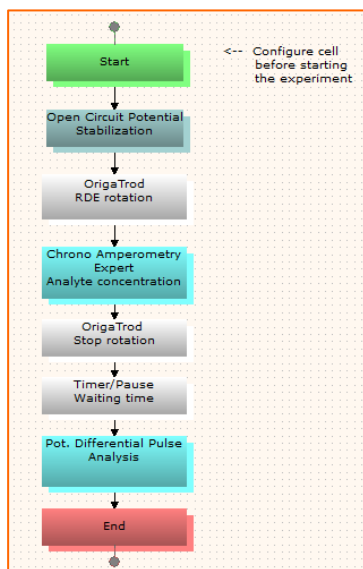# Application Note

Basics
AP-ORI05

Performing Multi-Methods in one Flowchart on OrigaMaster Software

In this application note defining a flowchart contains different methods is explained. This helps users to save time by clicking just on "Start" button and run different experiments and obtains different results through running one test.

Application Note

Introduction

There are many methods available on OrigaMaster software. After set up correctly the instrument before running a particular method, it is needed to define a flow chart to run an electrochemical test.

It is possible to define different or more than one electrochemical method in a flowchart. Then by clicking on the "Start" button in sequence ribbon of OrigaMaster software, all the tests will be run. So there is no need to perform tests separately.

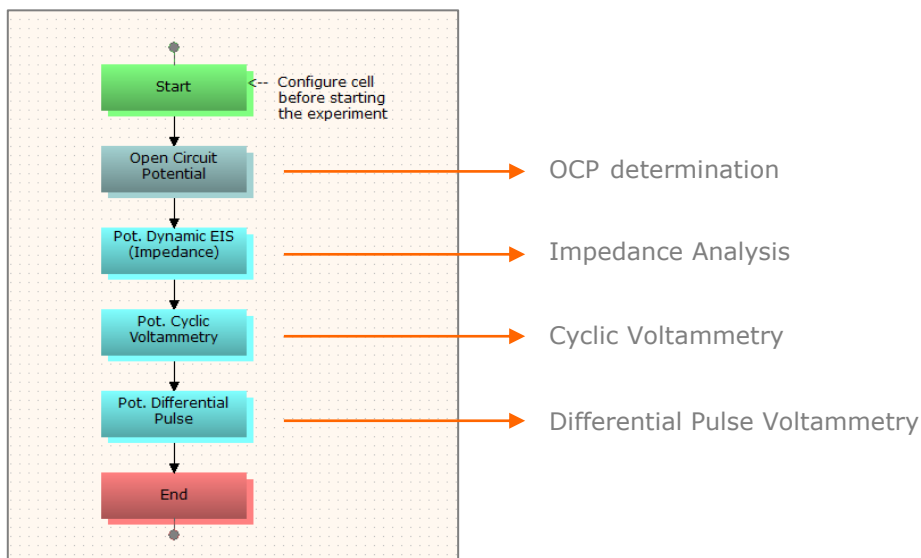Next pages show different flowcharts with different configurations.

