

Memorandum of Understanding  
19071/05/NL/CP



**Departament d'Enginyeria Química**  
Escola Tècnica Superior d'Enginyeria  
Universitat Autònoma de Barcelona  
Tel.: 93.581.10.18 Fax: 93.581.20.13  
08193 Bellaterra Spain

**TECHNICAL NOTE: 66.52**

**TECHNICAL DATABASE OF MELISSA**

---

prepared by/ <i>préparé par</i>	J.L. Testud, J. Albiol, J. Perez
reference/ <i>référence</i>	CCN5 to contract 13292/98/NL/MV
issue/ <i>édition</i>	1
revision/ <i>révision</i>	0
date of issue/ <i>date d'édition</i>	30/01/2006
status/ <i>état</i>	Final
Document type/ <i>type de document</i>	Technical Note
Distribution/ <i>distribution</i>	MELISSA all

---

**C O N F I D E N T I A L    D O C U M E N T**

## A P P R O V A L

Title <i>titre</i>	Technical Database of MELISSA	issue <i>issue</i>	1	revision <i>revision</i>	0
-----------------------	-------------------------------	-----------------------	---	-----------------------------	---

author <i>auteur</i>	J.L. Testud, J. Albiol, J. Perez	date <i>date</i>	30/01/2006
-------------------------	----------------------------------	---------------------	------------

approved by <i>approuvé by</i>	F. Gòdia	date <i>date</i>	30/01/2006
-----------------------------------	----------	---------------------	------------

## C H A N G E L O G

reason for change / <i>raison du changement</i>	issue/ <i>issue</i>	revision/ <i>revision</i>	date/ <i>date</i>

## C H A N G E R E C O R D

Issue: 1 Revision: 0

reason for change/ <i>raison du changement</i>	page(s)/ <i>page(s)</i>	paragraph(s)/ <i>paragraph(s)</i>

## T A B L E O F C O N T E N T S

<b>1. Additional Information</b> .....	<b>6</b>
<b>2. Requirements</b> .....	<b>7</b>
<b>Requirements definition</b> .....	<b>7</b>
<b>3. MELISSA loop at UAB</b> .....	<b>8</b>
<b>Pilot plant configuration in January 2003 at UAB</b> .....	<b>8</b>
<b>Pilot plant configuration in June 2004 at UAB</b> .....	<b>9</b>
<b>4. Organisation of the Visio database</b> .....	<b>9</b>
<b>Structure</b> .....	<b>9</b>
<b>System opportunities</b> .....	<b>10</b>
Graphic .....	10
Reporting.....	10
<b>5. Pilot Plant Inventory</b> .....	<b>10</b>
<b>ESTEC Inventory June 2004</b> .....	<b>11</b>
Origin .....	11
Structure .....	11
Suggestion to complete the ESTEC Inventory June 2004 .....	12
Abstract of supplier's documentation .....	12
<b>6. User's guide</b> .....	<b>12</b>
<b>Preparation</b> .....	<b>13</b>
Set Up of Visio software .....	13
Loading Visio Files .....	13
<b>Getting started</b> .....	<b>13</b>
Use of the application .....	13
<b>7. Equipment list</b> .....	<b>17</b>
<b>Equipment of CI</b> .....	<b>17</b>
<b>Equipment of CII</b> .....	<b>17</b>
<b>Equipment of CIII</b> .....	<b>17</b>
<b>Equipment of CIVa</b> .....	<b>18</b>
Filter .....	20
Analyser .....	23

Mass Flowmeter .....	24
Pumps .....	26
Valves.....	28
Balance.....	29
Local Controller .....	30
Ph Sensor.....	31
Manometer .....	32
Cooler.....	33
Steam Generator.....	33
Buffer .....	33
Rotameter .....	34
Graphical symbols of equipments.....	35
<b>Equipment of CIVb.....</b>	<b>35</b>
<b>Equipment of CV .....</b>	<b>35</b>
<b>8. <i>Technical documentation file</i>.....</b>	<b>36</b>
<b>Introduction.....</b>	<b>36</b>
<b>Organisation .....</b>	<b>36</b>
<b>Sources .....</b>	<b>36</b>
<b>Description of the content .....</b>	<b>37</b>
Parameters .....	37
Processes .....	38
<b>9. <i>Maintenance documentation file</i>.....</b>	<b>38</b>
<b>Introduction.....</b>	<b>38</b>
<b>Organisation .....</b>	<b>38</b>
<b>Sources .....</b>	<b>38</b>
<b>Description of the content .....</b>	<b>38</b>
Parameters .....	39
Review of the events affecting the equipments .....	39
<b>10. <i>access to visio files of CIII and CIV</i>.....</b>	<b>39</b>
<b>Compartment III.....</b>	<b>39</b>
CIII with sensors .....	40
CIII with sensors and actuators .....	41
CIII control levels .....	42
CIII photograph report .....	42
<b>Compartment CIVa.....</b>	<b>43</b>
CIVa with sensors .....	44



CIVa with sensors and actuators .....	45
CIVa photograph report .....	53
<b>11. Action List summary .....</b>	<b>54</b>

## 1. Additional Information

### Contacts

*In charge of Pilot plant at UAB,*  
*Joan ALBIOL for CII and CIVa (UAB)*  
*Julio PEREZ for CIII (UAB)*

*In charge of software aspects*  
*Jean-Louis TESTUD (consultant)*  
*4 rue Charles FOURIER*  
*75013 PARIS - FRANCE*  
*Phone : (33) 1 45 81 68 92*  
*Mob : (33) 6 26 17 36 39*  
*Email : jean-louis.testud@wanadoo.fr*

### Data sources

- TN 62-8\_0 VA.doc
- MELISSA\_060203\_ADERSA.vsd

### Reference documents

#### ESA Documents:

1. Study of MELISSA control system architecture trade off. MELISSA technical note TN72.3 (Draft). ESTEC/CONTRACT15671/01/NL/ND.
2. Control System Demonstrator Software Design Document. MELISSA technical note. TN72.4 Vol Iib (Draft). ESTEC/CONTRACT15671/01/NL/ND.
3. Control System Demonstrator Functional Test Results and Evaluation. MELISSA technical note. TN72.4 Vol IV (Draft). ESTEC/CONTRACT15671/01/NL/ND.TN
4. Definition of the control requirements for the MELISSA loop. MELISSA technical note TN72.2 (Draft). ESTEC/CONTRACT15671/01/NL/ND.
5. Technical database of MELISSA. TN66.51 (Draft).

#### UAB internal Documents:

6. ESTEC-Inventory.xls
7. Inventory MELISSA.xls
8. Taula\_io.doc

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

## 2. Requirements

### Requirements definition

The aims of this technical note are:

- To propose a temporary [See Note 1] organisation for the technical database's structure in order to collect technical information.
- To provide the relevant information in order to offer technical solutions for the design of MELISSA's Technical Data Base.
- To apply this organisation to Compartment CIII and CIVa
- To ensure the information access feasibility
- To test the availability of the parameter values from the technical suppliers
- To create a homogeneous and standard database (for technical and maintenance documents) and to verify it by testing.
- To simplify or facilitate the tracking of the pilot's experimentations.
- To simplify or facilitate the tracking of the pilot's technical evolution.
- To industrialise the tracking process
- To insure the safe transmission of the collected information to existing and future MELISSA project partners
- To start the completion of the database with UAB's available information at the TN writing date. To collect all information regarding the existing equipment.
- To prepare data transmission to an industrial relationship database software [See Note 1]
- To define and to specify the next actions that need to be done for the Technical Database

*Note 1:*

*The software tools required at this study level in order to complete the technical designs and collect the data relative to the pilot's equipment are Microsoft VISIO, Microsoft EXCEL and Microsoft WORD)*

*If needed the data can be exported with no loss to more specific software for example to database software such as Oracle or equivalent.*

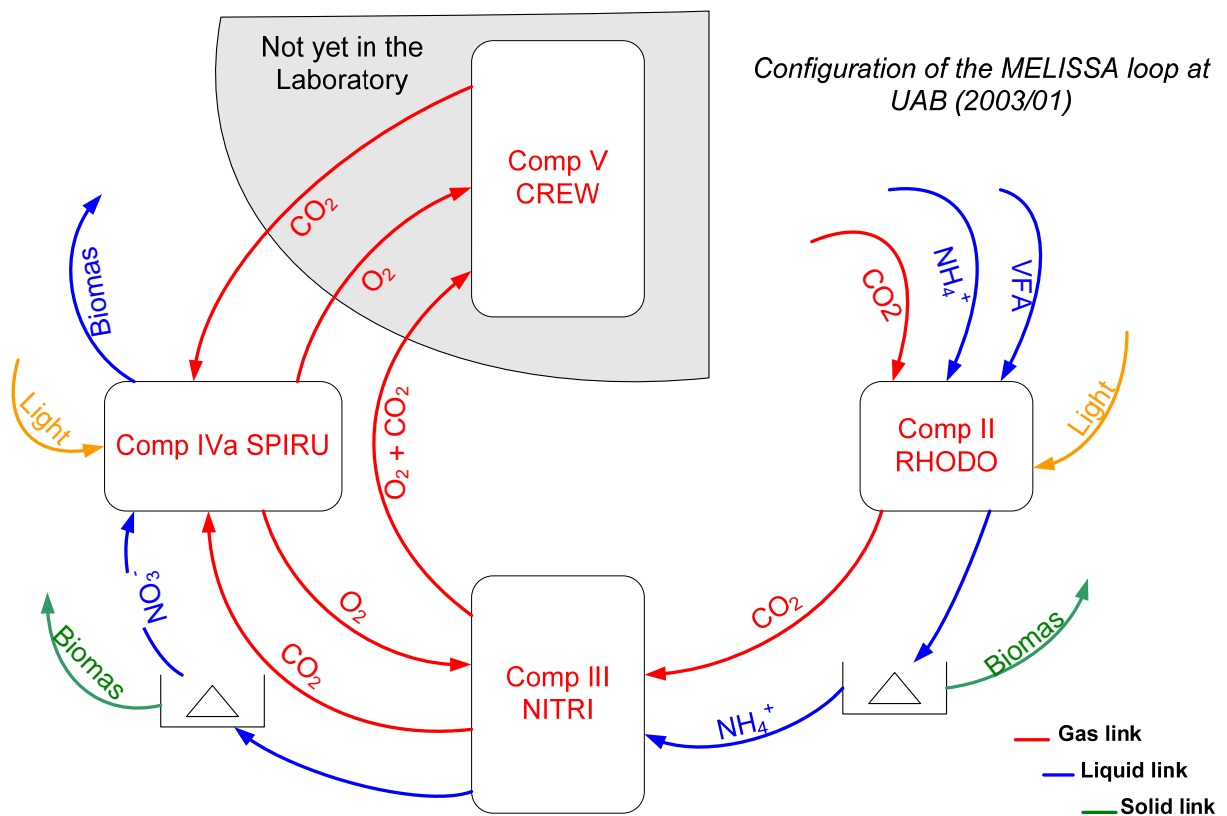
TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

### 3. MELISSA loop at UAB

#### Pilot plant configuration in January 2003 at UAB

Configuration of MELISSA's pilot plant at UAB in January 2003.

Liquid Solid Separator Systems are transformed into manual separators.



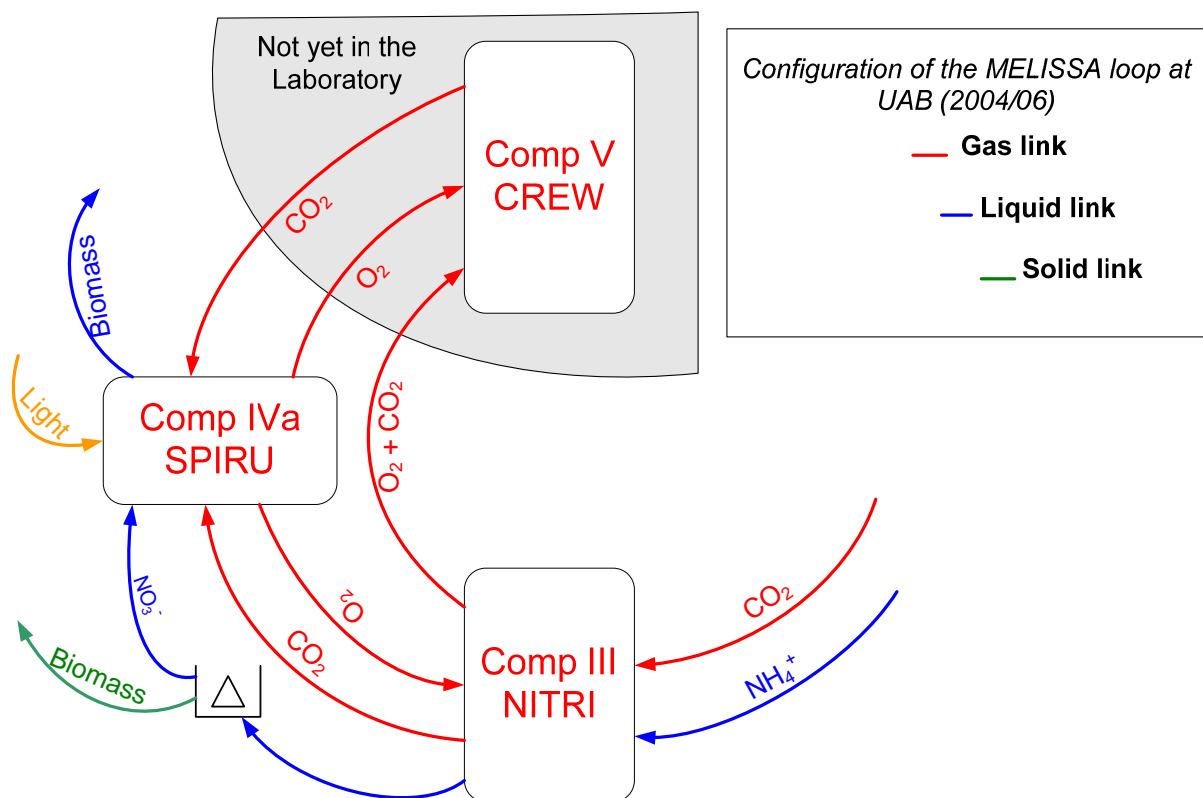
Picture 1: Pilot Plant configuration on 2003/01

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	



## Pilot plant configuration in June 2004 at UAB

Configuration of MELISSA's pilot plant at UAB in June 2004. Compartment II is taken apart. Steam Generator and Cooler are outside the pilot room.



Picture 2: Pilot plant configuration on June 2004

## 4. Organisation of the Visio database

### Structure

The database is structured in different levels.

**Level I** corresponds to the pilot plant. It is the most aggregate level. The elementary component is a compartment. The Level I view contains representation of compartments and indicates the links between them. It also contains all hardware items which are not specific to any compartment (e.g. analysis devices will be collected on a specific separate view of level I). Picture 1 and 2 show level I pilot plant configuration at two separate moments.

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	

**Level II** corresponds to a compartment. The elementary component is the hardware equipment. On each compartment view, the equipment is identified by a specific drawing and code. A shape issued from VISIO graphic standards is proposed and a code is chosen for each equipment. In a near future the shape and the code will be set in accordance with industrial standards. [*See action list: §12 – Action 1 and Action 2*]. A complete view of each compartment would be obtained by the superposition of various specific views. One view for the compartment equipment, one view for the sensors and one view for the actuators. Others views can be created and defined if necessary.

Each equipment, requires that several data must be recorded. The data is separated in two datasheets: one related to the technical characteristics of the equipment [Technical Documentation], the other is used as a log book [Maintenance Documentation]. The latter two documents exist for each kind of equipment.

