Adapter for SAP – Basics

Version 5.11

Manual

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Content

1 General Introduction*

This manual has been written for end users of the FORCAM Adapter for SAP. It contains useful information for handling and successfully working with FORCAM software. Answers to the most common questions will be given and users can find basic hints for initial problem solutions and maintenance.
For more detailed information about the FORCAM Adapter for SAP, see the Manual – Customizing Adapter for SAP which is provided separately.

* For better readability, we generally use the generic masculine in the text. However, these formulations encompass all genders and address everyone equally.

2 IDoc Basics

IDocs are structured ASCII files (or a virtual equivalent). They are the file format used by SAP R/3 to exchange data with foreign systems. This technique is an SAP standard feature and used in many communication scenarios.
IDoc is the acronym for Interchange Document (Intermediate Document). This indicates a set of (electronic) information which builds a logical entity. For example, an IDoc displays all data related to a specific customer or an individual invoice.
The FORCAM Adapter is using IDoc based communication with specific FORCAM developed IDoc basic types.
The information, exchanged by IDoc, is called as message and the IDoc is the physical representation of such a message. The name “messages” for the information sent via IDocs is used in the same ways as other EDI standards.
An IDoc is created by executing an outbound ALE or EDI process.

2.1 IDoc Terminologies

2.1.1 IDoc (Basic) type

IDoc types are based on the EDI standards and mostly on EDIFACT standards.
Basic types (or IDoc types) define the structure of an IDoc. Each basic type describes standard IDoc segments, format of data fields and their size. Basic types also define the number of segments and fields in an IDoc. All the fields that are necessary for the transmission of a message for a particular object are mapped in different segments. It also defines the structure and relationship of IDoc segments along with mandatory and optional segments.

2.1.2 IDoc Extension

Basic type contains all the standard fields that are necessary for carrying out a business process. However, if any additional values are required to send to the partner, you can make use of the IDoc extension feature. IDoc extension is an extension of basic type and contains additional custom IDoc segments and fields that are not available in standard basic type.

The process of data transfer out of the SAP system is called outbound process, while the receipt of data to the SAP system is called inbound process.

2.2 Steps in IDoc configuration

ⓘ Details about the IDoc configuration in the FORCAM Adapter for SAP can be found in the Manual – Customizing Adapter for SAP.

A complete interface setup requires additional table maintenance of FORCAM specific tables.
Below are the basic standard configurations which are required as a prerequisite for ALE-IDoc setup.

- Logical system (transaction **SALE**)
- Setup RFC destinations (transaction **SM59**)
- Port definition (transaction **WE21**)

2.2.1 The outbound process

Steps involved:

1. Create segments (**WE31**).
2. Create an IDoc type (**WE30**).
3. Create a logical message type (**WE81**).
4. Associate a logical message type to IDoc type (**WE82**).
5. Create the function module or standalone program which will create the IDoc.
   In the FORCAM Adapter, no message controlled IDoc creation is used.
6. Create a partner profile (**WE20**), which contains the necessary information for the partner in the outbound parameters with whom the IDoc is to be exchanged.

2.2.2 The inbound process

Steps Involved:

1. Define process code (**WE42**).
2. Allocate the inbound function module to the message type (**WE57**).
3. Define the function module characteristics (**BD51**).
4. Create a partner profile (**WE20**), which contains the necessary information for the partner in inbound parameters, with which the IDoc is to be exchanged.
5. Set up ALIAS for IDoc XML service (**SICF**).

2.2.3 Manage table entries

Customizing tables for the FORCAM Adapter package are maintained via transaction **SM30**.
The following tables are customizing tables and are managed only via transport:

- /FFMES/GLOBAL
- /FFMES/VERTEILER
- /FFMES/KORR_CUST
- /FFMES/CONTROL_V (This table is the value table for /FFMES/CONTROL)

Following are all application tables that must be managed in each system. The contents of these tables are not transported:

- /FFMES/PARM
- /FFMES/CONTROL
- /FFMES/AUFTR
- /FFMES/FA_FELDER

3 IDoc Structure and Records

3.1 General IDoc structure

The IDoc structure is composed of the **control record**, **data records** and **status records**. These records are stored in the following SAP tables: **EDIDC**, **EDID4** and **EDIDS**.

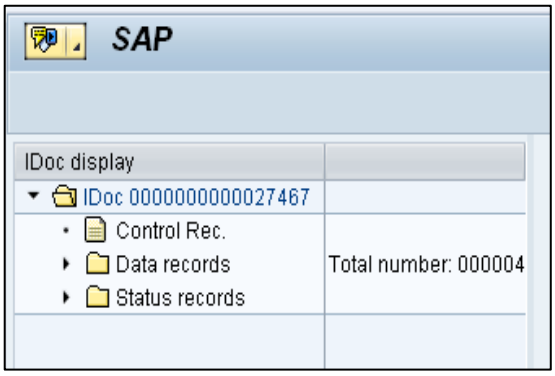


Fig. 1: SAP display of the IDoc structure

3.2 IDoc Records

3.2.1 Control record (EDIDC)

Contains information such as IDoc number, direction, IDoc status, basic type, message type, partner (sender/receiver), date and time of creation/update, interchange file or ISA number etc.

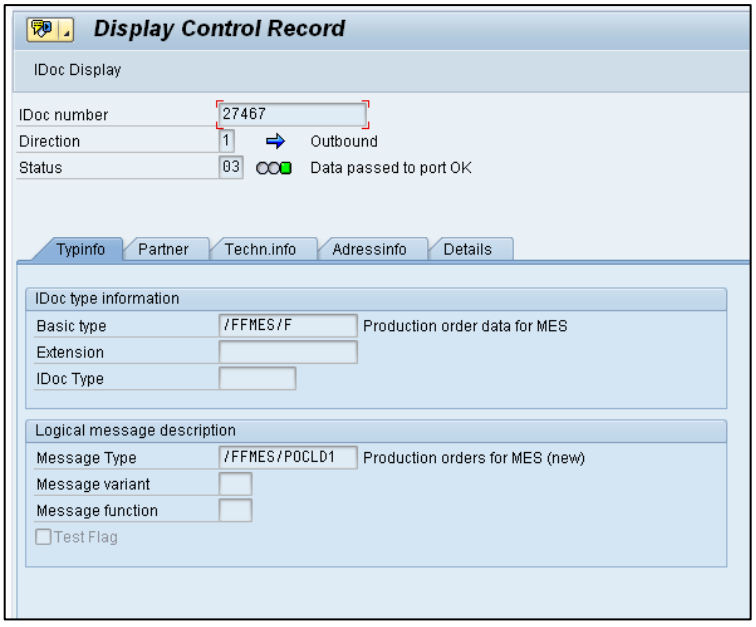


Fig. 2: Display control record

3.2.2 Data record (EDID4)

Contains the details of the IDoc segments. An IDoc segment has fields that contain the data necessary for posting the documents.

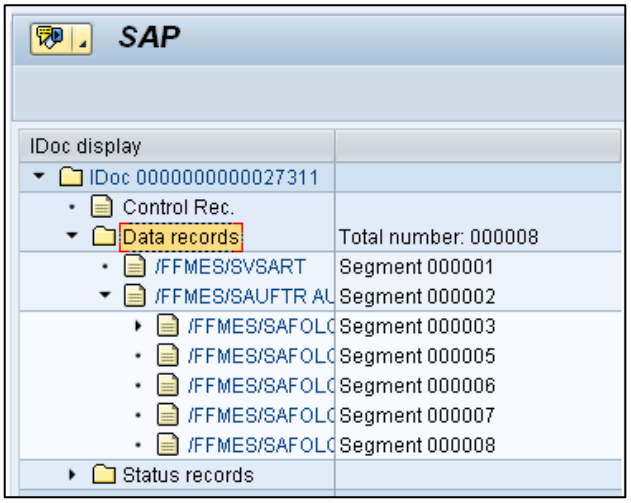


Fig. 3: SAP display with data records

3.2.3 Status records (EDIDS)

The IDoc status defines the processing status of the IDoc. IDoc statuses are used to track the IDoc and its various processing states. The status number represents the IDoc status. The current sequence of all the statuses an IDoc has passed through are found in **Control Record**.

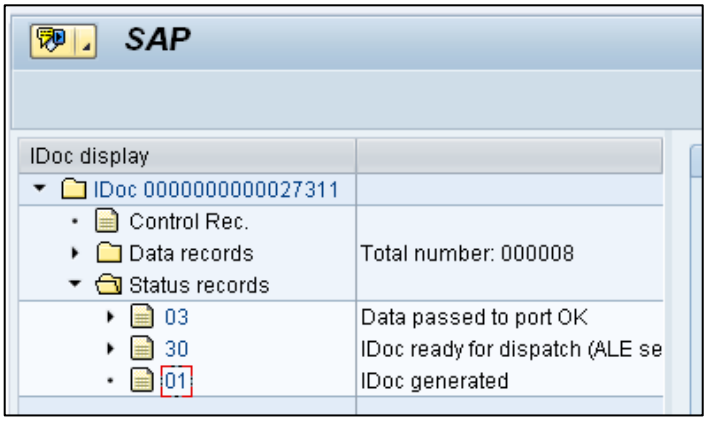


Fig. 4: SAP display with status records

4 Interface Maintenance

4.1 Introduction

The FORCAM Adapter is an IDoc based interface which is a typical batch processing. User action is only required in IDoc monitoring, error handling or supervisor activities.

4.2 Searching IDocs in SAP

Transaction WE02/WE05: General search

IDocs can be viewed in the system via transactions **WE02** and **WE05**.
If the IDoc number is not known, the search can be made based on IDoc date, direction, basic type, message type, and partner number.

