

# CRYSTAL XE

Release note

## Conditional recipes

(Available since Crystal XE version 1.06)

The screenshot displays the 'Main recipe editor [test.rcp]' window. The left pane shows a tree view of the recipe structure, including a conditional layer at 02:00:00:02.000. The central pane shows the configuration for this conditional layer, including a condition 'QueryYesNo('Do you want to execute this layer?')', a layer duration of 00:05:00.000, and a comment 'First layer (conditional)'. The right pane shows a visual representation of the recipe layers on a substrate, with the conditional layer highlighted in yellow. The bottom pane shows a detailed table of the recipe steps.

#	Layer	Description	Duration	Thickness	Material	1	2	3	4	5	6	7
01	00:00:00.000	Initialization	2 s									
02	00:00:02.000	First layer (conditional)	5 m			21			Auto		Auto	CLOSE
03	00:05:02.000	second layer (conditional)	30 s				3					
04	00:05:32.000	DO 2	Loop here		Mg							OPEN
01	00:06:02.000	Layer 1 in loop	5 s		Mg			600 (linear while layer time)				
02	00:06:07.000	Layer 2 in loop	6 s		Mg					700 (linear while layer time)		
		END LOOP										
09	00:06:24.000	End of recipe	30 s		Mg							

Date (jj/mm/yyyy)	Rev	Description
20/10/2017	1	Creation

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# 1 PREFACE

## 1.1 Audience

The Riber Crystal XE software is a very versatile and expandable environment for the control of MBE, CBE and similar growth systems but not only.

## 1.2 Documentation accessibility

This document and its latest version can be downloaded on the Crystal XE website at : <http://www.crystalxe.com> in the section My CrystalXE

You will need to create an account to access to My CrystalXE. A guide on how to do this is included on the Riber web site, and you will be requested to provide basic details. This account will be then activated by the Riber team. Once this administrative process has been completed, you will be able to access the relevant information, as shown in the figure below. Registering will also provide you with the option of being kept informed of developments and upgrades to the software, and to other Riber systems.

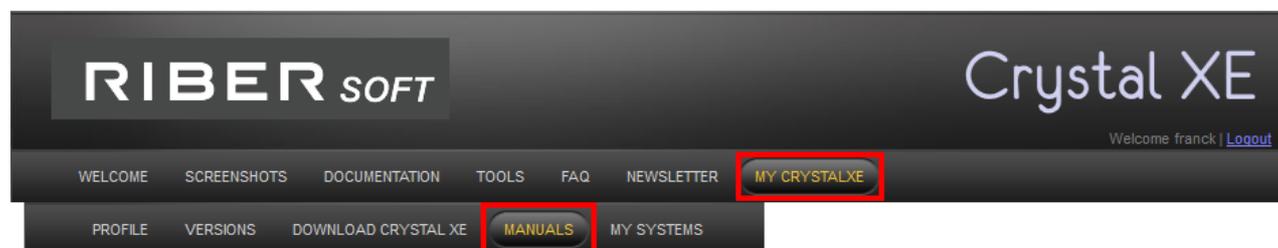


Figure 1: Access to the manual on the Riber Crystal XE website

## 1.3 Related documents

For more information, see the Crystal XE user manual which can be also downloaded at [www.crystalxe.com](http://www.crystalxe.com) in the section My CrystalXE.

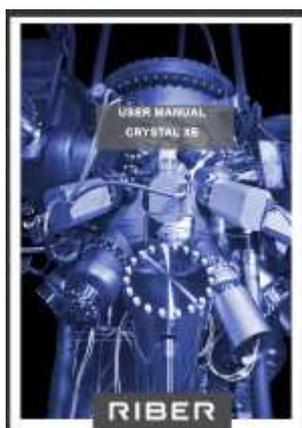


Figure 2: Crystal XE User Manual

## 2 Introduction

This release is intended for users who wish to write their own recipes by using the integrated recipe editor. The integrated recipe editor allows writing recipes without any knowledge in software programming.

The other solution is to use the Pascal scripts that offer all the possibilities of an advanced programming language.