Level III is a detailed view of the equipment. (Assembly and simplified diagrams, instructions for maintenance, etc.). All information relative to Level III is available in Maintenance Documentation.

## System opportunities

### *Graphic*

All Microsoft VISIO Software facilities are available from this platform. [Visio Professional 2002 (10.0.525) Copyright 1991-2001 Microsoft Corporation all rights reserved].

### *Reporting*

Reports can be edited automatically from the various views and datasheets. Different types of reports can be defined. As an example a report making a list of equipments of Compartment CIVa has been created. The data contained will be expanded and verified progressively either as part of future upgrades to this contract or as future Pilot Plant activities [*See action list: §12 - Action 3*].

## 5. Pilot Plant Inventory

Two inventory files are available: the: ESTEC Inventory and the UAB inventory. Some items are missing as the database used as starting point only includes inventoried items (that is hardware items to which an inventory number is assigned) other items such as pH probes, liquid filters, small valves ... are not included in the inventories as they are considered

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

consumables. The description of some items should be expanded. It would seem useful to complete these files in order to have up to date files to rely on.

## ESTEC Inventory June 2004

### Origin

UAB June 2004

### Structure

Excel File: ESTEC-inventory.xls

Item	Supplier	ESTEC Invent.	Orig. Value (Euro)	Remarks
------	----------	---------------	--------------------	---------

- **Item:** Generic Name of the equipment [See: Catalogue of Generic Names]
- **Supplier:** Reference of the equipment's Supplier [See: Catalogue of Supplier's References]
- **ESTEC Invent.:** Identification number of the equipment. To clarify the rules of identification.
- **Orig. Value (Euro):** Equipment's purchase price (without taxes) in Euro
- **Remarks:** Comments from UAB

Excel File: InventoryMELISSA.xls

Type of equipment	Inventory number	Pr	Date of purchase	Center	Room	Ac	Fin	Purchase Order	Amount	Cost (New)	Description
-------------------	------------------	----	------------------	--------	------	----	-----	----------------	--------	------------	-------------

Type of equipment

**Inventory number:** UAB inventory number

**Pr:** Indicates if the inventoried item is a complete equipment (C) or if it is part of a bigger equipment formed by several parts (I).

**Date of purchase:** Date the equipment was purchased.

**Center:** UAB Center to which the cost and property was charged (447 Chemical Engineering Department).

**Room:** Room of actual equipment location.

**Ac:** UAB internal code identifying the type of activity the equipment is assigned. For example: 20: Research. 10: Not specified.

**Fin:** UAB internal code. Source of budget.

**Purchase Order:** Number of the purchase order.

**Amount:** Number of items purchased at the same time.

**Cost (New):** Cost of the equipment at the time of purchase.

**Description:** Identification of the equipment.

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	

### *Suggestion to complete the ESTEC Inventory June 2004*

- **Key:** The specific key number of each equipment
- **@ Supplier:** Supplier's Email address
- **@ Email contact:** Email address of where to obtain information about the equipment.
- **Location:** Name of the Compartment(s) where the equipment is implemented
- **Purchase date:** The equipment's purchase date
- **Status:** Status of the equipment at the time of updating the inventory [e.g.: In order – Out of order – In maintenance – etc.].

ESTEC's inventory for June 2004 was completed with the above items in the Excel File named 'ESTEC-inventory 10-2004.xls'. The item "@Email contact" is an active link with a supplier or manufacturer of the equipment. This is the first step in collecting information about equipment.

[See action list: §12 - Action 4]

The same proposal can be done for the other inventory file.

### *Abstract of supplier's documentation*

To reduce access time to relevant information, it seems necessary to create a Word File containing an extract of the supplier's technical documentation for each class of equipment.

In case of several equipments from the same supplier, there should be as many files as there are equipments. The name of the file is defined in the following way: TD for Technical Documentation, followed by the supplier's name followed by the equipment's designation

***"TD\_SupplierName\_Equipment Name.doc"***

See Record: [..MELISSA Suppliers Documentation CIVA](#) to review the list of known suppliers. [See action list: §12 - Action 5].

## **6. User's guide**

The version of VISIO Software used in this TN is a French one. Therefore all menus and instructions are in French. If you use another version of Visio version you will find the same menus and instructions the only difference being the language.

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

## Preparation

### *Set Up of Visio software*

Check the correct set up of Visio software

### *Loading Visio Files*

Check you have got an access to the following files:

Nom	Taille	Type	Date de modification
MELISSA Suppliers Documentation CIVa		Dossier de fichiers	21/11/2004 18:23
Pictures		Dossier de fichiers	22/11/2004 10:46
Ref Maintenance Documentation		Dossier de fichiers	21/11/2004 17:39
Ref Technical Documentation		Dossier de fichiers	22/11/2004 10:04
Technical Note 66-52-11-2004		Dossier de fichiers	22/11/2004 11:16
UAB-ESTEC Documents		Dossier de fichiers	22/11/2004 11:07
Visio Files		Dossier de fichiers	22/11/2004 10:54
Visio Reports		Dossier de fichiers	22/11/2004 11:13

These files are located inside “TN 66-52 11-2004” file.

## Getting started

### *Use of the application*

#### *Getting started*

- ◆ Visio software has to be installed.
- ◆ Go to the file “\TN 66-52 11-2004\Visio Files”
- ◆ Click on the application “Melissa 06-2004-CIVa 05 11 2004 Travail.vsd”
- ◆ Select “activer les macros”
- ◆ Here you can work with the first window:
  - 1 Select an equipment
  - 2 Activate a link
  - 3 Edit a report
  - 4 Modify an equipment
  - 5 Add a new parameter

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	

6 Cancel a parameter

7 ...

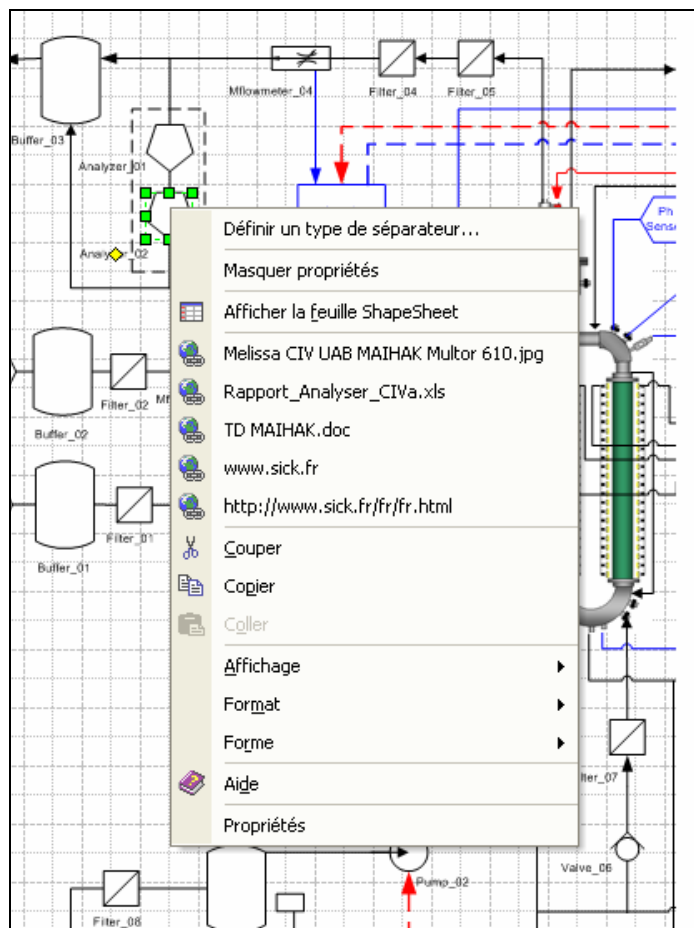
Activate the display of “Propriétés personnalisées”

1. Select « Fenêtre propriétés personnalisées » on menu « Affichage »

Access to linked files

**Procedure:**

1. Select an equipment on the screen and right click over it. Then select the required link.



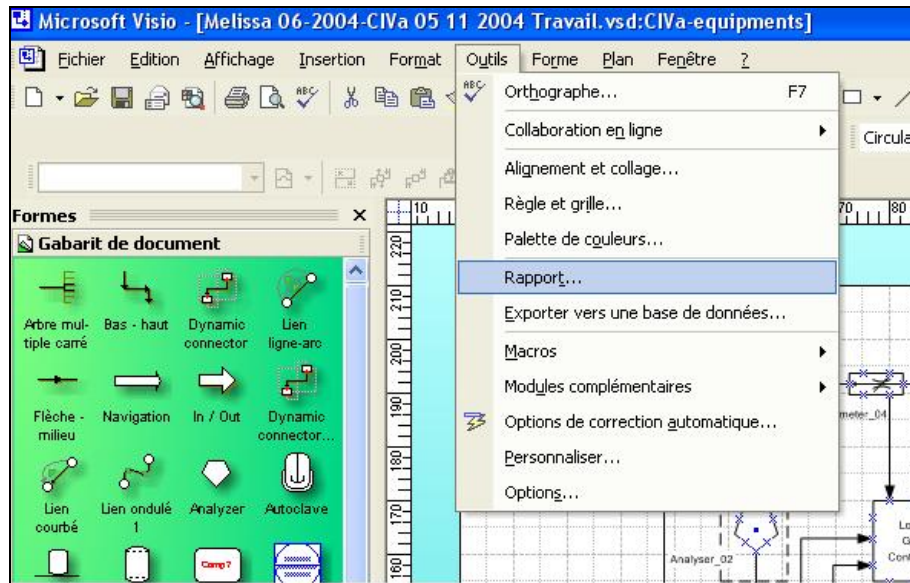
**Picture 3: Selection of linked file**

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

## Editing report

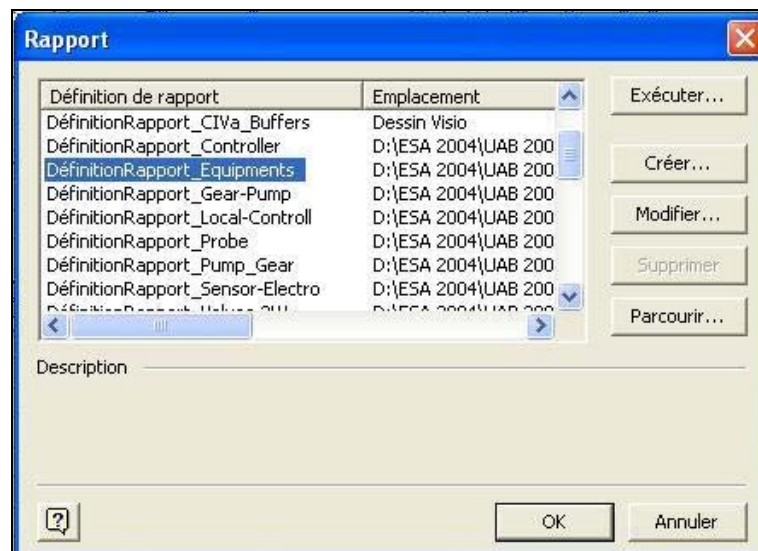
### Procedure:

1. Select "Rapport" on the menu "Outil"



Picture 4: Access to report

2. Select "Définition Rapport\_Equipments.vrd" and click on "execute"



Picture 5: Selection of the desired report

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	



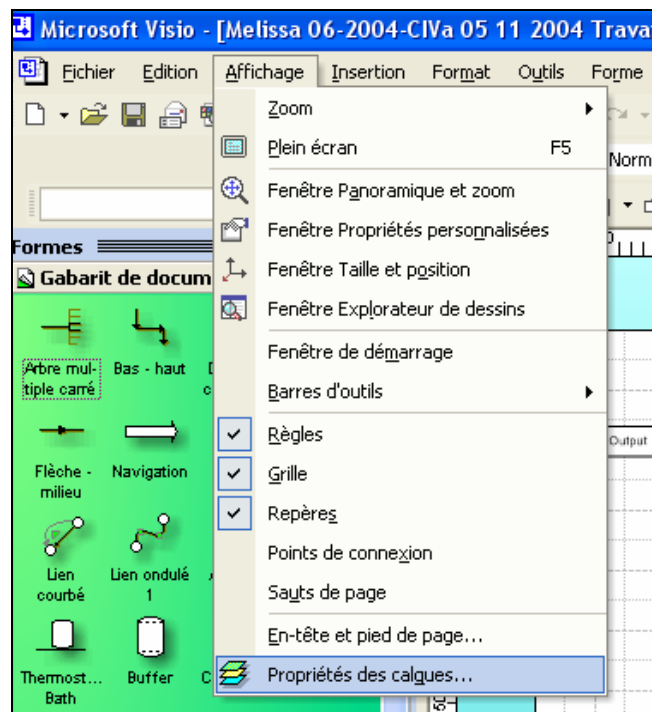
### 3. Choose the format and the destination file



Picture 6: options of report

### Access to different views

#### 2. Select “Propriétés des calques” on the menu “Affichage”

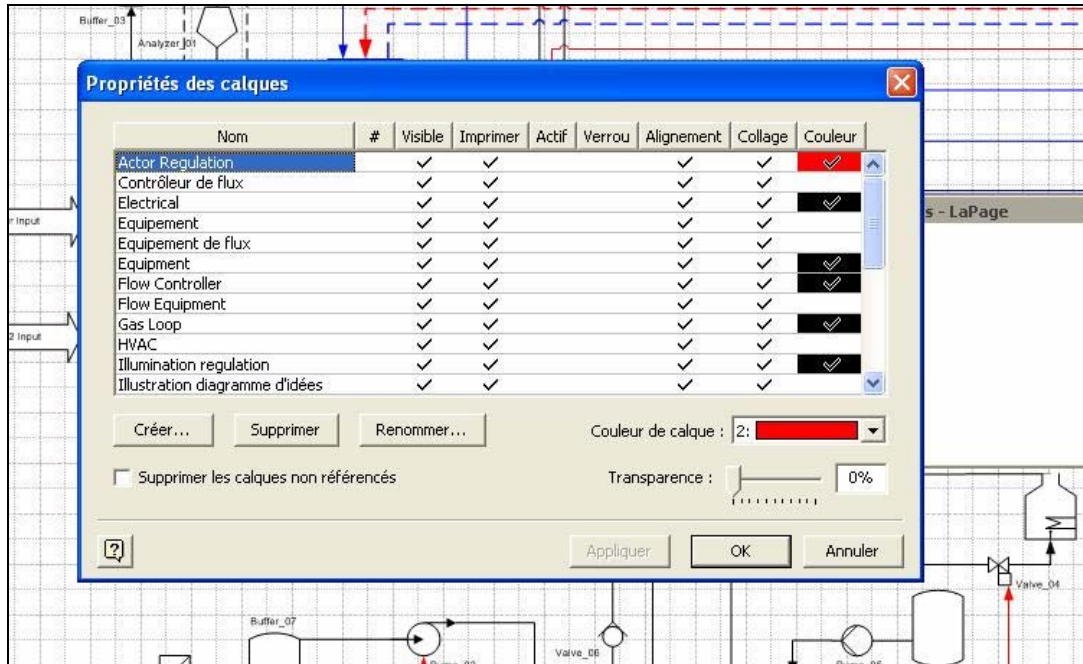


Picture 7: Select the view data shape

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	



3. *Select the desired options: Visibility, colour, etc. all the chosen options will be applied to the selected View*



Picture 8: Characteristics of the selected view

## 7. Equipment list

### Equipment of CI

*This will be completed as soon as the compartment CI will be implemented in the Pilot*

### Equipment of CII

*This will be completed as soon as the compartment CII will be implemented in the Pilot*

### Equipment of CIII

*This will be completed as soon as the compartment CIII will be implemented in the Pilot*

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

## Equipment of CIVa

The list of CIVa equipments will be automatically extracted by activating the report “DéfinitionRapport\_Equipments.vrd”. The following datasheet shows the actual status of the database completion.

