



GRINDING CIRCUIT TOOLBOX

USER'S MANUAL (V 1.0)

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INDEX

<i>I. Introduction.....</i>	<i>2</i>
<i>II. Simulation.....</i>	<i>4</i>



I. INTRODUCTION

This simulator is intended to ease the development of control strategies for conventional wet grinding circuits and comprises a sub-set of models described in the book "Advanced Control and Supervision of Mineral Processing Plant". The simulator assumes that the user is familiar with Matlab[®] and Simulink[®].

This user's manual describes the procedures for installing and using the simulator. A set of default parameters is preconfigured in order to provide an easy start. The calibration of these models is beyond the scope of this simulation toolbox.



How to get: The toolbox is freely available in the WorldWideWeb: www.springer.com/978-1-84996-105-9

How to install: Unpack GrindingToolbox.zip into any convenient directory. The directory GrindingToolbox should be created which is the top of the source tree. You must have Matlab® 5.0 or higher.

How to uninstall: Just remove the GrindingToolbox directory and remove the GrindingToolbox directory from your Matlab® path.

How to work: This toolbox was designed for Matlab, thus one need to install Matlab® 5.0 or higher before using this toolbox.

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Remarks: The toolbox is still under development. We can not give any warranty for anything related with our programs. Please send error messages or comments to our contact address.

Future releases: Send any wishes to our contact address.

Warning: Any uncritical application of the methods included in this toolbox can yield to pitfalls. We give no warranties for the results obtained with the toolbox.

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Version 2, June 1991

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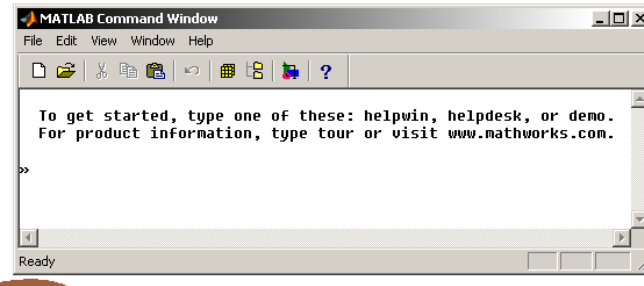


II. SIMULATION

In order to configure a given grinding circuit it is necessary to use the models included in the toolbox and some native Simulink® blocks.

The following steps provide the necessary information to carry out this process:

Step 1. Open a MATLAB® window.