Figure 1: Example of a flow chart with 4 different methods

TIPS: The Software proceeds as below:
-   First, it loads the 1st method, OCP in this case
-   Then it runs it.
-   All the other methods are in « stand-bye ». It means that it still possible to modify it while the 1st method is running.
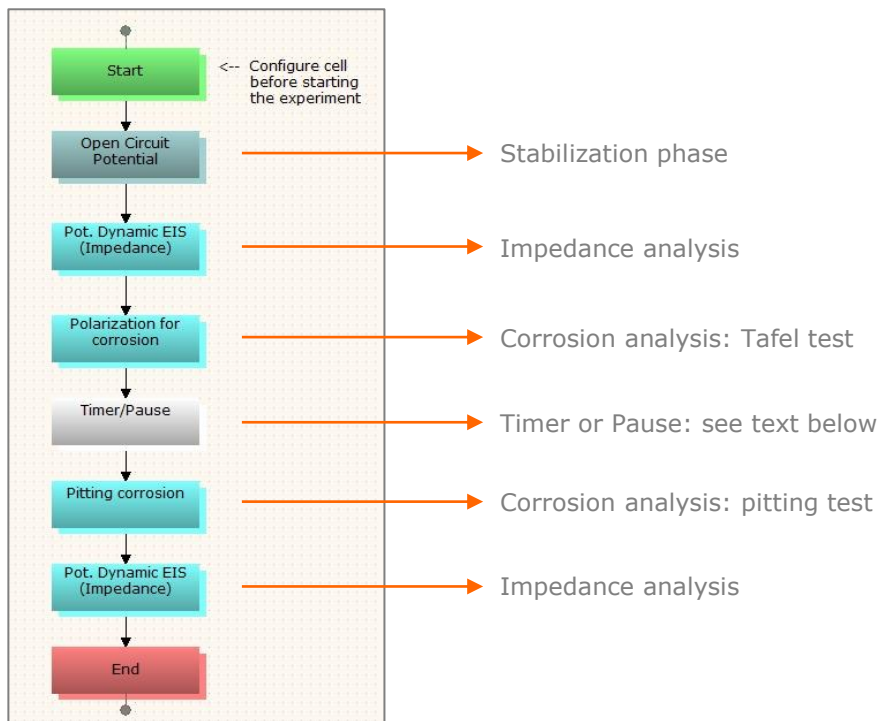
6 DIFFERENT METHOD CONFIGURATION

Figure 2: Example of a flow chart with 6 different methods

In this example, 6 methods about different analysis are performed here. One block is a Timer or a pause. It means that it can be set on a break during a period of time or it can be set on Hold until the user manually decides to go to the next methods (Pitting corrosion and EIS in this example). This tool allows you to change electrodes, polish the working electrode, change the electrolyte, change the sample, and so on.

TIPS: In Home tab, click on « Display curve after Exp. » if you want to display all the curves at the end of one experiment.
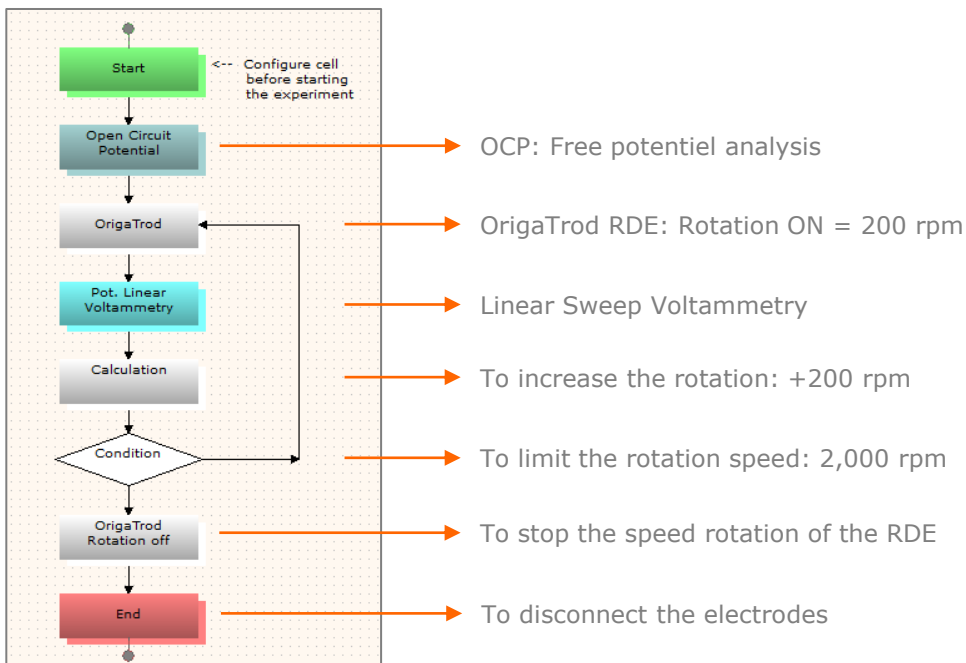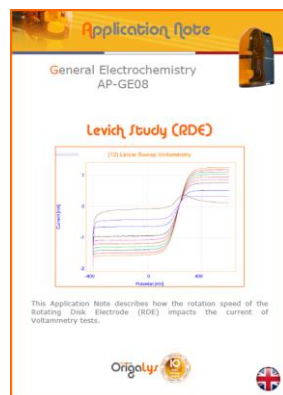
MANUAL LOOP CONFIGURATION