[*See action list: §12 - Action 6 and Action 7*].

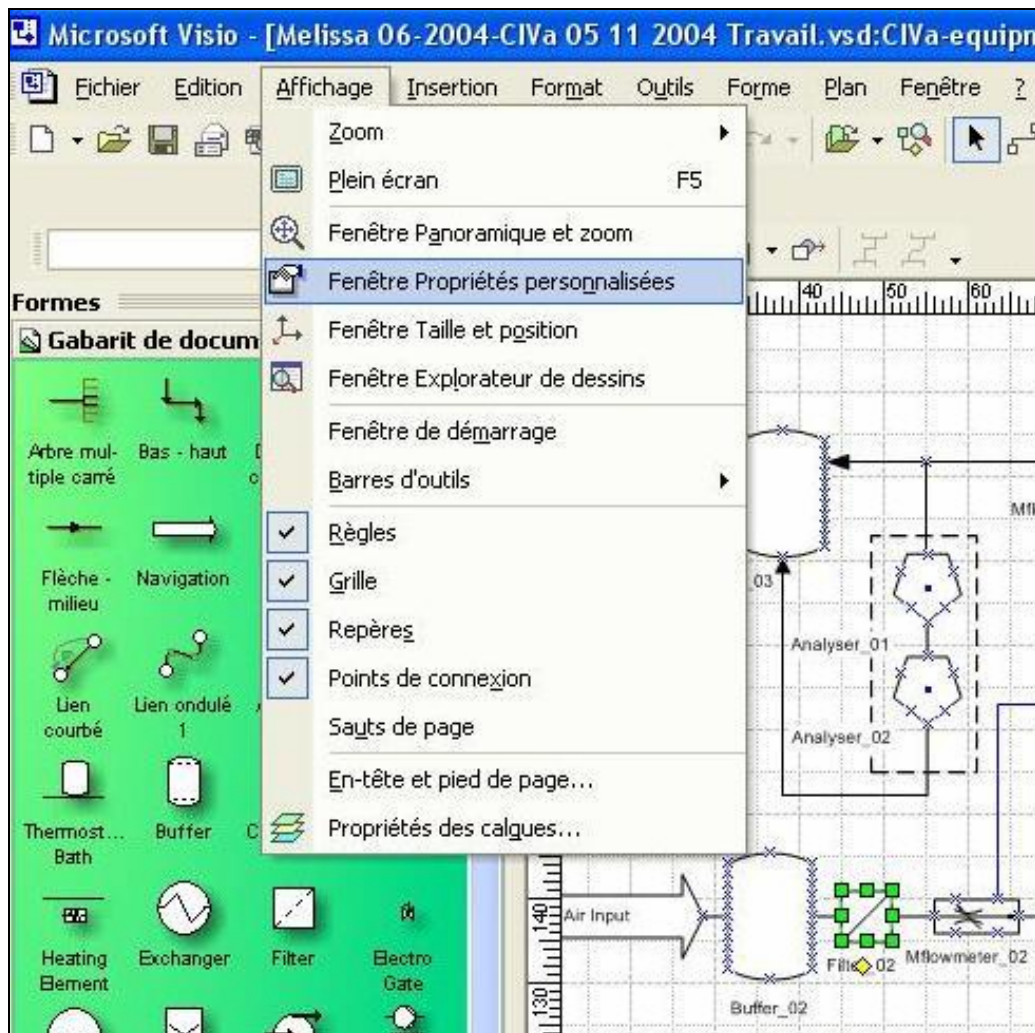
TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

### Report Equipments CIVa

<b>Id Material</b>	<b>Description</b>	<b>Model</b>	<b>Brand</b>	<b>Ref. Picture</b>	<b>Ref. Techn. Doc.</b>	<b>Ref. Maint. Doc.</b>	<b>@ contact</b>
Analyzer_01	CO2 Gas Analyser	Multor 610	MAIHAK	Melissa CIV UAB MAIHAK Multor 610.jpg	TD MAIHAK CIV.doc	Doc Analyser CIVa.xls	www.sick.fr
Analyzer_02	O2 Gas Analyser	Multor 610	MAIHAK	Melissa CIV UAB MAIHAK Multor 610.jpg	TD MAIHAK.doc	Doc Analyser CIVa.xls	www.sick.fr
Balance_01	Platform Balance	L 115/116	AVERY BERKEL	Melissa CIV Balance.jpg	TD AVERY BERKEL Balances.doc	Doc Balance CIVa.xls	www.averyweigh-tronix.com
Balance_02	Platform Balance	L 115/116	AVERY BERKEL	Melissa CIV Balance.jpg	TD AVERY BERKEL Balances.doc	Doc Balance CIVa.xls	www.averyweigh-tronix.com
Buffer_01	Gas CO2 Input alimentation			CIV CO2 Bottle.jpg		Doc Buffer CIVa.xls	
Buffer_02	Air Input alimentation			CIV Gas Alimentations.jpg		Doc Buffer CIVa.xls	
Buffer_03	CIVa Gas output buffer					Doc Buffer CIVa.xls	
Buffer_04	CIVa_Buffer_04 Liquid Output					Doc Buffer CIVa.xls	
Buffer_05	SO4H2 (Ph Ctr)			Melissa CIV UAB base and acid bottles.JPG		Doc Buffer CIVa.xls	
Buffer_06	NaOH (PH Ctr)			Melissa CIV UAB base and acid bottles.JPG		Doc Buffer CIVa.xls	
Buffer_07	Buffer Balance_02					Doc Buffer CIVa.xls	
Buffer_08	Buffer Balance_01					Doc Buffer CIVa.xls	
CIVa	CIVa - Photosynthetic compartment			Melissa CIV UAB Liquid Input.JPG		Doc Reactor CIVa.xls	
Exchanger_01	Outside Air refrigerant	TAB 015	M.T.A. Srl	CIVa Light Supply System.bmp		Doc Exchanger CIVa.xls	
Exchanger_02	Outside Steam Generator					Doc Steam Generator CIVa.xls	
Filter_01	Input CO2 Filter		HEADLINE FILTER	CIV Gas Alimentations.jpg		Doc Filter CIVa.xls	
Filter_02	Air Input Filter		HEADLINE FILTER	CIV Gas Alimentations.jpg		Doc Filter CIVa.xls	
Filter_03	Total Input Gas Filter		HEADLINE FILTER	CIV Gas Filter.jpg		Doc Filter CIVa.xls	
Filter_04	Output Gas Filter					Doc Filter CIVa.xls	
Filter_05	Sterility Gas filter	Ceramic Gas Filter	MILLIPORE	CIV Ceramic Filter.jpg		Doc Filter CIVa.xls	www.millipore.com
Filter_06	Gas Filter			CIV Flowmeters and filters.jpg		Doc Filter CIVa.xls	
Filter_07	Total Liquid Input Filter					Doc Filter CIVa.xls	
Filter_08	Liquid Filter	Millipore Opticap Filter	MILLIPORE	CIV Liquid Filter.jpg	TD Millipore.doc	Doc Filter CIVa.xls	www.millipore.com
Filter_09	Liquid Filter	Millipore Opticap Filter	MILLIPORE	Melissa CIV Filter Liquid.jpg		Doc Filter CIVa.xls	www.millipore.com
Light Supply System				CIVa-Light supply system.bmp		doc Light Supply System CIVa.xls	
Local Controller	Local Temperature Controller		BIOENGINEERING	Melissa CIV UAB Bioengineering Temp.jpg		Doc Local Controller CIVa.xls	www.bioengineering.ch
Local Controller	Local Gas Controller	HI-Tech	BRONKHORST	Melissa CIV UAB BRONKHORST.jpg	TD BRONKHORST.doc	Doc Local Controller CIVa.xls	www.instrutec.fr
Manometer_01	Pressure indicator			Melissa CIV Manometer.jpg		Doc Manometer CIVa.xls	
MFlowmeter_01	Measurement of mass Flow	F202D-FA-33-2	BRONKHORST		TD BRONKHORST MassFlowmeter CIVa.doc	Doc MFlowmeter CIVa.xls	www.instrutec.fr
MFlowmeter_02	Measurement of mass Flow	F202D-FA-33-2	BRONKHORST		TD BRONKHORST MassFlowmeter CIVa.doc	Doc MFlowmeter CIVa.xls	www.instrutec.fr
MFlowmeter_03	Measurement of mass Flow	F202D-FA-33-2	BRONKHORST		TD BRONKHORST MassFlowmeter CIVa.doc	Doc MFlowmeter CIVa.xls	www.instrutec.fr
MFlowmeter_04	Measurement of mass Flow	F202D-FA-33-2	BRONKHORST			Doc MFlowmeter CIVa.xls	www.instrutec.fr
Pump_01	Gear Pump	ISM 269 023A and BVP-Z	ISMATEC			Doc Pump CIVa.xls	www.imlab.com/fr/ismatec.htm
Pump_02	Gear Pump	ISM 269 023A and BVP-Z	ISMATEC			Doc Pump CIVa.xls	www.imlab.com/fr/ismatec.htm
Pump_03	Refrigerant recirculation Pump		ISMATEC		TD ISMATEC Pumps CIVa.doc	Doc Pump CIVa.xls	
Pump_04	Liquid Output Peristaltic Pump	Marlow 505U	WATSON	Melissa CIV Output Liquid peristaltic pump.jpg	TD ISMATEC Pumps CIVa.doc	Doc Pump CIVa.xls	www.watson-marlow.com
Pump_05	Acid Peristaltic Pump		ISMATEC	Melissa CIV UAB 06-2004-03 007.jpg	TD ISMATEC Pumps CIVa.doc	Doc Pump CIVa.xls	www.imlab.com
Pump_06	Base Peristaltic Pump		ISMATEC	Melissa CIV UAB 06-2004-03 007.jpg	TD ISMATEC Pumps CIVa.doc	Doc Pump CIVa.xls	www.imlab.com
Rotameter_01	Recirculation gas input			CIV Rotameter.jpg	TD Rotameter.doc	Doc Rotameter CIVa.xls	
Sensor Electronics	O2 measurement	Transmitter 4500	METTLER TOLEDO			Doc Electronics Sensor CIVa.xls	
Sensor Electronics	Ph measurement	Phrocon 18 pH/mV	CRISON Instruments sa			Doc Electronics Sensor CIVa.xls	www.crison.es
Sensor Electronics	Biomass measurement unit	C18-Dual (C18D)	MONITEK			Doc Electronics Sensor CIVa.xls	
Sensor Electronics	Temperature electronic sensor	C18-Dual (C18D)	BIOENGINEERING - EROELECTRONIC			Doc Electronics Sensor CIVa.xls	
Sensor_01	Pressure Probe	A05	STW	Melissa CIV Pressure Sensor.jpg		Doc Sensor CIVa.xls	www.sensor-technik.de
Sensor_02	Ph Probe	465-50-S7	METTLER TOLEDO	Melissa CIV Ph_Probe.jpg	TD INGOLD.doc	Doc Sensor CIVa.xls	http://www.mt.com
Sensor_03	Dissolved dioxygen probe		METTLER TOLEDO	Melissa CIV dO2_Probe.jpg		Doc Sensor CIVa.xls	
Sensor_04	Biomass Probe		MONITEK	Melissa CIV Monitek biomass sensor.jpg		Doc Sensor CIVa.xls	www.monitek.de;www.iberfluid.es
Sensor_05	Temperature Sensor - Thermocouple	Pt 100				Doc Sensor CIVa.xls	
Steam generator	Outside Steam generator					Doc Steam Generator CIVa.xls	
Valve_01	Butterfly Valve					Doc Valve CIVa.xls	
Valve_02	Butterfly Valve					Doc Valve CIVa.xls	
Valve_03	Powered Valve					Doc Valve CIVa.xls	
Valve_04	Powered Valve					Doc Valve CIVa.xls	
Valve_05	3 Way Plug Valves					Doc Valve CIVa.xls	
Valve_06	Non Return Valve					Doc Valve CIVa.xls	

## Filter

To see the characteristics of a specific equipment activate “affichage” in the menu then select “Fenêtre propriétés personnalisées” next select the desired equipment. This option is activated until you inactivate it. (See Picture 3).

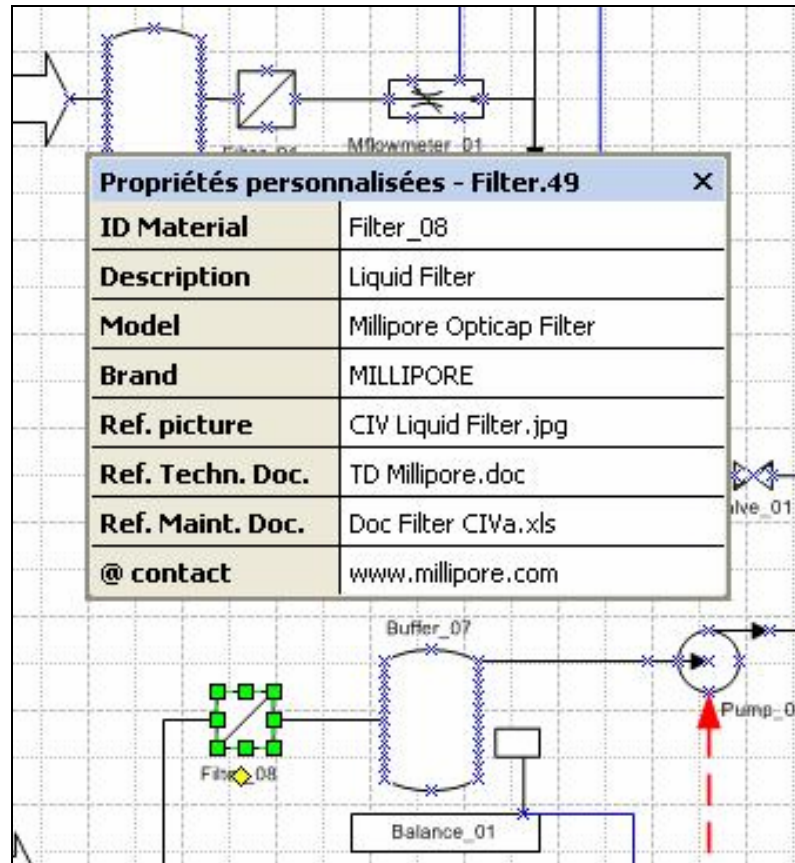


**Picture 9: Activation of characteristics display**

Picture 10 shows the list of filter parameters which will appear clicking on the shape which represents a filter on the VISIO screen.

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

To move the datasheet select the blue line with the mouse and reposition it.

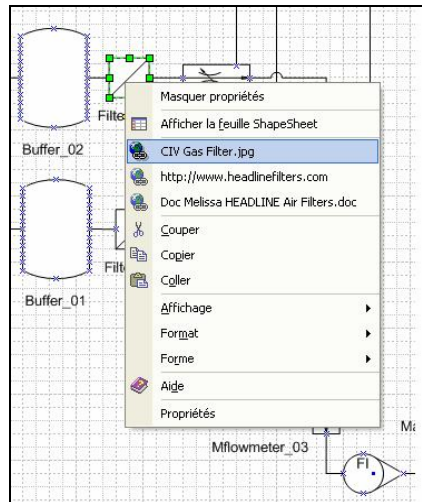


Picture 10: Parameters of FILTER

- **ID Material** – Material's identification is an internal reference for VISIO data files that you will define when inserting new material in VISIO
- **Description** – Comments to characterise the specificity of the equipment
- **Model** – Reference of the model defined by the manufacturer.
- **Brand** – Name of the manufacturer
- **Ref. picture** – Name of the file where the picture of the equipment is located (e.g. [..\Photos UAB June 2004\Melissa CIV Filter Liquid.jpg](#) see Pictures 5 and 6). There is a hypertext link with the picture. The link is activated if you right click and select the correct link (if there is multiple links)

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	





**Picture 11: List of Links**



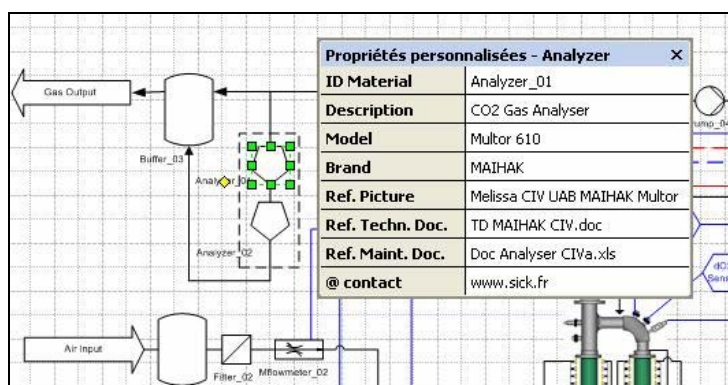
**Picture 12: Liquid filter photo**

- **Ref. Techn. Doc.** – The name of the file which contains the equipment’s technical documentation. You can reach this document by clicking on the link (e.g. [..\DOC Pilot MELISSA\TD MILLIPORE.doc](#) see Picture 3). To see the structure of the Technical Documentation File go to Chapter 8
- **Ref. Maint. Doc.** – The name of the file which contains the maintenance information of the equipment (e.g. [..\DOC Pilot MELISSA\Ref Maintenance Documentation\Doc Filter CIVa.xls](#)).
- **@ contact** – Email address of the contact Supplier or the manufacturer (e.g. [www.millipore.com](mailto:www.millipore.com) ).

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	

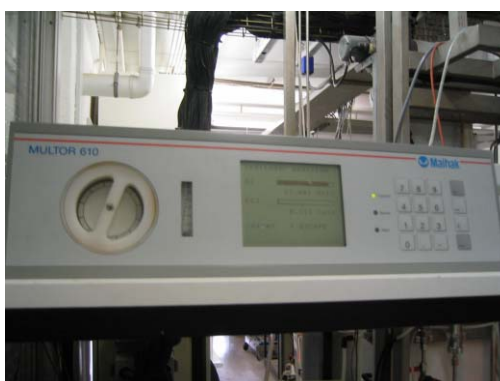
## Analyser

- *Analyser's personalised characteristics*



Picture 13: Analyser parameters

- *Analyser's picture*



Picture 14: Picture of Analyser

- *Analyser's Maintenance Document*

See the content of Excel File related to analyser ([..\DOC Pilot MELISSA\Ref Maintenance Documentation\Doc Analyser CIVa.xls](#)).

The first sheet of the file contains all the useful parameters for Analysers. One row by equipment.

The second sheet [See Picture 15] contains data and comments about all the significant events impacting the equipment. One row by event. One sheet by equipment.

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

Compartment **CIVa**

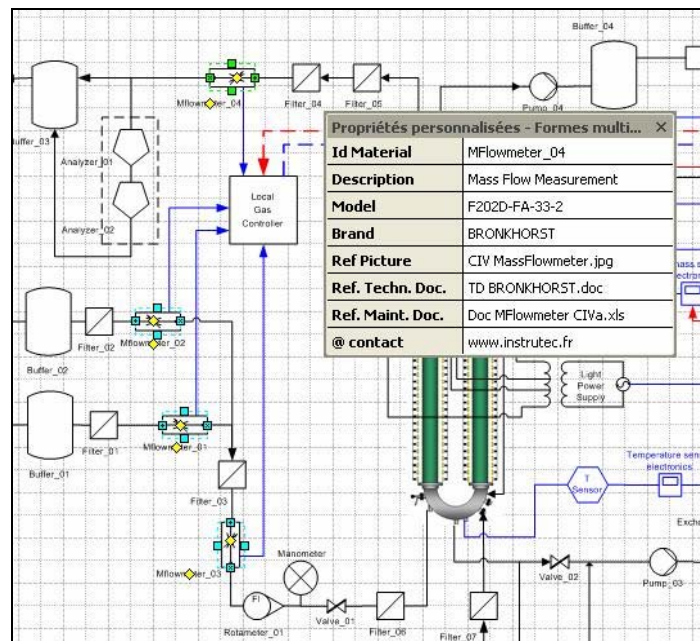
Equipment **ANALYSER**

	<i>ID Material</i>	<i>Description</i>	<i>Brand</i>	<i>Model</i>	<i>Serial Number</i>
	Analysér_01	CO2 Analyser	MAIHAK	Multor 610	956140
<i>Events</i>	<i>Date</i>	<i>Description</i>			
1	.....	Purchase Date			
2	.....	Setup date			
3	.....	Calibration			
4		Failure -	Comments		

**Picture 15: Second sheet of Maintenance Documentation**

## Mass Flowmeter

- *Mass Flowmeter's personalised characteristics*



**Picture 16: Mass Flowmeter parameters**

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	



- *Mass Flowmeter's picture*



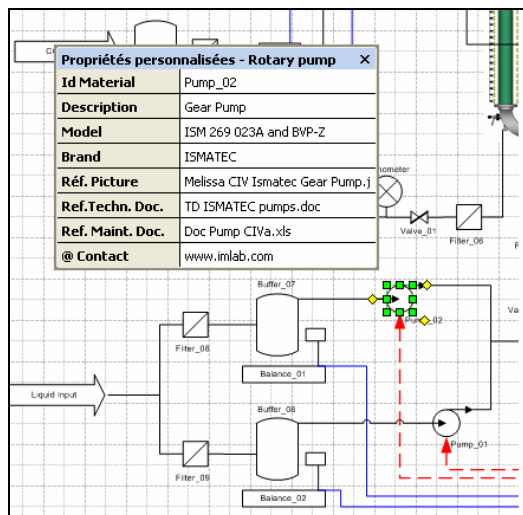
**Picture 17: Mass Flowmeter's picture**

[See action list: §12 - Action 8].

TN 66.52 UAB	Technical Database of MELISSA
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

**Pumps**

- ***Gear Pump's personalized characteristics***



**Picture 18: Gear Pump characteristics**

- ***Gear Pump's picture***



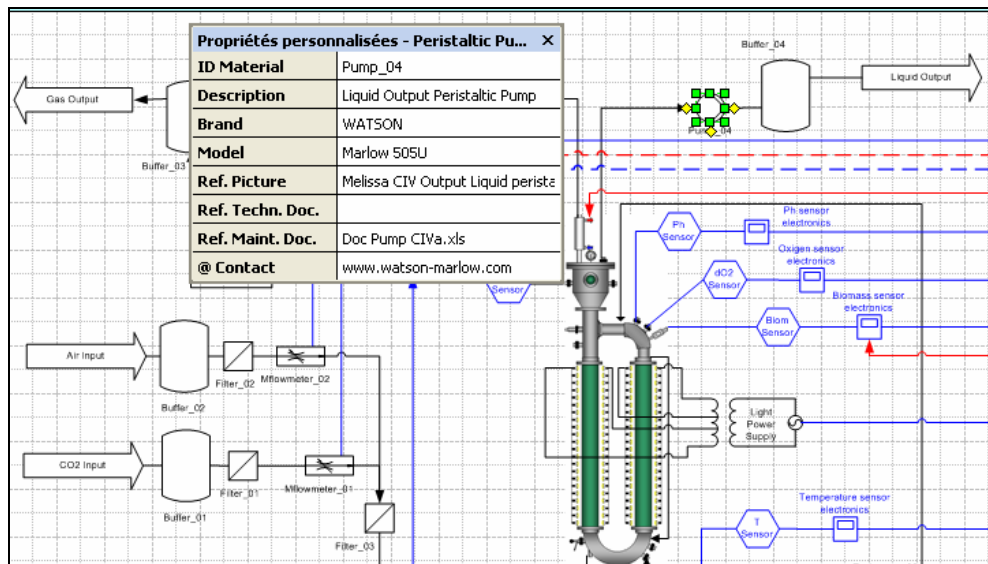
**Picture 19: Gear Pump's picture**

*[See action list: §12 - Action 9].*

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

## Peristaltic Pump

- *Peristaltic Pump's personalized characteristics*



Picture 20: Peristaltic characteristics

- *Peristaltic Pump's picture*



Picture 21: Peristaltic Pump's picture

[See action list: §12 - Action 10].

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	

## **Valves**

(To Be Completed)

### *Butterfly Valve*

- *Butterfly Valve's personalized characteristics*
- *Butterfly Valve's picture*

### *Powered Valve*

- *Powered Valve's personalized characteristics*
- *Powered Valve's picture*

### *Non Return Valve*

- *Non Return Valve's personalized characteristics*
- *Non Return Valve's picture*

### *3 Ways Plug Valve*

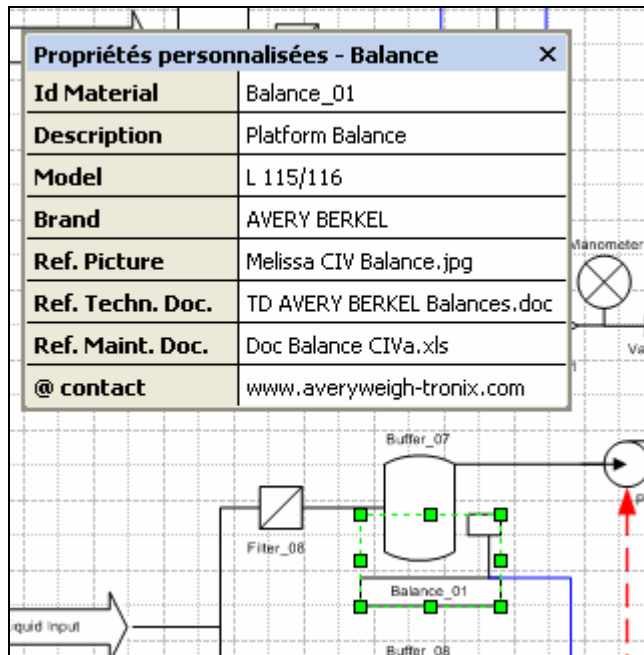
- *3 Ways Plug Valve's personalized characteristics*
- *3 Ways plug Valve's picture*

[See action list: §12 - Action 11].

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

*Platform Balance*

- *Balance's personalized characteristics*



**Picture 22: Characteristics of Balance**

- *Balance's picture*

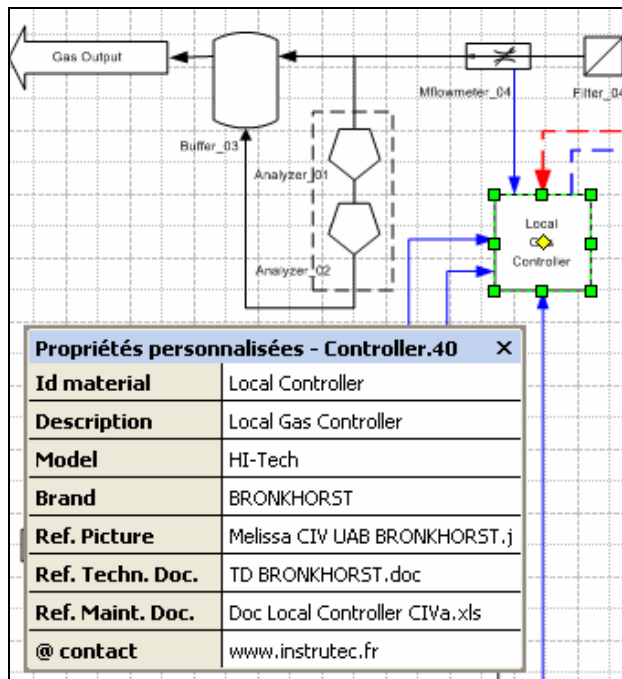


**Picture 23: Picture of electronic part of Balance**

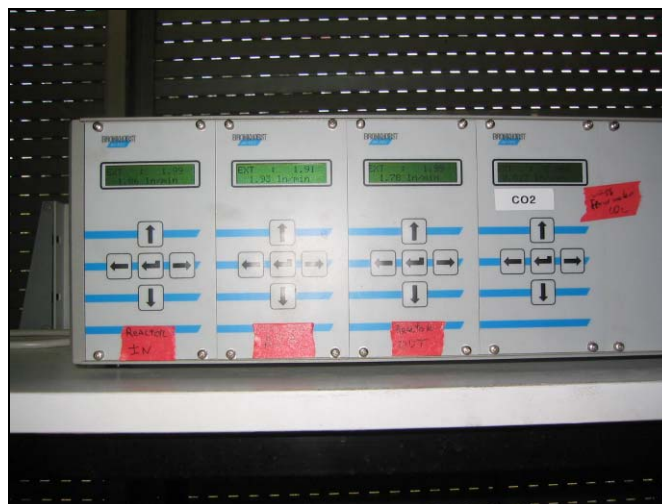
[See action list: §12 - Action 12].

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

**Local Controller**



**Picture 24: Characteristics of Local gas Controller**



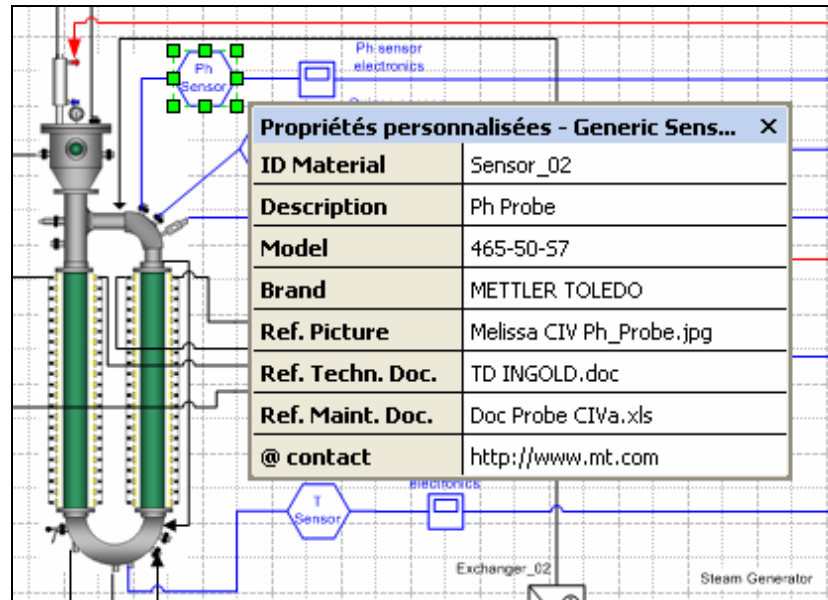
**Picture 25: Picture of Local Controller**

[See action list: §12 - Action 13].

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	



*Ph Sensor*



Picture 26: Characteristics of pH Sensor

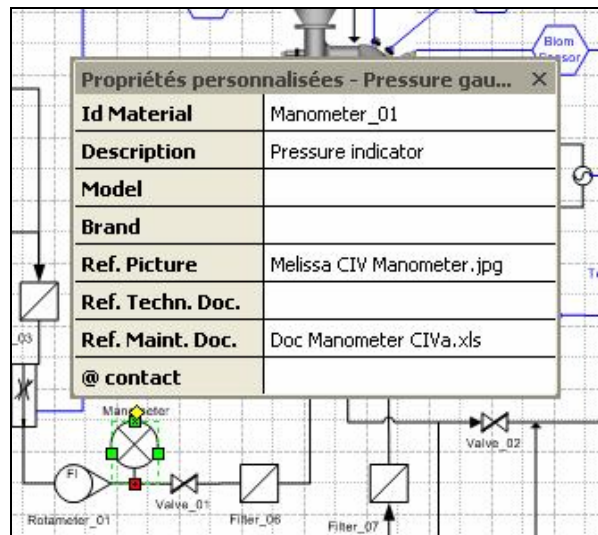


Picture 27: Picture of pH Sensor

[See action list: §12 - Action 14].

