

Tutorial: Time Constraints for Materials in Line Flows

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Tutorial: Time Constraints for Materials in Line Flows

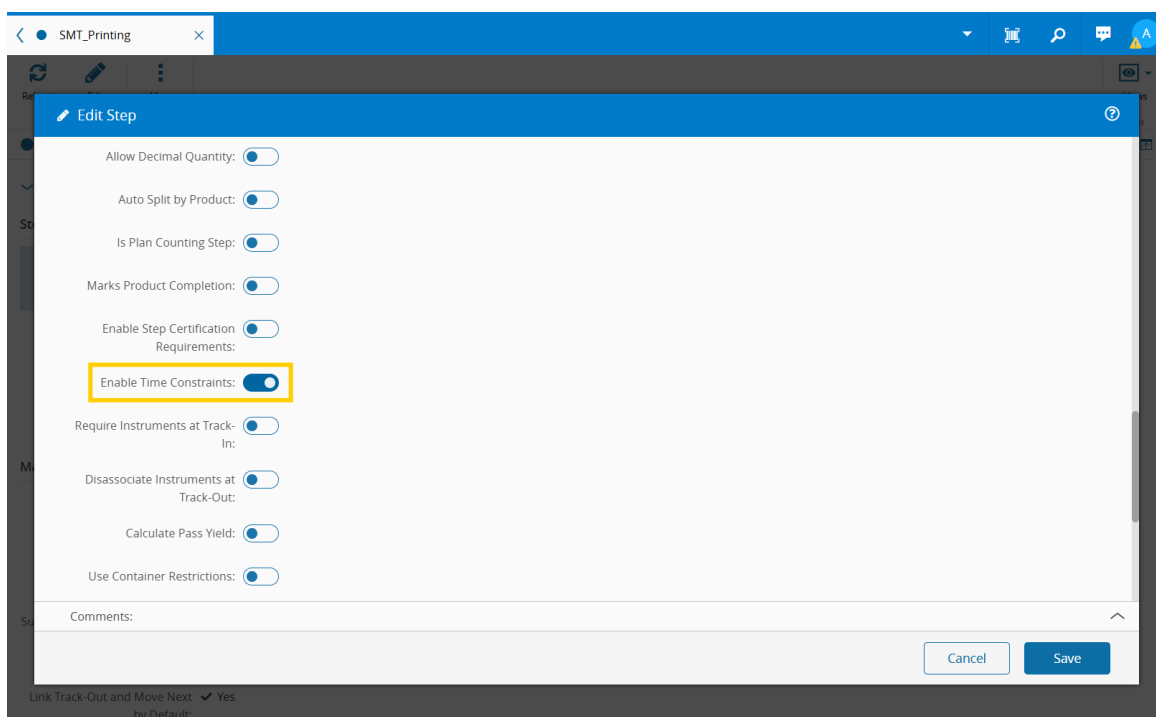
Estimated time to read: 3 minutes

Objective

Learn how to configure and validate time constraints between process steps to ensure materials are processed within defined time limits.

Step 1: Enable Time Constraints in Steps

- Open each step involved (source and target)
- Edit the step and **Enable Time Constraints**



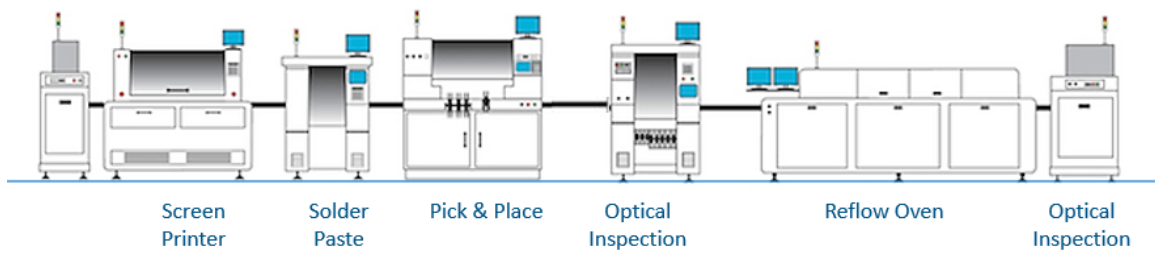
This must be enabled in both source and target steps.

Step 2: Define the Scenario

Example:

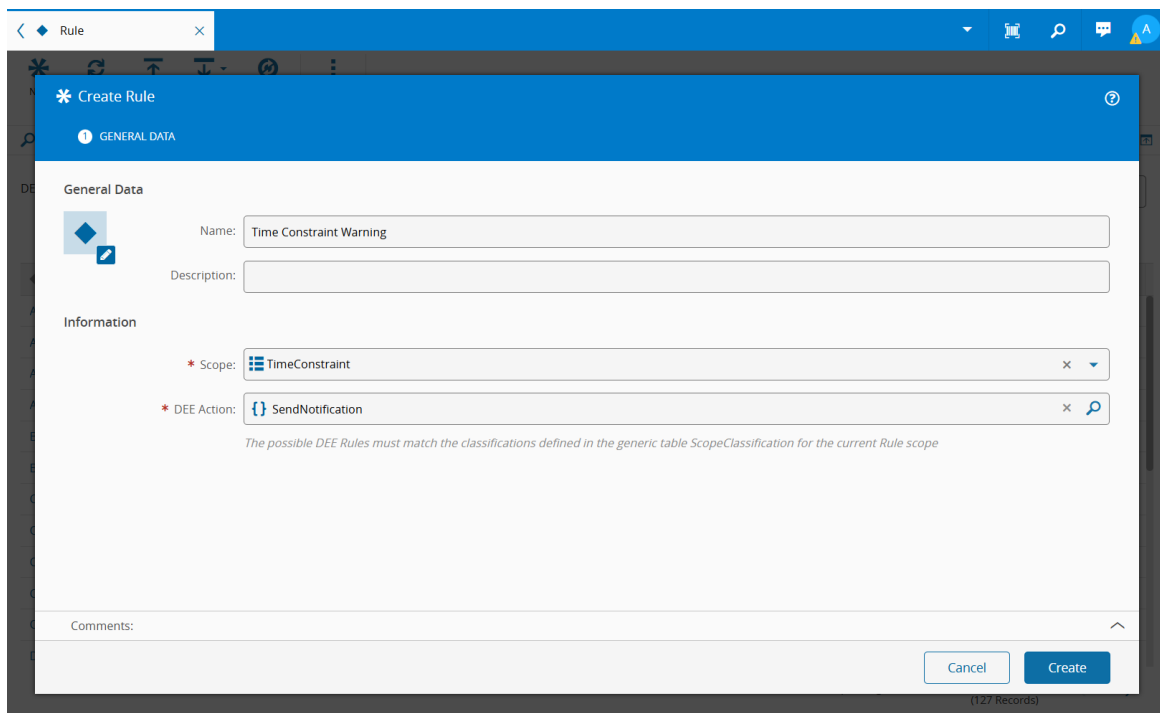
- Source Step: **SMT_Printing**
- Target Step: **SMT_Oven**
- Requirement:

- Maximum time = 30 minutes
- Warning at 25 minutes



Step 3: Configure Warning Rule (Optional)

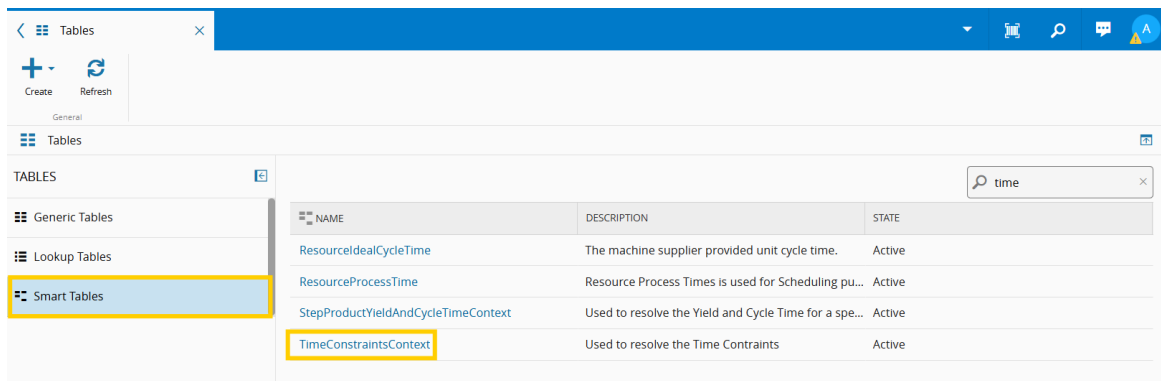
- Create a new rule with Scope **TimeConstraint**
- Define the desired action (e.g., notification to operators)



The screenshot shows the 'Create Rule' dialog box in the software interface. The dialog has a blue header with the title 'Create Rule' and a question mark icon. Below the header, there is a section titled 'GENERAL DATA' with a blue background. The 'General Data' section contains a 'Name' field with the value 'Time Constraint Warning' and a 'Description' field. Below this, there is an 'Information' section with a blue background. The 'Information' section contains a 'Scope' field with the value 'TimeConstraint' and a 'DEE Action' field with the value 'SendNotification'. Below the 'DEE Action' field, there is a note: 'The possible DEE Rules must match the classifications defined in the generic table ScopeClassification for the current Rule scope'. At the bottom of the dialog, there is a 'Comments' field and two buttons: 'Cancel' and 'Create'. The bottom right corner of the dialog shows '(127 Records)'.

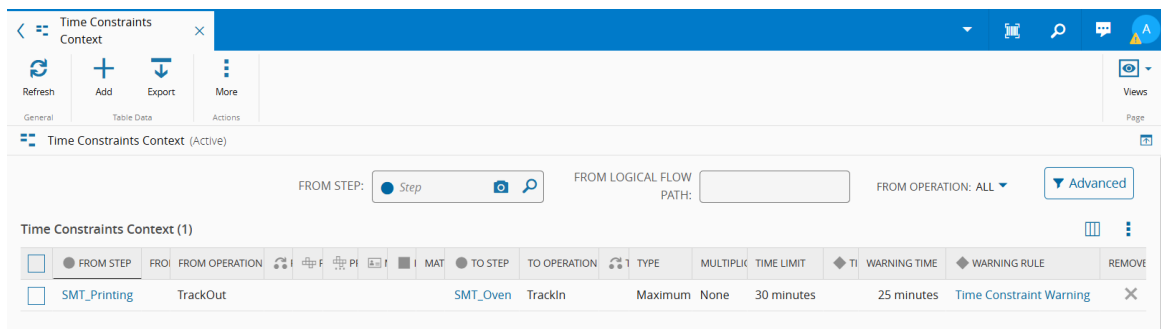
Step 4: Configure Time Constraint

- Navigate to **Administration > Tables** and open **TimeConstraintsContext**



NAME	DESCRIPTION	STATE
ResourceIdealCycleTime	The machine supplier provided unit cycle time.	Active
ResourceProcessTime	Resource Process Times is used for Scheduling pu...	Active
StepProductYieldAndCycleTimeContext	Used to resolve the Yield and Cycle Time for a spe...	Active
TimeConstraintsContext	Used to resolve the Time Constraints	Active

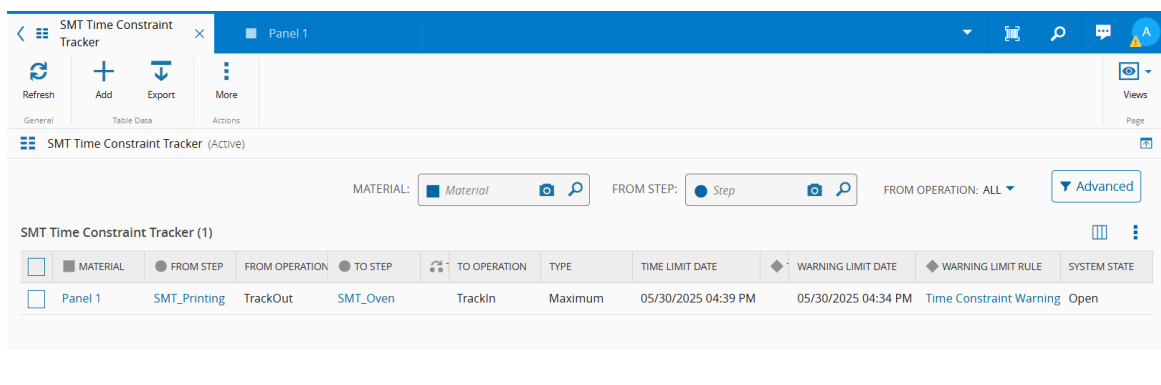
- Configure:
 - Source Step and Operation (e.g., TrackOut at SMT_Printing)
 - Target Step and Operation (e.g., TrackIn at SMT_Oven)
 - Maximum Time (30 minutes)
 - Warning Time (25 minutes)
 - Associated rules (optional)



FROM STEP	FROM OPERATION	TO STEP	TO OPERATION	TYPE	MULTIPLIER	TIME LIMIT	WARNING TIME	WARNING RULE	REMOVE
SMT_Printing	TrackOut	SMT_Oven	TrackIn	Maximum	None	30 minutes	25 minutes	Time Constraint Warning	X

Step 5: Execute Process

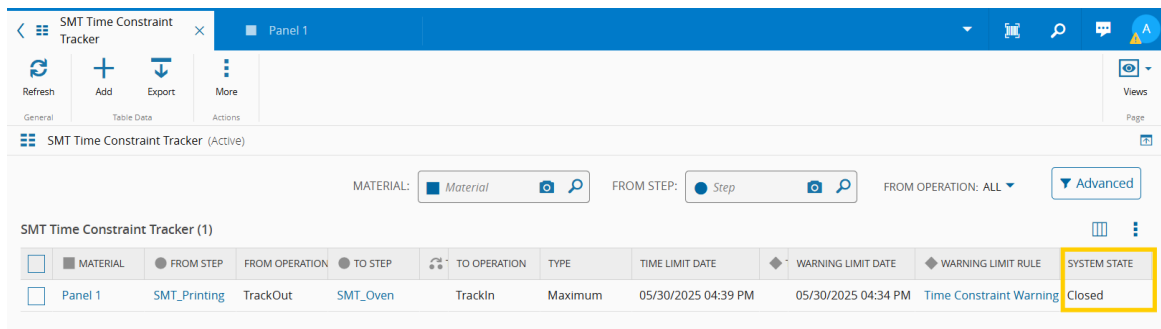
- Process a material through the source step (in this case, **SMT_Printing**)
- Perform the configured **From Operation** (TrackOut)
- A time constraint is created and tracked



MATERIAL	FROM STEP	FROM OPERATION	TO STEP	TO OPERATION	TYPE	TIME LIMIT DATE	WARNING LIMIT DATE	WARNING LIMIT RULE	SYSTEM STATE
Panel 1	SMT_Printing	TrackOut	SMT_Oven	TrackIn	Maximum	05/30/2025 04:39 PM	05/30/2025 04:34 PM	Time Constraint Warning	Open

Step 6: Validate Successful Scenario

- Move the material to the target step within the allowed time (in this case, **SMT_Oven**)
- Perform the **To Operation** (TrackIn)



The screenshot shows the 'SMT Time Constraint Tracker' window. At the top, there are tabs for 'General', 'Table Data', and 'Actions'. Below the tabs, there are filters for 'MATERIAL: Material', 'FROM STEP: Step', and 'FROM OPERATION: ALL'. A table titled 'SMT Time Constraint Tracker (1)' contains one row of data. The columns are: MATERIAL, FROM STEP, FROM OPERATION, TO STEP, TO OPERATION, TYPE, TIME LIMIT DATE, WARNING LIMIT DATE, WARNING LIMIT RULE, and SYSTEM STATE. The data row shows: Panel 1, SMT_Printing, TrackOut, SMT_Oven, TrackIn, Maximum, 05/30/2025 04:39 PM, 05/30/2025 04:34 PM, Time Constraint Warning, and Closed. The 'SYSTEM STATE' column is highlighted with a yellow box.

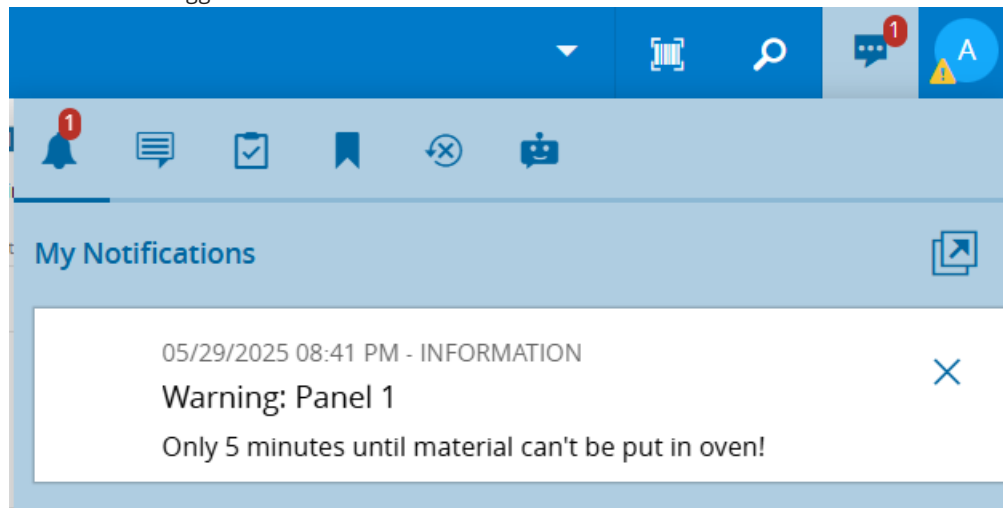
MATERIAL	FROM STEP	FROM OPERATION	TO STEP	TO OPERATION	TYPE	TIME LIMIT DATE	WARNING LIMIT DATE	WARNING LIMIT RULE	SYSTEM STATE
Panel 1	SMT_Printing	TrackOut	SMT_Oven	TrackIn	Maximum	05/30/2025 04:39 PM	05/30/2025 04:34 PM	Time Constraint Warning	Closed

Expected Result

- The constraint is satisfied
- Material proceeds normally
- Constraint is marked as **Closed**

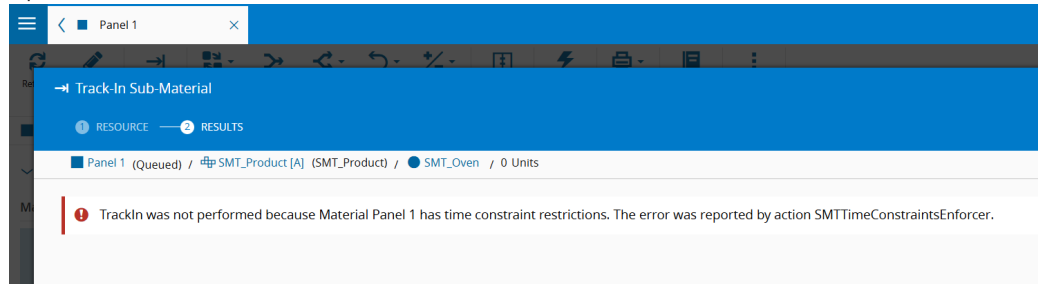
Step 7: Validate Delayed Scenario

- Delay the material before reaching the target step
- Observe:
 - At warning threshold:
 - Notification is triggered



- At maximum time exceeded:

- Operation is blocked



Expected Result

- Material cannot proceed
- Operator must take action:
 - Remove material from production
 - Or resolve constraint (if applicable)

Frequent Configuration Questions

Why is the constraint not being triggered?

Verify the following:

- The Smart Table configuration is correctly defined.
- The operation settings are configured for the intended event:
 - Track-In
 - Track-Out

Why am I not receiving a warning?

Ensure that:

- A warning rule is configured for the scenario.
- The user has an associated Employee record.

Why is the material not being blocked?

Check that the maximum allowed time is configured correctly and that the applicable rule is active.

Why am I experiencing performance issues?

Review the timer configuration and its execution frequency to ensure it is appropriate for the expected system load.



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