Start   <-- Configure cell before starting the experiment

Open Circuit Potential   → OCP: Free potentiel analysis

OrigaTrod   → OrigaTrod RDE: Rotation ON = 200 rpm

Pot. Linear Voltammetry   → Linear Sweep Voltammetry

Calculation   → To increase the rotation: +200 rpm

Condition   → To limit the rotation speed: 2,000 rpm

OrigaTrod Rotation off   → To stop the speed rotation of the RDE

End   → To disconnect the electrodes

Figure 3: Manual loops of Linear Voltammetry with OrigaTrod RDE

In this example, manual cycles of Linear Voltammetry method is performed. The calculation and the condition blocks are required to do so. The Calculation is the increase of the RDE speed rotation whereas the Condition is the maximum speed allowed. In this case, the condition is 2,000 rpm. When the software will reach this limit, it will perform the two last blocks: OrigaTrod (to stop the speed rotation) and the end (to disconnect the electrodes).

TIPS: To get more explanations about manual loops, please, review the Application note AP-GE08 about Levich Study.
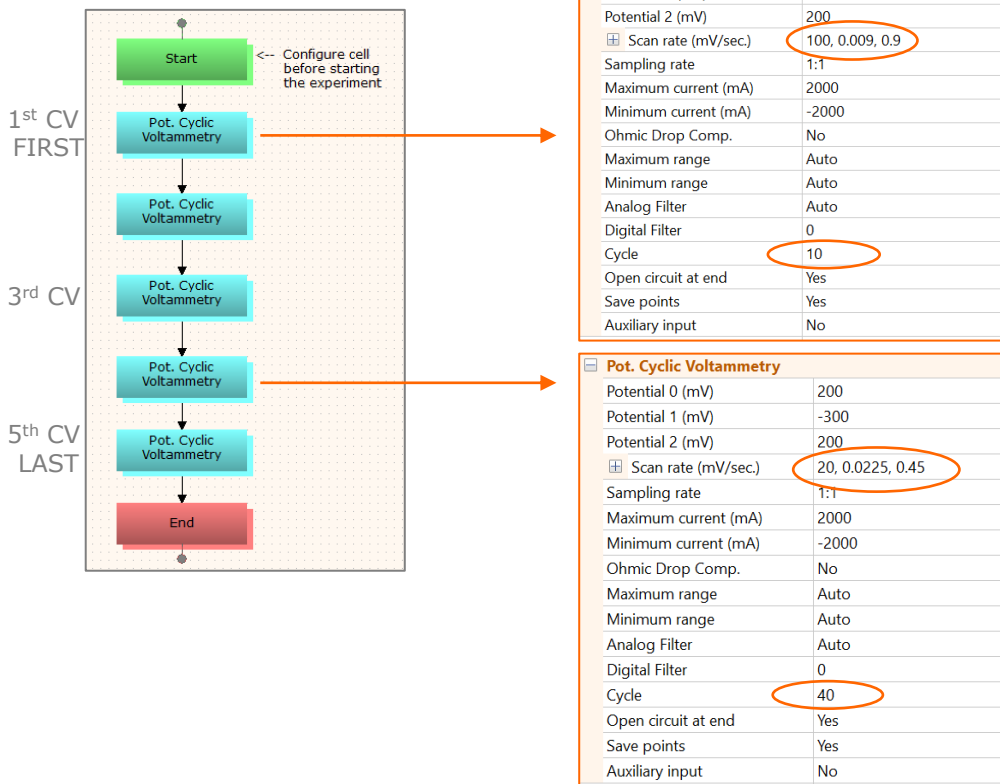
DIFFERENT PARAMETERS CONFIGURATION