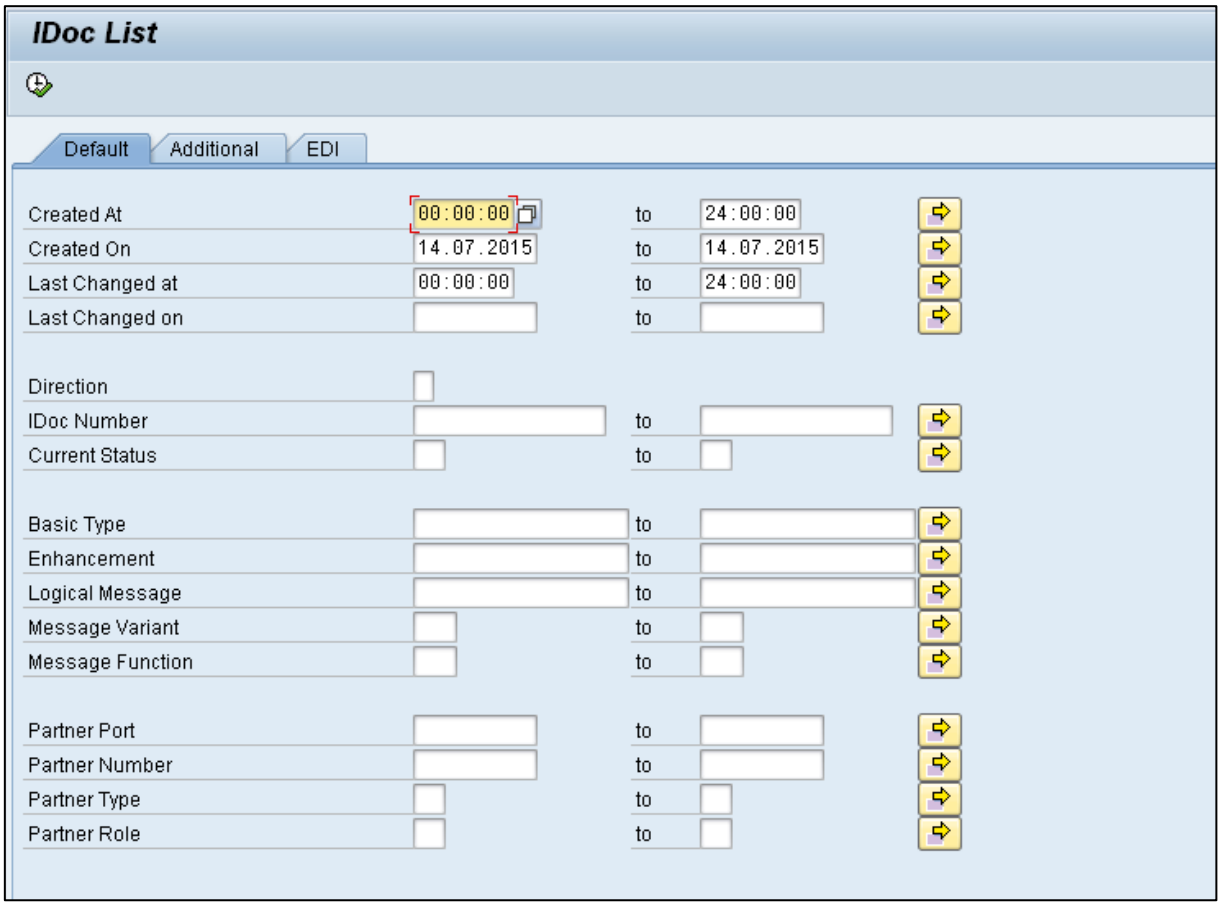


Fig. 5: SAP Screen IDoc List

4.3 Testing and editing IDocs

If an IDoc contains incorrect data, it can be edited using transactions **WE02** or **WE05**.
When an IDoc is edited, the original IDoc information (backup) is saved in a new IDoc under status **70** (inbound)/**33** (outbound). These IDocs remain in the system for reference only. The status of the edited IDoc becomes **69** (inbound) and **32** (outbound).

Debugging of IDocs can be done using the transaction **WE19**.
WE19 is a test tool for IDoc processing. WE19 copies the existing IDoc and creates a new one, which can then be modified as per testing needs.

4.4 Converting IDoc status ("logical deletion")

Status **68** means "no further processing". This status prevents an IDoc from being booked. Any reprocessing job will not consider those IDocs and IDocs are no longer in error state (red).
Logical IDoc deletion may be helpful in some cases where IDoc cannot be processed anymore. This can happen, for example, if the booking period is already locked or an incorrect booking was attempted.

There are different options to change IDoc status:

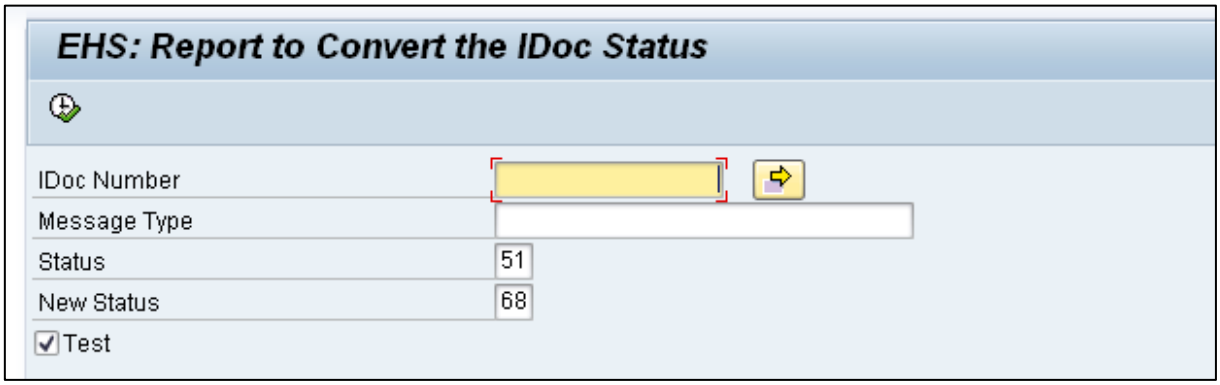


Fig. 6: Selection Screen of Report RC1_IDoc_SET_STATUS

1. SAP standard report **RC1_IDOC_SET_STATUS**
2. Report **/FFMES/IDOC_DELETE** (see section 4.8 for details)
3. Report **/FFMES/IDOC_MON** (see section 4.6.2 for details):
   - Delete IDocs: Select the row and click on change **IDOC_STATUS**.
   - Call up report: Transaction **/FFMES/MONI**

4.5 Automatic/immediate processing

IDoc processing by background job is the most preferred way of processing IDocs. Process code refers to a workflow or a function module which helps in reading or writing data from/to the IDoc. Process codes provided with the FORCAM Adapter must be configured in the system to process the inbound and outbound IDocs.

In this case, IDocs are processed immediately as they are generated or added in the system. The radio button **Transfer IDoc immediately** is selected in outbound options and **Trigger Immediately** is selected in inbound options. These checks are generally used when the real-time information exchange is necessary between two systems.

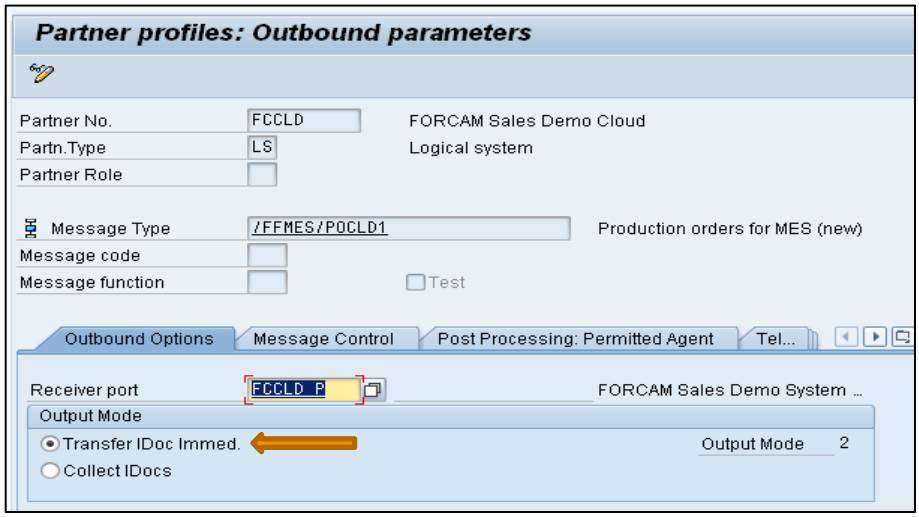


Fig. 7: SAP screen for partner profiles: Outbound parameters

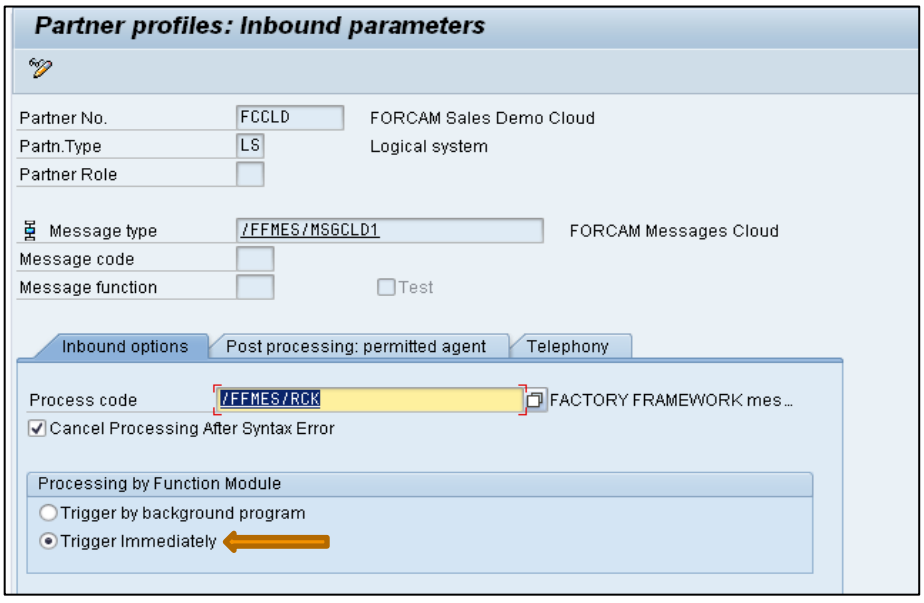


Fig. 8: SAP screen for partner profiles: Inbound parameters

4.6 Reprocessing IDocs

IDocs can also be manually processed resp. reprocessed in SAP.
If one IDoc is created on the system, but due to some problem (e.g. RFC not working or system is down) it is not received by another system, you can reprocess the same IDoc after solving the system problem by using the standard SAP transaction. For this purpose, an additional specific report is available in the FORCAM Adapter. There is no need to create a new IDoc.

4.6.1 Reprocessing IDoc using BD87

IDocs with error status can be reprocessed in SAP using transaction **BD87**.

