FIBERMAK TOWER

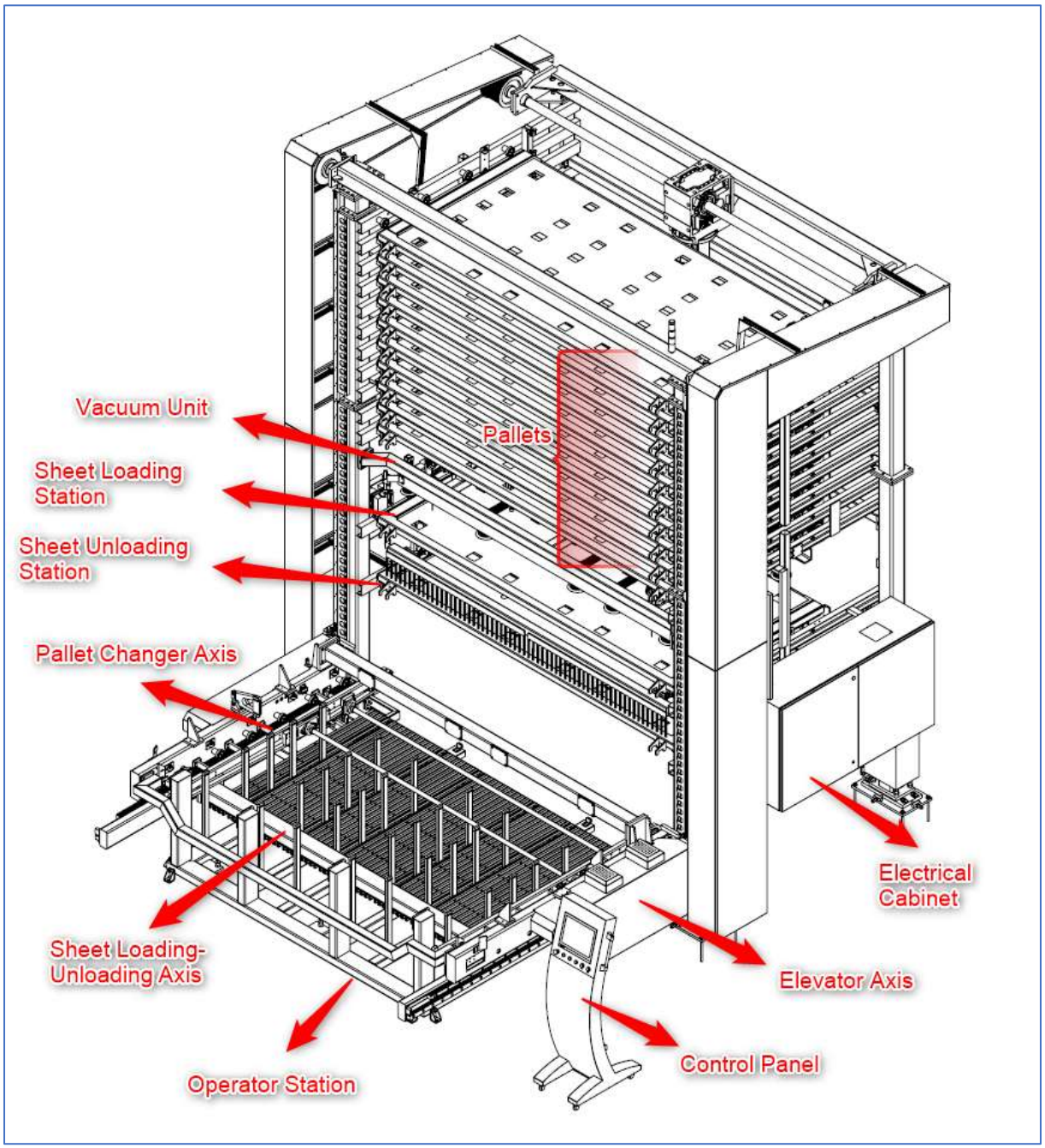
• INSTALLATION & SETUP

Warning

Operator must read and understand this documentation to use Towermak. This documentation gives important informations about the system.

Towermak

Towermak is designed as sheet loader and unloader for Fibermak Laser Machine. Towermak can be controlled by Laser Machine via automatic mode key switches. Towermak can have up to 16 racks and It allows store sheets up to 15 pallets(Loading and Unloading Pallets Included) . Each pallets can carry sheets which is loaded up to maximum 85 mm height and 3000 kg weight.



System Start-Up

Be Sure Nobody Is In Towermak Working Area.

Be Sure Air Pressure (6 Bar) Feeds The System.

Be Sure Fibermak Laser Machine Is On.

Check All Emergency Buttons Are Released.

Reset Laser Safety Barrier via Test Button.

Wait 60 seconds for Windows PC Initialization.

Start Towermak HMI application.

Check System Alarms And Errors.

System Shut Down

Wait for Any Automatic process is finished.

Turn Manual/Auto Mode Key Switch to Manual.

Shut Down Windows PC via start menu.

Switch Off Main Switch of Electrical Panel.

Close air pressure of System.

System Emergency Stop

Every emergency buttons stop the system immediately. When Buttons are pressed, any motorized equipments power are cut and Pneumatic System's air pressure is released for safety.

If Emergency buttons are pressed while Towermak is in automatic cycle, Towermak stops all automatic commands and waits for system safety conditions are convenient. If Emergency state is ready, Operator can give any command to Towermak.

Towermak always saves the automatic cycle states to its memory, So, Automatic cycles can be continued via Start command.

Towermak Controlling Modes

Towermak can be controlled by different modes. Modes can be change by panel key switches.

MANUEL MODE / AUTOMATIC MODE

Manuel Mode allows manuel motion commands, pneumatic controls. If Manuel mode is selected, Manuel control page is enabled.

Automatic Mode allows semi-automatic or automatic commands. If Automatic Mode and Local Mode are selected, Semi-Automatic commands can be executed. If Automatic Mode and Remote Mode are selected, Fibermak Machine commands Towermak system.

LOCAL MODE / REMOTE MODE

Local Mode is used for Towermak control by its operator panel. Remote Mode allows Fibermak Machine To Command Towermak.

MAINTENANCE MODE FOR ROPE TIGHTNESS

Manual + Remote mode selection is specifically defined to maintain A axis rope tightness. If Ropes are not enoughly tightening, rope control sensors cut off emergency line and prohibit axis movements. If Ropes are intact and Operator wants to tight ropes as much as its standard tightness , Emergency Line Error can be bypassed with Manual + Remote keys selection and then pressing to test button. This operation gives permission to A Axis(Elevator) movement. Operator can move A axis to upward via Manual Controls - Jog Mode till Rope is tighten.

Loading Sheet

When sheet loading is requested, Towermak scans sheets informations of pallets and compare sheet informations to find requested sheets. If Requested sheet is exist in pallets, A Axis takes the pallet from store and send to loading area. In loading area, Vacuum Unit get near to sheet and vacuum it. If Sheet thickness is under 5 mm, Sheet seperating process work. Caliper measures the sheet thickness. If measured thickness value is in acceptable tolerance, Fork Unit gets sheet. Fork Unit releases sheet to shuttle table and loading process is successfully done.

Unloading Sheet

When Sheet unloading is requested, A Axis moves to shuttle table position and fork unit moves for pick sheet on shuttle table. A Axis moves to unloading pallet position and release sheet to unloading pallette till fullness limit is reached. When unloading pallette limit is reached , According to operator choices, the pallet is taken to operator station or send to empty rack according to operator choices.

Storing Sheets

An Empty pallet is taken to operator station and Operator places sheets to pallet with respect to reference point. Height of placed sheets must be equal or less than 85 milimeters because of system limits. If Sheets placed conveinently to limits, Operator can send pallet to empty rack via semi-automatic controls. If Sheets are stored to rack, Sheet informations must be save to related pallet informations. Sheet informations must be true for Towermak automaticly perfect working.

A Axis (Elevator) Referencing

When A Axis needs to referencing because of rope tightness and position differences, Operator can give referencing command via Semi-Automatic Controls- A Axis Referencing button. When button is clicked, A Axis moves to first reference search position and then axis velocity is reduced for searching reference. When reference point is detected, System calibrate A axis, automatically. Please wait while referencing process is working.

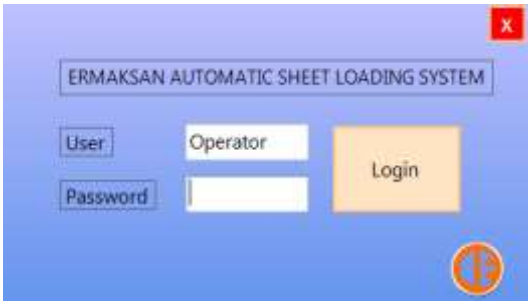
Job Cancellation Procedure

Every automatic process is called as Job in Towermak System. Job cancellation form is used to cancel jobs. Job Cancellation form is placed in Semi-Automatic form. Reset button can erase errors in Towermak system. If System has not error, Active jobs can be continued by start button. Reset button can not cancel jobs.

Human User Interface

Login Page

Towermak has two user account; "Admin" , "Operator" . Logining As Operator doesn't require password.



Start Screen

1- Axis Enable : Axis can be enabled by this radiobutton. If Axis is not enable, Axis movement is not possible.

2- Event Bar : Alarms and Errors are shown by Event Bar. Operator can access to alarm details with double click to Event Bar.

3- Directly Form Change Buttons : Operator can use these buttons for directly show form which is desired.

4- Form Change Buttons : Operator can show previous or next form by these buttons. Also, Operator can slide forms by two fingers thanks to multi touch utility.

5- Control Buttons:

Start button use for start semi-automatic processes.
Stop Button stops every axis movement and automatic processes.
Reset Button is used for delete alarms and errors.

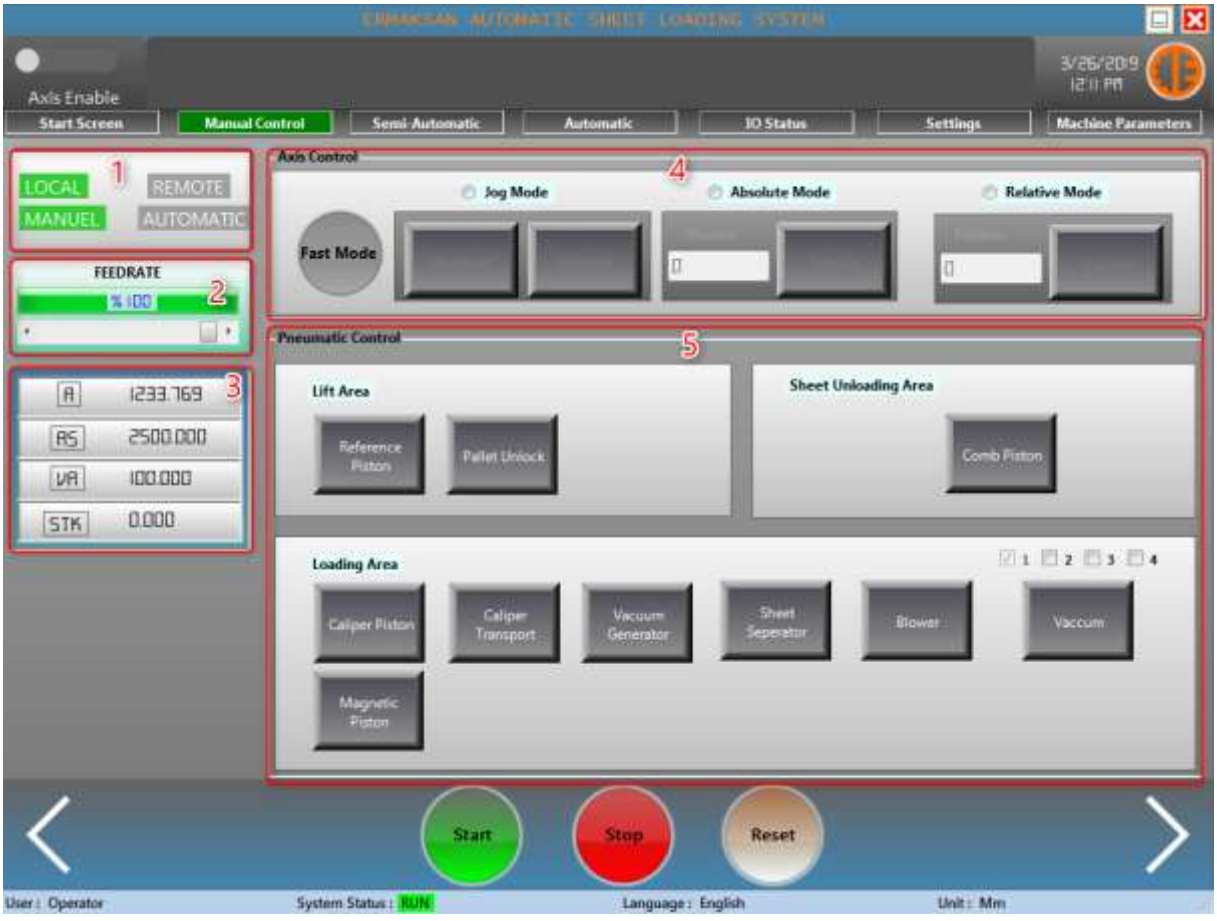
6- Status Strip : This strip shows system status and machine configurations that selected by Operator.

Manuel Control

To use manual controls, Local and Manual mode must be selected via key switches.

Warning!

Manual Controls must be controlled by qualified and trained personnel. Customer is responsible for any system damage and personnel injury due to incorrect using of manual controls.



1- Key Switches Positions : LOCAL / REMOTE , MANUEL/AUTOMATIC key switches positions are shown in this panel.

2- Feedrate : Operator can change axis feedrate with this scrollbar. This selection effects all motorized actions.

3- Axis Selection Panel : Axis is selected by this panel for give movement commands.

A Axis can be described as elevator axis. It has up or down movements.

AS Axis can be described as Pallet Changer. It has forward and backward movements.

VA axis can be described as Vacuum Unit. It has up or down movements.

STK axis can be described as Sheet Loader and Unloader. It has forward and backward movements.

4- Movement Modes :

Fast Mode : In manual mode, Fast mode lets rapid movements.

Jog Mode : This mode enables an axis to be moved via manuel Backward/Forward keys.

Absolute Mode: Axis can be moved to specific target position via Absolute Mode. If Position is entered and Execute button is clicked, Axis can be moved to target position. Please be careful to give movement commands in this mode.

Relative Mode: Axis can be moved as much as entered position value. Please be careful to give movement commands in this mode.

5- Pneumatic Controls : Operator can give manual commands to pneumatic valves via these buttons. To use Vacuum button, Operator must select checkboxes(1,2,3,4) according to sheet height and weight.

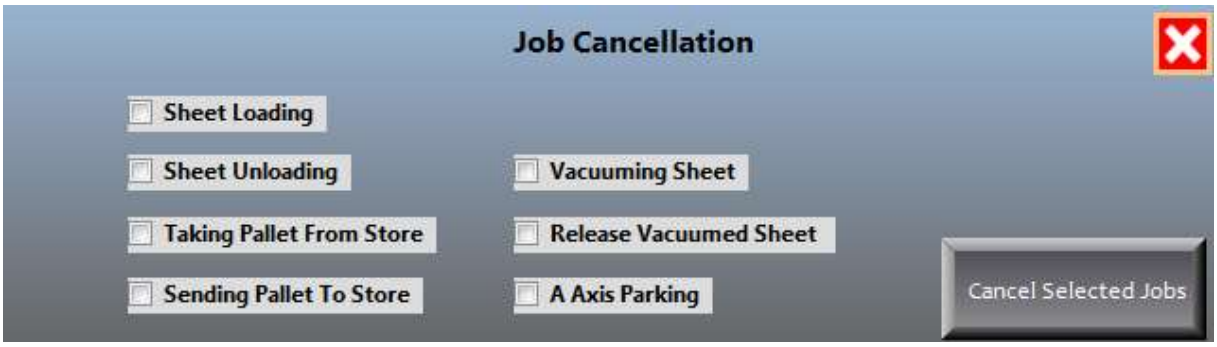
Semi-Automatic Control

To use semi-automatic controls, Local and Auto mode must be selected via key switches.

1. Pallet Informations : Towermak Multimaster saves all pallet datas to trace sheet informations. Also Lift Area, Top Shuttle Table and Down Shuttle Table informations are saved. Stored sheet informations must be matched with HMI pallet informations.

If Sheets stored to pallets, The Pallet information must be updated. Operator can use Semi-Automatic Control Page(1 and 3) for this action.

2.Active Jobs and Job Cancellation : Operator can see Towermak's working areas in this panel. By Job Cancellation Button, Operator can Access to Job Cancellation Form.



Operator can cancel the jobs by select checkboxes and "Cancel Selected Jobs button". If Operator cancel active jobs, He has to complete some jobs manually. Please be careful to cancel active jobs.

3.Selected Rack Info : Selected rack informations are shown in this panel. Operator can change informations by using textboxes and buttons.

4.Sheet Loading: Operator can load sheet to shuttle table via "Load Sheet To Table" Button. Sheet Length, Width and thickness must be conveinently entered. Material can be selected easily via combobox.

5.System Data: Operator can change sheet seperator cycle count and Unloading pallet fullness limit via this panel.

6. Sheet Storing: This panel functions are related with storing. Operator can manage pallets by these functions.

If Operator wants to take pallets from Store, He has to select pallet number then click the button "Take Pal. From Selected Rack"

If Operator wants to send pallets to Store, He has to select pallet number then click the button "Send Pal. To Selected Rack"

If A Axis needs to calibration, Operator can calibrate the axis by "Calibrate A Axis " button.

A Axis can be moved to park position by "A Axis Park " button.

7. Sheet Unloading : Operator can unload sheet by using this panel. