

# Process Analysis (Process Evaluation) / Comparative Assessment of VisiMix projects

## QUICK START MANUAL

### General

Use this option to perform for **Process Analysis / Comparative assessment** procedure using modelling possibilities of the VisiMix program.

**Purpose of operation:** Comparison of performance of mixing operations performed in mixers of different design, different scale and/or different regimes.

This comparison is performing with respect to unit operation (technical target of the mixing operation defined by user).

Results of different VisiMix projects comparison organized in form of set of tables and graphs containing values of VisiMix input and output parameters.

Selection of these parameters is defined by selected unit operation.

Tables include:

- **Basic characteristics of the equipment**
- **Target parameters of the process (parameters of general applicability of the equipment for selected process)**
- **Auxiliary characteristics (characteristics of the flow and turbulence effecting selected process results)**
- **Properties and regime characteristics relevant for selected unit operation**

**This option helps user:**

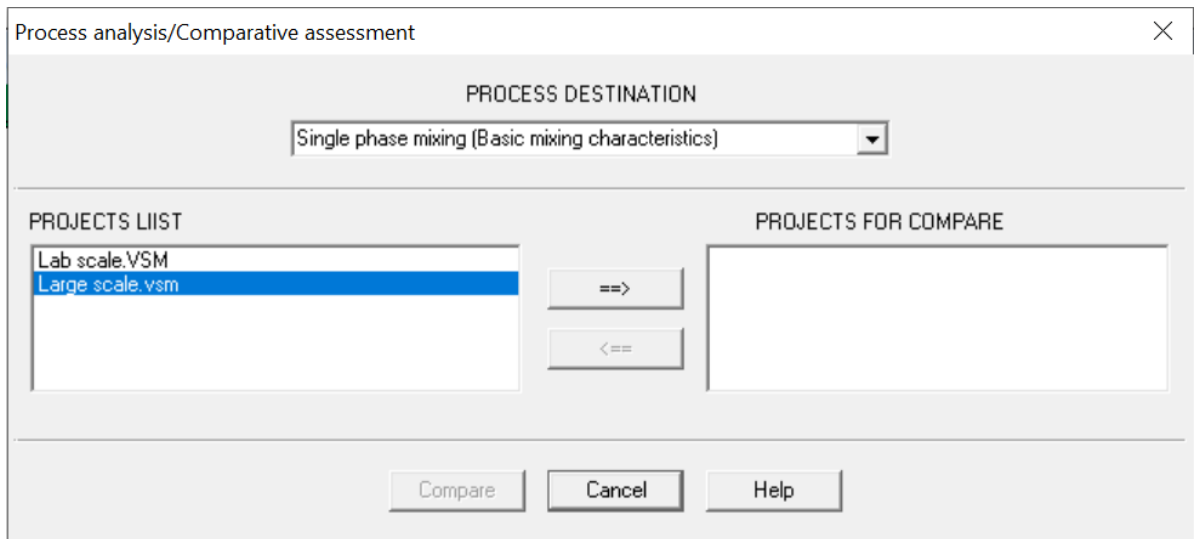
- **To select the mixing equipment that match his process requirements.**
- **To check if it is possible to reproduce conditions of industrial scale process in his pilot or laboratory unit.**
- **To analyze effect of regime characteristics and physical properties of mixed materials on the process results.**

**Description of the work with this feature:**

### **Start VisiMix Process Analysis / Comparative assessment procedure.**

Click **Process Analysis** option in the Project submenu or **Process Analysis** button in the button bar on the upper part of VisiMix screen.