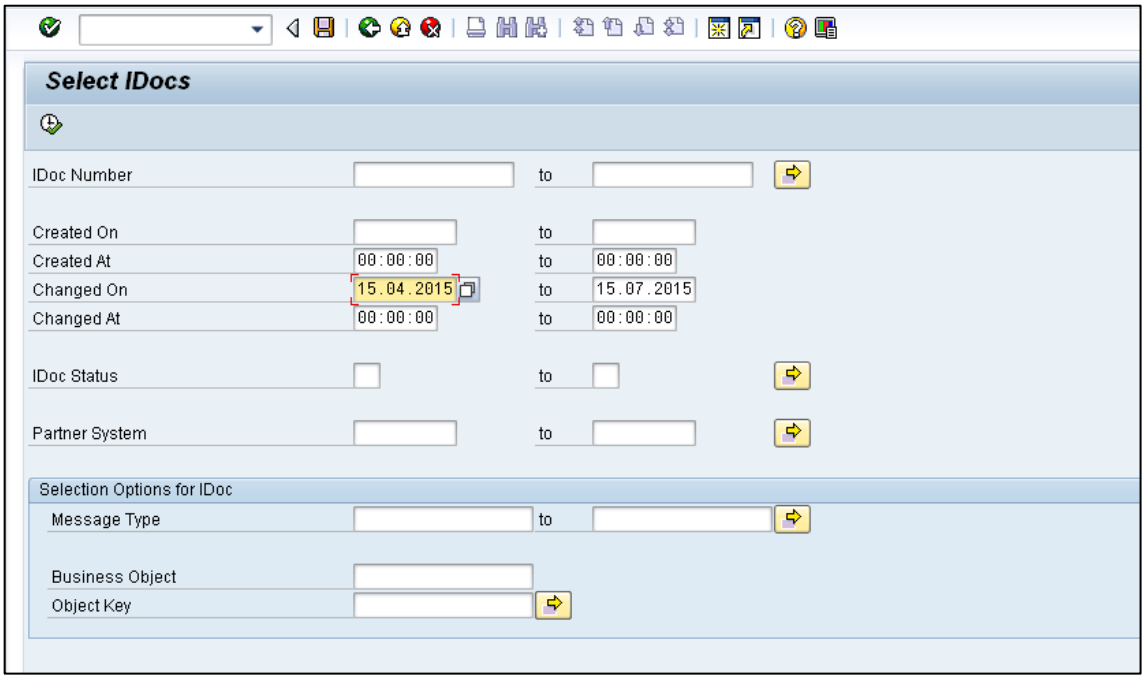


Fig. 9: Selection screen for IDoc list

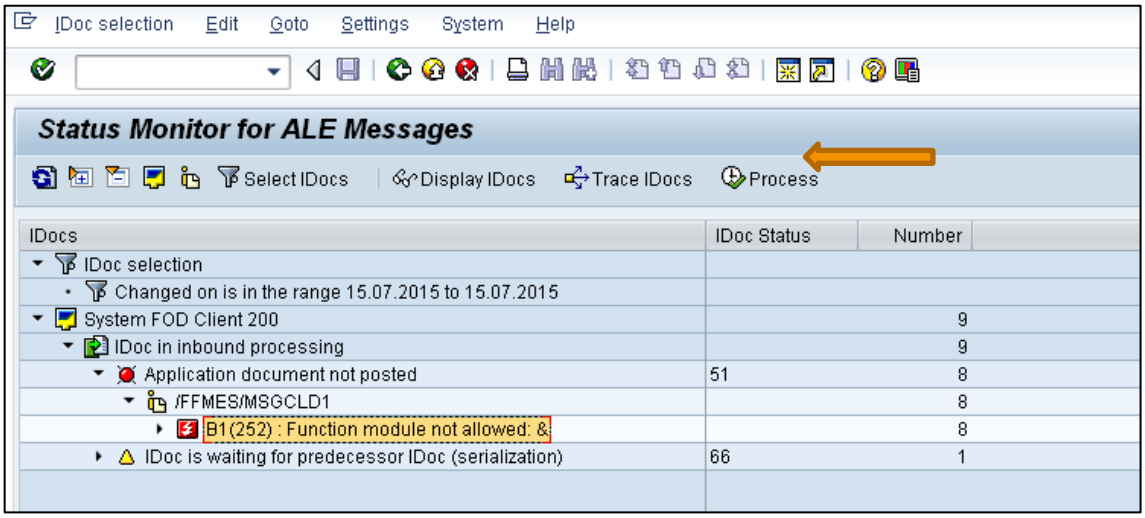


Fig. 10: SAP screen: Status monitor for ALE messages

4.6.2 Reprocessing IDocs using /FFMES/IDOC_MON

The FORCAM report **/FFMES/IDOC_MON** can be used for easy monitoring of IDocs. It can also be called-up via transaction **/FFMES/MONI**.
This report enables the processing of all inbound IDocs with errors (status **51**).
IDocs with error status can be reprocessed with this report. There are options for processing IDocs with serialization issues or other errors in the system.

IDocs are processed, after solving the system issue, by executing any of the options directed below, i.e. **Process IDoc** or **Process IDoc with serialization**.

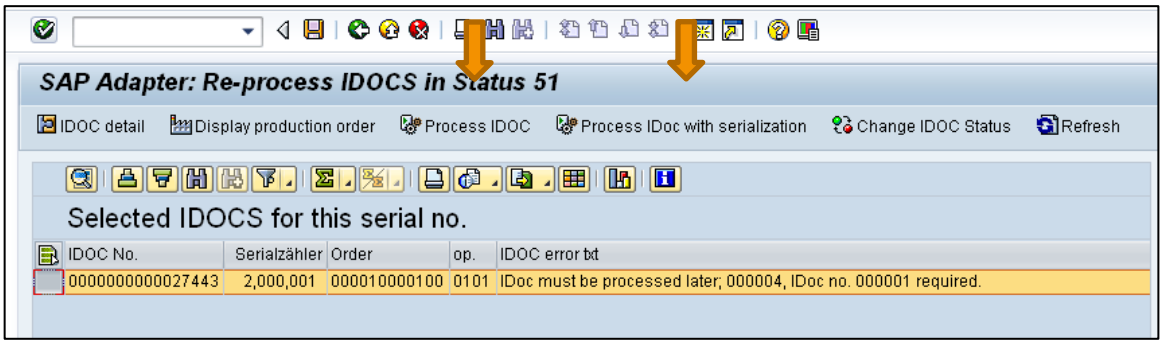


Fig. 11: Display in FORCAM adapter for IDoc reprocessing

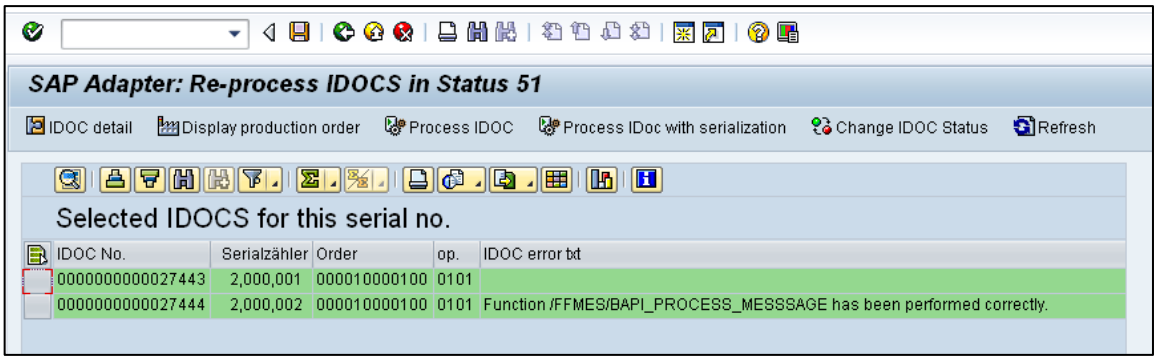


Fig. 12: FORCAM Adapter screen after reprocessing IDocs

After the serialization issue is resolved and processing is successful again, the status changes to **53**:

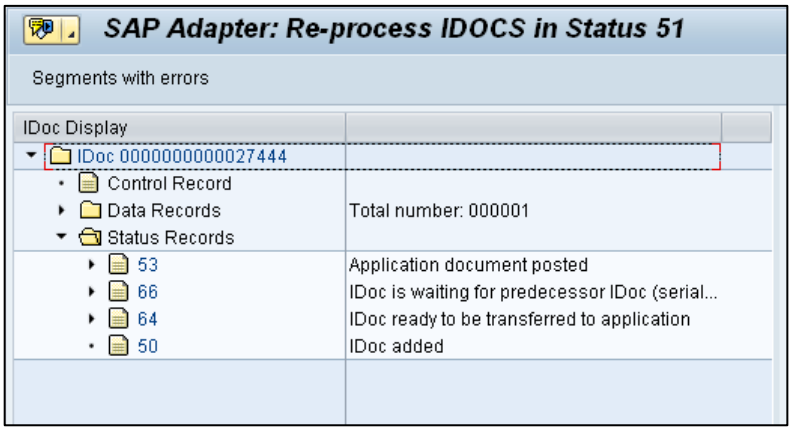


Fig. 13: SAP screen displaying status records

4.7 Error handling for non-posted IDoc

SAP Report: RBDMANIN

This program ensures that IDocs which were not yet booked (recorded) are automatically entered later. The report should be executed as a regular batch job in an SAP system with an active FORCAM Adapter. Details about SAP job creation can be found in the SAP standard documentation.
Create a report version first, then schedule the job using transaction **SM36**.

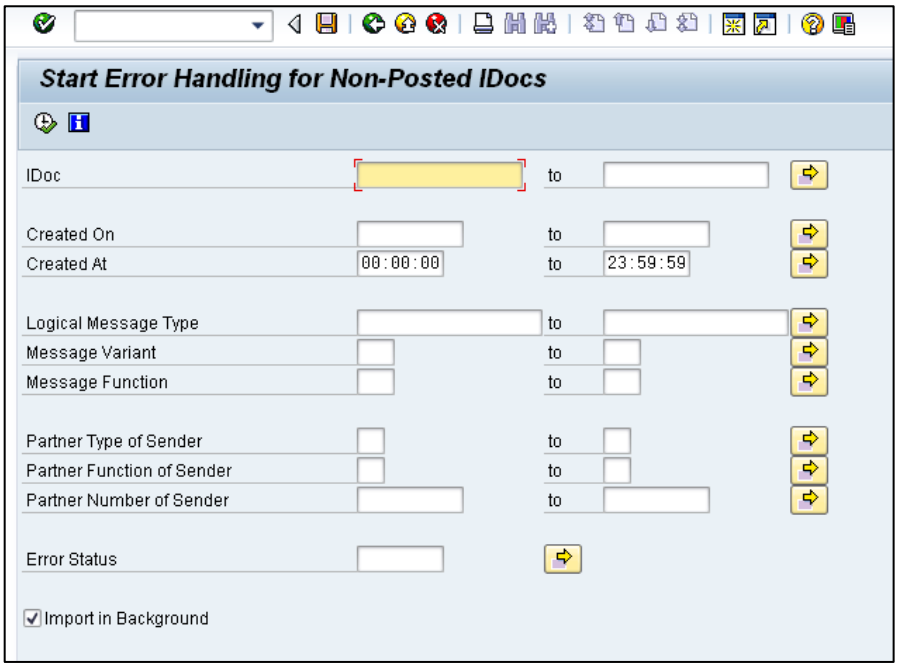


Fig. 14: Selection screen of report RBDMANIN

When serialization is active, the transfer-ready incoming IDocs that are waiting in status **66** after an error occurred, must be initiated again.
This task can be taken-over by report **RBDAPP01** that should be scheduled as regular batch run for this purpose.

ⓘ The report **RBDMANIN** is not able to initiate the IDocs in status **66** for processing.

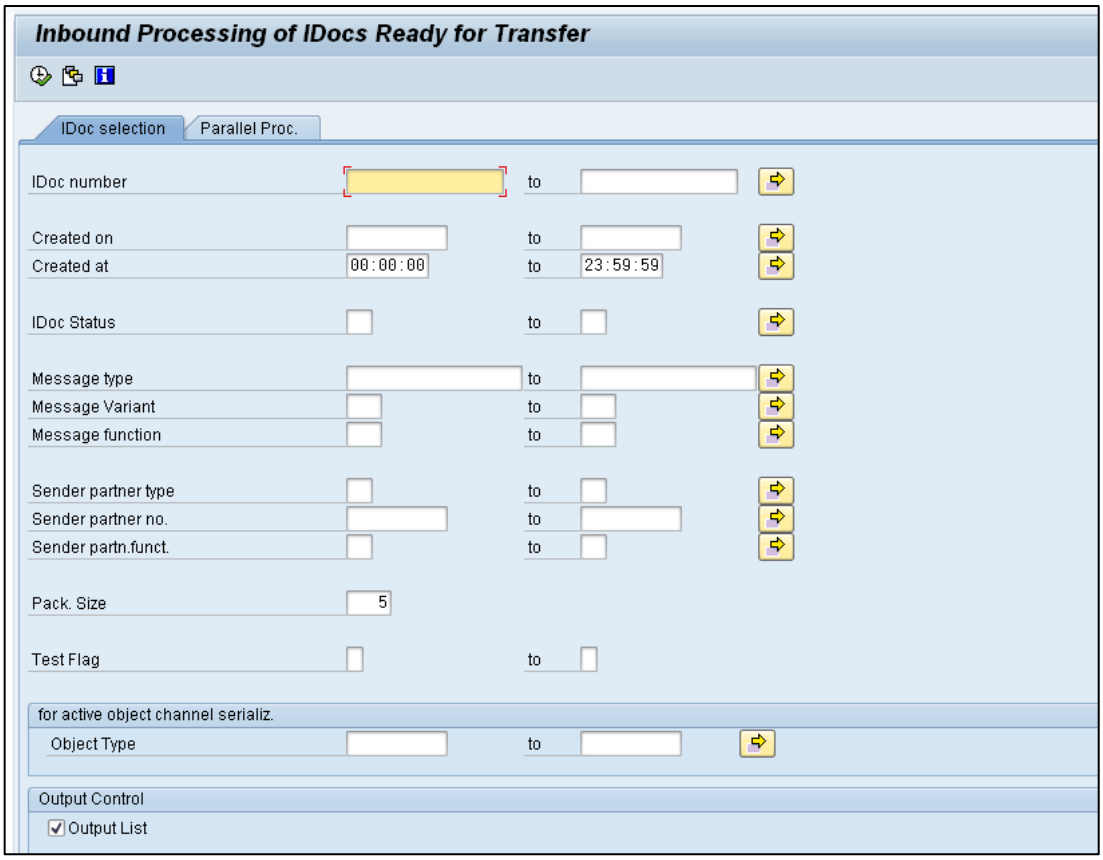


Fig. 15: Selection screen of report RBDAPP01

4.8 Deleting IDocs

This section describes the deletion of specific IDocs. The report **/FFMES/IDOC_DELETE** is used instead of the existing SAP standard tools (transaction **WE11**).