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

**Manometer**



**Picture 28: Characteristics of Manometer**



**Picture 29: Picture of manometer**

[See action list: §12 - Action 15].

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	



## **Cooler**

(To be completed)

- ◆ Cooler's personalized characteristics
- ◆ Cooler's picture

*[See action list: §12 - Action 16].*

## **Steam Generator**

(To be completed)

- ◆ Steam Generator's personalized characteristics
- ◆ Steam Generator's picture

*[See action list: §12 - Action 17].*

## **Buffer**

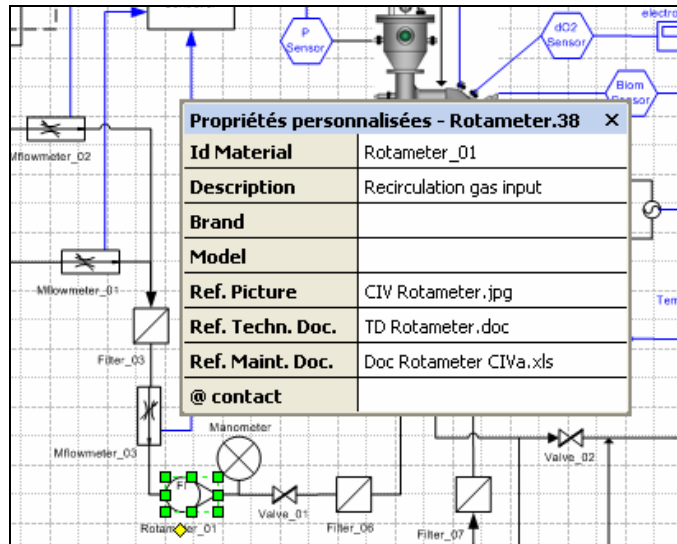
(To be completed)

- ◆ Buffer's personalized characteristics
- ◆ Buffer's picture

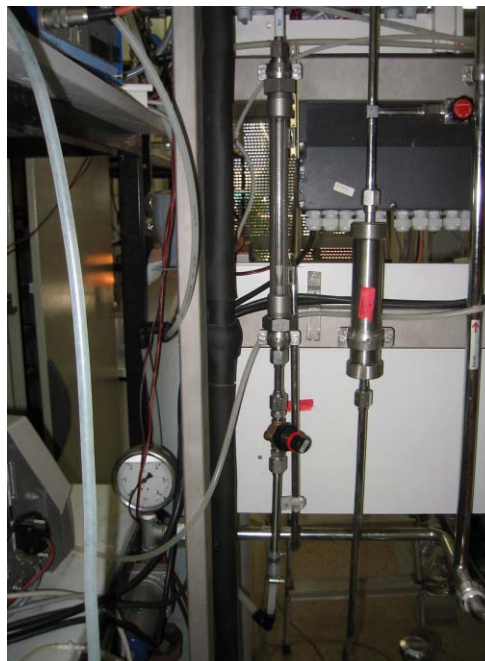
*[See action list: §12 - Action 18].*

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

**Rotameter**



**Picture 30: Characteristics of Rotameter**



**Picture 31: Rotameter's picture**

*[See action list: §12 - Action 19].*

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

## Graphical symbols of equipments

 Filter_01	Peristaltic Pump	 Valve_0?	Powered Valve	 Manometer	Manometer
 Analyzer_0?	Peristaltic Pump	 NR_Valve 01	Non Return Valve	 Rotameter_?	Rotameter
 Miflowmeter_0?	Peristaltic Pump	 Valve_0?	3 Ways Plug Valve	 Steam Generator	Steam Generator
 Gear Pump_0?	Peristaltic Pump	 Balance_?	Balance	 Heat Exchanger_01	Air Cooler
 Pump_01	Peristaltic Pump	 Local Gas Controller	Local Controller	 Buffer_01	Buffer
 Valve_0?	Butterfly Valve	 ?? Sensor	Sensor		

## Equipment of CIVb

[See action list: §12 - Action 20].

## Equipment of CV

[See action list: §12 - Action 21].

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

## 8. Technical documentation file

### Introduction

This document is specific to a distinct equipment. There are as many documents as there are equipments. This document will need to collect all the necessary numerical data:

- ◆ For the equipment usage
  - 8 In nominal mode
  - 9 In deprecated mode
- ◆ For the equipment diagnostic
  - 10 In real time
  - 11 In differed time
- ◆ For the equipment restart
  - 12 On the Earth
  - 13 On space

### Organisation

The technical documentation files are in Microsoft WORD files with links to Visio files and are available from each equipment with hypertext links. One file per equipment type. Parameters are normalised and unities are standard [MKSA]. Parameters variables and titles are in accordance with the selected industrial norm [see TN 75.71]. Pictures are prepared with Microsoft Visio software.

### Sources

The information has been extracted from the creator's technical documents.

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

## Description of the content

[See action list: §12 - Action 22].

### Parameters

Necessary and useful technical parameters:

- ♦ Metrological parameters
  - 14 Precision
  - 15 Sensibility
  - 16 Loyalty
  - 17 Measure range
  - 18 Area and working conditions
  - 19 ...
- ♦ Economical parameters
  - 20 Price
  - 21 Purchase date
  - 22 ...
- ♦ Physical parameters
  - 23 Length
  - 24 Width (or diameter)
  - 25 Depth
  - 26 Weight
  - 27 etc.
- ♦ Exploitation parameters
  - 28 Setting date
  - 29 IP protection level
  - 30 Mean Time Between Failures [MTBF]
  - 31 Mean Time To Repair [MTTR]
  - 32 etc.

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

### *Processes*

The file has to refer to the following process descriptions related to the equipment:

- ◆ Executing procedure
- ◆ Uninstalling procedure
- ◆ Calibration and stepping procedure
- ◆ Check up tests and linked data coherence
- ◆ Analysis of failure modes and critical study [AMDEC]
- ◆ etc.

## 9. Maintenance documentation file

### Introduction

This document is specific to a particular equipment. There are as many documents as there are equipments. This document must gather all information relevant to the equipment's maintenance record of activities.

### Organisation

The Maintenance documentation files are Microsoft EXCEL files and are linked to Visio files and are available from each equipment with hypertext links. One file per equipment type. Parameters are normalised and unities are standard [MKSA]. Parameters variables and titles are in accordance with the selected industrial norm [see TN 75.71]. Pictures are made with Microsoft Visio software.

### Sources

The information has been provided by the pilot's operational technical staff.

### Description of the content

[See action list: §12 - Action 23].

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

## Parameters

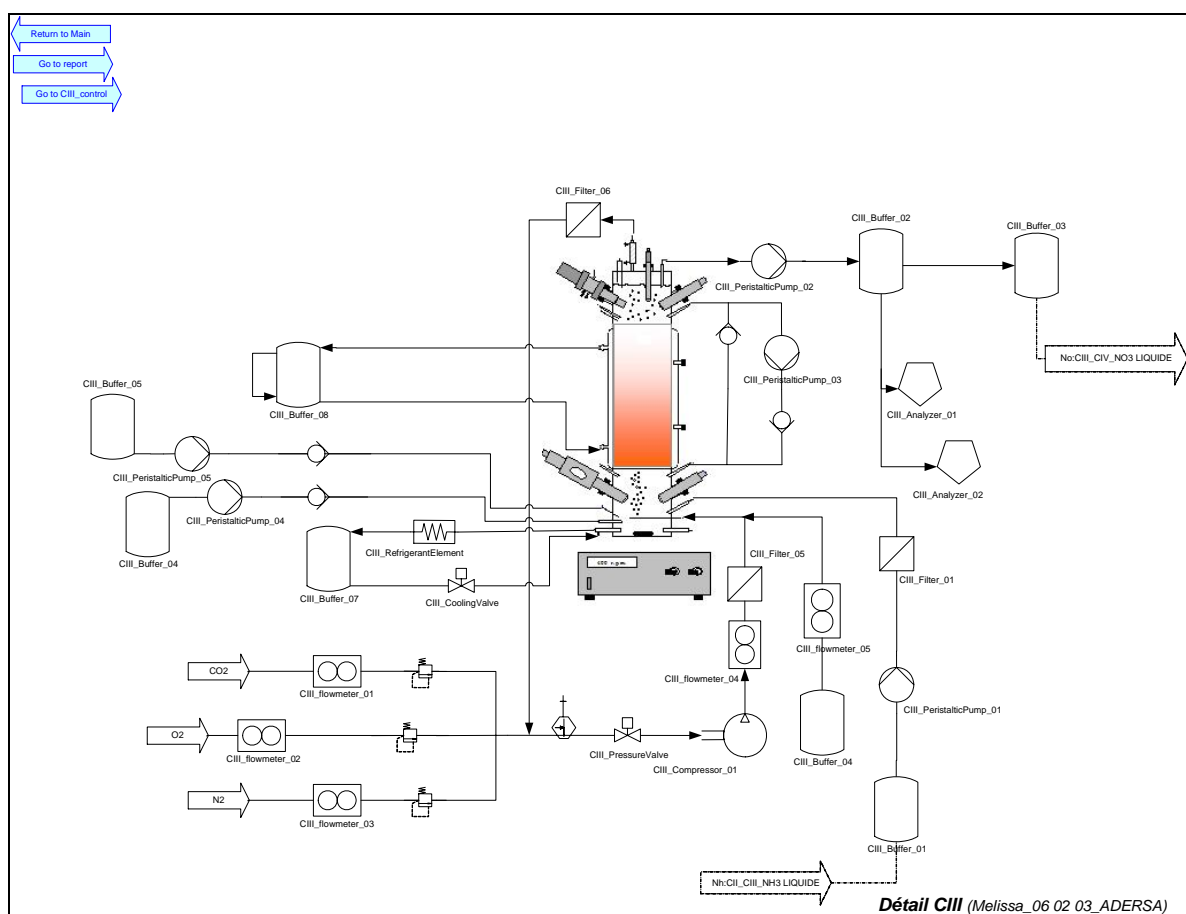
Resuming of the parameters useful to identify the equipment

