

# 11 Lab Automation Service

## 11.1 Introduction

The **Automation service** is used for **Data exchange** between the **Anton Paar RheoCompass™** software and a **Customer software** in a **Lab Information Management System**.

Based on an **Order file** a project is automatically opened and executed. The **Automation result definition window** (2) is used to define the content of the **Result file** to be exported (3) for the **Customer software** waiting for the file.

The **RheoCompass automation service** has the following functions:

- Detect and manage **Order files** received from **Customer software**
- **Open** and **Close** projects defined in the order file
- Store **Result files** taken over by the **Customer software**
- **Handle** the **Status** of the currently running project

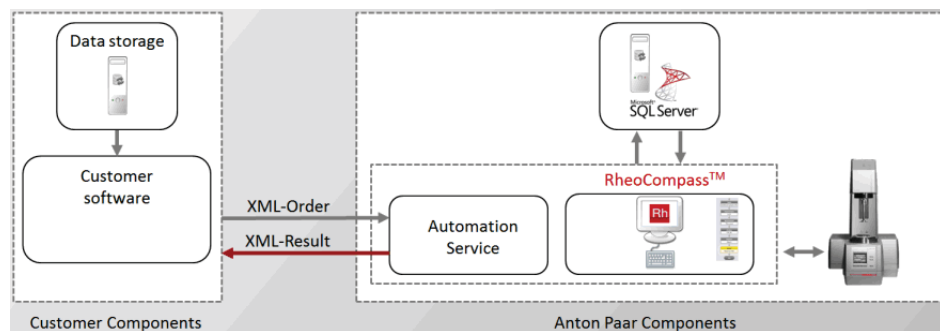


Fig. 11 - 1 The RheoCompass Automation Service.

### Order file:

XML-based **Order file** from a **Customer software** containing all information needed for the **Automation service** to **Start** a project. It contains the project name and some optional info such as additional sample information.

The format of the Order file is XML, UTF-8 based on the standard **ISO/IEC-10646**.

### Result file:

XML-based **Result file** for a **Customer software** provided by the **Automation service**. This is independent of results from projects and tests. The **XML result** file provided by RheoCompass contains the measuring result details defined within the **Automation result definition window** of the RheoCompass project file

The format of the Result file is XML, UTF-8 based on the standard **ISO/IEC-10646**.

## 11.2 Requirements

The software license feature **Lab Automation service** must be enabled by installing an appropriate license:

Licensed for: Anton Paar Germany GmbH (Rh12C5227 - 1.11.0.0)

License details: Lab automation service: **Enabled**

RheoCompass must be started using the **Command line parameter** 'OrderFileName=Name.xml'

whereas Name = any user-defined name such as Order.xml

## 11.3 Automated Backup

### 24 h Operation

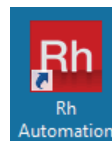
In automation mode with 24 h operation it is not advisable to use the RheoCompass built-in database backup for Microsoft SQL Server Express.

The Express Edition can only perform error-free backup if no project is in use. The backup should be disabled in **Rh, Options, Backup**. Use an SQL Server maintenance plan instead or an external database-backup software.

### 8 h Operation

The automated backup can stay activated if RheoCompass is not in use between 2:30 am and 3:30 am. Also, after loading RheoCompass in the morning, allow 10 min for any backup tasks to be completed that may be pending.

## 11.4 Working with the Automation

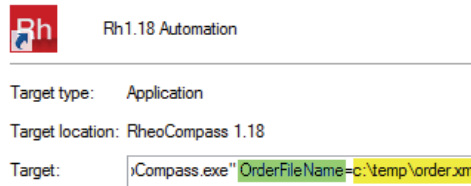


### 11.4.1 Starting with Command Line

**How to Start RheoCompass with an Icon Containing the Command-Line Parameter:**

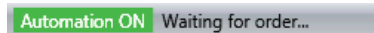
1. To prepare the shortcut, right-mouse-click the icon, then click **Properties** and tab <**Shortcut**>

2. Next add the command line;  
e.g., "C:\Program Files\Anton Paar\RheoCompass 1.18\RheoCompass.exe"  
**OrderFileName=C:\Temp\Automation\name.xml**



### 11.4.2 Status

Once started in **Automation mode** the **Status bar** of RheoCompass™ indicates that the software is in **Automation mode** and **'Waiting for order...'**



### 11.4.3 Project Name or Identifier in Order File

Once the automation file has been found in the directory defined in the command line parameter, the project is opened and executed. The name defined in the order file can be of the following types:

- **Project Template** identified by the **ID**:<TemplateId>59afe0c6-4718-45f2-9e3c-11dcf6e4c2bc</TemplateId>
- **Project Template** identified by the **Name**:<TemplateName>Automation Template</TemplateName>
- **Project** identified by the **ID**:<ProjectId>a82615a1-a665-42c1-af2b-41e5b666cf5b</ProjectId>
- **Project** identified by the **Name**:<ProjectName>Automation Project</ProjectName>

If a **Project template** is opened, a new project is created from the project template with the **Default name** defined in the **Properties** of the project template.

### 11.4.4 Execution of Project and Creation of Result

The project is opened and the default test definition is executed.

Based on the **Automation result definition window** a result file is created and stored in the pre-defined path.

The order file is removed. Next, the project is closed and saved with the new test

## 11.5 Project Automation

For project automation some additional features are available in RheoCompass™.

### 11.5.1 Auto-Start and Auto-Close

Start the test definition automatically when opening a project, and close it with the action **End**.

How to set the **Auto-Start** and **Auto-Close** in the **Order file**:

1. AutoStartTestDefinition:Automatically open the project and go to the **Start** dialog in the default **Test definition**; value = true or false
2. AutoCloseProject:Automatically close the project after test execution of the default **Test definition**; value = true or false
3. ConfirmProject: A popup dialog for confirmation is shown while closing; value = true or false

Example:

```
<AutoStartTestDefinition>>false</AutoStartTestDefinition>
```

```
<AutoCloseProject>>true</AutoCloseProject>
```

```
<ConfirmProject>>true</ConfirmProject>
```

Instead of defining the Auto-Start and Auto-Close in the Order file it can also be defined using the **Properties** of the **Project template**.

To add the automation feature **Edit** the project or project template in the **RheoFinder**

and change the settings in **Details, Automation**.

### 11.5.2 Input data

The **Order file** is optionally used to transfer **Additional input** values from the customer software to RheoCompass™.

The additional inputs are displayed in the default test definition in the action Start.

Examples for additional input are BatchNo, Comment and Customer. For further information see the Automation order scheme provided with the installation of RheoCompass™.

The items are listed below the 'Start input collection'.

### 11.5.3 Automation Result Definition Window

The **Automation result definition** is a **Window** type used to define the results stored in the **Result file**.

Automation results are stored in a **Result file** of type **XML** using the action **Export**.

Click the **Ribbon Window, New automation result definition** to add a new window to the project or project template

Use the **Ribbon Automation** to **Insert, Move** or **Delete** elements in the Automation result definition.

A result element consists of a user defined **Label** and a **Data type**.

Label	Data, Data Value
Name, project	Project name
Name, creator	Project info   Created by
Name, sample	Test details   Sample <Next test>
Viscosity, 1st point	Value <Next test>   Interval 1   Data point 1 Viscosity eta   [mPa-s]   Standard   5 valid digits
Viscosity, last poi...	Value <Next test>   Interval 1   Last data point Viscosity eta   [mPa-s]   Standard   5 valid digits

Click the **Ribbon Window, Save as template** to save the currently selected **Automation result definition** as a template.

Open the RheoFinder category **Automation result definition templates** and click the **Ribbon** function **Home, Export, Export selected item** to **Export** the template and store it as a file. The file extension is **\*.RhTau**.

### 11.5.4 Creating the Result File

How to define and create the Result file:

1. Make sure a **Result definition window** is persistent in the project or project template
2. Add an Action **Export** to the **Default test definition**
3. Select the export type **Automation result** with format **XML** and the **Result definition window** in the **Details pane** of the **Action Export**

The Result file is stored automatically during the next test execution.

### 11.5.5 Advanced Functions of the Order File

For advanced functions of the order file have a look at the **Automation order scheme** provided with the installation of RheoCompass™.

## 11.6 Automation States

The **Automation status** of RheoCompass is shown in the status line of RheoCompass.

It is started with the Lab automation service license feature and the command line parameter.

The visualization uses 2 elements:

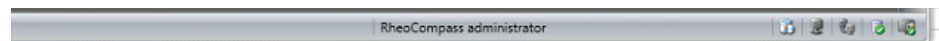
- a signal element showing the general automation state
- a status text element showing detailed status texts

Both elements are right-aligned to the existing status bar elements:

**The following automation states are applicable:**

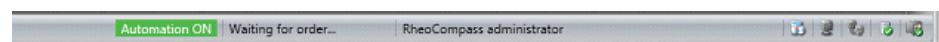
#### 1. Automation Off

No <Automation service> is started.



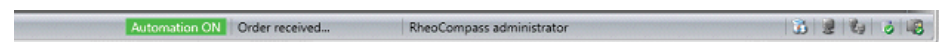
#### 2. Automation ON, waiting for order

<Automation Service> scanning for any incoming orders.



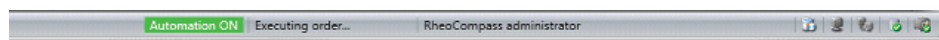
#### 3. Automation ON, order received

Order received, syntax of order checked. With the information contained therein, a new project is created, or an existing project is opened. An error message appears if the syntax is incorrect.



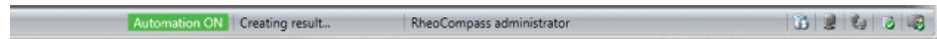
#### 4. Automation ON, executing order

A project has been correctly created and started. The <Project Service> calls the method "BeginProject()" and can now start the test definition (automatically or manually).

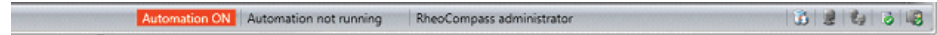


#### 5. Automation ON, creating result

Once the result file has been created, the automation task is finished.

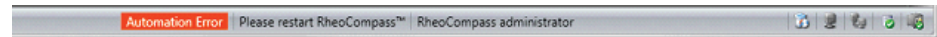


#### 6. Automation ON, order mechanism stopped or not started



#### 7. Automation error, Error state

The Automation service has stopped accepting orders. A log entry is created with the error code.



## 11.7 Exporting Project Templates as Template Packages

This function enables sharing of **User-defined project templates**. Create your own template package and share it with any subsidiary or department of your company.

- Click **RheoFinder, More, Create template package** to start creating a new template package.
- Click **RheoFinder, More, Import template package** to start importing a template package created by a user.

Requirement: The shortcut is only visible to users with the role **RheoCompass administrator**.