Two options are available to delete IDocs:

- Delete completely: Remove from all databases
- Delete logically: Set a new status that excludes the IDoc from further processing (status **68**)

To execute the deletion, you can use the SAP standard function module **EDI_DOCUMENT_DELETE**. It is possible to run a simulation to check the selection.
When deleting logically, a new status is set (**68** = no further processing). This change is only possible with IDocs in the IDoc inbound.

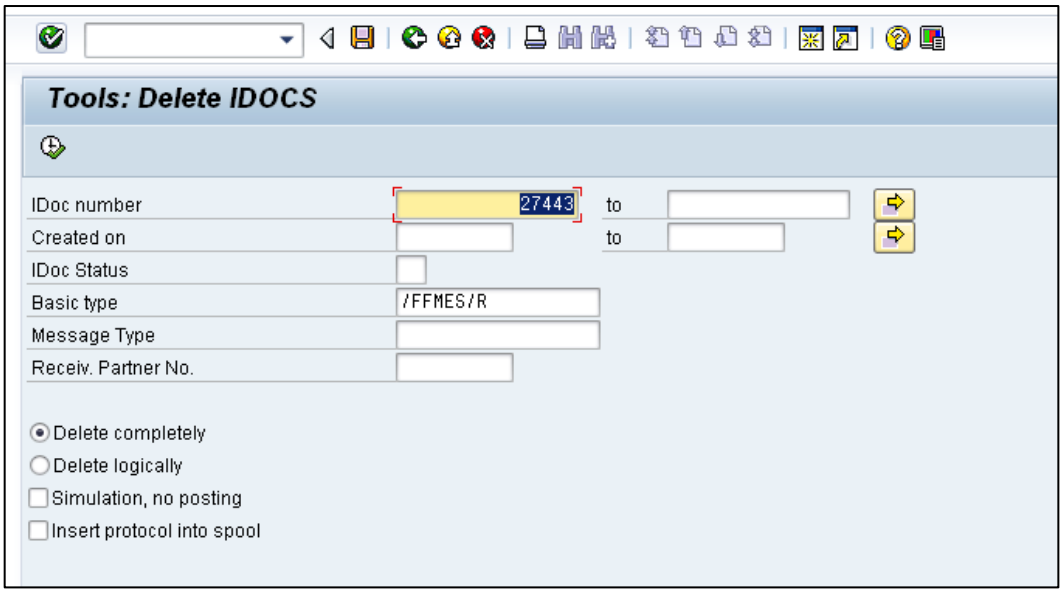


Fig. 16: Selection screen of report /FFMES/IDOC_DELETE

4.9 Redirect IDocs to FORCAM

In exceptions, interruptions can occur due to technical problems. Then IDocs that have not yet been sent remain in the SAP outbound IDoc.

You can use the report **/FFMES/RBDAGAIN_HTTP** to re-send outbound IDocs to the FORCAM system (production order data). This report considers all changes since the last transfer and sends the correct IDoc.

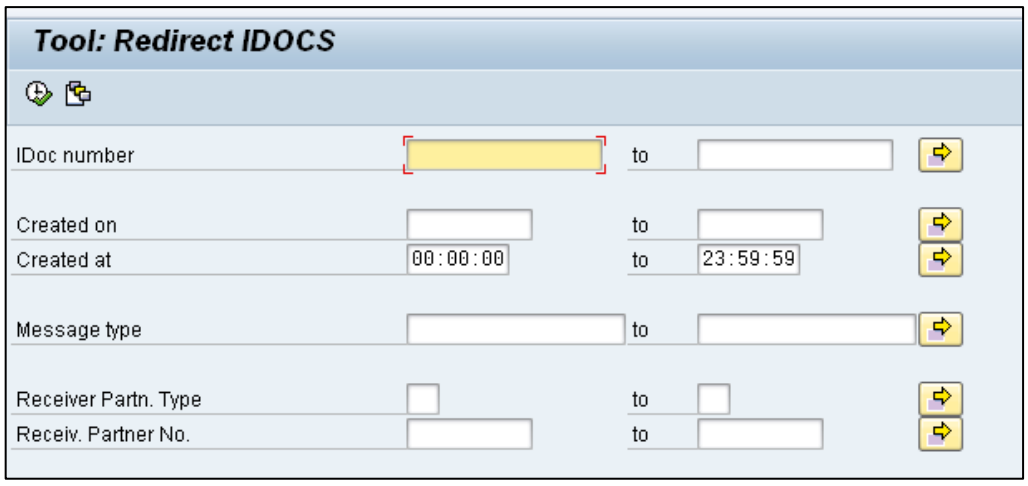


Fig. 17: Selection screen of report /FFMES/RBDAGAIN_HTTP

4.10 Mass transfer of orders to FORCAM

Production order data is generally transmitted automatically via outbound IDocs after all order changes. The release of an order also represents an order change. The transmit function is enabled by a BADI implementation (SAP default BADI "work order update").
Sometimes it will be necessary to transfer selected orders apart from this logic, for example, after the implementation of a new machine into the FORCAM interface or the start of a new FORCAM installation. The report **/FFMES/TRANSFER_ORDER_SPEC** was created for this task.
This report creates IDocs with basic type **/FFMES/F**. The function module from BADI implementation is used for the IDoc creation.

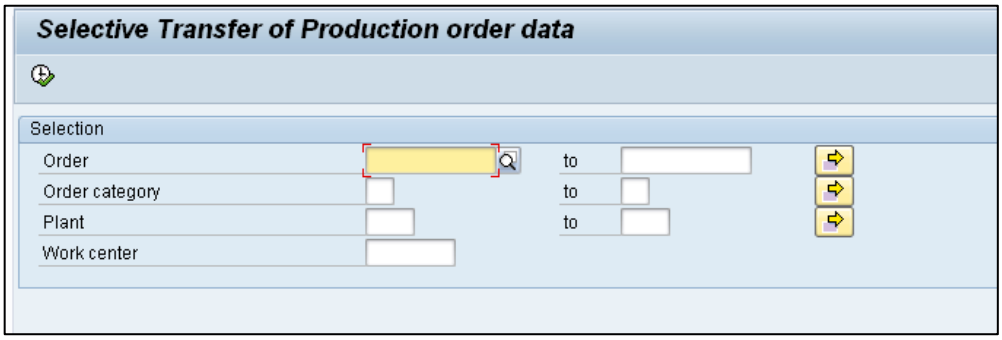


Fig. 18: Selection screen of report /FFMES/TRANSFER_ORDER_SPEC

5 Fine-tuning the FORCAM Adapter

The FORCAM Adapter can be easily adjusted to meet several additional requirements after initial setup. These features are not mandatory but might be helpful in certain installations.

5.1 Table /FFMES/CONTROL_V

5.1.1 Functionality

Table **/FFMES/CONTROL_V** contains most important global control parameters for the FORCAM Adapter. It is the parameter value table for table **/FFMES/CONTROL**. Here you can switch on the necessary parameters.

The following example shows how an activated parameter is displayed in table **/FFMES/CONTROL**:

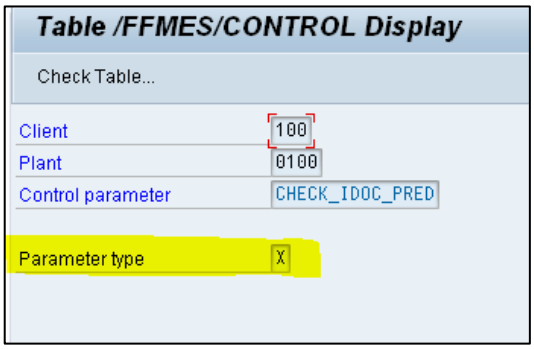


Fig. 19: Activated parameter in table /FFMES/CONTROL

/FFMES/CONTROL_V is a customizing table. Content of this table is transported and must be maintained only in a development/customizing system. Changes must be imported via transport request.
Parameters to be activated must have an entry in table **/FFMES/CONTROL_V**.

/FFMES/CONTROL is an application table. Content of this table is not transported and must be maintained separately in each system.

All parameters can be switched on according to desired functionality. No parameter is mandatory except **CHECK_IDOC_PRED**.

5.1.2 Predefined parameters and their use

5.1.2.1 CHECK_IDOC_PRED – Check activity status of IDoc predecessor

This parameter is most commonly used. It must be activated to allow serialization of incoming IDocs on operation level.
This serialization is used in all standard installations as a default. Details for this are available in the Manual – Customizing Adapter for SAP.

5.1.2.2 ACTIV_CLEAR_RES – Clear open reservations if final confirmation

This parameter is used in booking of confirmations. If the parameter is activated, all open reservations will be cleared while booking final confirmation (function module **BAPI_PRODORDCONF_CREATE_TT**).

5.1.2.3 ACTIV_NO_REMN_n – Indicator: No remaining activity expected for standard value

This parameter is used in booking of confirmations with record type **L40** (final confirmation). If the parameter is activated, the indicator “no remaining activity expected” will be set active (function module **BAPI_PRODORDCONF_CREATE_TT**).
Every standard value has a single parameter which must be activated separately:

- ACTIV_NO_REMN_1
  Indicator: No remaining activity expected for standard value 1
- ACTIV_NO_REMN_2
  Indicator: No remaining activity expected for standard value 2
- ACTIV_NO_REMN_3
  Indicator: No remaining activity expected for standard value 3
- ACTIV_NO_REMN_4
  Indicator: No remaining activity expected for standard value 4
- ACTIV_NO_REMN_5
  Indicator: No remaining activity expected for standard value 5
- ACTIV_NO_REMN_6
  Indicator: No remaining activity expected for standard value 6

5.1.2.4 ACTIV_PLAF_SEQ – Considering implications when downloading repetitive manufacturing orders (PLAF)

When downloading planned orders in the REM environment, only the master sequence from the routing is considered in the default. The parameter can be used to select the inclusion of alternative implications from the routing for the download (generation of **/FFMES/F IDOCS**).

5.1.2.5 ACTIV_SEQUENCES – Considering implications

This parameter is used when downloading production order data in the function module for IDoc creation. It controls the downloading of order sequence data to the MES.
If the parameter is set to inactive, only work operation data for the **000000** implications will be transmitted to the FORCAM system.

