



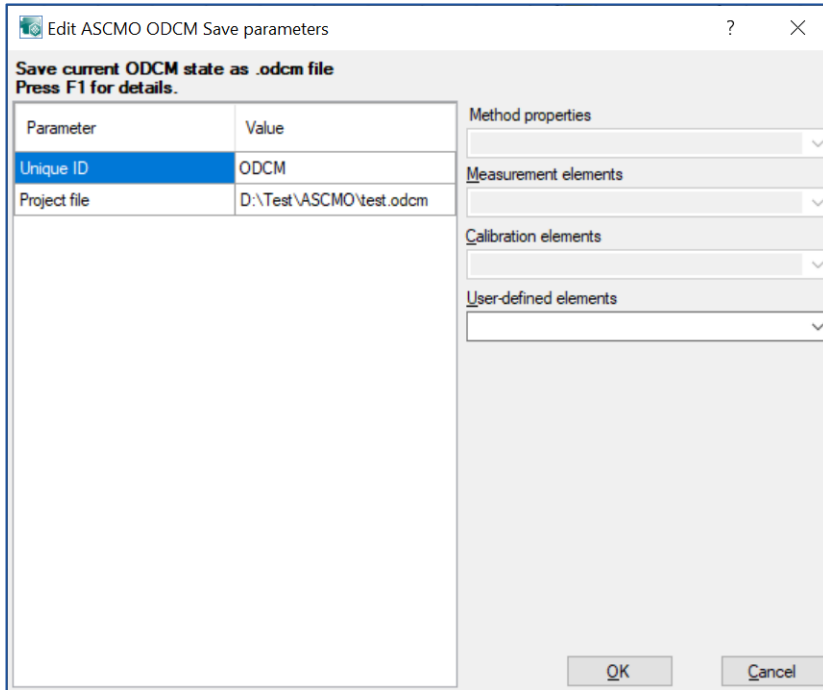
# INCA-FLOW V4.14 - What's new?

## Guided calibration for INCA

# INCA-FLOW V4.14 New Features

New Features	
1	New methods: <ul style="list-style-type: none"><li>– “ASCMO ODCM Save”</li></ul>
2	Extension of methods: <ul style="list-style-type: none"><li>– “ASCMO ODCM Initialize”: Support .odcm loading to continue a saved DoE</li><li>– “Start load controller” : Added calibration strategy</li><li>– “Execute DoE plan”: Added ramping types ‘Discrete’, ‘Ramp’, ‘Step’, added optional log file to trace calibration steps</li><li>– “Approach to design point”: Added calibration strategy, added optional latency for monitored measurement values, reworked reaction strategies, added optional log file to trace calibration steps</li></ul>
3	VDT Improvements: <ul style="list-style-type: none"><li>– Channel Conversion is displayed as a term</li><li>– Display information about imported files</li><li>– Defined folder structure at first start of VDT</li><li>– Labeling of merge events</li><li>– Report Generation with new icons, better output dialogue and further meta information</li></ul>

# 1. New testbench method: "ASCMO ODCM Save"



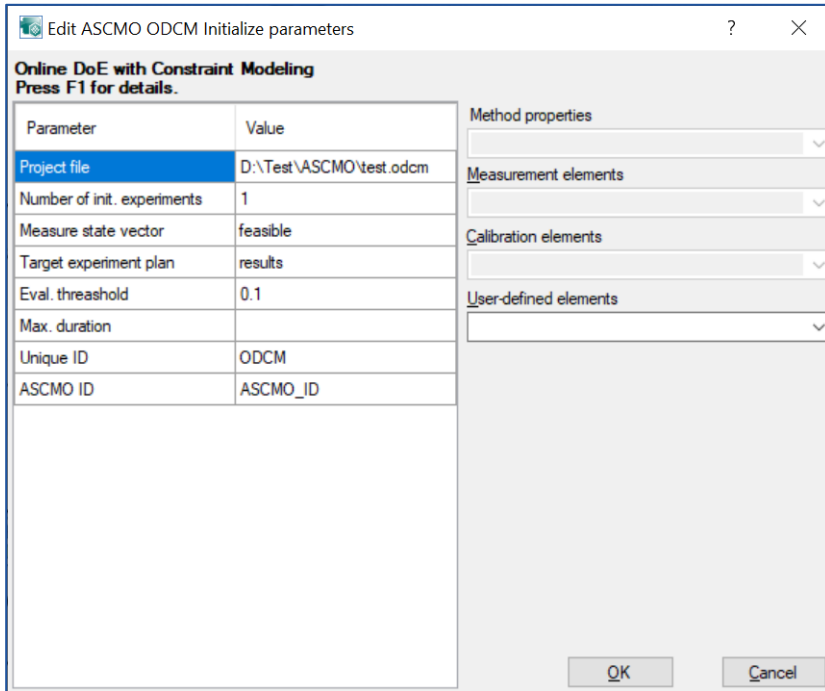
## Motivation

- Users want to start a DoE from the last executed point of the ODCM project. Therefore, a method is needed to save the current ODCM state.

## Solution

- Added a new testbench method "ASCMO ODCM Save" to save the current ODCM plan and progress as .odcm file via ASCMO API.
- Extended "ASCMO ODCM Initialize" to support loading of .odcm files to continue a previously saved ODCM plan.

## 2. Extension of testbench method: "ASCMO ODCM Initialize"



### Motivation

- Users want to start a DoE from the last executed point of the ODCM project. Therefore, "ASCMO ODCM Initialize" has to be extended, to allow loading of .odcm files for continuing a previously saved ODCM plan.

### Solution

- Extended "ASCMO ODCM Initialize" to support loading of .odcm files to continue a previously saved ODCM execution.

## 2. Extension of testbench method “Start load controller”

Start load controller parameters

Unique ID  
LOADCTRL

Load measurement: m\_load    Load setpoint: 5    Load PT1 filter factor: 1

WGA power stage logic: Transition within load range    TPS to WGA target (load): 98    WGA to TPS target (load): 102

Gradient controller    TPS controller    WGA controller

Active

TPS control element	KF1
TPS calibration strategy	Fill map / curve
TPS P gain	
TPS I gain	
TPS I lower limit	
TPS I upper limit	
TPS D gain	
TPS curve lookup	
TPS gradient limit	
TPS min.	0
TPS max.	100
TPS gain	1
TPS precontrol	0
TPS I-part element	

Logfile:  Browse...

Measurement elements:     Calibration elements: KF1    User-defined elements:

OK    Cancel

### Motivation

- The customer needs the possibility to define the calibration strategy for the control element in the load controller, because maps or curves can be used as calibration targets.

### Solution

- Added calibration strategy for TPS and WGA control elements

## 2. Extension of testbench method “Execute DoE plan”

Calibration element	Calibration strategy	Data vector	Time vector	Interval time (sec.)	Ramp type
tbSpeed	fill	targetSpeedVector		1	Discrete
tbLoad	fill	targetLoadVector	loadRampTimes	1	Ramp

Monitor name	Measurement element	Upper limit	Lower limit	Debounce time (ms)	Limit violation reaction
	tempOil	100	50	1000	abort

Logfile:

Measurement elements:  Calibration elements:  User-defined elements:

### Motivation

- The customer needs more flexibility with Execute DoE plan by being able to also use ramp or hold time vectors for calibration targets, like in ASCMO export.
- There should be a separate log file for the method to trace the calibration steps and not flooding the interpreter.log.

### Solution

- Added “Ramp type” selection to define the type of time vector, that is provided:
  - Discrete: time vector contains discrete calibration times (old behavior)
  - Ramp: time vector contains ramp times (= ASCMO Ramp Time)
  - Step: direct setting of calibration, time vector contains hold times (= ASCMO Hold Time)
- Added optional log file

## 2. Extension of testbench method "Approach to design point"

Approach to design point parameters

ID: MYAPPROACH

Approach type: Stepping

Steady time for each step (ms): 1000

Steady time for last step (ms): 5000

Max. number of reapproaches: 6

Calibration element	Calibration strategy	Start value	Max. step size (TO)	Max. step size (BACK)	Target design point	Target value type
c_targetRpm	fill	1000	500	1000	5000	Target value
	fill					

Monitor name	Measurement element	Upper limit	Lower limit	Debounce time (ms)	Latency (ms)	Limit violation reaction	Direct CP approach
	tempOil	100	0	500	3000	step back + 1/2 step	<input type="checkbox"/>
							<input type="checkbox"/>

Logfile:  Browse...

Measurement elements:  Calibration elements:  User-defined elements:

OK Cancel

### Motivation

- Customer want to address latency of monitored measurements to be taken into account by the methods limit fail reaction behavior.
- There should be a separate log file for the method to trace the calibration steps and not flooding the interpreter.log.

### Solution

- Added optional parameters 'Latency' for monitoring. The limit fail reactions are adjusted to detect the triggering step by using the latency information and to extend respective stabilization and debounce time by the latency.
- Added optional log file

### 3. VDT Improvements: Channel Conversion is displayed as a term

The screenshot shows the VDT software interface with the following details:

- Channel List:** A list of channels is shown, with 'Coming clutch pressure [Pa]' highlighted in blue. Its conversion formula is  $p\_clutch\_new * 10^{5/1000}$ .
- Metadata:** The metadata for the selected channel includes:
  - Name: p\_clutch\_new
  - Alias: Coming clutch pressure
  - Unit: Pa
  - Description: Pressure of coming clutch
- Conversion:** A red box highlights the 'Conversion' section, showing the formula  $*10^{5/1000}$ .
- Diagram:** A blue double-headed arrow points from the 'Conversion' formula field to the 'Coming clutch pressure [Pa]' entry in the channel list.

#### Motivation

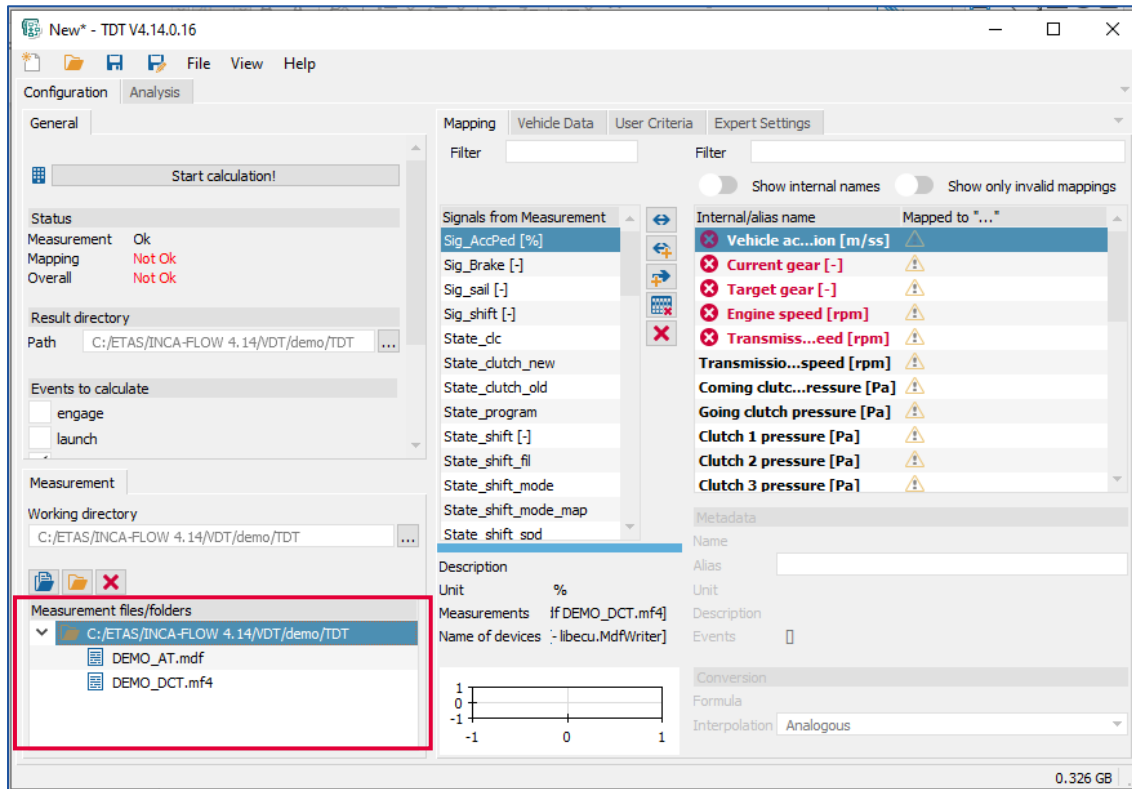
- The user cannot directly see if a channel mapping is connected to a conversion rule.

#### Solution

- The used conversion is displayed as a term in the mapping row.



### 3. VDT Improvements: Display information about imported files



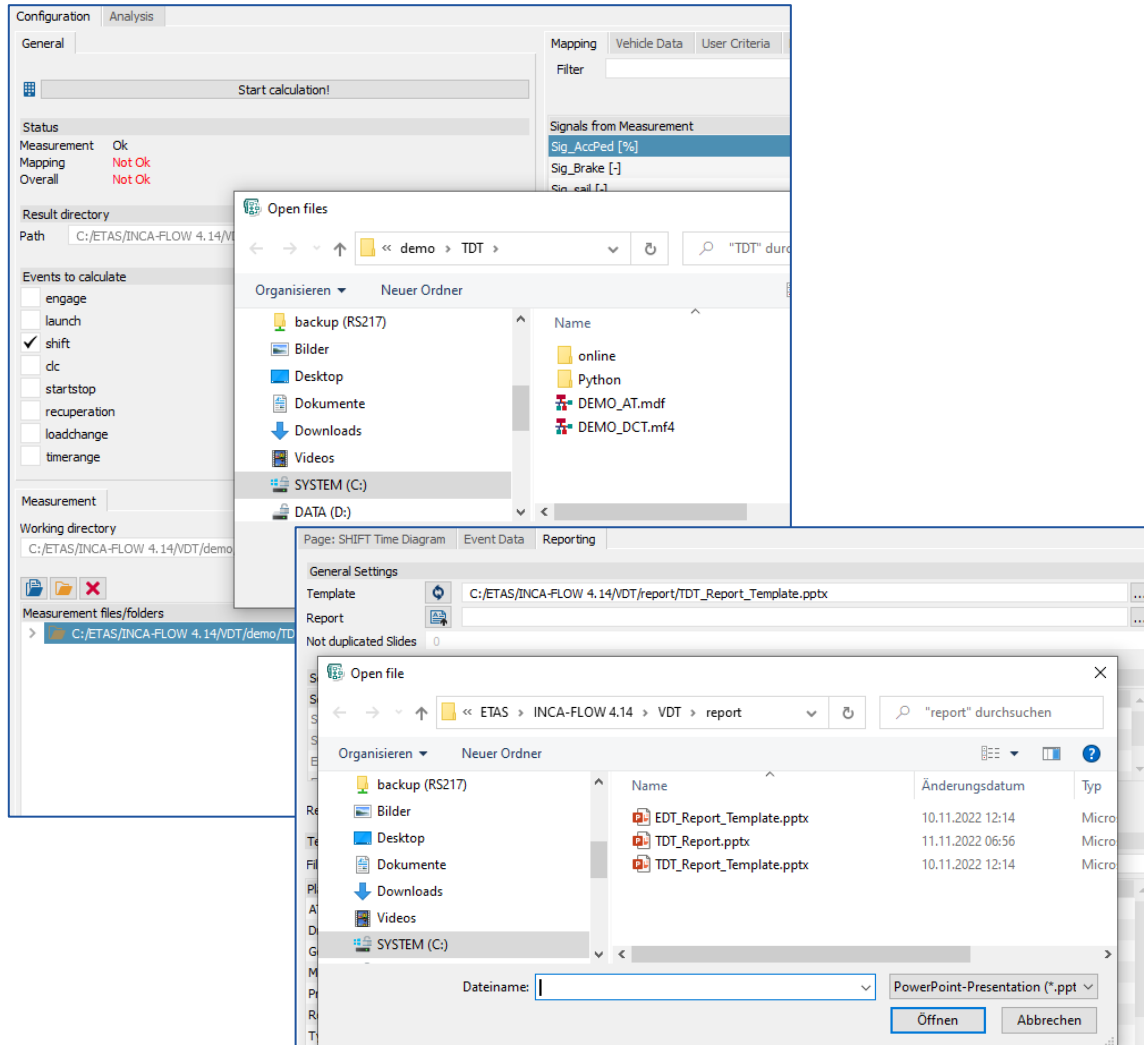
#### Motivation

- When using a folder import instead of single files, there is no information about the measurement files found in selected directory.

#### Solution

- A tree view was added to show all files which will be imported.

### 3. VDT Improvements: Defined folder structure at first start of VDT



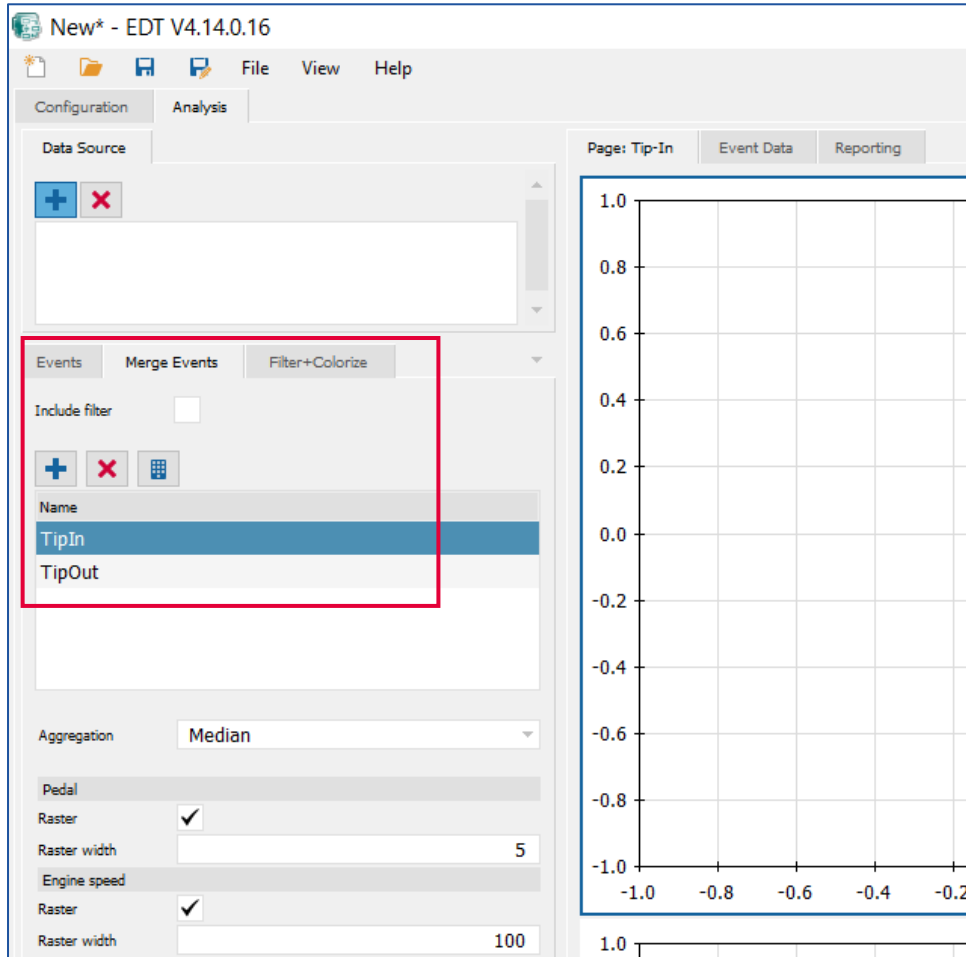
#### Motivation

- When using VDT for the first time, some dialogues appear (with Windows default behavior) in a location which might confuse the user
- Also there might be some INCA-FLOW version conflicts (i.e. dialogue opened in demo folder of previous INCA-FLOW version)

#### Solution

- For specific dialogues a standard location was implemented:
  - Configuration -> Demo-directory
  - Reporting -> Report-directory
- Also dialogue location is depending on context and version

### 3. VDT Improvements: Labeling of merge events



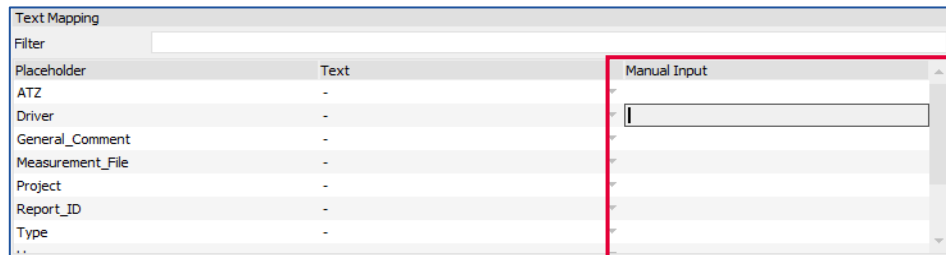
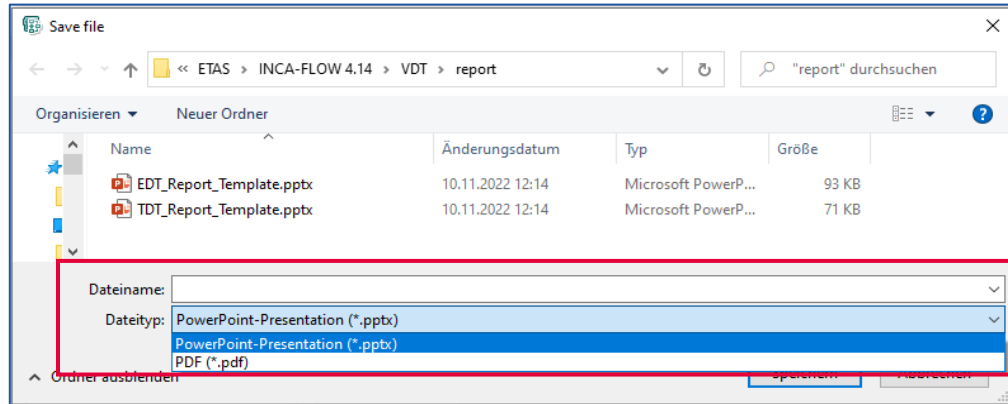
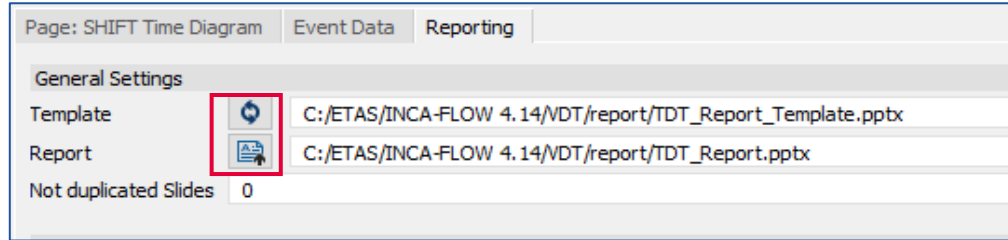
#### Motivation

- Merge events were just named "Merge Event 1, Merge Event 2..."
- The user was not able to name the merge events e.g. on topics

#### Solution

- Merge events can be labeled by the user
- By a double-click on the Merge Event, the user can edit the name

### 3. VDT Improvements: Report Generation with new icons, better output dialogue and further meta information



#### Motivation

- The icons in "General Settings"-tab of the report generator are not intuitive
- Report File-format is not displayed in the output dialog. Only \*.pptx or \*.pdf is displayed.
- Report information should be extended

#### Solution

- New buttons are more intuitive.
- More precise information about the output file type is added to the dialogue.
- Additionally a manual text input can be placed in the "Text Mapping" section.

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[https://www.etas.com/de/portfolio/inca\\_flow.php](https://www.etas.com/de/portfolio/inca_flow.php)

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