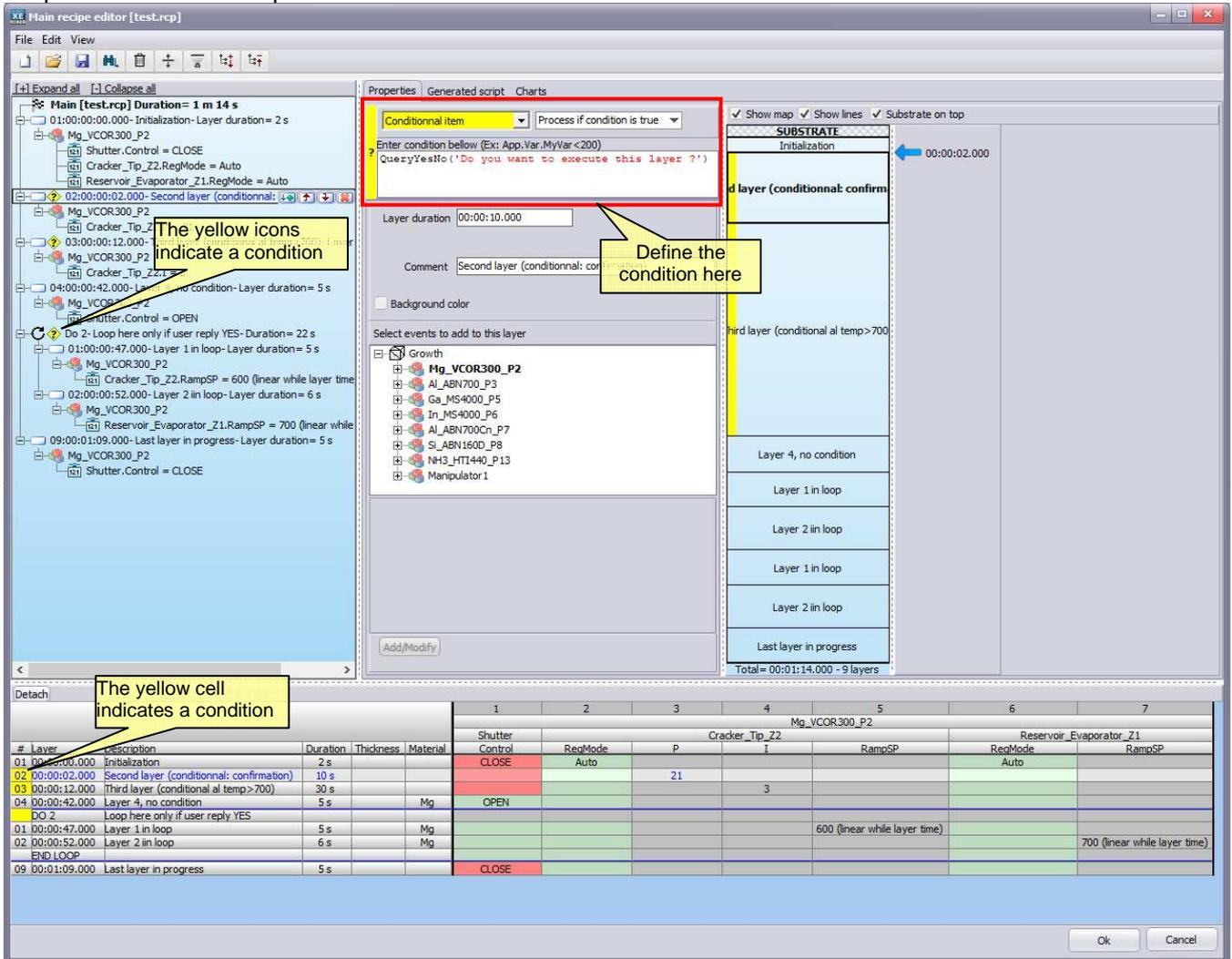
Since **Crystal XE version 1.06**, it is possible to create conditional recipes. In other words, it is possible to add a condition to execute or not execute a step. This condition can also be set to **wait for an event**.