5.1.2.6 ALLOW_BLCK_PERD – Allow booking in blocked period

This parameter is used in confirmation booking after checking of booking period.
If the parameter is set active, posting date will be set to actual date (SY-DATUM) and booking will be made. Otherwise the posting date will remain the shift date from the incoming IDoc and booking will be tried. In this case an error will occur (red IDoc).

5.1.2.7 ALLOW_PERSN – Transfer of personnel data during change with S or D indicator

This parameter can be used to execute a special BADI implementation, which enables the single supply of personnel data.

⚠ Activate only if a suitable FORCAM FORCE IIOT release is also connected to the adapter (starting from version 5.9).

5.1.2.8 ALLOW_PLANG_FLD – Fill plan data segment in order IDoc with data

The outbound IDoc is called up in the **FILL_AFOLG** subprogram. If active, the additional plan data segment **SOPPLD** is filled with data and transmitted in the **/FFMES/F** IDoc.
An additional call is made in the subprogram **READ_STDVAL_FOR_APL**, which is also called up in the subprogram **FILL_AFOLG**.

5.1.2.9 BOOK_ADD_OPSTR – Book additional OPSTR at day change

IDoc inbound only for OPSTR messages. In general only the first OPSTR will be posted (TRÜC with quantity zero). If the parameter is active, an OPSTR should also be posted after day change, even if it is not the first OPSTR.

5.1.2.10 CHECKLOCK_INACT – CHECK_LOCK Not active (do not set order lock)

This parameter is used during inbound processing of IDocs.
If the parameter is active, no retry will be made in case of error when attempting to lock the order (5 attempts, the IDoc will go directly to error status if the order is locked by another process).

5.1.2.11 CHECK_AFOLG_S_D – Check operations for deletion and insertion entries

This parameter is used in the IDoc outbound process.
In the function module for production order of an IDoc creation, this parameter is used to generate correct IDocs after re-reading master data.
If this parameter is active, deletion (D) records for one order operation are not sent if a creation (S) record is sent in that IDoc for the same order operation.

5.1.2.12 CHECK_COMPL_DWN – Check complete component download

This parameter is used in the IDoc outbound process.
As standard, component information (**AFOKO** segment) is only sent completely at order release or after changes of components. The parameter **CHECK_COMPL_DWN** must be set active if complete component information (all components of order) are to be sent with every download of production order data.

5.1.2.13 CHECK_DUMMY_ORD – Check for dummy orders

This parameter is used in the IDoc inbound process.
Wrong order numbers can cause unnecessary error IDocs. If the parameter is set active, the order number is checked against SAP tables and the IDoc will be set to status **68** if the order does not exist in SAP.

5.1.2.14 CHK_ACT_SYSID_x – Indicator: Active check for SYSID

This group of parameters is used in the IDoc outbound process.
SAP system ID (**SYSID**) is an additional key field which can be transferred to the FORCAM system.
If the parameter is set active, **SYSID** is filled in IDoc segments and transferred to the FORCAM system.
There are separate parameters for production order data, HR data and shift data:

- CHK_ACT_SYSID_F
  Indicator: Active check for SYSID - PROD. ORDER
- CHK_ACT_SYSID_H
  Indicator: Active check for SYSID - HR DATA
- CHK_ACT_SYSID_S
  Indicator: Active check for SYSID - SHIFT DATA

5.1.2.15 CHK_ADDN_CNF – Multiple confirmations for editing the operation

The IDoc inbound is called up in subprogram **F10_STORNO_RM** (corrections). If the parameter is set, the subprogram **F10_PROCESS_MULTI_KORR** is called up. There, automatically generated confirmations are also cancelled for milestone confirmations (**IDOC /FFMES/CANCEL**).

5.1.2.16 CHK_PERSONNEL – Remove invalid personnel number from messages

This parameter can be used to automatically ensure that invalid personnel numbers are removed from the IDocs. The infotype **0001** is read (call-up in FB **/FFMES/IDOC_INPUT_MESSAGE**).

5.1.2.17 CMB_SHIFT_BREAKS – Combine successive shift breaks

The outbound IDoc is called up in the **/FFMES/TRANSFER_SHIFT_DATA** program.
For breaks in shift transfer, successive breaks are combined in the IDoc **/FFMES/S**.

5.1.2.18 DIFF_AUFNR_FORM – Check production order number

Converting the order number to numeric value, because the internal storage in SAP is done with leading zeros and the subsequent processing would otherwise generate errors.

5.1.2.19 DONOTUSEF_xxx – Do not Use xxx in confirmations

This group of parameters is used in confirmation booking (inbound IDocs from FORCAM).
If the parameter is set active, certain fields are not filled in confirmations.
There are separate parameters for workplace, personnel number and time recording card:

- DONOTUSEF_ARBPL: Do not use workplace in confirmations
- DONOTUSEF_PERNR: Do not use personnel number in confirmations
- DONOTUSEF_ZAUSW: Do not use time recording ID card number in confirmations

5.1.2.20 INACTIV_FINCONF – Indicator: FIN_CONF not active if final confirmation

This parameter is used in confirmation booking with record type **L40** (final confirmation).
If the parameter is set active, the indicator for final confirmation will not be set.

5.1.2.21 OPEND_TAR_ACTIn – Indicator: Determine target activity if OPEND – standard value n

This group of parameters is used in confirmation booking with record type **L40**. It is used for bookings of target activities (planned = actual).
There are parameters for each standard value which can be activated independently:

- OPEND_TAR_ACTI1
  Indicator: Determine target activity if OPEND - standard value 1
- OPEND_TAR_ACTI2
  Indicator: Determine target activity if OPEND - standard value 2
- OPEND_TAR_ACTI3
  Indicator: Determine target activity if OPEND - standard value 3
- OPEND_TAR_ACTI4
  Indicator: Determine target activity if OPEND - standard value 4
- OPEND_TAR_ACTI5
  Indicator: Determine target activity if OPEND - standard value 5
- OPEND_TAR_ACTI6
  Indicator: Determine target activity if OPEND - standard value 6

Target activity is determined in these cases at operation end.

5.1.2.22 POST_ALL_CONFIR – Post all MES confirmations

This parameter is used in activity confirmation processing (inbound IDocs).
If the parameter is set active, all confirmations with record type **L20** must to be booked.
If the parameter is not set, only the first activity booking with **L20** will be booked.
This logic applies to **OPSTR** and **OPINT** bookings.

5.1.2.23 QTYMG_TAR_ACTIn – Indicator: Determine target activity if QTYMG – standard value n

This group of parameters is used in confirmation booking of quantities. It is used for bookings of target activities (planned = actual).
There are parameters for each standard value which can be activated independently:

- QTYMG_TAR_ACTI1
  Indicator: Determine target activity if QTYMG - standard value 1
- QTYMG_TAR_ACTI2
  Indicator: Determine target activity if QTYMG - standard value 2
- QTYMG_TAR_ACTI3
  Indicator: Determine target activity if QTYMG - standard value 3
- QTYMG_TAR_ACTI4
  Indicator: Determine target activity if QTYMG - standard value 4
- QTYMG_TAR_ACTI5
  Indicator: Determine target activity if QTYMG - standard value 5
- QTYMG_TAR_ACTI6
  Indicator: Determine target activity if QTYMG - standard value 6

Target activity is determined in these cases at quantity bookings.

5.1.2.24 STAT_HEADER_AVO – Apply head user status to operation

The IDoc outbound is called up in the subprogram for filling the IDoc **/FFMES/F** (FFIL_AFOLG).
If active, the user status is written from the header to the user status in each operation.

5.2 Table /FFMES/CONF_QTY (optional)

5.2.1 Main purpose

Maintain this table when there is a need to adjust the target quantity in IDoc download of production order data according to expected confirmation quantity and confirmations on predecessor operation.

5.2.2 Functionality

/FFMES/CONF_QTY is an application table. Content of this table is not transported and must be maintained separately in each system.

Target quantity of production order operation is transferred to the FORCAM system in the field **MGVRG** (**AFOLG** segment).
The expected confirmation quantity is influenced by previously booked confirmations on predecessor operations. There is SAP standard customizing which must be adjusted accordingly.

If status **CNF** is set into actual operation then all relevant operations will be sent in download IDoc.
In this case, booked quantity of good parts in the predecessor operation will be set as target quantity of successor operations.

This table is relevant for IDoc download to the FORCAM system (IDocs in outbox).
Conditions from table **/FFMES/CONF_QTY** are checked within the SAP adapter package.

5.2.3 Table maintenance

Table **/FFMES/CONF_QTY** must be maintained to activate the logic of target quantity adjustment as described. This table is plant specific and has the following structure:

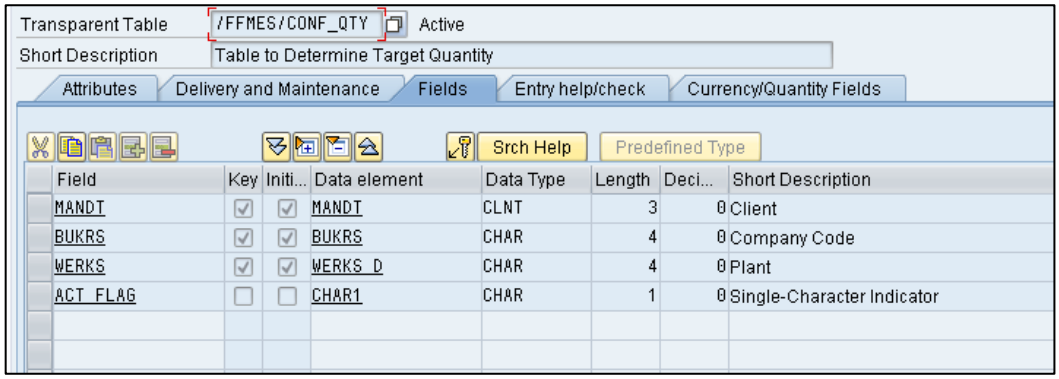


Fig. 20: Structure of table /FFMES/CONF_QTY

An example entry can look like this:

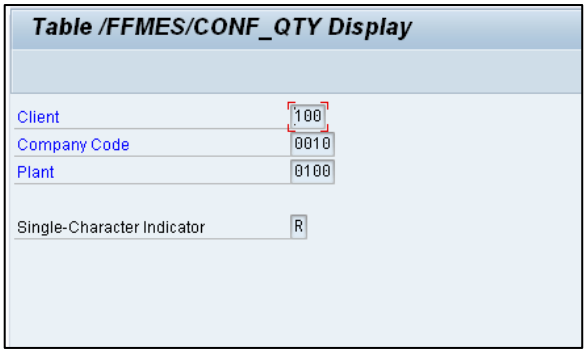


Fig. 21: Example entry of table /FFMES/CONF_QTY

The Single-Character Indicator can have the values R or Q.

- **R:**
  Operation quantity from SAP table **AFVV**. The confirmed yield quantity minus the scrap is used if the status **CNF** is active in a predecessor operation.
- **Q:**
  Field **SMENG** is used, which is determined by calling SAP function module **CO_RU_DET_CONF_QUANTITY**.

5.3 Table /FFMES/CONST (optional)

5.3.1 Main purpose

Maintain this table if configurable constants are to be used for adjusting the functionality of the FORCAM adapter.

5.3.2 Functionality

/FFMES/CONST is an application table. Content of this table is not transported and must be maintained separately in each system.

There are existing constants which can be activated and used by maintaining table **/FFMES/CONST**. In addition to that, new customer specific constants can be implemented. Coding for additional constants must be implemented in existing enhancement methods.