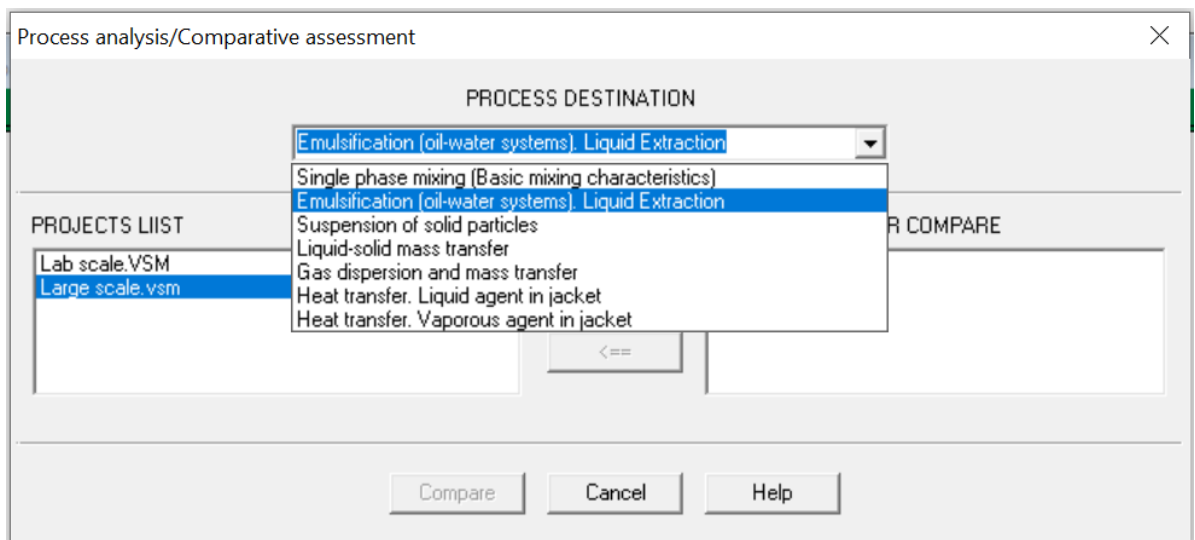
**Process Analysis / Comparative assessment** dialog appears.



If some projects are opened (for the sake of example - projects “Lab scale” and “Large scale”), they automatically appear in the PROJECT LIST of the dialog on the left side.

### **Selection of basic unit operation**

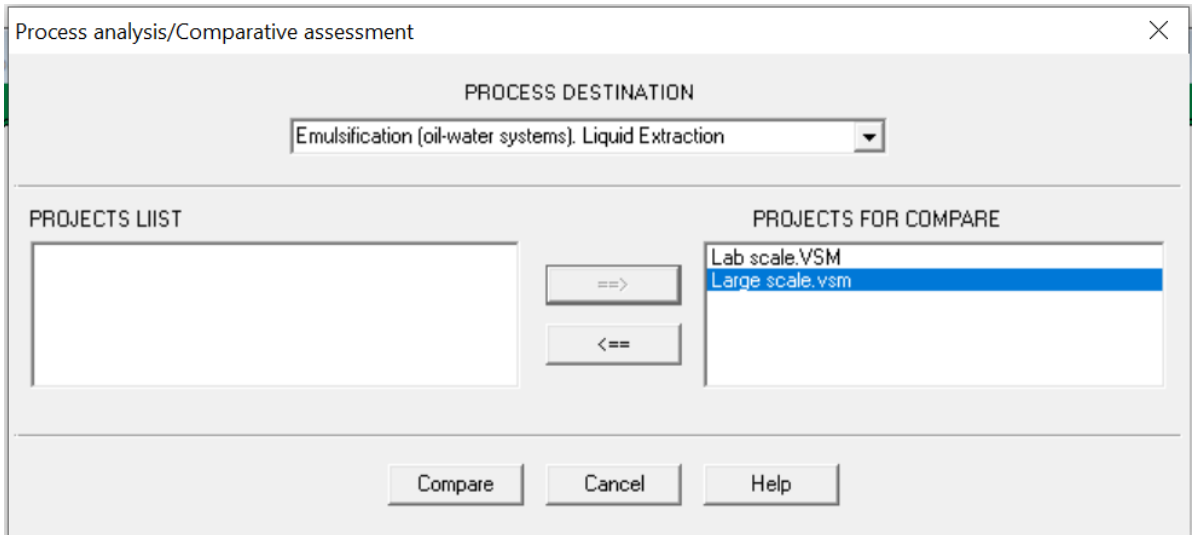
Select BASIC UNIT OPERATION from the list box BASIC UNIT OPERATIONS on the upper part of the dialog:



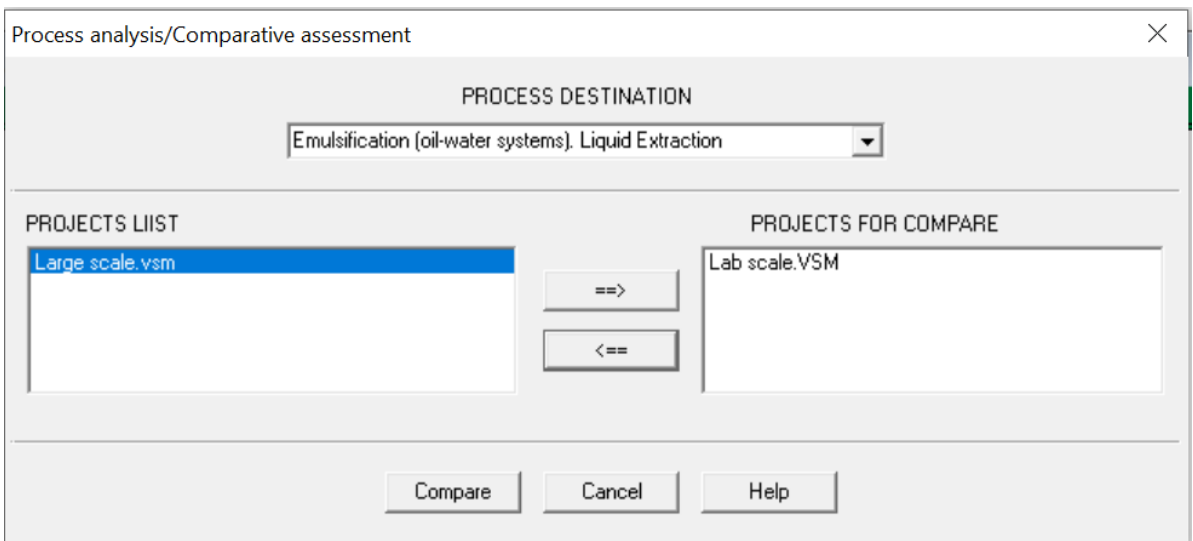
## Creation of list of projects for comparison

In order to transfer the project from PROJECT LIST to list of PROJECTS FOR COMPARE (on the right side of the dialog), select the project and click upper arrow button ==> . If selected process is ready for simulation of selected process it will be transferred to the list of PROJECTS FOR COMPARE.

If there is a lack of initial data for the selected project, corresponding input window will appear. Complete the input of initial data and the project and the project will be transferred to the list of PROJECTS FOR COMPARE.

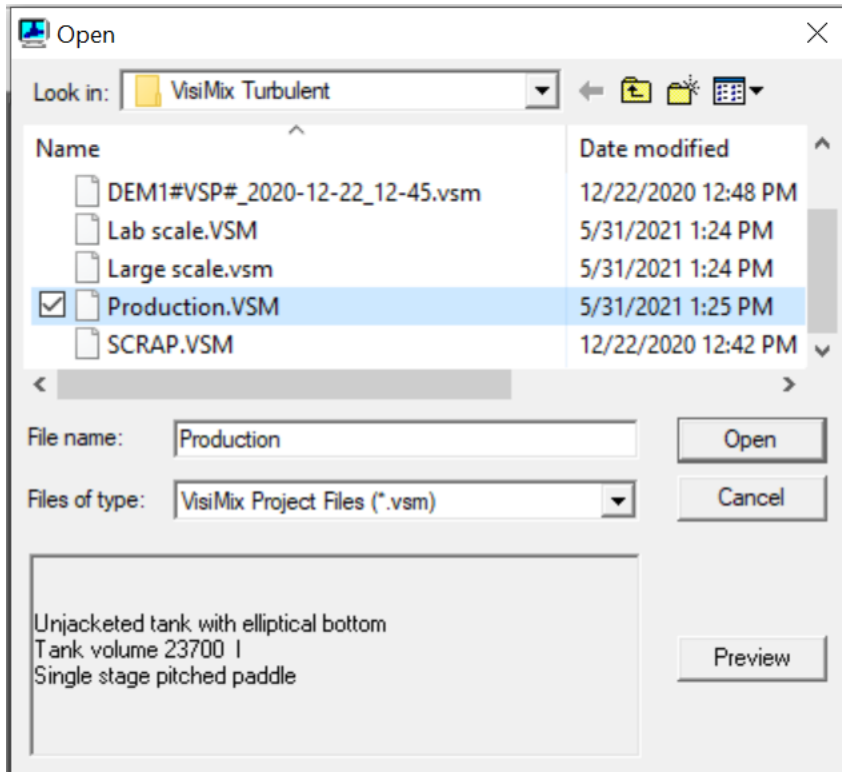


You can exclude the project from the list of PROJECTS FOR COMPARE by click lower arrow button <== . Selected project will be transferred from the list of PROJECTS FOR COMPARE to the LISTS OF PROJECTS.