### Review of the events affecting the equipments

- 33 Date of event
- 34 Description of the event
- 35 Action

## 10. access to visio files of CIII and CIV

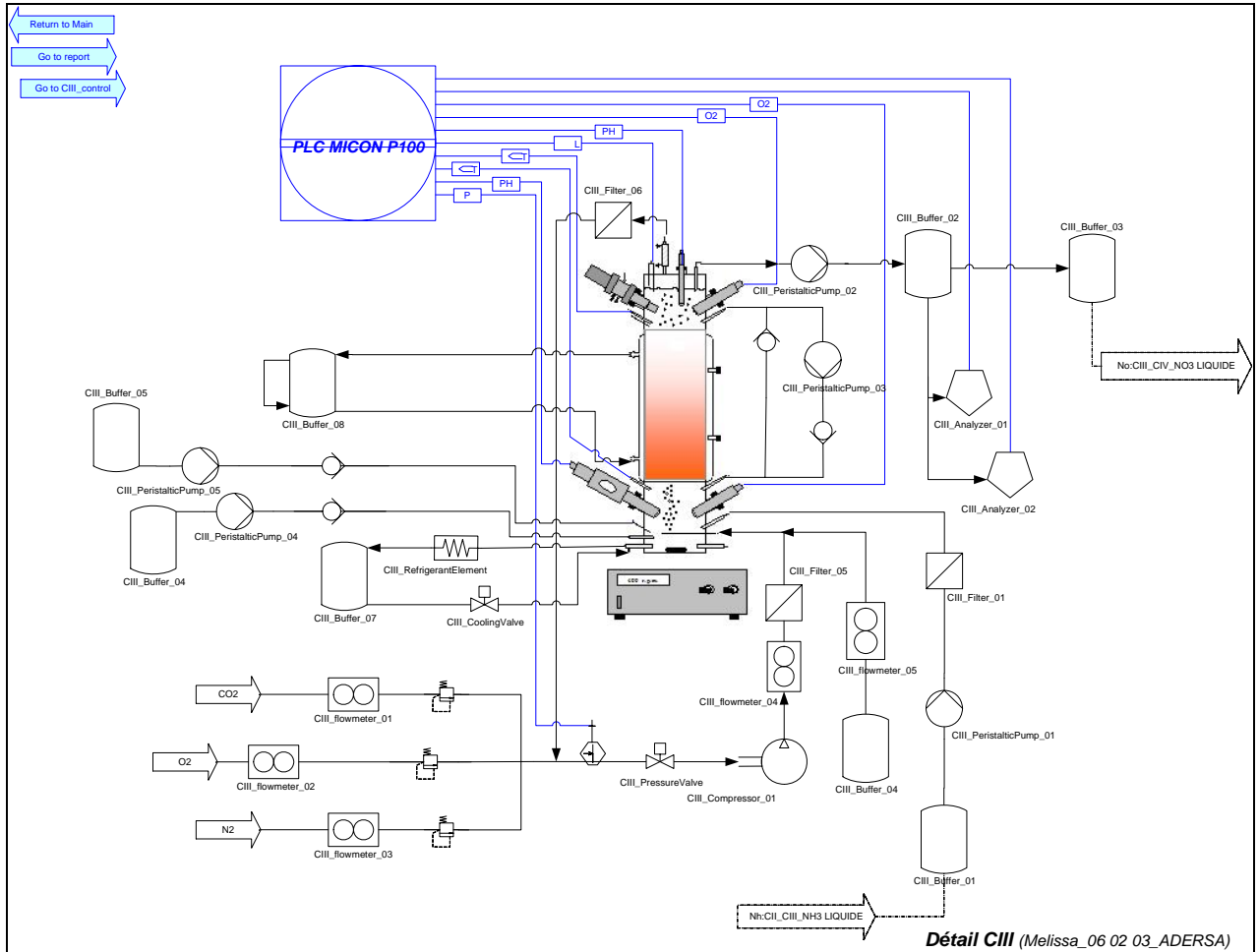
### Compartment III



Picture 32: Physical architecture of CIII

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

## CIII with sensors

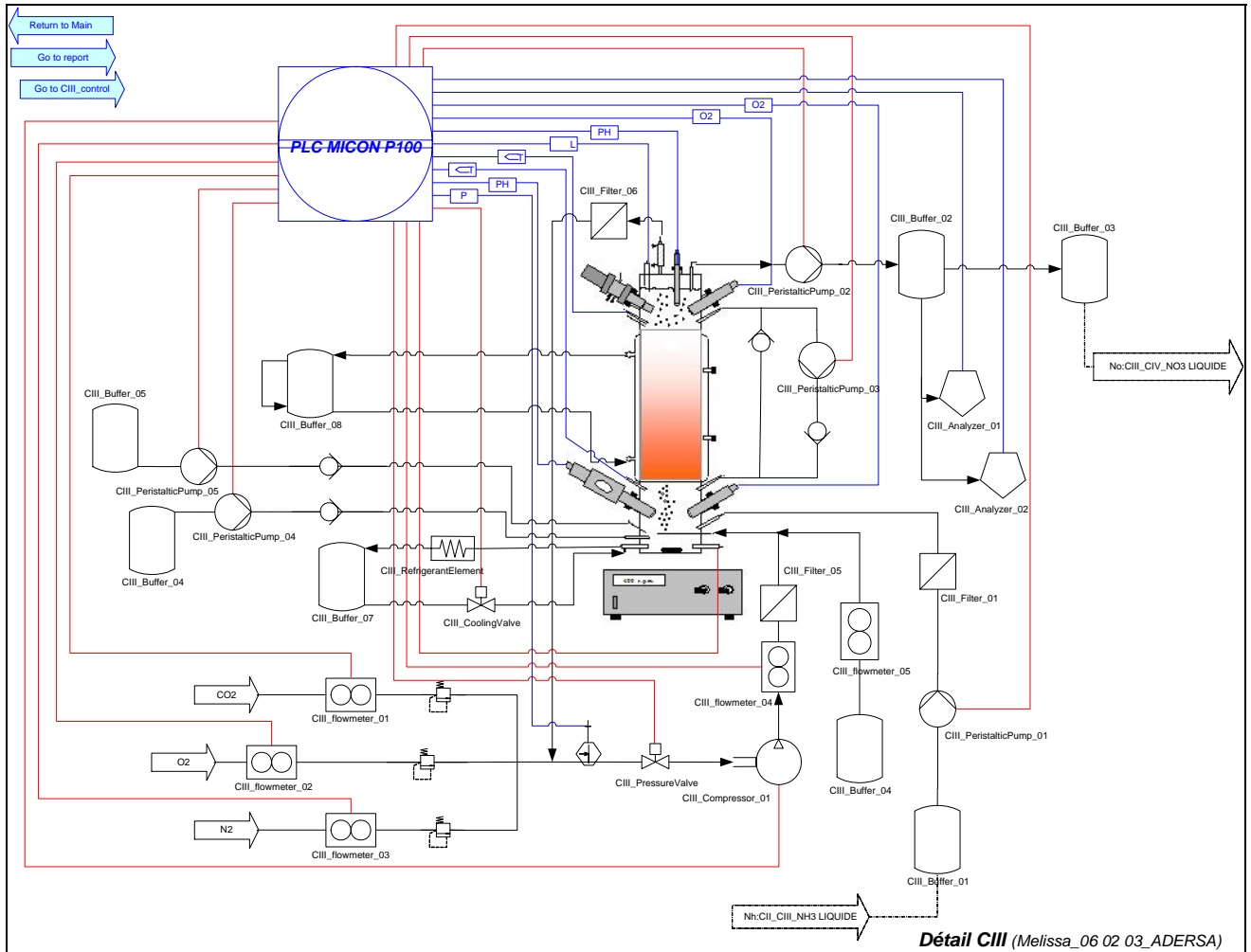


Picture 33: Sensors of CIII

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	



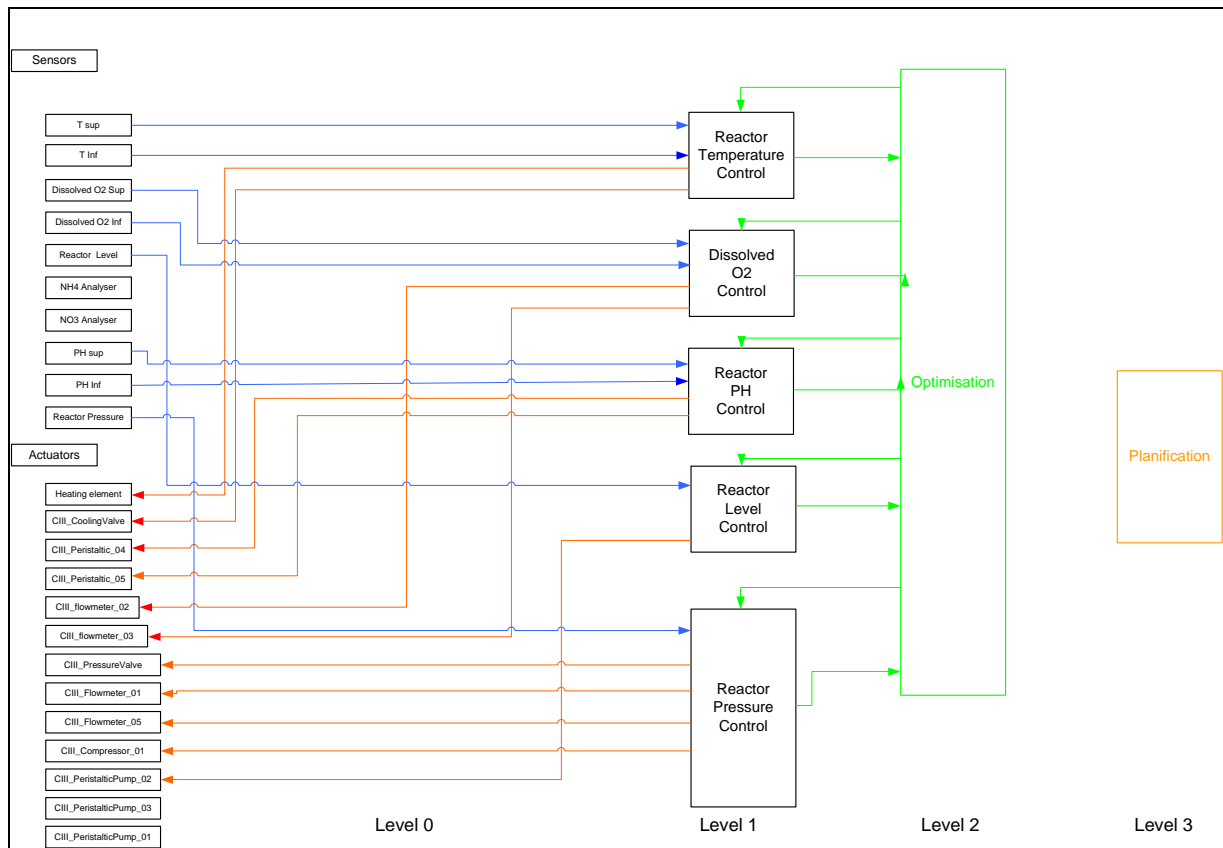
## CIII with sensors and actuators



Picture 34: Actuators of CIII

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

**CIII control levels**



**Picture 35: CIII control loops**

**CIII photograph report**

See [..\Pictures\Pictures CIII.ppt](#) to observe different views of Compartment III

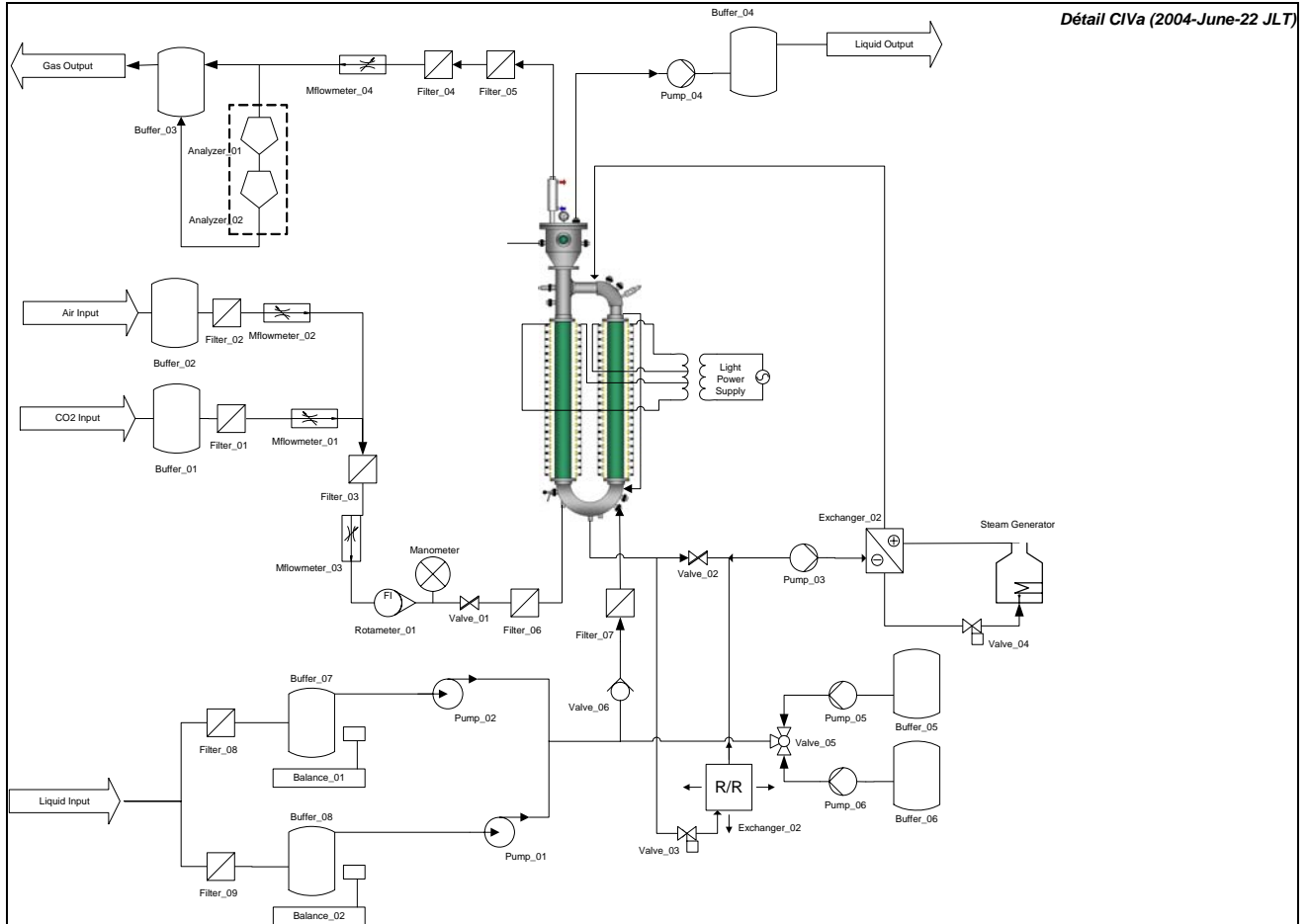
*To do for CIII:*

[See action list: §12 - Action 24].

[See action list: §12 - Action 25].