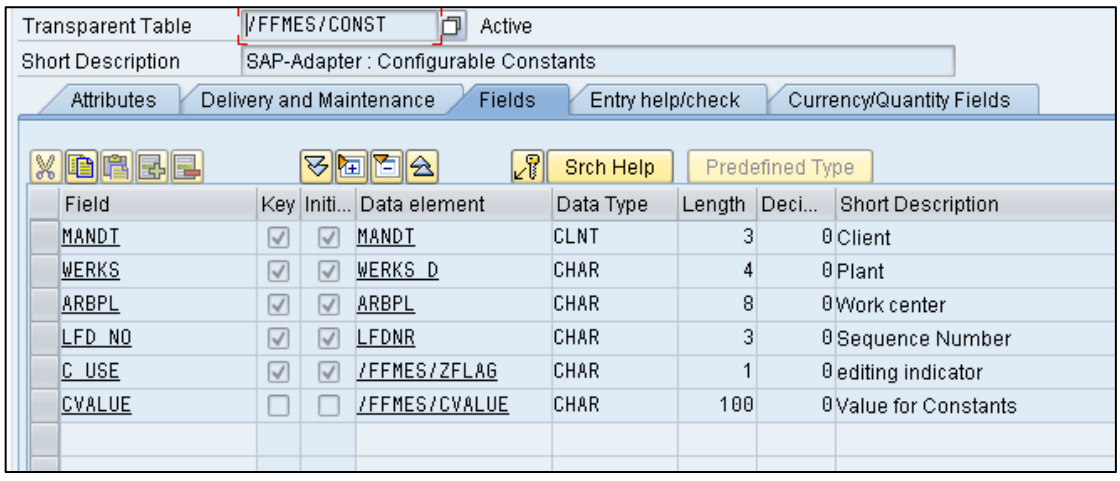
Existing constants are:

- **S:**
  Switch off IDoc inbound serialization for specified FORCAM record type.
- **W:**
  Waiting time in seconds per plant or single workplace. This waiting time is used in IDoc processing (check lock entries, check predecessor for IDoc serialization).

This table is relevant for IDoc upload from the FORCAM system to SAP (IDocs inbound). Conditions from table **/FFMES/CONST** are checked within the SAP adapter package.

5.3.3 Table maintenance

Table **/FFMES/CONST** must be maintained to activate the configurable constants.
Entries can be created plant or workplace specific. Sequence number allows combined entries.
Field **C_USE** must contain the abbreviation for the respective constant (e.g. “W” for configurable waiting time).



Field	Key	Initi...	Data element	Data Type	Length	Deci...	Short Description
MANDT	☑	☑	MANDT	CLNT	3	0	Client
WERKS	☑	☑	WERKS_D	CHAR	4	0	Plant
ARBPL	☑	☑	ARBPL	CHAR	8	0	Work center
LFD_NO	☑	☑	LFDNR	CHAR	3	0	Sequence Number
C_USE	☑	☑	/FFMES/ZFLAG	CHAR	1	0	editing indicator
CVALUE	☐	☐	/FFMES/CVALUE	CHAR	100	0	Value for Constants

Fig. 22: Structure of table /FFMES/CONST

An example entry with constant **S** can look like this:

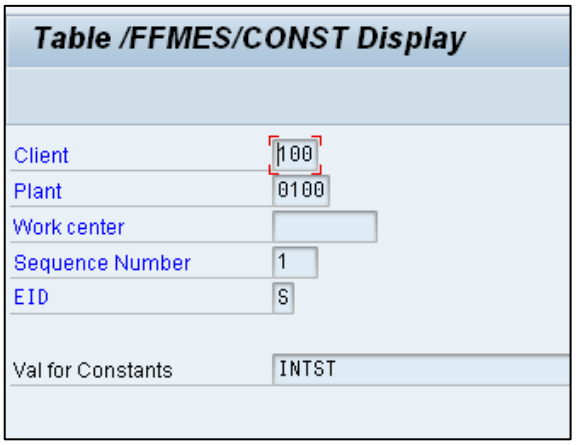


Fig. 23: Example entry with constant S

Additional entries must be maintained for each record type which should not have serialization on PO operation level. The following example shows switching off serialization for record types **INTST** and **INTND**.

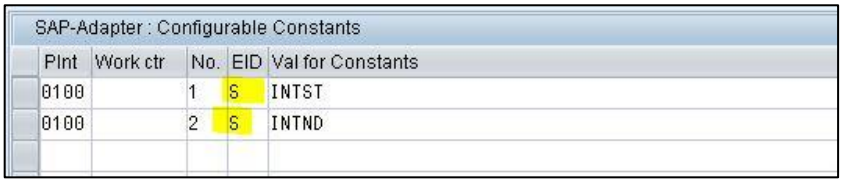


Fig. 24: Switching off serialization for record types INTST and INTND

An example entry with constant **W** can look like this:

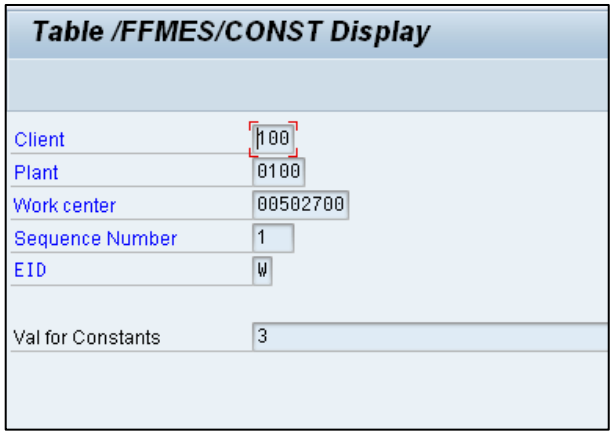


Fig. 25: Example entry with constant W

5.4 Table /FFMES/DELETE_PO (optional)

5.4.1 Main purpose

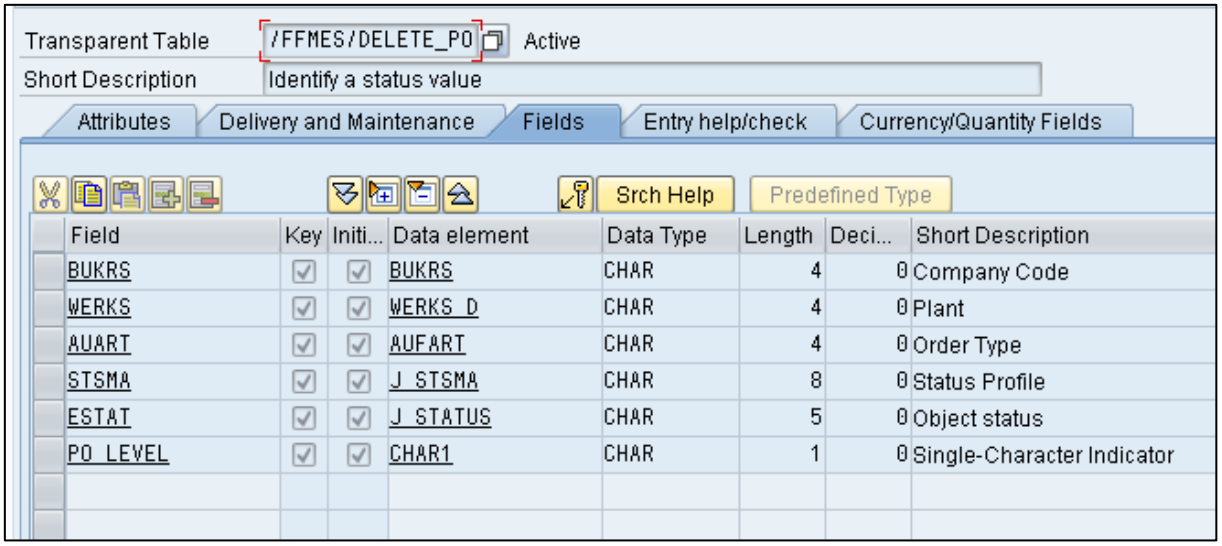
Maintain this table when there is a need to create and send out deletion records for production orders at specific order status, apart from **COMPL** and **TECO**.

5.4.2 Functionality

/FFMES/DELETE_PO is an application table. Content of this table is not transported and must be maintained separately in each system.

Standard deletion records are only created in FORCAM production order download at certain order status (**COMPL** and **TECO**).
The term “status” stands here for the SAP system status.
Table **/FFMES/DELETE_PO** must be maintained if a different creation of deletion records is wanted.
The functional logic is implemented in such a way that *either* standard deletion records are created *or* deletion records at status values of table **/FFMES/DELETE_PO**.

This table is relevant for the IDoc download to the FORCAM system (IDocs in outbox).
Conditions from table **/FFMES/DELETE_PO** are checked within the SAP adapter package.



Field	Key	Initi...	Data element	Data Type	Length	Deci...	Short Description
BUKRS	☑	☑	BUKRS	CHAR	4	0	Company Code
WERKS	☑	☑	WERKS_D	CHAR	4	0	Plant
AUART	☑	☑	AUFART	CHAR	4	0	Order Type
STSMA	☑	☑	J_STSMA	CHAR	8	0	Status Profile
ESTAT	☑	☑	J_STATUS	CHAR	5	0	Object status
PO_LEVEL	☑	☑	CHAR1	CHAR	1	0	Single-Character Indicator

Fig. 26: Structure of table /FFMES/DELETE_PO

The following table describes the table fields of /FFMES/DELETE_PO:

Table 1: Fields of table /FFMES/DELETE_PO

Field	Description
BUKRS	Actual company code where user is logged on
WERKS	Plant number (conditions must be set for each plant)
AUART	Order type for which the condition is valid
STSMA	Status profile in which “deletion relevant” status is included (blank = for all)
ESTAT	System status for deletion record (in internal notation, e.g. I0009)
PO_LEVEL	Level where check is applied (H = header, O = operation)

5.4.3 Table maintenance

Users must be aware that standard deletion records are not created if table **/FFMES/DELETE_PO** is not empty. I.e. all status entries producing deletion records must be maintained in the table.
The status must be entered in internal format. Values for that are found in table **TJ02T** (SAP system status).

An example entry can look like this:

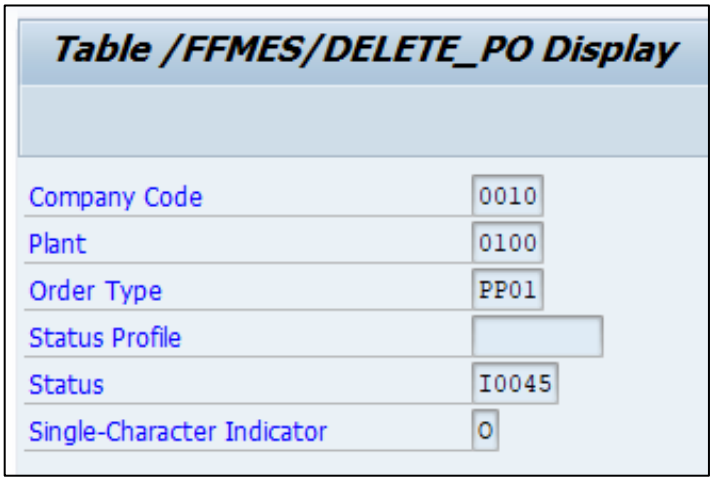


Fig. 27: Example entry of table /FFMES/DELETE_PO

5.5 Table /FFMES/FILTER (optional)

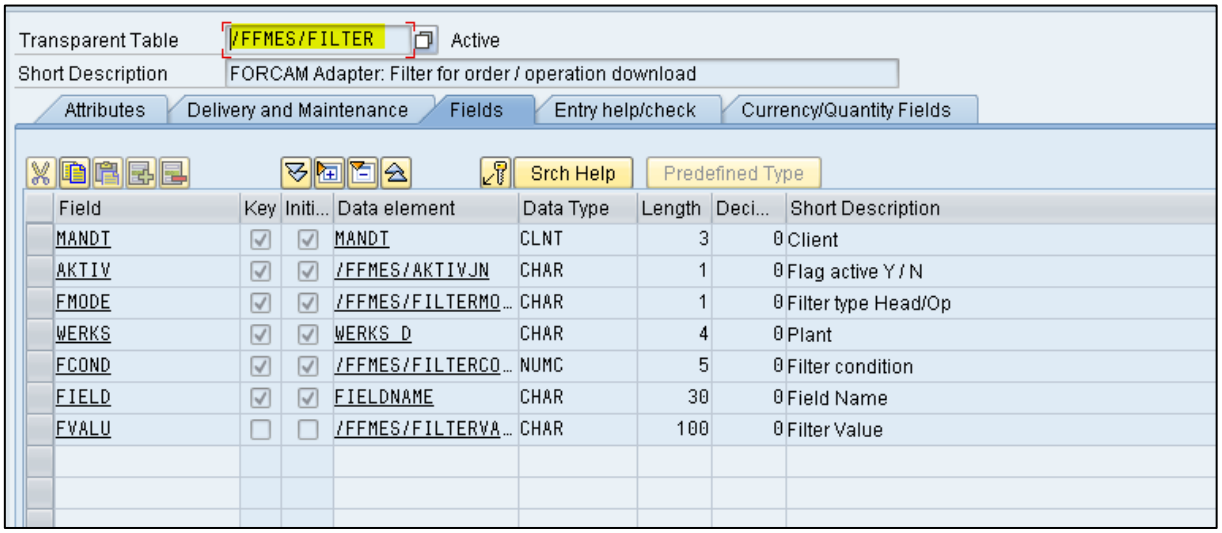
5.5.1 Main purpose

Maintain this table when there is a need to filter out certain production orders or production order operations from being sent via the FORCAM interface.

5.5.2 Functionality

/FFMES/FILTER is a customizing table. Content of this table is transported and must be maintained only in development/customizing system. Changes must be imported via transport request.

This table is used for definition of certain filter conditions which allow to exclude production orders or production order operations from transfer to the FORCAM system.
This table is relevant for IDoc download to the FORCAM system (IDocs in outbox).
Conditions from table **/FFMES/FILTER** are checked within the SAP adapter package (details for this can be found in method **DYNAMIC_FILTER**).



Field	Key	Initi...	Data element	Data Type	Length	Deci...	Short Description
MANDT	☑	☑	MANDT	CLNT	3	0	Client
AKTIV	☑	☑	/FFMES/AKTIVJN	CHAR	1	0	Flag active Y / N
FMODE	☑	☑	/FFMES/FILTERMO...	CHAR	1	0	Filter type Head/Op
WERKS	☑	☑	WERKS_D	CHAR	4	0	Plant
FCOND	☑	☑	/FFMES/FILTERCO...	NUMC	5	0	Filter condition
FIELD	☑	☑	FIELDNAME	CHAR	30	0	Field Name
FVALU	☐	☐	/FFMES/FILTERVA...	CHAR	100	0	Filter Value

Fig. 28: Structure of table /FFMES/FILTER

The following table describes the table fields of **/FFMES/FILTER**:

Table 2: Fields of table /FFMES/FILTER

Field	Description
MANDT	Actual client where user is logged on
AKTIV	Activity flag of a condition. If this flag has not been set for a specific condition, this condition will not be used for filter logic.
FMODE	Filter mode Header/Operation describes the level of filter usage.
WERKS	Plant number (conditions have to be set for each plant)
FCOND	Condition number is crucial for identification of condition combination. Entries with the same condition number are connected by a logical AND. Entries which have a different condition number are interpreted as OR blocks.
FIELD/FVALU	Combination of field name and filter value for filtering

5.5.3 Table maintenance

The following picture shows a possible filter condition. Operations which fit those conditions are not transferred to the FORCAM system:

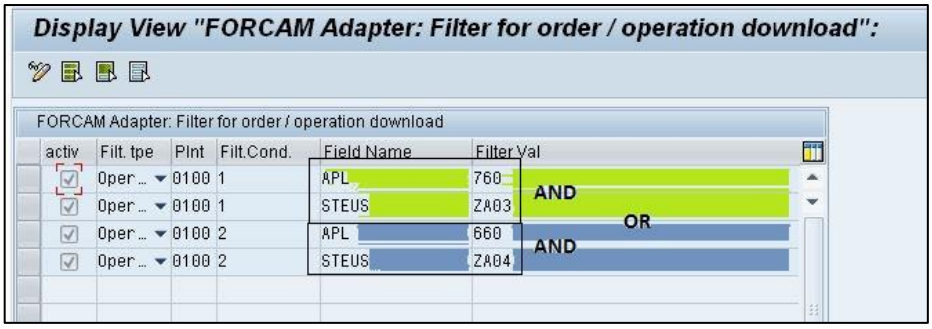


Fig. 29: Filter condition for production order download (example)

In table **/FFMES/FILTER** all conditions are checked which are active and belong to the plant of production order operation.
An operation will be filtered out and not sent to the FORCAM system if one of the defined AND conditions in **/FFMES/FILTER** table applies.

5.6 Table /FFMES/SKIP_MSG (optional)

5.6.1 Main purpose

Maintain this table when incoming messages from certain FORCAM relevant workplaces must be skipped.

5.6.2 Functionality

/FFMES/SKIP_MSG is an application table. Content of this table is not transported and must be maintained separately in each system.
Incoming messages for certain workplaces can be skipped in SAP (not being processed) if it is not possible to suppress sending from MES.
Table **/FFMES/SKIP_MSG** must be maintained for all workplaces whose messages should not be processed in SAP.
This table is relevant for IDoc Upload from the FORCAM system into SAP (IDocs inbound).
Logic is implemented in inbound function module **/FFMES/IDOC_INPUT_MESSAGE**.

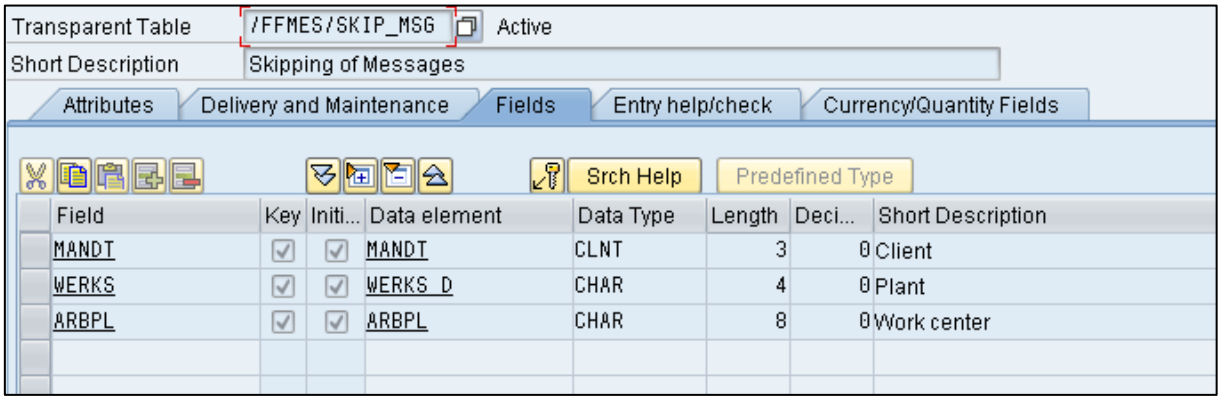


Fig. 30: Structure of table /FFMES/SKIP_MSG

5.6.3 Table maintenance

Table entries must be created for all relevant workplaces which should not receive any bookings from FORCAM system.

An example entry can look like this:

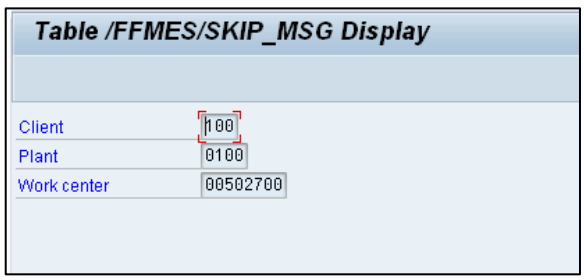


Fig. 31: Example entry of table /FFMES/SKIP_MSG

All incoming messages (basic type **/FFMES/R**) for this workplace and plant will not be booked by the interface. No error IDocs will be produced.

5.7 Table /FFMES/STATUS (optional)

5.7.1 Main purpose

Maintain this table if there is a need to set the SAP user status accordingly in a production order operation after specific messages are received from the FORCAM system.

5.7.2 Functionality

/FFMES/STATUS is a customizing table. Content of this table is transported and must be maintained only in development/customizing system. Changes must be imported via transport request.

This table is used for mapping of FORCAM order status into SAP user status values. Certain user status values can be set during processing of status messages (MES record types **OPSTR**, **OPINT** or **OPEND**).

⚠ User status logic must be activated in table **/FFMES/GLOBAL**.
Flag “Status logic act.” must be switched on.

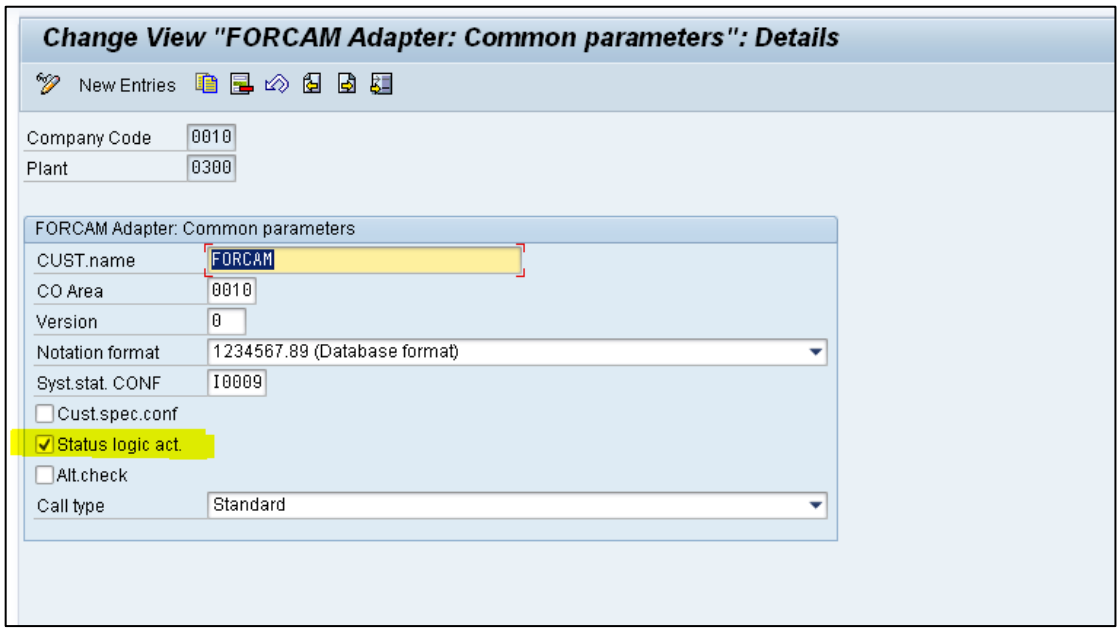


Fig. 32: Flag Status logic act.

Table **/FFMES/STATUS** is checked while receiving IDocs from the connected FORCAM system (IDocs inbound).

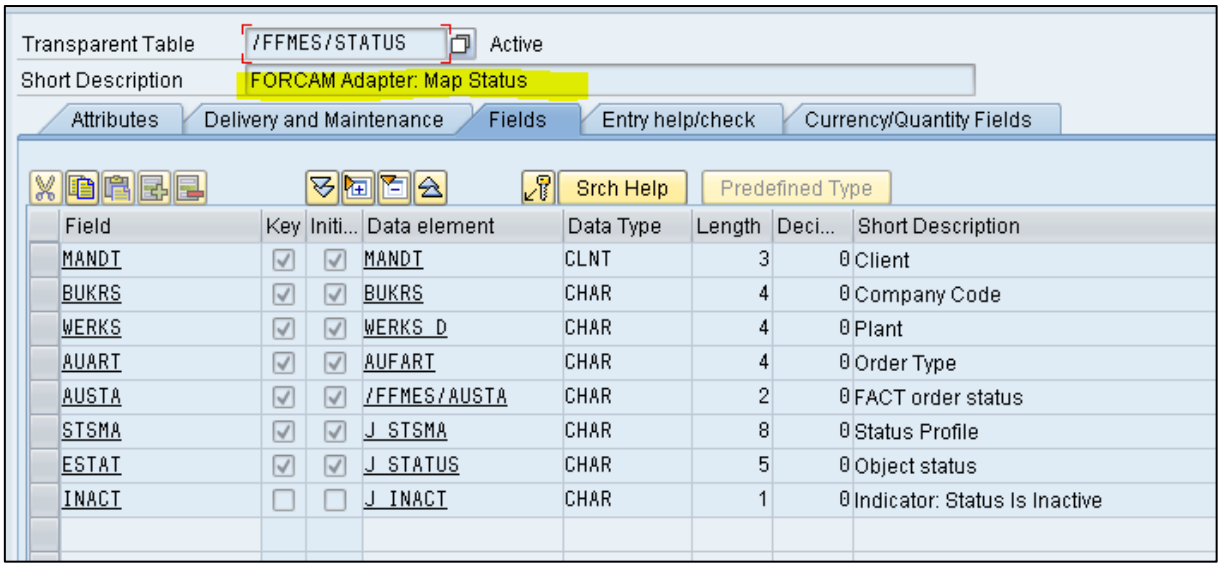


Fig. 33: Structure of table /FFMES/STATUS

The field “INACT” means that previously set user status values must be deactivated before setting the new status value.

5.7.3 Table maintenance

An example entry can look like this:

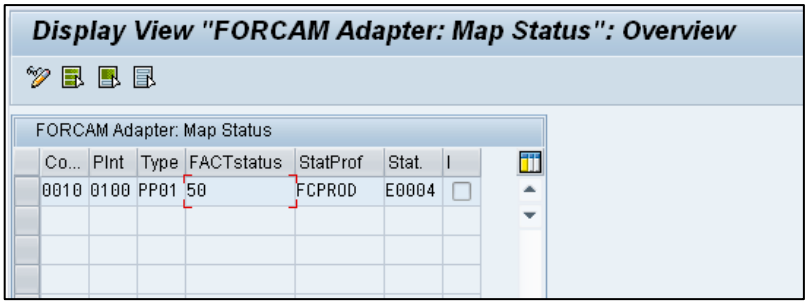


Fig. 34: Example entry of table /FFMES/STATUS

- CoCode:
  Company code of production order
- Plnt:
  Plant of production order
- TYPE:
  Order type of the production order from received MES message
- FACT Status:
  MES order status from received MES message
- StatProf:
  Status profile to be used for setting of user status
- Stat:
  User status to be set (internal name from table **TJ30T**)
- I:
  Deactivate existing status before setting new user status value

5.8 Table /FFMES/STDVAL (optional)

5.8.1 Main purpose

Maintain this table when there is a need to map SAP standard values to the MES (FORCAM) standard values due to a different assignment of standard values in SAP (to be used in time confirmations on production order operations sent by FORCAM interface via inbound IDocs).

5.8.2 Functionality

/FFMES/STDVAL is an application table. Content of this table is not transported and must be maintained separately in each system.

This table is used for mapping the MES time base to the SAP standard values while posting the confirmations sent via messages from FORCAM. Standard values in FORCAM are 1 = Setup, 2 = Production, 3 = Labor time.
These values can be differently assigned in SAP, e.g. 1 = Production/processing time.
The table is used if there are no specific entries in the **/FFMES/VERTEILER** table for mapping the MES time base to a specific standard value. Assignment of specific standard values can be maintained in the table for plant, workplace category, standard value key, workplace and MES time base.
MES time base describes the FORCAM system activity types (e.g. manufacturing time).

An entry in this table can look like this:

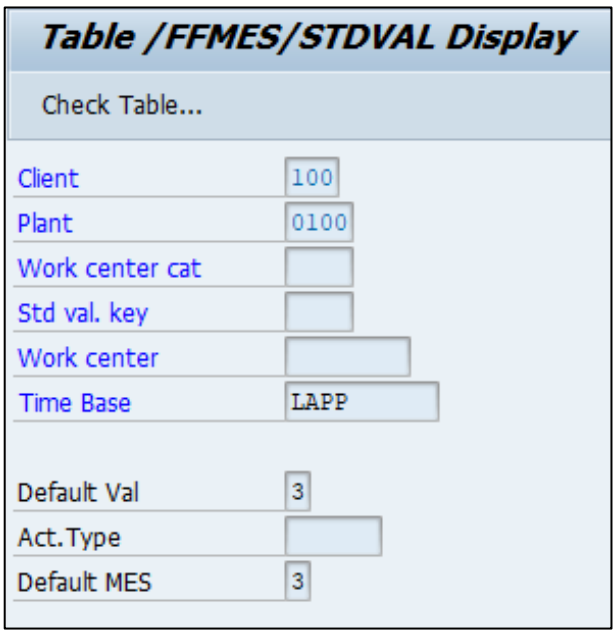
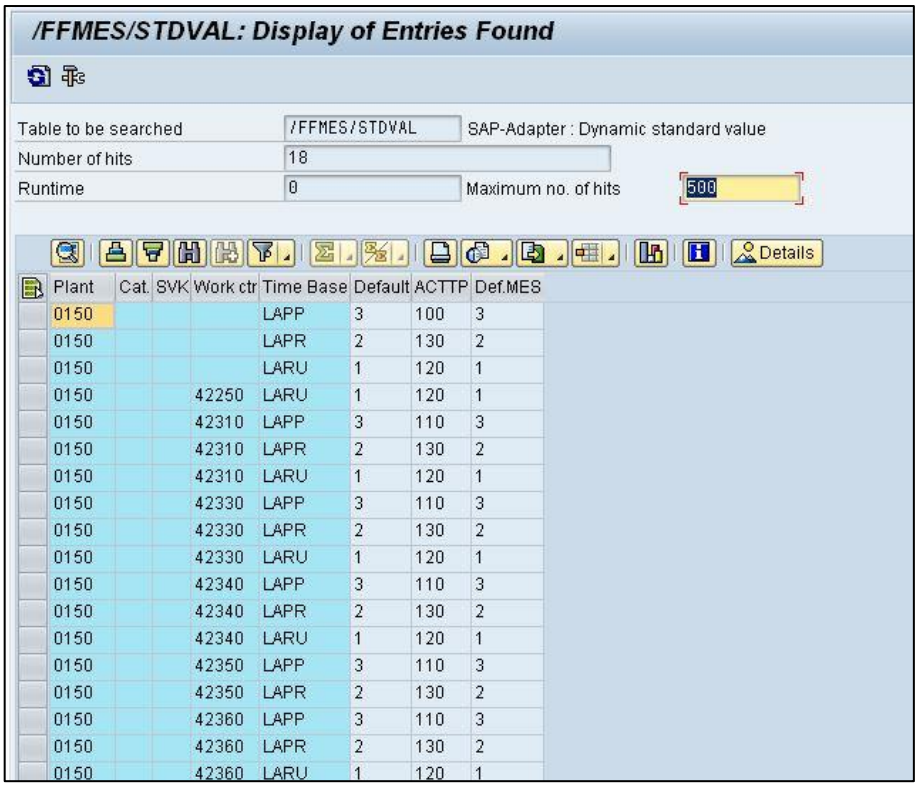


Fig. 35: Example entry in table /FFMES/STDVAL

The next picture shows another example of table entries in which different standard values are defined for specific workplaces. It illustrates the assignment of different activity types for time posting:



Plant	Cat.	SVK	Work ctr	Time Base	Default	ACTTP	Def.MES
0150				LAPP	3	100	3
0150				LAPR	2	130	2
0150				LARU	1	120	1
0150			42250	LARU	1	120	1
0150			42310	LAPP	3	110	3
0150			42310	LAPR	2	130	2
0150			42310	LARU	1	120	1
0150			42330	LAPP	3	110	3
0150			42330	LAPR	2	130	2
0150			42330	LARU	1	120	1
0150			42340	LAPP	3	110	3
0150			42340	LAPR	2	130	2
0150			42340	LARU	1	120	1
0150			42350	LAPP	3	110	3
0150			42350	LAPR	2	130	2
0150			42360	LAPP	3	110	3
0150			42360	LAPR	2	130	2
0150			42360	LARU	1	120	1

Fig. 36: Sample entries for /FFMES/STDVAL with assignment of different activity types for time confirmations on PO operations

5.8.3 Table maintenance

Activity type for booking of confirmation is read with time base sent by MES message from table **/FFMES/VERTEILER**. If no entry has been found there, then table **/FFMES/STDVAL** will be used.
Table **/FFMES/STDVAL** can be used for mapping in upload scenarios (PO confirmation) or download scenarios (Transfer PO data).
For all reading attempts in upload scenarios, additionally the MES time base will be used.

- First the table will be read with key fields **plant** and **workplace** from the MES message (inbound IDoc).
- Next attempt will be made with:
  - **Plant**, **workplace type**, **control key**
    No workplace should be specified in that table entry (left blank).
- Next attempt will be made with:
  - **Plant** and **workplace type**
    No control key and no workplace should be specified in that table entry (both fields left blank).
- Next attempt will be made with:
  - **Plant** and **control key**
    No workplace type and no workplace should be specified in that table entry (both fields left blank).
- Next attempt will be made with:
  - **Plant**
    No workplace type, no control key and no workplace should be specified in that table entry (all 3 fields left blank).

⚠ Important for upload (confirmation bookings):
If no specified entry has been found after all those attempts, then the standard value for this booking will be filled with zero.

⚠ Any unwanted zero booking of durations or activities might be an indicator for wrong maintenance of table **/FFMES/STDVAL**.

⚠ If an entry has been found, the results will be mapped accordingly into target fields for download (**AFOLG-VGWxx**) or Upload (**AFVV-VGWxx**). A mapping is also possible for specially wanted activity types.

6 Annex

6.1 Abbreviations

Table 1: Abbreviations used in this document

Abbreviation	Description
ALE	Application Link Enabling
EDI	Electronic Data Interchange
MES	Manufacturing Execution System
REM	Repetitive Manufacturing
RFC	Remote Function Call

6.2 Table of figures