1st CV FIRST

3rd CV

5th CV LAST

Pot. Cyclic Voltammetry	
Potential 0 (mV)	200
Potential 1 (mV)	-300
Potential 2 (mV)	200
⊞ Scan rate (mV/sec.)	100, 0.009, 0.9
Sampling rate	1:1
Maximum current (mA)	2000
Minimum current (mA)	-2000
Ohmic Drop Comp.	No
Maximum range	Auto
Minimum range	Auto
Analog Filter	Auto
Digital Filter	0
Cycle	10
Open circuit at end	Yes
Save points	Yes
Auxiliary input	No

Pot. Cyclic Voltammetry	
Potential 0 (mV)	200
Potential 1 (mV)	-300
Potential 2 (mV)	200
⊞ Scan rate (mV/sec.)	20, 0.0225, 0.45
Sampling rate	1:1
Maximum current (mA)	2000
Minimum current (mA)	-2000
Ohmic Drop Comp.	No
Maximum range	Auto
Minimum range	Auto
Analog Filter	Auto
Digital Filter	0
Cycle	40
Open circuit at end	Yes
Save points	Yes
Auxiliary input	No

Figure 4: Same methods but with different parameters

In this example, 5 cylic voltammetry methods are performed in a raw. Two options are possible:

- All the five CV can be strictly the same, with same parameters.
- All the five CV can be strictly different, with different parameters.

> **TIPS:** While running a method, the rest of the sequence can be changed. For instance, if the 2nd CV is running, it means that CV #3, CV #4 and CV #5 can be changed.
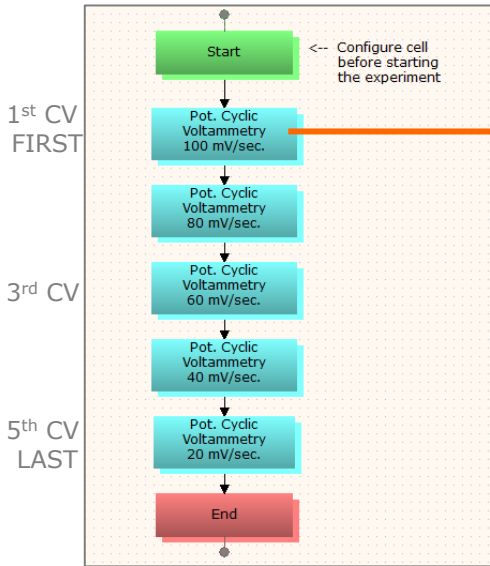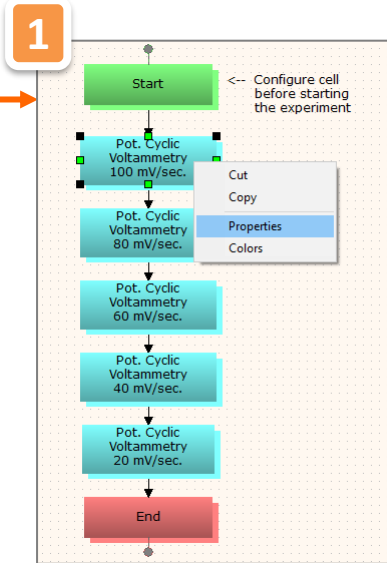
CUSTOMIZABLE CONFIGURATION

Figure 5: Same flowchart but with customized block name
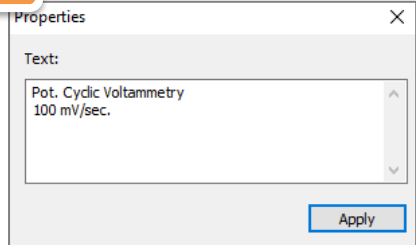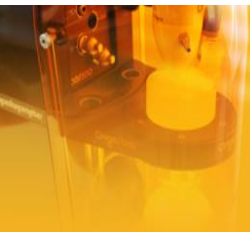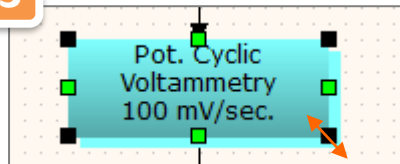
1

- ✓ Right click on one block
- ✓ Then click on Properties.

2

- ✓ Enter the text you want to add
- ✓ Then, click on Apply

3

- ✓ Resize the block to clearly display all the text if needed