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	

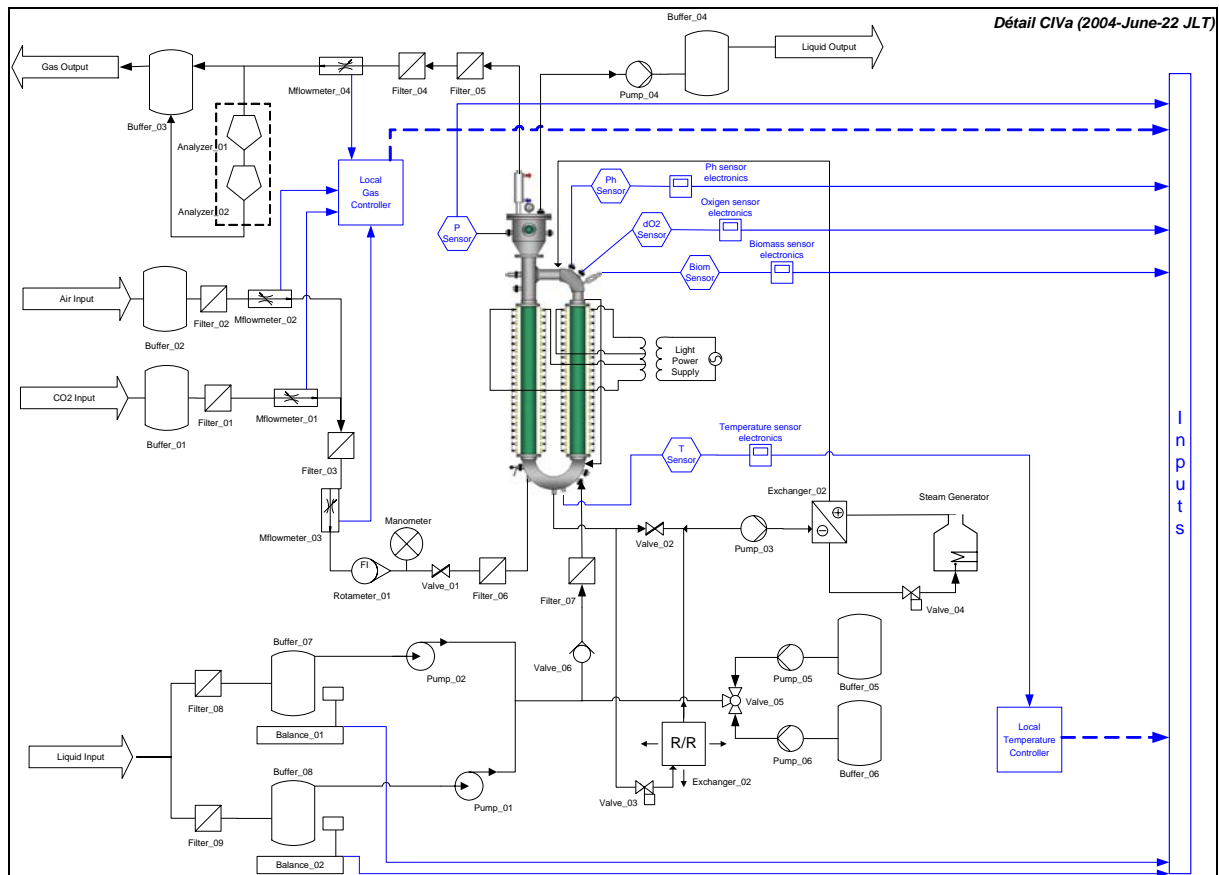
**Compartment CIVa.**



**Picture 36: CIVa Equipments View**

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

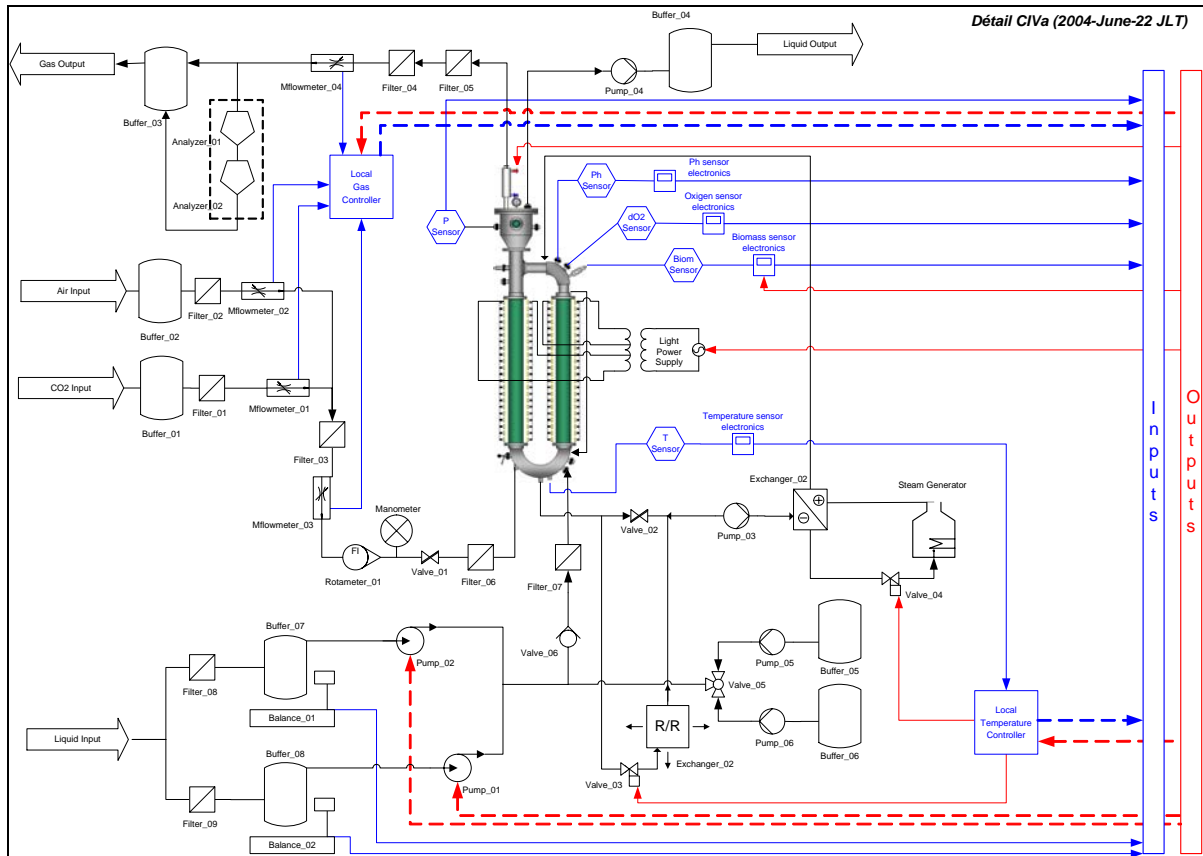
## CIVa with sensors



**Picture 37: CIVa Equipments with sensor View**

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

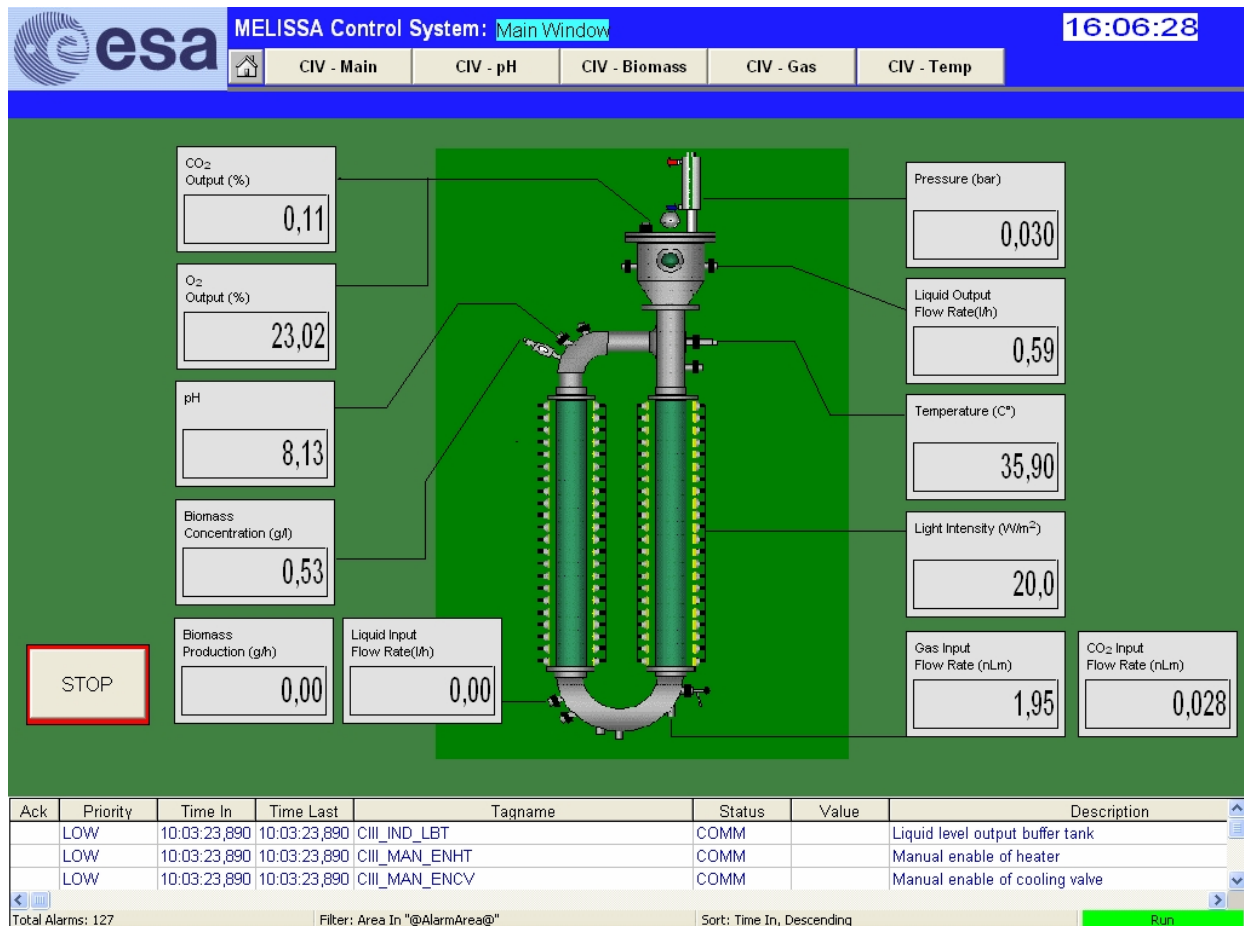
**CIVa with sensors and actuators**



**Picture 38: CIVa Equipments with sensors and actuators View**

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

## CIVa Main Window



**Picture 39: CIVa Main Window. (Control View from NTE).**

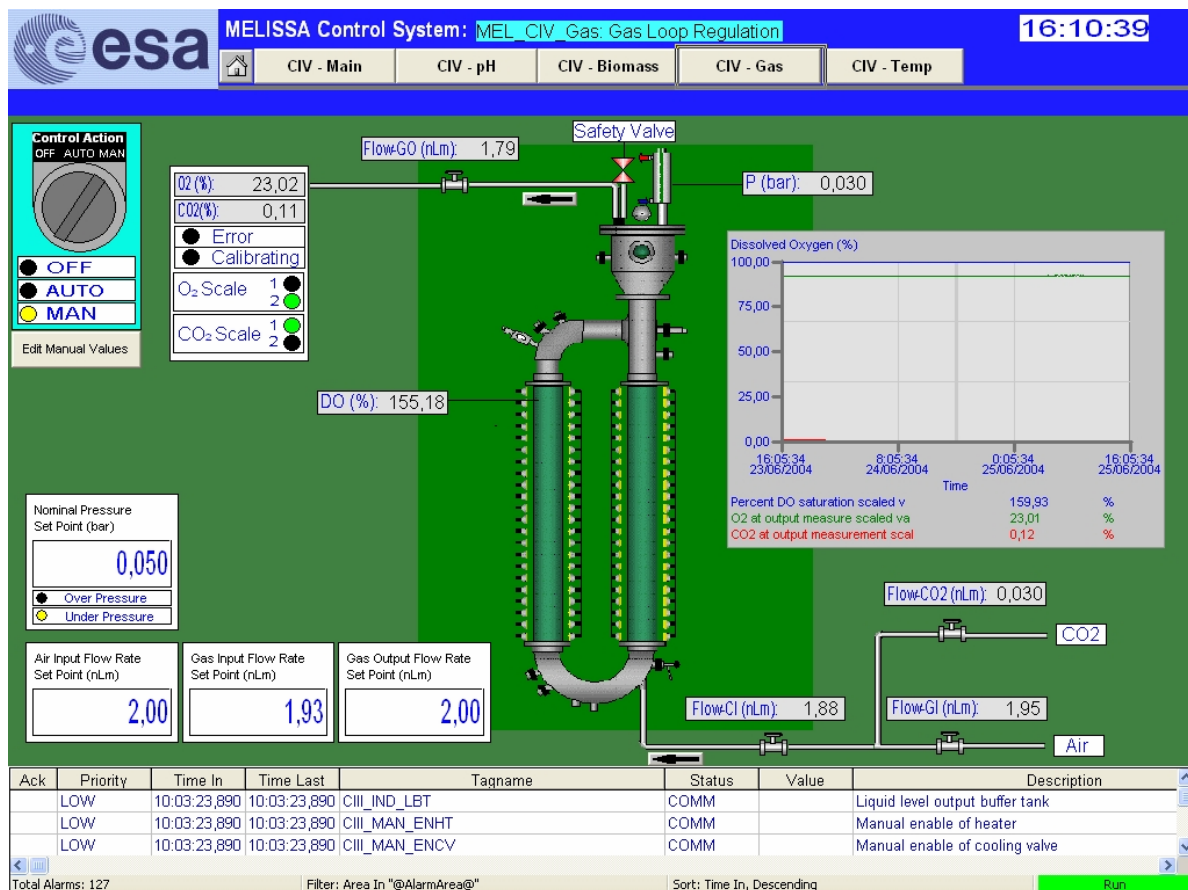
### Comments:

- Put the set point values on the view
- The “taula IO.xls” does not contain all variables.
- Use the standard tags to identify the variables

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	

## Gas Loop Regulation Window

This loop maintains the pressure of the gas phase



**Picture 40: Gas loop regulation view. (Control View from NTE).**

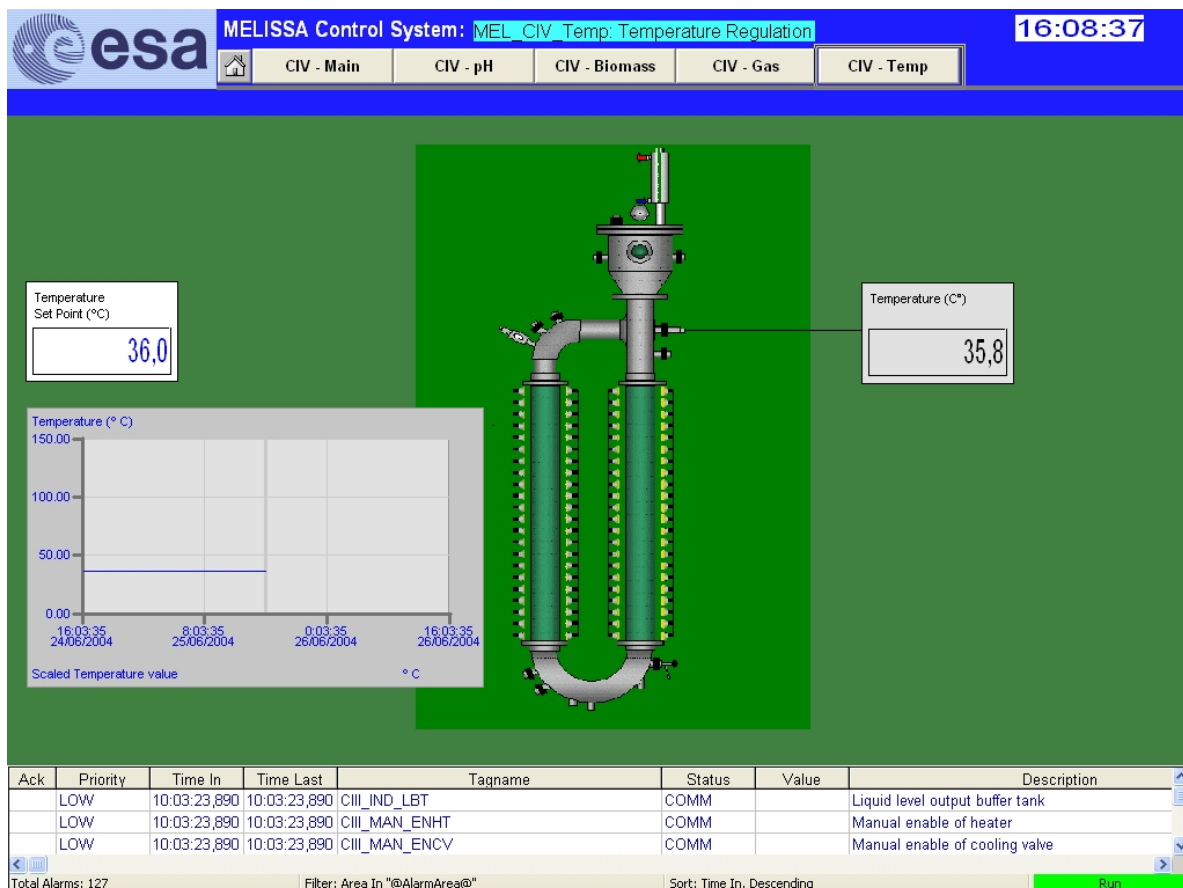
Comments:

- Collect the set point and the measured value on the screen
- Use the standard tags to identify the variables

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	

## Temperature Loop Regulation Window

This loop maintains the culture's temperature



Picture 41: Temperature Loop Regulation Window. (Control View from NTE).

### Comments :

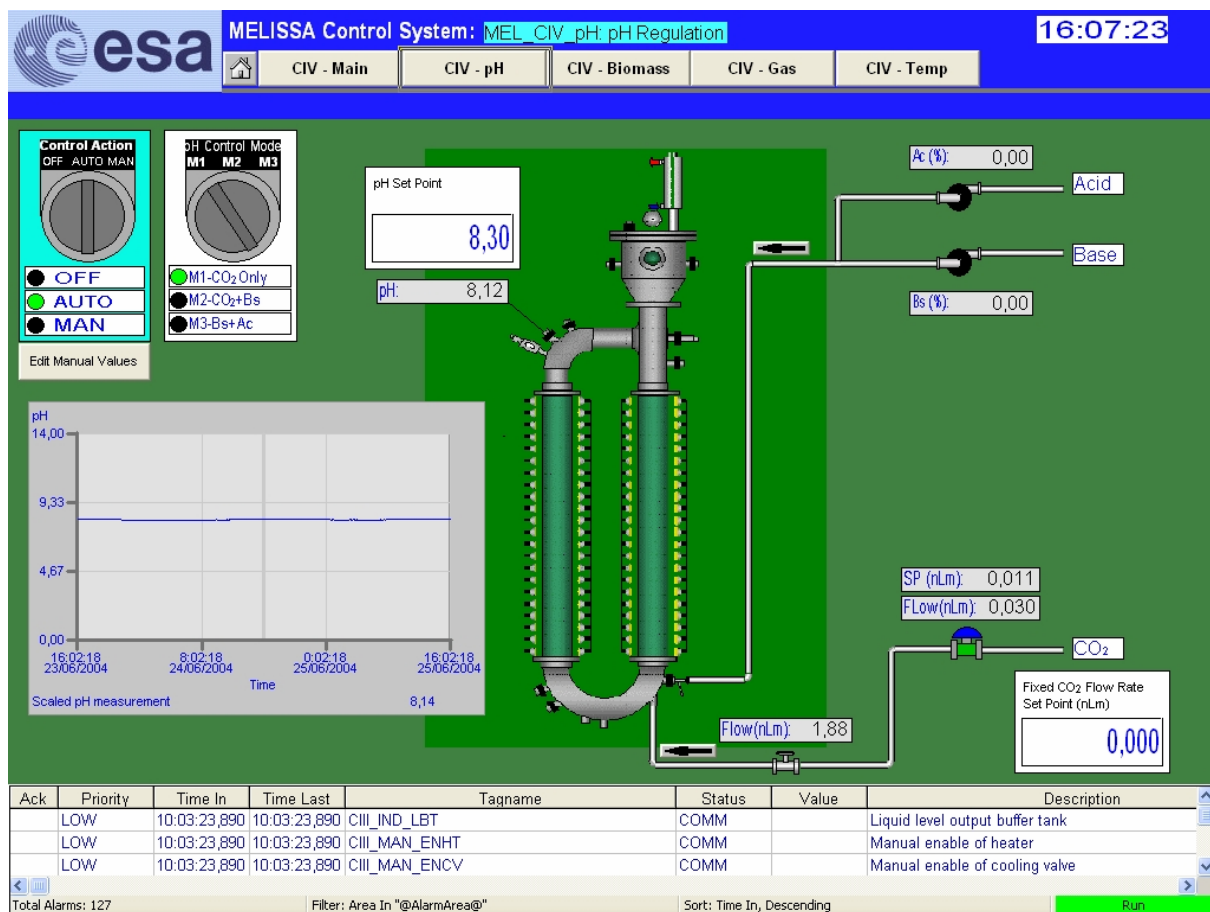
- Add information on air cooler and steam generator variables
- Use the standard tags to identify the variables

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	



## pH Loop Regulation Window

This loop maintains the pH in the culture's substratum



Picture 42: pH Loop Regulation Window. (Control View from NTE).