The condition can be applied on

- **A layer**
- **A loop**
- **A pause**
- **A sub-recipe**

### 3 How to enter a conditional event

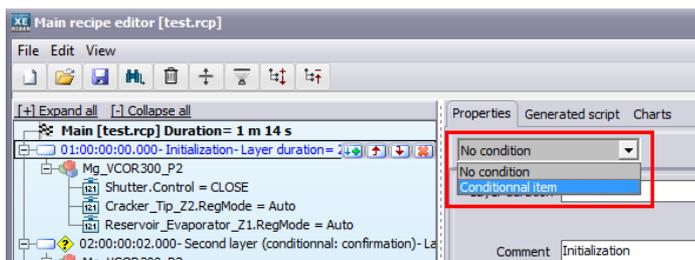
Example of conditional recipe:



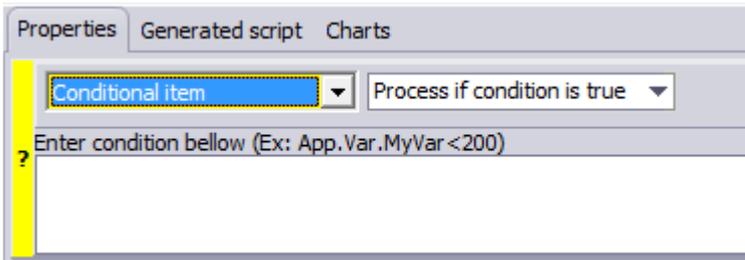
A conditional step (layer, loop, pause or sub-recipe) is identified by a yellow mark.

In the tree view, there is a yellow icon, in the grid with the first cell of the line is yellow and in the map view, a vertical yellow margin indicates that the step is a conditional layer.

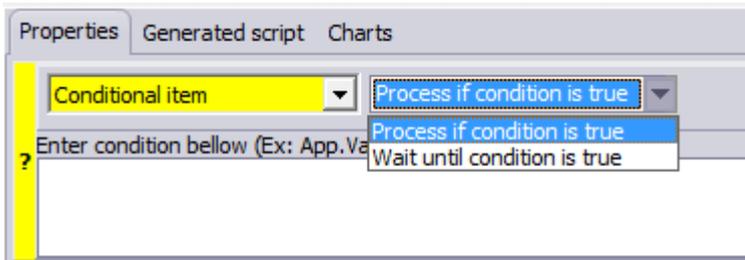
To define a new condition, click on a step and then select "Conditional item" in the combo box - see the red rectangle in the next picture:



When the conditional item is selected, the following options are available:



You can select either “Process if condition is true” or “Wait until condition is true”

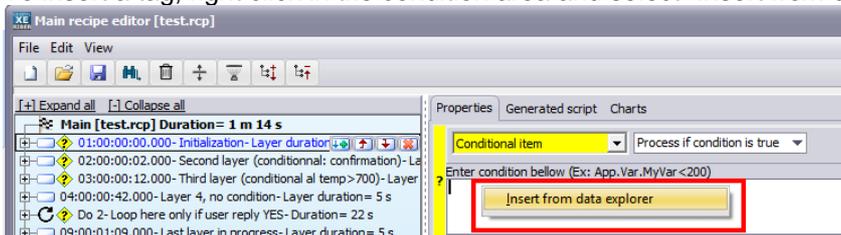


In the condition editor, you can enter any formula or condition that returns zero or a value other than zero. The condition will be **false** if the condition returns **zero**, otherwise the condition will be **true**.

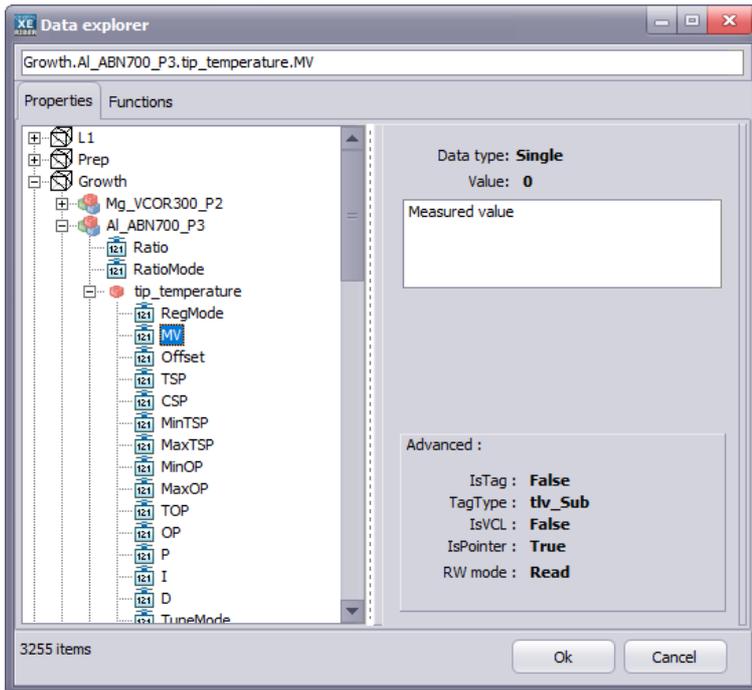
The following conditions are available:

- A simple comparison using standard comparison instructions used in Pascal (see pascal language in the user manual), example: “*GrowthPressure.pressure.MV<1E07*” (The sign “<>” can be used to test if the values are different.)