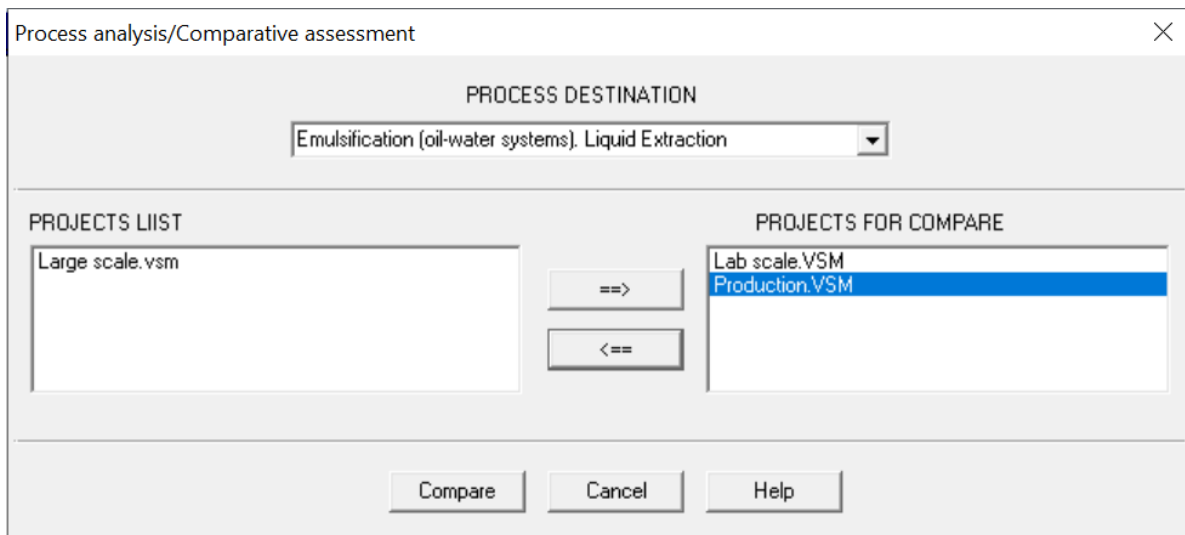
## Opening of the new project from the file

Select the project, for example project “Production” and open it.



If selected process is ready for simulation of selected process it will be transferred to the list of PROJECTS FOR COMPARE.

If there is a lack of initial data for the selected project, corresponding input window will appear. Complete the input of initial data and the project and the project will be transferred to the list of PROJECTS FOR COMPARE.



## Compare

Click Button “Compare”. Output window, **VisiMix Process Analysis**, presenting results of selected projects comparison for selected unit operation will be opened.

Unit operation:  
**Emulsifying (Oil - Water Systems). Liquid Extractors, Multi-phase reactors.**

Parameter	1	2	3	4	5	6	7	8	9
Project Name	Lab scale	Large scale	Production						
=== TARGET PARAMETERS									
Condition of complete emulsifying	complete	complete	complete						
Mean drop size , mkm	333	333	290						
Specific mass transfer area , sq.m/...	4910	4900	5620						
=== BASIC DEVICE CHARACTERISTICS									
Tank diameter , mm	300	3000	3000						
Type of impeller	pitched paddle	pitched paddle	pitched paddle						
Impeller tip diameter , mm	120	1200	1300						
Rotational speed , Rpm	500	108	120						
Impellers number	1	1	1						
Mean micromixing time inside drop, s	35.8	35.8	22.8						

**Brief description of the application**

**1. General**

This application presents results of VisiMix simulations of selected unit operation for a number of VisiMix projects that differ from each other by equipment design, scale or process regime.

This comparison is performed with respect to unit operation (technical target of the mixing operation defined by user).

Results of different VisiMix projects comparison organized in form of set of tables and graphs containing values of

User Notes :

Target Parameters >> Mixing tank data >> Properties >> Basic Mixing and Turbulence >> Kinetics of drop breaking >> All in One >>

**Note:** The results of calculations relevant for values of initial data actual at the moment of this window was created.

You always can edit initial data of active project. After editing click button **Compare** again and you will receive the window **VisiMix Comparative assessment** for a new set of values of initial data.

## Export of Process Analysis results to Excel

You can export results of calculation to Excel.

To perform this, click on button “Export to Excel” on the upper part of the screen:

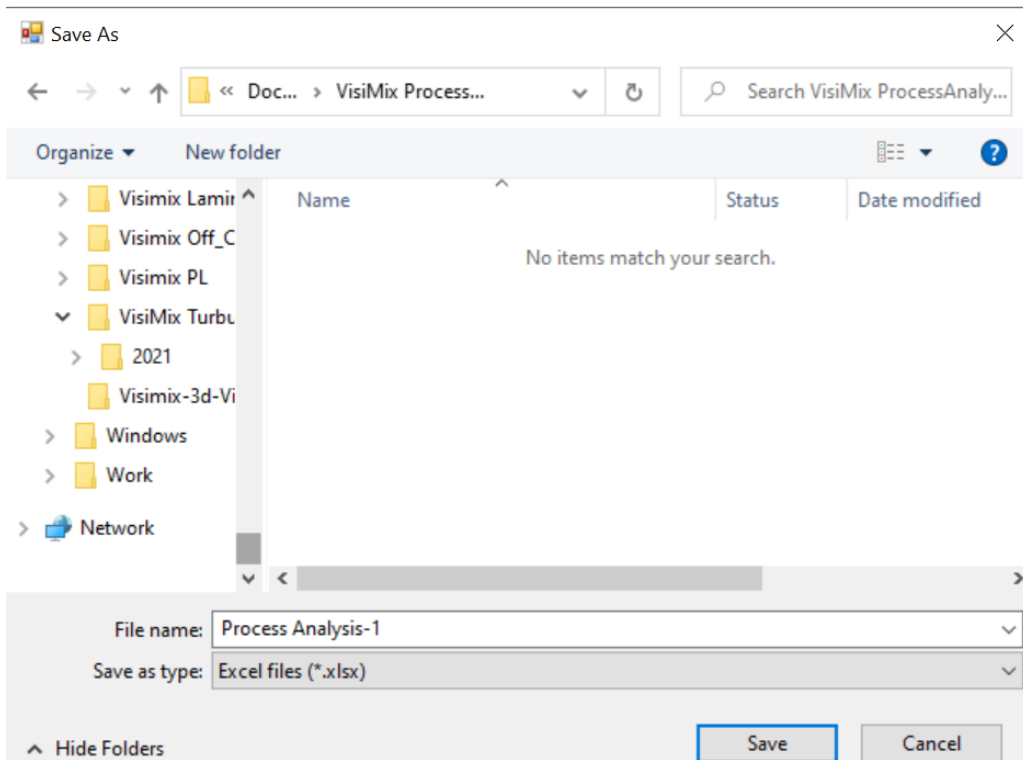
Unit operation:  
**Emulsifying (Oil - Water Systems). Liquid Extractors, Multi-phase reactors.**

Open Save As **Export to Excel** Close Exit

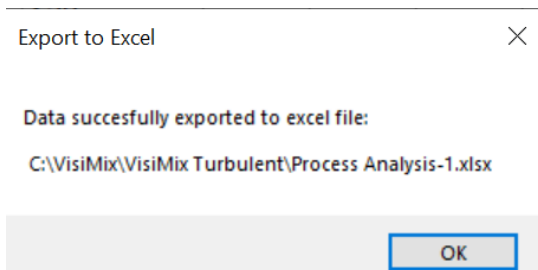
**Basic Characteristics of the Emulsion Created**

1 C:\Vis  
2 C:\Vis  
3 C:\Vis

“Save” dialog appears. Name the file and save it in the selected folder.



The following message appears:



Open the saved \*.xlsx file:

AutoSave  Off Process Analysis-1 Search

File Home Insert Draw Page Layout Formulas Data Review View Help

Clipboard Font Alignment Number Conditional Formatting

Target Parameters

	A	B	C	D	E	F
1	Target Parameters					
2						
3	Parameter		1	2	3	
4	Project Name		Lab scale	Large scale	Production	
5	=== TARGET PARAMETERS					
6	Condition of complete emulsifying		complete	complete	complete	
7	Mean drop size, mkm		333	333	290	
8	Specific mass transfer area, sq.m/cub.m		4910	4900	5620	
9	=== BASIC DEVICE CHARACTERISTICS					
10	Tank diameter, mm		300	3000	3000	
11	Type of impeller		pitched paddle	pitched paddle	pitched paddle	
12	Impeller tip diameter, mm		120	1200	1300	
13	Rotational speed, Rpm		500	108	120	
14	Impellers number		1	1	1	
15	Mean micromixing time inside drop, s		35.8	35.8	22.8	
16						
17						
18						
19						
20						
21						

Target Parameters Mixing tank data Properties Basic Mixing and Turbulence Kinetics of drc ...

*All results of the analysis are organized in several Excel sheets.*

## New unit operation selection

Select new unit operation in the **Process Analysis / Comparison assessment** dialog.

Process analysis/Comparative assessment

PROCESS DESTINATION

Gas dispersion and mass transfer

PROJECTS LIIST

- > Lab scale.VSM
- > Large scale.vsm
- > Production.VSM

PROJECTS FOR COMPARE

==>

<==

Compare Cancel Help

All projects will be transferred from the list of PROJECTS FOR COMPARE to the LISTS OF PROJECTS.

For convenience, transferred projects are marked with arrow at the left side of their name.