart of the machine, the machine showed the error message 170–12, stating that the synchronization with EOSYSTEM had failed. In addition to that the first image of the job could not be stored in very rare cases. Besides that, the image acquisition was not affected and the monitoring system was fully operational. Now this is fixed and the PowderBed system has no more errors after the restart of the machine.
- Item 188543: After a machine error had occured the exposure information of the second layer had been added to the one layer with the error. This is now fixed. If a machine error occurs and the job is continued afterwards, the monitoring data/exposure information is now stored correctly to the according layer.
- Item 190984: The Smart Fusion Image is stored for the layer that it had been applied to. In the EOSTATE Exposure OT Client, if the Smart Fusion Channel is selected in the Operator or the QA Engineer Role, it shows the Smart Fusion image that was applied for this layer. In the Operator Role if the slider is set to the live layer 'Image not available' will be shown for the live layer during job recording. As soon as the layer is completed the Smart Fusion image is shown if 'last completed layer' is selected.
- Item 194384: In very rare cases it was possible that the 'automatic job delete' did not follow the FIFO principle to delete jobs and therefore sometimes even deleted the Job that was currently being built. To prevent this behaviour in the future the criterion that is used to determine the oldest job has been changed to make the automatic job delete more robust. In addition another function has been implemented that explicitly prevents the deletion of a job that is currently being built.

#### **New Functions**

- Item 167146: Monitoring jobs that have been exported with a SW version from an Edition older than Edition 05.20 cannot be imported. To import them in a database of Edition 05.23 they have to be imported to Edition 11.22 first and then the export of the same job from Edition 11.22 can be imported with Edition 05.23. It is no no longer possible to restore database backups with a backup version 001. Starting with Edition 11.23 it will only be possible to restore database backups of SQLite databases. The job lists shown in the client tools are now sorted based on the date the job was added to the database.
- Item 167147: The DB2 database is replaced by a SQLite database. Therefore, the DB2 server is no longer required. The Monitoring database is now split in a 'job database' per job conatining all the images, analysis results and so on and one system database containing all the system data like the corrections.
- Item 167150: During the update procedure of the monitoring system only a part of the database is migrated. All existing jobs are deleted during the migration of the database. However, the system data (e.g. analysis profiles and geometric corrections) will be migrated to the new monitoring 'system DB'. If the monitoring data of the jobs (job data like images, part statistics, analysis results and so on) has to be available after the migration, the jobs have to be exported prior to the update, respectively prior to the database migration which is part of the update procedure. The exported jobs can then later be imported in a normal 'offline use case'.
- Item 168254: Smart Fusion is now a new Feature within the EOSTATE Exposure OT software. The following changes apply for jobs where Smart Fusion is enabled in EOSPRINT. The first three layers of a job are always exposed with a neutral Smart Fusion image and therefore

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- with exactly 100 % of the laser power in the jobfile. The Smart Fusion image for the fourth layer is based on the OT image of the third layer. After a pause in the build job and a following single exposure the next layer is exposed with a neutral Smart Fusion image.
- Item 174102: In the Remote Use Case, when a Client is connected to a machine, the Si-number of the machine is now stored. Therefore it is no longer necessary to re-enter the Si-number when connecting with the same machine at a later point in time.
- Item 175577: The remote export and the import of monitoring jobfiles is now up to 50 % faster.
- Item 185144: At the job start, and prior to the first laser exposure, EOSYSTEM waits for a confirmation from the monitoring system that the monitoring system is fully operational. If monitoring is not fully operational the build process is stopped and the respective monitoring system can be deactivated to restart the job or the monitoring system has to be fixed before the job can be restarted.
- Item 185164: The Smart Fusion status (enabled/disabled for at least one part) is shown in the EOSTATE Exposure OT report as well as the Job summary in the QA Engineer Role in the EOSTATE Exposure OT Client. The material thickness was removed from the QA Engineer Role.
- Item 185167: The Smart Fusion Images can be exported as Raw, Tiff and Jpeg images (8 bit grey value). Either by using the context menu of the view ports or by using the 'Export Jobs' tool. The Tiff images contain the target GV as tag.
- Item 187011: Parts with laser power below 10 W are no longer considered for the monitoring analysis and therefore no more indications are calculated for these parts. They can also no longer be selected in the viewport in the Monitoring Client.
- Item 187680: The Smart Fusion images are automatically corrected if the geometric correction of EOSTATE Exposure OT is not accurate enough. If the automatic correction of the Smart Fusion images does not work properly an error message is shown in the EOSTATE Exposure OT Event Log and at the GUI of the machine.
- Item 188064: The Monitoring Client Software can now be started without any special license. License 1, which is available on every dongle from EOS, is the only license that is required to start the Monitoring Client.

- Item 39279: The progress indication while importing/exporting data acquired for a job with a large number of anomalies does not indicate the actual progress during individual steps.
- Item 43597: If there is not enough free disk space on the system partition (C:) for the temporary data while importing job data, the job data cannot be imported and the message 'Import failed. See log file for details' appears.
- Item 56839: In the support role the live image of the building process is not updated during the recoating or during the layer change. This situation has no effect on recording.
- Item 80376: In the QA Engineer role, when adding comments with the comment function 'from layer ... to layer ...' it may happen that not all selected layers are provided with the corresponding comment.
- Item 119627: The machine display shows an error message "Buildjob was cancelled after 0 layers" after having built the job for the geometric correction has been built correctly and the geometric correction can be calculated.
- Item 161335: It is not possible to use a network path for the automatic export. The images, indications and part statistics can only be exported to the monitoring IPC when the automatic export feature is being used.
- Item 169076: The job duration shown in the report is off by one hour if the clock change occurred whilst the job was being built.
- Item 194564: Floating point values are not displayed in the Storage Management tool in the Client software. If a floating point value is entered the value is stored and applied correctly but it's not going to be displayed. If an integral number is entered the value is displayed correctly.
- Item 195029: In rare cases, after the deletion of a job, the according message in the Event Log is stored and displayed twice. However, the deletion of the job itself is not affected by this.



# Version 1.10.169 - SP1

#### **General Information**

- EOSTATE Exposure OT Edition 11.22 SP1 is compatible to all the other Edition 11.22 software products from EOS. A detailed description of the downward compatibility to other EOS software versions can be found in the compatibility matrix (see ANNEX 1).
- All layer heights (given in millimeters) indicated in the EOSTATE Exposure OT client relate to the complete building task. The layer height
  displayed in the user interface on the machine, however, relates to the building process. Therefore, if a building process is not started in the
  first layer, the building height displayed by EOSTATE Exposure OT is different to the building height displayed on the machine. In
  comparison, the layer number relates to the building process.
- Simultaneous access to acquired job data by several processes (e.g. several instances of the EOSTATE Exposure OT client) is not supported.
- The deletion of a building task during acquisition will result in undefined behavior and is not supported.
- The acquisition of building processes with single exposures and/or single recoatings undertaken manually during the building process is not supported.
- Calculations of geometric corrections and process intensity corrections are time consuming. During the calculation the application might become unresponsive. This behavior has no effect on the result.

### Important note

- Service Pack 1 for EOSTATE Exposure OT for Edition 11.22 was released to enable the support of the new OT camera U3-3000 for the EOS M 300-4 and EOS M 400-4, which will be shipped with new systems. It is the successor to the discontinued UI-3000 camera from IDS. The functionality and the basic camera parameters (camera resolution, bit depth) remain the same. EOSTATE Exposure OT 1.10.167 can still be used for existing systems. Solved Items and new functions, that were already implemented with EOSTATE Exposure OT 1.10.167 can be found below in Release Notes chapter 1.10.167 and are also included in 1.10.169.
- Version 1.10.169 was tested and released with Windows 10 IoT.
- All components of EOSTATE Exposure OT must be updated at the same time and be on the same version.
- Information regarding the required ports can be found in the latest version of the EOS Industrial Cybersecurity Guide.