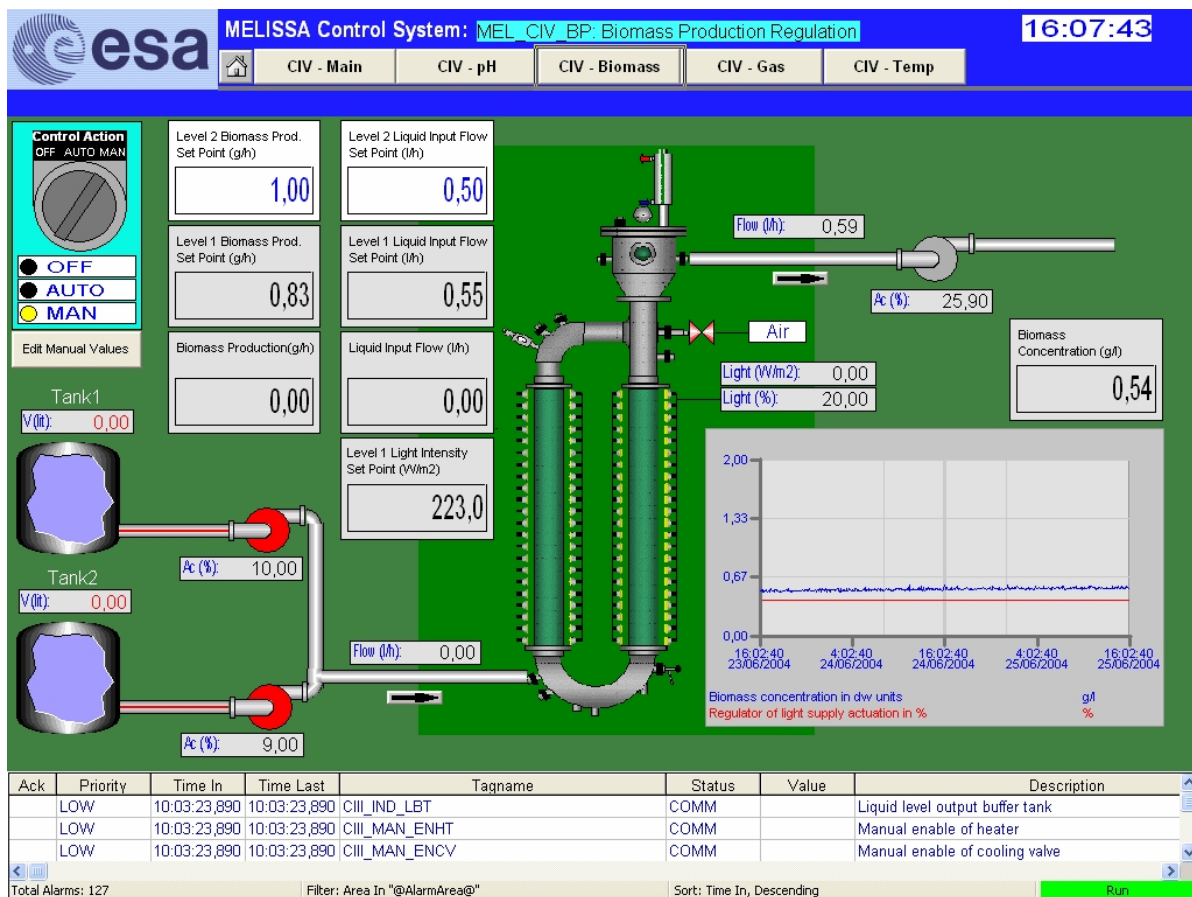
### Comments :

Use the standard tags to identify the variables

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	

## Biomass Loop regulation Window

This loop maintains biomass concentration



Picture 43: Biomass Loop Regulation window. (Control View from NTE).

### Comments

- Use the standard tags to identify the variables

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization	
Memorandum of Understanding 19071/05/NL/CP	

## Gas loop Input Output

See [..\UAB-ESTEC Documents\taula\\_io.doc](..\UAB-ESTEC Documents\taula_io.doc) and <..\UAB-ESTEC Documents\In-Out Compartiments.xls>

Compartment IVa

ID	Compartment	Loop	Type	IO	Device	Range	Name	OldTag	Description	Remarks
<i>P Control</i>										
46	CIV	CIV_CL_P	A	O	Flow regulator	0-5 V	CIV_PM_Fgo	AO-0603	Gas flow at output regulation	<i>GO Set Point</i>
43	CIV	CIV_CL_P	A	I	Flowmeter	0-5 V	CIV_MGO_Fg	AI-0603	Gas flow at output	<i>GO Measurement</i>
41	CIV	CIV_CL_P	A	I	Flowmeter	0-5 V	CIV_MV_Fg	AI-0601	Gas flow recirculation	<i>GFR Measurement</i>
44	CIV	CIV_CL_P	A	O	Flow regulator	0-5 V	CIV_PM_Fgr	AO-0601	Gas flow recirculation regulation	<i>GFR Set Point</i>
45	CIV	CIV_CL_P	A	O	Flow regulator	0-5 V	CIV_PM_Fgi	AO-0602	Gas flow at input regulation	<i>GI Set Point</i>
48	CIV	CIV_CL_P	A	I	Pressure sensor	0-5 V	CIV_MV_P	AI-0605	Pressure measurement	<i>P Measurement</i>
47	CIV	CIV_CL_P	D	O	Pressure valve	0-24 V	CIV_VL_Fg	DO-0601	Pressure safety valve activation	Activates a relay at 220V
42	CIV	CIV_CL_P	A	I	Flowmeter	0-5 V	CIV_MGI_Fg	AI-0602	Gas flow at input	<i>GI Measurement</i>
				O					<i>Nominal Pressure Set Point</i>	<i>P Set Point</i>
				O					<i>Dissolved O2 %</i>	<i>dO2 Measurement</i>
				O					<i>Air Input flow rate Set point</i>	<i>Air Input Set Point</i>

### Comments:

- ♦ Black variables in the EXCEL sheet are issued from the UAB document « taula IO.doc »
- ♦ Added comments are in blue to differentiate them from the original comment
- ♦ All variables appear on the control screen however not all are referenced in the EXCEL sheet (See blue variables in the “description” column).
- ♦ [See action list: §12 - Action 26].

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

## Temperature Loop Input Output

Compartment IVa

ID	Compartment	Loop	Type	IO	Device	Range	Name	OldTag	Description	Remarks
<i>Temp Control</i>										
31	CIV	CIV_CL_T	A	I	Temperature sensor	1-5 V	CIV_MV_T	AI-0502	Temperature measurement	Original 1-5V. Adapted to 4-20 mA controller input.
				O					<i>Temperature Set Point</i>	

Comments:

- Temperature Set point is not in the list
- The value of another variable is interesting in order to control the temperature. The window is near empty and it is possible to report values from steam generator and cooler.

[See action list: §12 - Action 27].

## pH Loop Input Output

Compartment IVa

ID	Compt	Loop	Type	IO	Device	Range	Name	OldTag	Description	Remarks
<i>pH Control</i>										
49	CIV	CIV_CL_pH	A	I	pH sensor	4-20 mA	CIV_MV_pH	AI-0606	pH measurement	<i>pH Measurement</i>
50	CIV	CIV_CL_pH	A	I	CO2 flowmeter	0-5 V	CIV_MV_CO2	AI-0604	CO2 flow measurement	<i>CO2 Measurement</i>
52	CIV	CIV_CL_pH	A	O	Base pump	0-5 V	CIV_PM_Bs		Additional Base source for pH regulation	<i>Base Set point</i>
51	CIV	CIV_CL_pH	A	O	CO2 flow regulator	0-5 V	CIV_FR_CO2	AO-0604	CO2 flow regulation	<i>CO2 Set point</i>
				O					<i>Additional Acid source for pH regulation</i>	<i>Acid Set point</i>
				I					<i>Acid Flow Measurement</i>	<i>Acid Measurement</i>
				I					<i>Base Flow Measurement</i>	<i>Base Measurement</i>

[See action list: §12 - Action 28].

## Biomass loop Input output

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

Compartment IVa									
ID	Compt	Loop	Type	IO	Device	Range	Name	OldTag	Description
<i>Biomass Control</i>									
40	CIV	CIV_CL_Cx	A	I	Biomass sensor	4-20 mA	CIV_MV_Cx	AI-0501	Biomass measurement
39	CIV	CIV_CL_Cx	A	I	Balance2	4-20 mA	CIV_MV_M2	AI-0504	Mass measurement to determine input flow
38	CIV	CIV_CL_Cx	A	I	Balance1	4-20 mA	CIV_MV_M1	AI-0503	Mass measurement to determine input flow
37	CIV	CIV_CL_Cx	D	O	Enable liquid input pump2	0-24 V	CIV_EN_Li2	DO-0502	Liquid Pump input2 on
36	CIV	CIV_CL_Cx	D	O	Enable liquid input pump1	0-24 V	CIV_EN_Li1	DO-0501	Liquid Pump input1 on
35	CIV	CIV_CL_Cx	A	O	Liquid output pump	0-5 V	CIV_PM_LO	AO-0503	Liquid Pump output set point
34	CIV	CIV_CL_Cx	A	O	Liquid input pump2	0-5 V	CIV_PM_Li2	AO-0502	Liquid Pump input2 set point
33	CIV	CIV_CL_Cx	A	O	Liquid input pump1	0-5 V	CIV_PM_Li1	AO-0501	Liquid Pump input1 set point
				O					Level 2 Biomass Prod Set Point (g/h)
				O					Level 1 Biomass Prod Set Point (g/h)
				I					Biomass production (g/h)
				O					Level 2 Liquid Input Flow Set Point (l/h)
				O					Level 1 Liquid Input Flow Set Point (l/h)
				I					Liquid Input Flow (l/h)
				O					Level 1 Light Intensity Set Point (W/m2)
				D					Air ?
				I					Liquid Flow Output
				I					Light Intensity Measurement ? (W/m <sup>2</sup> - %)

[See action list: §12 - Action 29].

### ***CIVa photograph report***

See [Pictures CIV.ppt](#) to visualise different views of Compartment CIVa

[See action list: §12 - Action 30]

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

## 11. Action List summary

This section defines what remains to be done. The Technical Note number is mentioned only if the action is to be defined together with ESA and UAB. The other actions points are proposed for discussion during the year.

Description of the action	TN Number <small>(if action is soon engaged)</small>
<i>Action 1: Application of the graphic standard ISA S5's principles to symbolize each element. Creation under VISIO software the basic shape corresponding to the standard for each equipment</i>	TN 78.71 et TN 78.72
<i>Action 2: Application of the labelling standard ISA S5's principles in order to code each element's label</i>	TN 78.71 et TN 78.72
<i>Action 3: Verify and validate the structure of the reports by UAB and ESA</i>	TN 78.71 et TN 78.72
<i>Action 4: Define the list of items and for each of them define the list of possible information</i>	[See Note 2]
<i>Action 5: Check and validate the supplier's references and for each of them select the pertinent technical information for each kind of equipment</i>	TN 78.72
<i>Action 6: Complete and validate information of the datasheet, all the blank cells of the following datasheet have to be fulfilled</i>	TN78.72
<i>Action 7: Take and comment missing equipment's picture (format .jpg is recommended)</i>	TN 78.72
<i>Action 8: Complete and validate the list of specific parameters for Mass Flowmeter and to update Technical and maintenance documentation</i>	[See Note 2]
<i>Action 9: Complete and validate the list of specific parameters for gear pumps and to update Technical and maintenance documentation</i>	[See Note 2]

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	

<i>Action 10: Complete and validate the list of specific parameters for peristaltic pumps and to update Technical and maintenance documentation</i>	<i>[See Note 2]</i>
<i>Action 11: Take pictures of different kind of valves and list of the specific parameters. To complete Maintenance and technical documentation of Valves</i>	<i>[See Note 2]</i>
<i>Action 12: Complete and validate the list of specific parameters for balances and to update Technical and maintenance documentation</i>	<i>[See Note 2]</i>
<i>Action 13: Idem for local controller [Temperature and gas]</i>	<i>[See Note 2]</i>
<i>Action 14: Idem for sensors [Pressure, dO2, CO2, pH, Biomass, Light, Temperature, ...]</i>	<i>[See Note 2]</i>
<i>Action 15: Idem for manometers</i>	<i>[See Note 2]</i>
<i>Action 16: Idem for Cooler</i>	<i>[See Note 2]</i>
<i>Action 17: Idem Steam Generator</i>	<i>[See Note 2]</i>
<i>Action 18: Idem for buffers</i>	<i>[See Note 2]</i>
<i>Action 19: Idem for Rotameter</i>	<i>[See Note 2]</i>
<i>Action 20: Information about CIVb's equipment have to be Completed as CIVa when the compartment CIVb will be implemented in the Pilot</i>	<i>[See Note 2]</i>
<i>Action 21: Information about CV's equipment have to be Completed as CIVa when the compartment CV will be implemented in the Pilot</i>	<i>[See Note 2]</i>
<i>Action 22: Define precisely the organisation of the Technical Documentation and verify it with UAB and ESA</i>	<i>TN 78.71</i>
<i>Action 23: Define precisely the organisation of the Maintenance Documentation and verify it with UAB and ESA</i>	<i>TN 78.71</i>
<i>Action 24: Reference all the equipment's occurrence to each basic shape for CIII as done for CIVa</i>	<i>[See Note 2]</i>

TN 66.52	Technical Database of MELISSA
UAB	
This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization Memorandum of Understanding 19071/05/NL/CP	

<i>Action 25: Define the links for CIII as done for CIVa</i>	<i>[See Note 2]</i>
<i>Action 26: Normalize the variable's names and complete the blank cells of Pressure Control Loop of CIVa</i>	<i>[See Note 2]</i>
<i>Action 27: Normalize the variable's names and complete the blank cells of Temperature Control Loop of CIVa</i>	<i>[See Note 2]</i>
<i>Action 28: Normalize the variable's names and complete the blank cells of pH Control Loop of CIVa</i>	<i>[See Note 2]</i>
<i>Action 29: Normalize the variable's names and complete the blank cells of Biomass Control Loop of CIVa</i>	<i>[See Note 2]</i>
<i>Action 30: Have a completed and illustrated report</i>	<i>[See Note 2]</i>

*Note 2: The tasks which are not allocated to TN 78.71 and TN 78.72 will have to be done by the Pilot Plant in the future. At present time it can be foreseen that the maintenance and update of the information collected in the database will be performed by the Pilot Plant technical staff. At present time the precise definition of tasks for each personnel is under discussion between ESA and UAB for the new frame contract. Any modification proposed referring to modification of the software developed by NTE (for example update of screen labelling or inclusion of other variables) will have to be done by NTE and will be done in future work orders.*

TN 66.52	Technical Database of MELISSA
UAB	
<p>This document is confidential property of the MELISSA partners and shall not be used, duplicated, modified or transmitted without their authorization</p> <p>Memorandum of Understanding 19071/05/NL/CP</p>	