To insert a tag, right click in the condition area and select “Insert from data explorer”

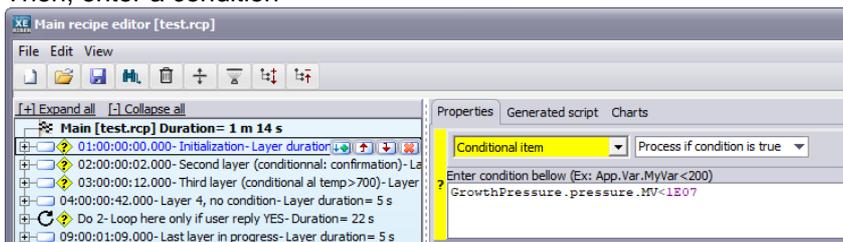


Select the tag in the data explorer

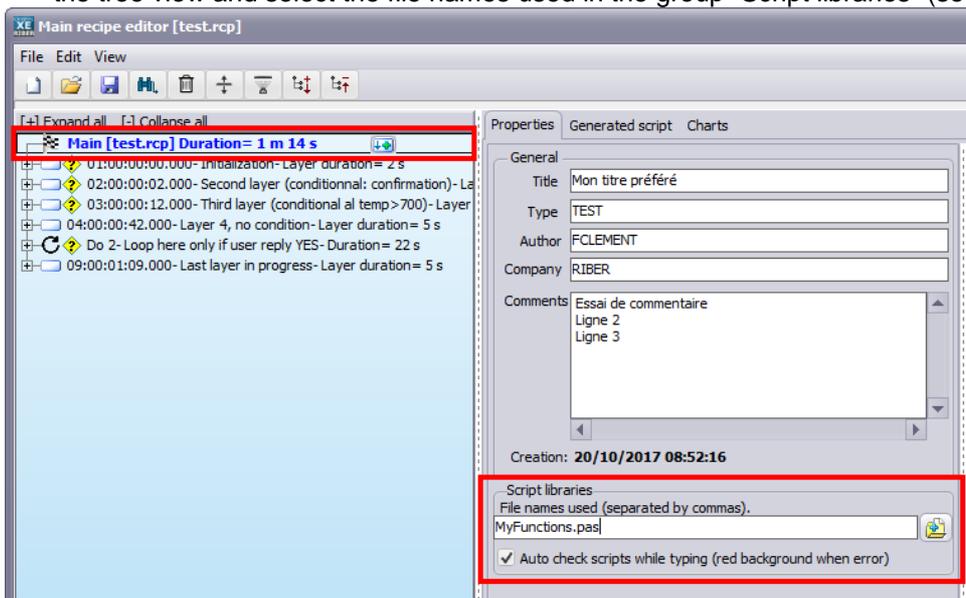


Press OK to insert the selected tag into the condition area.

Then, enter a condition



- You can use the result of a script function like “QueryYesNo(‘message’)”
- The result of a user defined function. In that case you must select the script file to use. Click in the main item of the tree view and select the file names used in the group “Script libraries” (see the screen copy bellow)



Then you can use all the functions that you have defined in the library.

## 4 Execute a condition recipe

When a condition is true, no change will be displayed in the recipe log.

When a condition is false, the following message will be displayed in the recipe log:  
“*Condition is false, step skipped (followed by the comment of the item)*”

Example of recipe log:

Layer	Date / Time	Description
0001	20/10/2017 11:30:36,491	Initialization
0002	20/10/2017 11:30:51,687	Second layer (conditionnal: confirmation)
	20/10/2017 11:31:01,687	Condition is false, step skipped (Third layer (conditional al temp>700))
0003	20/10/2017 11:31:01,687	Layer 4, no condition
	20/10/2017 11:31:10,394	Condition is false, loop skipped Loop here only if user reply YES
0004	20/10/2017 11:31:10,396	Last layer in progress
	20/10/2017 11:31:16,354	-----> Completed