#### **New Functions**

• Item 168306: IDS camera U3-3000 is now supported.

#### Known Issues

- Item 39279: The progress indication while importing/exporting data acquired for a job with a large number of anomalies does not indicate the actual progress during individual steps.
- Item 43597: If there is not enough free disk space on the system partition (C:) for the temporary data while importing job data, the job data cannot be imported and the message "Import failed. See log file for details" appears.
- Item 56839: In the support role the live image of the building process is not updated during the recoating or during the layer change. This situation has no effect on recording.
- Item 80376: In the QA Engineer role, when adding comments with the comment function "from layer ... to layer ..." it may happen that not all selected layers are provided with the corresponding comment.
- Item 98058: When importing job files of Edition 10.19 (EOSTATE Exposure OT Version 1.4) the progress in the status bar is not displayed correctly. The job import itself is not affected by this.
- Item 119627: The machine display shows an error message "Buildjob was cancelled after 0 layers" after having built the job for the
  geometric correction although the job for the geometric correction has been built correctly and the geometric correction can be
  calculated.
- Item 161335: It is not possible to use a network path for the automatic export. The images, indications and part statistics can only be exported to the monitoring IPC when the automatic export feature is being used.
- Item 169076: The job duration shown in the report is off by one hour if the clock change occurred whilst the job was being built.
- Item 182831: In most cases, when the first job is started after a restart of the machine, the machine will show the error message 170–12, stating that the synchronization with EOSYSTEM has failed. In addition to that the first image of the job cannot be stored in very rare cases. Besides that, the image acquisition is not affected and the monitoring system is fully operational.



# Version 1.10.167

#### General Information

- EOSTATE Exposure OT Edition 11.22 is compatible to all the other Edition 11.22 software products from EOS. A detailed description of the downward compatibility to other EOS software versions can be found in the compatibility matrix (see ANNEX 1).
- All layer heights (given in millimeters) indicated in the EOSTATE Exposure OT client relate to the complete building task. The layer height
  displayed in the user interface on the machine, however, relates to the building process. Therefore, if a building process is not started in the
  first layer, the building height displayed by EOSTATE Exposure OT is different to the building height displayed on the machine. In
  comparison, the layer number relates to the building process.
- Simultaneous access to acquired job data by several processes (e.g. several instances of the EOSTATE Exposure OT client) is not supported.
- The deletion of a building task during acquisition will result in undefined behavior and is not supported.
- The acquisition of building processes with single exposures and/or single recoatings undertaken manually during the building process is not supported.
- Calculations of geometric corrections and process intensity corrections are time consuming. During the calculation the application might become unresponsive. This behavior has no effect on the result.

#### Important Note

- Version 1.10.167 was tested and released with Windows 10 IoT.
- All components of EOSTATE Exposure OT must be updated at the same time and be on the same version.
- · Information regarding the required ports can be found in the latest version of the EOS Industrial Cybersecurity Guide.

### Solved Items

- Item 165641: In some cases, it was possible that a notification was shown twice in the Event Log. This is now fixed. In these cases notifications are only shown once in the event log.
- Item 170368: The comment type was not displayed in the list of comments. Now the comment type is displayed correctly in the list of comments.

#### **New Functions**

- Item 84528: It is now possible to use an automatic job delete for old monitoring jobs. If this feature is activated, the oldest job is deleted automatically if the storage capacity runs low to ensure the proper acquisition of the job that is currently being built. The feature has to be activated after the Software update to Edition 11.22. The automatic job delete starts as soon as the feature is activated if the storage limit is exceeded. More details regarding this feature can be found in the software manual.
- Item 102020: The approach for calculating the layer information has been improved. The overall quality of the generated layer information, which is used for the analysis calculation and the calculation of the part statistics, increased and the probability of errors has been reduced even further.
- Item 158715: After sensor errors, the camera is re-initialized and tries to restart image recording. Until now, the camera stopped image acquisition after a sensor error.
- Item 168306: IDS camera U3-3000 is now supported.

#### Known Issues

- Item 39279: The progress indication while importing/exporting data acquired for a job with a large number of anomalies does not indicate the actual progress during individual steps.
- Item 43597: If there is not enough free disk space on the system partition (C:) for the temporary data while importing job data, the job data cannot be imported and the message "Import failed. See log file for details" appears.
- Item 56839: In the support role the live image of the building process is not updated during the recoating or during the layer change. This situation has no effect on recording.
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- Item 98058: When importing job files of Edition 10.19 (EOSTATE Exposure OT Version 1.4) the progress in the status bar is not displayed correctly. The job import itself is not affected by this.
- Item 119627: The machine display shows an error message "Buildjob was cancelled after 0 layers" after having built the job for the geometric correction has been built correctly and the geometric correction can be calculated.
- Item 161335: It is not possible to use a network path for the automatic export. The images, indications and part statistics can only be exported to the monitoring IPC when the automatic export feature is being used.
- Item 169076: The job duration shown in the report is off by one hour if the clock change occurred whilst the job was being built.

# Release Notes



• Item 182831: In most cases, when the first job is started after a restart of the machine, the machine will show the error message 170–12, stating that the synchronization with EOSYSTEM has failed. In addition to that the first image of the job cannot be stored in very rare cases. Besides that, the image acquisition is not affected and the monitoring system is fully operational.

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# Version 1.9.194

#### General Information

- EOSTATE Exposure OT Edition 05.22 is compatible to all the other Edition 05.22 software products from EOS. A detailed description of the downward compatibility to other EOS software versions can be found in the compatibility matrix (see ANNEX 1).
- All layer heights (given in millimeters) indicated in the EOSTATE Exposure OT client relate to the complete building task. The layer height
  displayed in the user interface on the machine, however, relates to the building process. Therefore, if a building process is not started in the
  first layer, the building height displayed by EOSTATE Exposure OT is different to the building height displayed on the machine. In
  comparison, the layer number relates to the building process.
- Simultaneous access to acquired job data by several processes (e.g. several instances of the EOSTATE Exposure OT client) is not supported.
- The deletion of a building task during acquisition will result in undefined behavior and is not supported.
- The acquisition of building processes with single exposures and/or single recoatings undertaken manually during the building process is not supported.
- Calculations of geometric corrections and process intensity corrections are time consuming. During the calculation the application might become unresponsive. This behavior has no effect on the result.

#### Important Note

- Version 1.9.194 was tested and released with Windows 10 loT.
- All components of EOSTATE Exposure OT must be updated at the same time and be on the same version.
- Information regarding the required ports can be found in the latest version of the EOS Industrial Cybersecurity Guide.

### Solved Items

- Item 104567: Selecting one or several parts in the operator role in the live-view, although the image could not be loaded, might have lead to a software freeze of the application. If this happened, the application had to be closed using either the Windows task manager or the taskbar. Now there's no longer a software freeze of the application in this situation.
- Item 153190: Starting the Exposure OT Client 1.8.283 took more time (several seconds) than in previous versions. Now the application starts as fast as before.
- Item 153720: If the SystemService of EOSTATE Exposure OT was not restarted (e.g. by restarting the IPC) for more than 114 days the data acquisition stopped. This was due to the fact that image acquisition stopped after the internal frame counter reaching 100 Million frames. Now it is no longer necessary to restart the SystemService after 114 days to ensure data acquisition.
- Item 159390: For jobs that were not started with the first layer the layer number in the slider was not displayed correctly. The layer number for exported images, for the part statistics and the indication export however was correct. Now the layer number in the slider is displayed correctly, too.