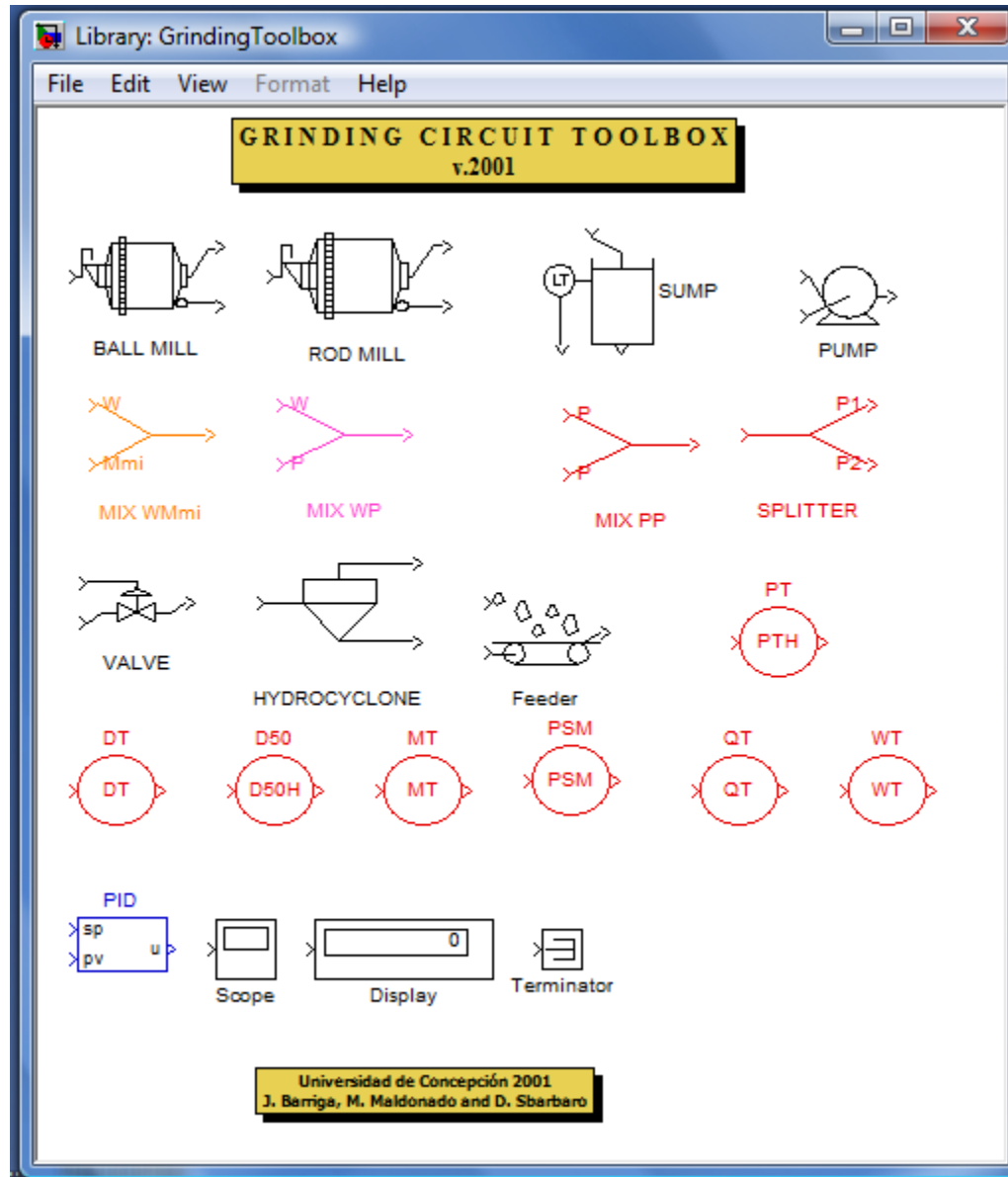


Step 2. Change the directory where the toolbox is located, for instance:

» **cd 'Z:\GrindingToolbox'**

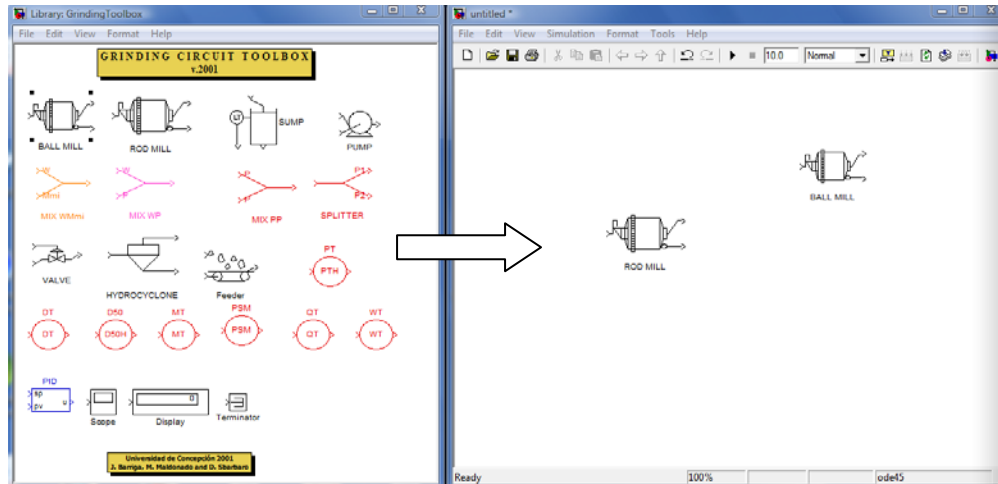
Step 3. Open the library:

» **GrindingToolbox**

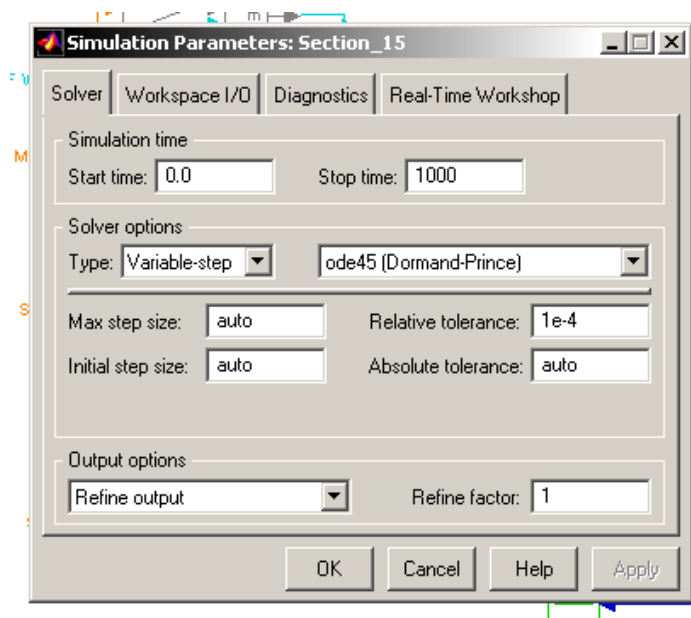


Step 4. Open a new window either typing **Ctrl+N** or using the menu bar: **File/New/Model**

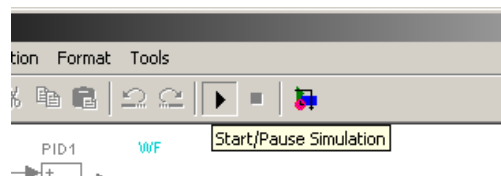
Step 5. By “drag & drop” , select the required elements and place them in a new Simulink® page:



Paso 6. Set the simulation parameters by either using **Ctrl+E** or selecting in the menu bar: **Simulation/Parameters**



Paso 7. Run the model by using **Ctrl+T** or:





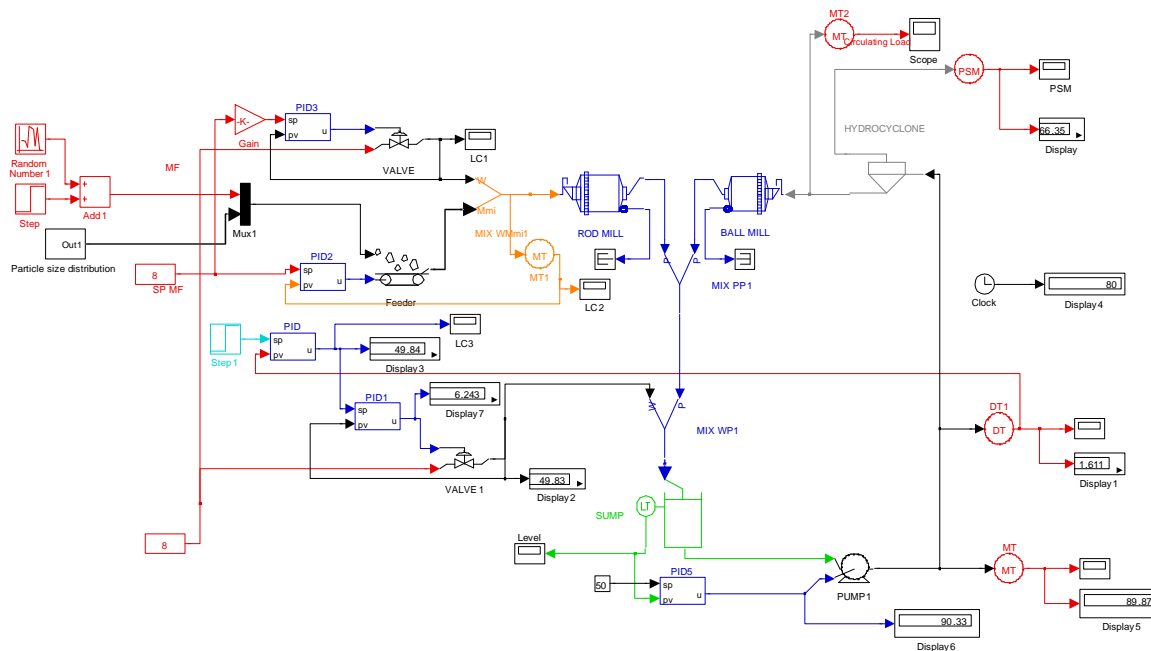
In order to visualize the simulation results the following Simulink[®] blocks can be used:

- Display:  shows the numerical values
- Scope:  shows a trend

As an example, the file Example_1.mdl presents a classical grinding circuit with the following control loops:

- Sump level controlled by the output sump flowrate.
- Density controlled by the sump water flowrate.

The final simulation diagram is shown in the following figure.



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