#### **New Functions**

- Item 58252: The calculation of the layer information on the Monitoring IPC, which is the basis for the images analysis, is now also performed during the laser exposure. This improves the overall robustness of the system.
- Item 140405: Now there is a text box in the layer slider that allows going directly to a certain layer number.
- Item 150046/160765: The file names of the exported images are now the same regardless of whether the export tool or the "right-click" in the viewport channel has been used. The filenames of the images have also been adapted to always have five digits for the layer number.

#### Known Issues

- Item 39279: The progress indication while importing/exporting data acquired for a job with a large number of anomalies does not indicate the actual progress during individual steps.
- Item 43597: If there is not enough free disk space on the system partition (C:) for the temporary data while importing job data, the job data cannot be imported and the message "Import failed. See log file for details" appears.
- Item 56839: In the support role the live image of the building process is not updated during the recoating or during the layer change. This situation has no effect on recording.
- Item 80376: In the QA Engineer role, when adding comments with the comment function "from layer ... to layer ..." it may happen that not all selected layers are provided with the corresponding comment.
- Item 98058: When importing job files of Edition 10.19 (EOSTATE Exposure OT Version 1.4) the progress in the status bar is not displayed correctly. The job import itself is not affected by this.
- Item 119627: The machine display shows an error message "Buildjob was cancelled after 0 layers" after having built the job for the geometric correction has been built correctly and the geometric correction can be calculated.
- Item 161335: It is not possible to use a network path for the automatic export. The images, indications and part statistics can only be exported to the monitoring IPC when the automatic export feature is being used.

# Release Notes



- Item 165641: In some cases, it is possible that a notification is shown twice in the Event Log. This does not affect the functionality of the software.
- Item 169076: The job duration shown in the report is off by one hour if the clock change occurred whilst the job was being built.



# Version 1.8.283

#### General Information

- EOSTATE Exposure OT Edition 11.21 is compatible to all the other Edition 11.21 software products from EOS. A detailed description of the downward compatibility to other EOS software versions can be found in the compatibility matrix (see ANNEX 1).
- All layer heights (given in millimeters) indicated in the EOSTATE Exposure OT client relate to the complete building task. The layer height
  displayed in the user interface on the machine, however, relates to the building process. Therefore, if a building process is not started in the
  first layer, the building height displayed by EOSTATE Exposure OT is different to the building height displayed on the machine. In
  comparison, the layer number relates to the building process.
- Simultaneous access to acquired job data by several processes (e.g. several instances of the EOSTATE Exposure OT client) is not supported.
- The deletion of a building task during acquisition will result in undefined behavior and is not supported.
- The acquisition of building processes with single exposures and/or single recoatings undertaken manually during the building process is not supported.
- Calculations of geometric corrections and process intensity corrections are time consuming. During the calculation the application might become unresponsive. This behavior has no effect on the result.

#### Important Note

- Version 1.8.283 was tested and released with Windows 10 loT.
- All components of EOSTATE Exposure OT must be updated at the same time and be on the same version.
- Information regarding the required ports can be found in the latest version of the EOS Industrial Cybersecurity Guide.

#### Solved Items

- Item 50808: For large building tasks that consist of more than 2000 individual files, in rare cases there might have been synchronization problems with the monitoring system if these tasks were deleted or copied manually. Now in this case there are no more synchronization problems.
- Item 50810: In rare cases, the building task synchronization service did not reconnect to the machine after the connection was lost, even if the machine became available again. Now the building task synchronization service reconnects once the machine becomes available.
- Item 69001, 80334: When starting a build job that has not been completely transferred to the machine, yet it might have happened that some layers were not recorded correctly and that there were no monitoring images available for these layers. Now, even if a build job is started, that has not been completely transferred to the machine, yet all layers are recorded correctly.
- Item 101747: In the remote use case, deleting a job with a large number of indications sometimes lead to the error message stating "Could not delete job", even though the job had been deleted successfully. Now the job is deleted correctly and no more error message is shown in this case.
- Item 121467: No cross pattern was shown on the machine display for the correction jobs. The jobs were still being built correctly. Now the cross pattern is shown on the machine display for the correction jobs.
- Item 138153: The maintenance script did not work when windows domain users were used to connect to the database. Now the maintenance script also works for domain users.
- Item 138597: If several analysis profiles were available, the tool analysis profile management was not displayed when clicking on the tool for the first time. Clicking on another tool and then clicking on the tool analysis profile management again displays the tool in this case. The tool analysis profile management is now also displayed after clicking on it, even if several analysis profiles are available.
- Item 139847: Jobs could be loaded/imported/exported/deleted while an offline analysis was running by selecting a job in the corresponding tool via double-click. This might have lead to unexpected behavior. Now Jobs cannot be loaded/imported/exported/deleted while an offline analysis is running.
- Item 152824: In the operator role the default value for the max value of the scaling was 45000 for EOSTATE Exposure OT on the EOS M 300-4 and on the EOS M 400-4. This value is now changed to 8000 and now matches the max value in the QA engineer role.

#### **New Functions**

- Item 60524: The current use case (remote or offline) is shown in the login mask and in the status bar. This way it is more clear to the user if there is a connection to a machine or if the offline use case is currently being used.
- Item 69251: The layer number in the monitoring software now relates to the layers that are built and not to the layers in the building task. This is relevant when partial jobs are being built. The first exposure of a job that is built now also has the number one in the EOSTATE Exposure OT Client. This applies for example for the layer slider, the tiff tags of the images, the name of the image when it is exported. This makes it easier to correlate a Exposure OT Image to the according layer of the built job.
- Item 73034: The EOSTATE Exposure OT data (images, part statistics and indications) can now be accessed via the Web API of EOSCONNECT Core. More detailed information regarding this topic can be found in the EOSCONNECT Core documentation.
- Item 77554: It is now possible to multi-select several jobs and then export, import or delete them all at once. The progress is shown in the status bar and matching notifications can be found in the event log of the client.
- Item 81011: The Exposure OT images, the part statistics and the indications can now also be exported via the export tool. This allows the export of all the job data of one or several jobs as well as the export of the whole job file.



- Item 94873: The tiff images now have a header with several tags e.g. the Job ID, image resolution and many more. More detailed information regarding the header can be found in the software manual.
- Item 106296: It is now possible to change the stripe overlap thickness parameter for the part statistics calculation.
- Item 104982: The part statistics and the indication export have been adapted and are now consistent. Detailed information regarding this topic can be found in the software manual.
- Item 114639: The software version of the EOSTATE Exposure OT software that recorded the job is now stored in the corresponding job file and is also shown in the "Job Summary" section in the EOSTATE Exposure OT Client.
- Item 118287: If the end of a job had been missed due to an internal communication error it was not possible to delete these jobs. In this case it is now possible to delete the job afterwards (at the latest once a new job has been built).
- Item 121790, 137163: The event log now also shows a notification if EOSTATE Exposure OT was activated or de-activated at the machine and the notifications for pausing and resuming a job were also adapted.
- Item 123868: The viewport-mouse interaction has been improved. More detailed information regarding the new behavior can be found in the software manual.
- Item 128634: It is no longer possible to disable the currently enabled analysis profile. This prevents unintentional data loss since data acquisition is not possible if no analysis profile is enabled.
- Item 137163: The notification texts in the EOSTATE Exposure OT software have been improved to state more clearly if a build job was stopped, got started or was resumed.
- Item 137877: The size of the stored images has been reduced by up to 30 % (dependent of the job layout) by rounding grey value of each
  pixel to whole numbers. This significantly improves job handling, e.g. the import and export of jobs and also reduces the required disc
  space.
- Item 137878: It is now possible to additionally export the EOSTATE Exposure OT images as tiff images with 32-bit. Grey values exceeding 65535 are therefore also available in tiff images and not only for images that were exported in the raw format.
- Item 141594: The 8-bit tiff image is no longer supported. The 32-bit tiff image is exported in float format.
- Item 141943: The automatic export tool is now available in the support role. In addition, it is now possible to set the automatic export settings in the remote use case.
- Item 150045: The tooltip for the storage LED in the status bar, which is indicating the free storage space, is now updated whenever the free disc space changes by more than 5 % compared to the previous value.

- Item 39279: The progress indication while importing/exporting data acquired for a job with a large number of anomalies does not indicate the actual progress during individual steps.
- Item 43597: If there is not enough free disk space on the system partition (C:) for the temporary data while importing job data, the job data cannot be imported and the message "Import failed. See log file for details" appears.
- Item 56839: In the support role the live image of the building process is not updated during the recoating or during the layer change. This situation has no effect on recording.
- Item 80376: In the QA Engineer role, when adding comments with the comment function "from layer ... to layer ..." it may happen that not all selected layers are provided with the corresponding comment.
- Item 98058: When importing job files of Edition 10.19 (EOSTATE Exposure OT Version 1.4) the progress in the status bar is not displayed correctly. The job import itself is not affected by this.
- Item 104567: Selecting one or several parts in the operator role in the live-view, although the image cannot be loaded, might lead to a software freeze of the application. If this happens, the application has to be closed using either the Windows task manager or the taskbar.
- Item 119627: The machine display shows an error message "Buildjob was cancelled after 0 layers" after having built the job for the geometric correction has been built correctly and the geometric correction can be calculated.
- Item 153190: Starting the Exposure OT Client 1.8.283 takes more time (several seconds) than in previous versions.
- Item 153720: If the SystemService of EOSTATE Exposure OT is not restarted (e.g. by restarting the IPC) for more than 114 days the data acquisition is stopped. This is due to the fact that image acquisition stops after the internal frame counter reaches 100 Million frames.
- Item 159390: For jobs that are not started with the first layer the layer number in the slider is not displayed correctly. The layer number for exported images, for the part statistics and the indication export however is correct.
- Item 161335: It is not possible to use a network path for the automatic export. The images, indications and part statistics can only be exported to the monitoring IPC when the automatic export feature is being used.



# Version 1.7.246

#### General Information

- EOSTATE Exposure OT Edition 05.21 is compatible to all the other Edition 05.21 software products from EOS. A detailed description of the downward compatibility to other EOS software versions can be found in the compatibility matrix (see ANNEX 1).
- All layer heights (given in millimeters) indicated in the EOSTATE Exposure OT clients relate to the complete building task. On the other hand, the layer height displayed in the user interface on the machine relates to the building process. If a building process is not started in the first layer, the building height displayed by EOSTATE Exposure OT is therefore different to the building height displayed on the machine.
- Simultaneous access to acquired job data by several processes (e.g. several instances of the EOSTATE Exposure OT client) is not supported.
- The deletion of a building task during acquisition will result in undefined behavior and is not supported.
- The acquisition of building processes with single exposures and/or single recoatings undertaken manually during the building process is not supported.
- Calculations of geometric corrections and process intensity corrections are time consuming. During the calculation the application might become unresponsive. This behavior has no effect on the result.

#### Important Note

- Version 1.7.246 was tested and released with Windows 10 IoT. The basis for the update to Version 1.7.246 is Windows 10 IoT, which is included in the upgrade to Edition 05.20.
- All components of EOSTATE Exposure OT must be updated at the same time and be on the same version.

#### Solved Items

- Item 123020: In rare cases it was possible that a frame loss occurred during image acquisition. Several improvements have been implemented in the software to reduce the probability of a frame loss even further.
- Item 124007: After an image loss or a frame loss the error message always stated that monitoring data is missing even if the image or frame loss had occurred before or after a build job. Now the error message only states that monitoring data is lost if the frame loss occurred during a build job.
- Item 125203: In rare cases switching between layers of a job with many parts in the remote use case during a build job increased CPU utilization of the monitoring IPC which then might have resulted in lost frames. Now the software has been optimized so that, even for jobs with many parts, no more frames are lost due to switching between layers in the remote use case.
- Item 125826: Cancelling a job import or a job deletion still lead to an event stating that the job import or the job de-letion, respectively, had been successful. Now in this case, no event is shown in the event log.
- Item 126020: In rare cases date and time were not shown correctly in all tools that show a list of jobs in the client. Now the tools show the date and time when the data acquisition started.
- Item 126114: The red warning sign and the number for critical events in the status bar was affected by events that had already been acknowledged, when re-opening the event log. Now acknowledged events no longer affect the num-ber of events and the red triangle when re-opening the event log.
- Item 136525: For parts overlapping with support structures the part borders were not matching the actual parts perfectly. In these cases, the part contours are now much more accurate.

# **New Functions**

- Item 73036: Analysis Preview: the analysis profile management now also displays one layer next to the algorithm parameters including the indication overlay of the algorithm result for this layer. More information regarding this feature can be found in the software manual.
- Item 109189: It is now possible show the overlay for all indications of the layers that are currently displayed by selecting the corresponding tick box in the view options.
- Item 110093: Several improvements for the Eventhandling are now available. The "LEDs" in the status bar are updated more often (e.g. on job end). LEDs switch back to a green status during a job if the error causing the red/orange LED no longer exists (e.g. if the connection to the machine is re-established the "Service-LED" goes back to a green status). Events for the Job-Start and the Job-End are now shown in the Eventlog. It is now possible to acknowledge all selected events at once.
- Item 114059: All images that can be exported via the Client are no longer being crypted when they are stored on the Monitoring system.
- Item 114100: Jobs can now be loaded/imported/exported/deleted via double-clicking the corresponding entry in the list of jobs.
- Item 118911: Starting with Exposure OT 1.7.246 it is now possible to install the Client software in parallel to prior software versions. The Exposure OT Client 1.7.246 can now be installed in parallel to the Exposure OT Client of Edition 11.20. More detailed information can be found in the software manual.

#### Known Issues

Item 39279: The progress indication while importing/exporting data acquired for a job with a large number of anomalies does not indicate
the actual progress during individual steps.



- Item 43597: If there is not enough free disk space on the system partition (C:) for the temporary data while importing job data, the job data cannot be imported and the message "Import failed. See log file for details" appears.
- Item 50808: For large building tasks that consist of more than 2000 individual files, in rare cases there may be synchronization problems with the monitoring system if these tasks are deleted or copied manually.
- Item 50810: In rare cases, the building task synchronization service does not connect again to the machine after the connection is lost, even if the machine is available again.
- Item 56839: In the support role the live image of the building process is not updated during the recoating or during the layer change. This situation has no effect on recording.
- Item 63681: In rare cases, the part contour displayed may not match the recorded data exactly or the data may be offset. This situation has no direct effect on recording but can restrict the analysis in that anomalies are not found or too many anomalies are found and the part statistics data are not calculated exactly.
- Item 69001, 80334: When starting a build job that has not been completely transferred to the machine yet it might happen that some layers are not recorded correctly and that there are no monitoring images available for these layers.
- Item 80376: In the QA Engineer role, when adding comments with the comment function "from layer ... to layer ..." it may happen that not all selected layers are provided with the corresponding comment.
- Item 98058: When importing job files of Edition 10.19 (EOSTATE Exposure OT Version 1.4) the progress in the status bar is not displayed correctly. The job import itself is not affected by this.
- Item 101747: In the remote use case, deleting a job with a large number of indications can lead to the error message stating "Could not delete job", even though the job was deleted successfully. This can also be seen from the fact that the job is then no longer listed in the job list
- Item 104567: Selecting one or several parts in the operator role in the live-view, although the image cannot be loaded, might lead to a software freeze of the application. If this happens, the application has to be closed using either the Windows task manager or the taskbar.
- Item 119627: The machine display shows an error message "Buildjob was cancelled after 0 layers" after having built the job for the
  geometric correction although the job for the geometric correction has been built correctly and the geometric correction can be
  calculated.
- Item 121467: No cross pattern is shown on the machine display for the correction jobs. The jobs are still being built correctly.
- Item 138153: The maintenance script does not work when windows domain users are used to connect to the database.
- Item 138597: If several analysis profiles are available, the tool analysis profile management is not displayed when you click on the tool for
  the first time. Clicking on another tool and then clicking on the tool analysis profile management again displays the tool in this case.
- Item 139847: Jobs can be loaded/imported/exported/deleted while an offline analysis is running by selecting a job in the corresponding tool via double-click. This might lead to unexpected behavior.



# Version 1.6.143

#### **General Information**

- EOSTATE Exposure OT Edition 11.20 is compatible to all the other Edition 11.20 software products from EOS. A detailed description of the downward compatibility to other EOS software versions can be found in the compatibility matrix (see ANNEX 1).
- All layer heights (given in millimeters) indicated in the EOSTATE Exposure OT clients relate to the complete building task. On the other hand, the layer height displayed in the user interface on the machine relates to the building process. If a building process is not started in the first layer, the building height displayed by EOSTATE Exposure OT is therefore different to the building height displayed on the machine.
- Simultaneous access to acquired job data by several processes (e.g. several instances of the EOSTATE Exposure OT client) is not supported.
- The deletion of a building task during acquisition will result in undefined behavior and is not supported.
- The acquisition of building processes with single exposures and/or single recoatings undertaken manually during the building process is not supported.
- Calculations of geometric corrections and process intensity corrections are time consuming. During the calculation the application might become unresponsive. This behavior has no effect on the result.

#### Important Note

- Version 1.6.143 was tested and released with Windows 10 IoT. The basis for the update to Version 1.6.143 is Edition 05.20, which includes the upgrade to Windows 10 IoT and EOSTATE Exposure OT 1.5.359.
- All components of EOSTATE Exposure OT must be updated at the same time and be on the same version.

# Solved Items

- Item 97802: The analysis summary was not updated correctly regarding the number of "rejected indications" after having changed the classification of indications. Now the analysis summary gets updated correctly regarding the number of "rejected indications".
- Item 99260: The job duration in the analysis summary was not displayed correctly if the job had been imported or if the job took longer than 24 hours. The job duration is now displayed correctly in such cases.
- Item 102288: Database backups could only be restored to a disk drive with the same drive letter from which the backup was originally created. It is now possible to restore database backups to a disk drive which has a different drive letter than the backup drive.
- Item 105832: Restoring a database failed if the target drive did not contain a database yet. Therefore, to restore a database from a backup,
  it was necessary to first create a new, empty database. It is now no longer necessary to create a database before a database can be
  restored.

#### **New Functions**

- Item 110092: The EOSTATE Exposure OT Client gives you the possibility to check events that occurred during, before and after the build job. These events include e.g. frame losses, a hard shutdown of the IPC due to a defect UPS (for EOS M 300-4 and EOS M 400-4), exceeding the storage capacity and many more. More details regarding this feature can be found in the manual. The most important events are shown as pop-ups at the display at the machine.
- Item 104051: The maintenance script includes additional repair functionalities, which leads to the database system being more robust.
- Item 110661: EOSTATE Exposure OT no longer stores compressed images in the machine database.
- Item 112742: The naming of the exported images has been changed. The channel name is now part of the file name.
- Item 123275: There are new calibration jobs available for the EOS M 300-4. These were necessary to ensure compatibility with the EOSPRINT of Edition 11.20.

#### Known Issues

- Item 39279: The progress indication while importing/exporting data acquired for a job with a large number of anomalies does not indicate the actual progress during individual steps.
- Item 43597: If there is not enough free disk space on the system partition (C:) for the temporary data while importing job data, the job data cannot be imported and the message "Import failed. See log file for details" appears.
- Item 50808: For large building tasks that consist of more than 2000 individual files, in rare cases there may be synchronization problems with the monitoring system if these tasks are deleted or copied manually.
- Item 50810: In rare cases, the building task synchronization service does not connect again to the machine after the connection is lost, even if the machine is available again.
- Item 56839: In the support role the live image of the building process is not updated during the recoating or during the layer change. This situation has no effect on recording.
- Item 63681: In rare cases, the part contour displayed may not match the recorded data exactly or the data may be offset. This situation has no direct effect on recording but can restrict the analysis in that anomalies are not found or too many anomalies are found and the part statistics data are not calculated exactly.



- Item 69001, 80334: When starting a build job that has not been completely transferred to the machine yet it might happen that some layers are not recorded correctly and that there are no monitoring images available for these layers.
- Item 80376: In the QA Engineer role, when adding comments with the comment function "from layer ... to layer ..." it may happen that not all selected layers are provided with the corresponding comment.
- Item 98058: When importing job files of Edition 10.19 (EOSTATE Exposure OT Version 1.4) the progress in the status bar is not displayed correctly. The job import itself is not affected by this.
- Item 101747: In the remote use case, deleting a job with a large number of indications can lead to the error message stating "Could not delete job", even though the job was deleted successfully. This can also be seen from the fact that the job is then no longer listed in the job list.
- Item 104567: Selecting one or several parts in the operator role in the live-view, although the image cannot be loaded, might lead to a software freeze of the application. If this happens, the application has to be closed using either the Windows task manager or the taskbar.
- Item 119627: The machine display shows an error message "Buildjob was cancelled after 0 layers" after having built the job for the geometric correction has been built correctly and the geometric correction can be calculated.
- Item 121467: No cross pattern is shown on the machine display for the correction jobs. The jobs are still being built correctly.
- Item 124007: After an image loss or a frame loss the error message always states that monitoring data is missing even if the image or frame loss had occurred before or after a build job.
- Item 125203: In rare cases switching between layers of a job with many parts in the remote use case during a build job increases CPU utilization of the monitoring IPC which might result in lost frames.
- Item 125826: Cancelling a job import or a job deletion still leads to an event stating that the job import or the job deletion, respectively, has been successful.
- Item 126020: In rare cases the date and the time is not shown correctly in all tools that show a list of jobs in the client.



# Version 1.5.359

#### General Information

- EOSTATE Exposure OT Edition 05.20 is compatible to all the other Edition 05.20 software products from EOS. A detailed description of the downward compatibility to other EOS software versions can be found in the compatibility matrix (see ANNEX 1).
- All layer heights (given in millimeters) indicated in the EOSTATE Exposure OT clients relate to the complete building task. On the other
  hand, the layer height displayed in the user interface on the machine relates to the building process. If a building process is not started in
  the first layer, the building height displayed by EOSTATE Exposure OT is therefore different to the building height displayed on the machine.
- Simultaneous access to acquired job data by several processes (e.g. several instances of the EOSTATE Exposure OT client) is not supported.
- The deletion of a building task during acquisition will result in undefined behavior and is not supported.
- The acquisition of building processes with single exposures and/or single recoatings undertaken manually during the building process is not supported.
- Calculations of geometric corrections and process intensity corrections are time consuming. During the calculation the application might become unresponsive. This behavior has no effect on the result.

### Important Note

- The Update to version 1.5.359 also includes an update of the operating system of the Monitoring IPC to Windows 10 IoT. For this update, an external hard drive with at least 1 TB storage capacity is required to conduct the backup and the restoring of the monitoring data. This hard drive has to be provided by the customer. The update of the monitoring system on an EOS M 400-4 and EOS M 300-4 also requires a monitor (DVI port), a keyboard and a mouse, which also have to be provided by the customer.
- All components of EOSTATE Exposure OT must be updated at the same time and be on the same version.

#### Solved Items

- Item 54420: It was not possible to establish a connection to the database if the computer was longer than 15 characters. This problem is now resolved. Monitoring now supports computer names which are longer than 15 characters.
- Item 67261: The comment function did not work properly if task files were missing during recording. The comment function now also works for task files that were missing during job recording.
- Item 85929: Starting a build job that had been configured at the machine user interface with a custom starting layer lead to a red "Service" LED. Now the "Service" LED will no longer turn red if a build job is started with a different starting layer.
- Item 87073: Starting a second Client instance on the same computer, could lead to a crash of the second instance with a Windows error message. Starting a second Client now leads to an error message from the Monitoring software.
- Item 95870: For exported images, the file name also included the file extension. It is now guaranteed that the images are saved with correct names.

### **New Functions**

- Item 73173: Image files (raw or tiff format) can now be exported automatically to a network drive during the job recording. Indications and part statistics can now be exported automatically to a network drive at the end of a build job.
- Item 78003: Image data is no longer stored in the database but directly on the file system. This leads to significant performance improvements, especially for job import, job export and for "maintenance". In addition to that, storage space is released immediately after deleting a job in the Client, so that it is no longer required to run "maintenance" after job deletion.
- Item 96575: The cross pattern for the geometric correction for EOSTATE Exposure OT on the EOS M 290 has been improved. It contains more crosses and therefore improves the accuracy of the geometric correction in the area behind the drill holes.
- Item 100454: The raw format images now have a file header, which includes an identifier, the version number, width, height and the data type (4 bytes each).

#### Known Issues

- Item 39279: The progress indication while importing/exporting data acquired for a job with a large number of anomalies does not indicate the actual progress during individual steps.
- Item 43597: If there is not enough free disk space on the system partition (C:) for the temporary data while importing job data, the job data cannot be imported and the message "Import failed. See log file for details" appears.
- Item 50808: For large building tasks that consist of more than 2000 individual files, in rare cases there may be synchronization problems with the monitoring system if these tasks are deleted or copied manually.
- Item 50810: In rare cases, the building task synchronization service does not connect again to the machine after the connection is lost, even if the machine is available again.
- Item 56839: In the support role the live image of the building process is not updated during the recoating or during the layer change. This situation has no effect on recording.



- Item 63681: In rare cases, the part contour displayed may not match the recorded data exactly or the data may be offset. This situation has
  no direct effect on recording but can restrict the analysis in that anomalies are not found or too many anomalies are found and the part
  statistics data are not calculated exactly.
- Item 69001, 80334: When starting a build job that has not been completely transferred to the machine yet it might happen that some layers are not recorded correctly and that there are no monitoring images available for these layers.
- Item 80376: In the QA Engineer role, when adding comments with the comment function "from layer ... to layer ..." it may happen that not all selected layers are provided with the corresponding comment.
- Item 97802: The analysis summary is not updated correctly regarding the number of "rejected indications" after changing the classification
  of indications.
- Item 98058: When importing job files of Edition 10.19 (EOSTATE Exposure OT Version 1.4) the progress in the status bar is not displayed correctly. The job import itself is not affected by this.
- Item 99260: The job duration in the analysis summary is not displayed correctly, if the job had been imported or if the job took longer than 24 hours.
- Item 101747: In the remote use case, deleting a job with a large number of indications can lead to the error message stating "Could not delete job", even though the job was deleted successfully. This can also be seen from the fact that the job is then no longer listed in the job list.
- Item 102288: Database backups can only be restored to a disk drive with the same drive letter from which the backup was originally created.
- Item 105832: Restoring a database fails if the target drive doesn't contain a database yet. Therefore, to restore a backed up database, it is necessary to first create a new, empty database.



# Version 1.4.133

#### General Information

- EOSTATE Exposure OT Edition 10.19 is compatible to all the other Edition 10.19 software products from EOS. A detailed description of the downward compatibility to other EOS software versions can be found in the compatibility matrix (see ANNEX 1).
- All layer heights (given in millimeters) indicated in the EOSTATE Exposure OT clients relate to the complete building task. On the other
  hand, the layer height displayed in the user interface on the machine relates to the building process. If a building process is not started in
  the first layer, the building height displayed by EOSTATE Exposure OT is therefore different to the building height displayed on the machine.
- Simultaneous access to acquired job data by several processes (e.g. several instances of the EOSTATE Exposure OT client) is not supported.
- The deletion of a building task during acquisition will result in undefined behavior and is not supported.
- The acquisition of building processes with single exposures and/or single recoatings undertaken manually during the building process is not supported.
- Calculations of geometric corrections and process intensity corrections are time consuming. During the calculation the application might become unresponsive. This behavior has no effect on the result.

#### Important Note

- All components of EOSTATE Exposure OT must be updated at the same time and be on the same version.
- Customer Tools are now accessible using the Windows start menu and are getting installed automatically during the installation of the OT Client.

#### Solved Items

- Item 58327: In rare cases, an image did not appear in the "Last layer" mode, in which the last layer completed in a building process is displayed. It is now ensured that the image appears in the "Last layer" mode once it is available.
- Item 74270, 77667: The Batch export of images failed, if the job had a missing image or there were two images for some layers due to a single exposure. It is now ensured that the batch export does not stop at such a layer and that all the following images are being exported correctly.
- Item 75533: On a EOS M 400-4 it was not possible to verify the geometric correction using the Geometric Correction Verification. It is possible to calculate the Geometric Correction Verification now.
- Item 75680: In rare cases, while using the script "PurgeRecordings" it could happen, that the script failed and that the database had a defective configuration afterwards. It is now ensured that, even if the script "Purge Recordings" fails, the database still has a consistent configuration.
- Item 78667: After a faulty build process, followed by a manually performed single-exposure or single-recoating, the status of the monitoring system was undefined. It is now ensured that also in this case the monitoring system has a defined status.
- Item 78877: If the maintenance of the monitoring database had been aborted prematurely by the user, the subsequent maintenance would
  fail, too. In this case, performing several maintenance scripts in a row lead to a corrupt database. It is now ensured that maintenance
  works even if it had been aborted prematurely before.
- Item 80489: A geometric calibration with activated Scaling Factor causes a deviation from the part contour shown in the monitoring software to the exposed area for subsequent jobs. The deviation depends on the scaling factor. The correct procedure for a geometric calibration to prevent this deviation is now described in the manual.

# **New Functions**

- Item 42135: Using the client and the monitoring database for offline analysis on a local installation without connection to the machine is now supported. Please, consider the software manual for installation conditions. The customer tools are now accessible via the Windows start menu and are installed as part of the client installation.
- Item 57776: In the Remote Use Case it is now supported to export a job to the local system using the client.
- Item 73015: EOS M 300-4 systems are now supported.
- Item 73022: It is now possible to export the found indications in a csv format for further processing.
- Item 73038: The storage space consumption of offline analyses is now significantly reduced.
- Item 81454: The job handling in the software is now revised and adapted. Now it is possible to export and delete jobs in the QA Engineer
  role.
- Item 84497: The Remote and the Offline Use Case are now supported on Windows 10.

#### Known Issues

- Item 39279: The progress indication while importing/exporting data acquired for a job with a large number of anomalies does not indicate the actual progress during individual steps.
- Item 43597: If there is not enough free disk space on the system partition (C:) for the temporary data while importing job data, the job data cannot be imported and the message "Import failed. See log file for details" appears.



- Item 50808: For large building tasks that consist of more than 2000 individual files, in rare cases there may be synchronization problems with the monitoring system if these tasks are deleted or copied manually.
- Item 50810: In rare cases, the building task synchronization service does not connect again to the machine after the connection is lost, even if the machine is available again.
- Item 54420: It is not possible to establish a connection to the database if the computer name is longer than 15 characters. The character limit is specified by the database system used.
- Item 56839: In the support role the live image of the building process is not updated during the recoating or during the layer change. This situation has no effect on recording.
- Item 63681: In rare cases, the part contour displayed may not match the recorded data exactly or the data may be offset. This situation has no direct effect on recording but can restrict the analysis in that anomalies are not found or too many anomalies are found and the part statistics data are not calculated exactly.
- Item 67261: The comment function does not work if the task files were missing during recording. The user is informed about missing task files by the status indication in the client application.
- Item 69001, 80334: When starting a build job that has not been completely transferred to the machine yet it might happen that some layers are not recorded correctly and that there are no monitoring images available for these layers.
- Item 80376: In the QA Engineer role, when adding comments with the comment function "from layer ... to layer ..." it may happen that not all selected layers are provided with the corresponding comment.
- Item 85929: Starting a build that has been configured on the machine to employ a different starting layer leads to a red "Service" LED. However, the recording of the monitoring data is not affected by this.
- Item 87073: When starting a second client on the same computer, the second client sometimes crashes with a Windows error message.
   However, this does not affect the client that had already been started.



# Version 1.3.31

#### General Information

- All components of EOSTATE Exposure OT must be updated at the same time and be of the same version.
- All layer heights (given in millimeters) indicated in the EOSTATE Exposure OT clients relate to the complete building task. On the other hand, the layer height displayed in the user interface on the machine relates to the building process. If a building process is not started in the first layer, the building height displayed by EOSTATE Exposure OT is therefore different to the building height displayed on the machine.
- Simultaneous access to acquired job data by several processes (e.g. several instances of the EOSTATE Exposure OT client) is not supported.
- The deletion of a building task during acquisition will result in undefined behavior and is not supported.
- The acquisition of building processes with single exposures and/or single recoatings undertaken manually during the building process is not supported.
- The nomenclature for the analysis parameters in analysis profile management has been harmonized.
- Calculations of geometric corrections and process intensity corrections are time consuming. During the calculation the application might become unresponsive. This behavior has no effect on the result.

#### Important Note

• EOSTATE Exposure OT Edition 04.19 is compatible with EOSYSTEM and EOSPRINT according to the following table:

### Solved Items

- Item 39273: A message was not displayed to the user if the network connection between the monitoring system and machine was lost. It is now ensured that a message is displayed in the client application if the connection is lost.
- Item 39300: If the shortcut ALT+F4 was used with a function (EOSTATE Exposure OT client), the window related to this function disappeared and it was then not possible to open any other function. This behavior now no longer occurs. It is ensured that the application is closed after a prompt if this shortcut is used.
- Item 42823: If recorded data were exported to a drive on which there was not enough space, in rare cases there could be a confusing error message related to data access. It is now ensured that a corresponding message is output if there is not enough space to save the data.
- Item 45840, 45936, 44196: In rare cases, the application could freeze and cause a high CPU load if the connection to the database was lost during operation. This behavior now no longer occurs. It is ensured that the application always responds, even if the connection to the database is lost.
- Item 58228: In the QA role the diagram for recordings that do not contain any analyses is not displayed. It is now ensured that the diagram is displayed as soon as a part statistic is activated in the analysis profile.
- Item 59764: The position markings in the diagram and layer slider do not match in rare cases. It is now ensured that, independent of the content of the recording, the position markings in the diagram and in the layer slider match.
- Item 61276, 53779: The behavior while closing windows in the analysis profile editor has been modified. While closing a window, there is now a confirmation prompt before a change is discarded. Changing to a different command closes the analysis profile editor without saving.
- Item 63371, 57358: In rare cases, task data from the monitoring system could not be processed because they were not fully synchronized. It is now ensured that the task data synchronized with the monitoring system are consistent and can be processed.
- Item 63605, 71398: The database maintenance was often unable to free up any storage space, even after recorded data had been deleted. It is now ensured that disk space is released by the database to the operating system during database maintenance, if the space is no longer required.
- Item 64165: In rare cases, the monitoring system was not able to connect to the machine after a restart, if the machine was temporarily not available. It is now ensured there are continuous attempts to establish a connection after a restart.
- Item 67488: Logging into the client application was canceled with a general error message if an analysis profile was not activated in the system. It is now ensured that it is possible to log into the client application, even without an analysis profile activated.
- Item 73767: The application might periodically freeze due to status updates in the operator and support role. It is now ensured, that the application remains responsive during status updates.

# **New Functions**

- Item 41832: Geometric correction is now supported also for multi head systems. The individual scanner fields are corrected individually in the areas where they do not overlap and corrected using the average in the overlapping areas.
- Item 57909: The monitoring systems are completely integrated for EOS M 400–4 systems. They can be switched off and on via the control panel for the system. If the system is switched off or restarted, the monitoring systems are also shut down or restarted.
- Item 63382: The parameters with which a building task was originally recorded or analyzed can be viewed in the analysis profile editor.



- Item 50808: For large building tasks that consist of more than 2000 individual files, in rare cases there may be synchronization problems with the monitoring system if these tasks are deleted or copied manually.
- Item 50810: In rare cases, the building task synchronization service does not connect again to the machine after the connection is lost, even if the machine is available again.
- Item 54420: It is not possible to establish a connection to the database if the computer name is longer than 15 characters. The character limit is specified by the database system used.
- Item 56839: In the support role the live image of the building process is not updated during the recoating or during the layer change. This situation has no effect on recording.
- Item 58327: In rare cases, an image may not appear in the "Last layer" mode in which the last layer completed in a building process is displayed. This situation has no effect on recording.
- Item 63681: In rare cases, the part contour displayed may not match the recorded data exactly or the data may be offset. This situation has no direct effect on recording but can restrict the analysis in that anomalies are not found or too many anomalies are found and the part statistics data are not calculated exactly.
- Item 67261: The comment function does not work if the task files were missing during recording. The user is informed about missing task files by the status indication in the client application.
- Item 39279: The progress indication while importing/exporting data acquired for a job with a large number of anomalies does not indicate the actual progress during individual steps.
- Item 43597: If there is not enough free disk space on the system partition (C:\) for the temporary data while importing job data, the job data cannot be imported and the message "Import failed. See log file for details" appears.



# Version 1.2.18.99

#### General Information

- EOSTATE Exposure OT supports 64-bit versions of Windows 7 (Ultimate or Enterprise).
- All components of EOSTATE Exposure OT must be updated at the same time and be of the same version.
- New component EOSTATE Exposure OT Service Tools: EOSTATE Exposure OT Service Tools is a collection of tools for updating and maintaining the system.
- New component EOS BTSync Service: EOS BTSync Service synchronizes the task data between the EOSTATE Exposure OT system and the machine connected (EOSYSTEM). The following network ports must be open for operation: 8735 (TCP)
- All layer heights (given in millimeters) indicated in the EOSTATE Exposure OT clients relate to the complete building task. On the other hand, the layer height related to the building process is displayed in the user interface on the machine. If a building process is not started in the first layer, the building process displayed by EOSTATE Exposure OT is different to the building height displayed on the machine.
- Simultaneous access to acquired job data by several processes (e.g. several instances of the EOSTATE Exposure OT client) is not supported.
- The deletion of a building task currently being acquired will result in undefined behavior/is not supported.

#### Important Note

• EOSTATE Exposure OT Edition 04.18 is compatible with EOSYSTEM and EOSPRINT according to the following table:

#### Solved Items

- Item 39288: If an analysis profile was activated in the analysis profile management tool for a building task loaded, sporadically it was no longer possible to see this tool window. It was possible to see the window again as soon as the focus was changed back to the client application (e.g. by pressing Alt & Tab). Also, it was sometimes not possible to see message boxes if the analysis profile tool was open and the toolbar had previously been undocked and docked again.
- This behavior now no longer occurs.
- Item 42651: If a very large number of entries were selected in the list of anomalies (e.g. more than 45,000), the client application became unstable and stopped responding.
- This behavior now no longer occurs. It is ensured that the application still responds, even if a very large number of anomalies are selected.
- Item 41519 /41769: The transaction log for the database overflowed on importing acquired job data records (> 200 GB) and the import
  process failed.
- This behavior now no longer occurs. It is ensured that job data records > 200 GB can be imported without errors.
- Item 29974: Very rarely the connection to the camera used for the acquisition was lost during operation and therefore process data no longer acquired. If this situation occurred, it was necessary to restart the entire system including the camera.
- The error handling has been significantly improved in this respect. Furthermore, a corresponding message (sensor LED on the status bar red) is output on the loss of single frames and acquisition continued.
- Item 37929: If a comment was added while a large number of parts were selected in the visualization window, this action could increase the size of the comment list to such an extent that the usability of the comment function was restricted (e.g. it was no longer possible to use the delete function).
- This behavior now no longer occurs. The comment function can be used without restriction.
- Item 37784: If an invalid value was entered in the field for a floating point number in the settings for an operation in the analysis profile management, the last valid value entered was applied on saving.
- This behavior now no longer occurs; instead a corresponding message is output.
- Item 39330: On the usage of variable layer thicknesses, the analysis results with the "Thresholding Indication Detector" were inconsistent due to the averaging method applied. Due to modifications necessary for the latest software version, the results generated by the detection algorithm are different to the results from earlier program versions.

# **New Functions**

- Item 39571: Processing of building task data exported using EOSPRINT 2.3. Both formats (default job and EOSPAR) are supported for the extraction of layer, part and building task information. As such EOSTATE Exposure OT now supports variable layer thicknesses (Z segmentation) from EOSPRINT 2. The building task data are transferred automatically to the monitoring system connected. Dedicated configuration in EOSPRINT 2 is therefore not necessary.
- Item 42132: The raw data acquired and the analysis results can be exported in the "QA Engineer" role. Image data for the selected layer or for all layers are exported in the formats RAW (32 bits uncompressed), TIFF (8/16 bits uncompressed), JPEG (compressed) by right-clicking the display area. Statistical, part-specific analysis results are exported in the "CSV" format by right-clicking the graph area.
- Item 42132: In the "QA Engineer" role, acquisition and analysis reports can be generated in the "PDF" format using a newly added workflow element. Summaries and detailed information on anomalies detected are output in the reports.
- Item 45387: The status of anomalies detected can now take on the following values or be set to the following values: "Suggested (Auto)"
  default value for anomalies detected automatically; "Accepted"; "Rejected"; "Undetermined".



- Item 44196: If the database is forced to shut down, the client application cannot connect to the database at the start. This state is not detected and the application waits a long time until it finally stops responding.
- Item 39270: If the comment field for anomalies is edited with a multiple selection and then the text entry is discarded using Ctrl & Z, the selected entries are overwritten with a blank value.
- Item 39279: The progress indication on importing/exporting data acquired for a job with a large number of anomalies does not reflect the actual progress during individual steps.
- Item 43597: If there is not enough free disk space on the system partition (C:\) for the temporary data while importing job data, the job data cannot be imported and the message "Import failed. See log file for details" appears.
- Item 45840 / 45936: If the connection to the database is lost in the client application after login, the client application may stop responding and the CPU load may increase significantly.
- Item 39300: If the shortcut ALT & F4 is used with a function open (EOSTATE Exposure OT client), the window related to this function disappears and it is then not possible to open any other function. In this situation it is necessary to restart the client application.
- Item 24416: The acquisition of building processes with single exposures and/or single recoatings undertaken manually is not supported.



# Version 1.1.5.92

#### General Information

- EOSTATE Exposure OT supports only 64-bit versions of Windows 7 (Ultimate or Enterprise).
- All layer heights (given in millimeters) displayed in the EOSTATE Exposure OT Client relate to the complete building task. On the other hand, the layer height related to the building process is displayed in the user interface on the machine. If a building process is not started in the first layer, the building process displayed by EOSTATE Exposure OT is different to the building height displayed on the machine.
- The acquisition of a building process is not supported if the building task is changed on the machine during a break.
- The acquisition of a building process is not supported if parts overlap or intermesh in the related building task.
- The acquisition of building processes with single exposures and/or single recoatings undertaken manually is not supported.
- Reorganization of the database may only be carried out when partition E: on the EOSTATE Exposure OT system is empty.
- Concurrent access of recorded job data from multiple processes (e.g. multiple instances of the EOSTATE Exposure OT Client) is not supported.

#### Important Note

• EOSTATE Exposure OT Edition 10.17 is compatible to EOSYSTEM Edition 10.17 only. This includes the building tasks created via EOSPRINT 1.7.20.1. EOSTATE Expsore OT is not compatible to buildings task created via EOSPRINT 2.0 or higher.

#### Solved Items

- Item 20974: Very rarely the first attempt to save image data in the database failed after a system start or after an extended period of system inactivity. This situation meant that layer images or layer metadata were not available in the application and consequential errors occurred during the subsequent data processing steps. The problem no longer occurs during one-off database maintenance measures at system start or periodic database maintenance measures.
- Item 31524: Rarely an internal error related to a timeout could occur on establishing the connection to the database. As a result the process of establishing the connection was aborted at an early stage and the connection to the database was not made. The maximum time until a timeout occurs has been increased and the problem no longer arises.
- Item 26435: The user interface language in the EOSTATE Exposure OT Client is now switched after restarting the application. A corresponding message is displayed on the selection of a different language for the user interface. Also, after changing the user interface language, a message dialog box appears where the application can be restarted automatically by clicking a button. Otherwise it is up to the user to restart the application manually later.
- Item 33101: If an analysis profile includes several operations with the same type and same parameters, the program no longer stops responding during offline analyses.
- Item 33190: If a very large number of anomalies have been detected, a timeout could occur on importing a job into the database and the EOSTATE Exposure OT Client could then stop responding. The maximum time until a timeout occurs has been increased and the import functionality has been restructured; the problem no longer arises.
- Item 33502: If an offline analysis was applied in the QA Engineer role to a job currently being acquired and the analysis profile for this offline analysis was selected for display in the EOSTATE Exposure OT Client, up to now the results were also displayed in the Operator role. With immediate effect, the live data and the anomalies detected by the analysis profile used during acquisition are displayed in the Operator role.

#### **New Functions**

- Item 34399: A reduced integral image as well as the number of anomalies detected is written to the machine database (LOGDB) for each layer acquired.
- Item 35157: The display in the visualization window of all anomalies detected previously can be activated in the display options for the Operator role.
- Item 25041: Several anomalies detected can be selected at once in the list of anomalies in the Evaluation workflow step for the QA Engineer role. This feature makes it possible to display in the visualization window, selected anomalies or all anomalies in the current layer and in other layers. In addition, all anomalies selected can be evaluated simultaneously and commented in the Classification group box.
- Item 35540: If the EOSTATE Exposure OT Client is used to import job data that contain an analysis profile that already exists in the destination database, this identical analysis profile is not imported again. Only once an analysis profile has been saved again is it considered new and therefore different to the other analysis profiles.
- Item 24508: For improved marking of comments, informative comment types can be entered in the comment function. The types include: "Not specified", "General", "Information", "Error".

# Known Issues

• Item 29974: Very rarely the connection to the camera used for the acquisition may be lost during operation and therefore process data no longer acquired. If this situation occurs, the entire system including the camera must be restarted.

# Release Notes



- Item 37929: If a comment is created while a large number of parts is selected within the visualization window this can enlarge the comment list in such a way that the comment window's usability becomes restricted (for example, the delete button cannot be used anymore).
- Item 37784: Within the Analysis Profile Management, if an invalid value is entered into the input field of a floating-point setting the last valid entered value is applied upon saving.
- Item 23105: If the shortcut ALT+F4 is used with a function open (EOSTATE Exposure OT Client), the window related to this function disappears and it is then not possible to open any other function. In this situation it is necessary to restart the client application.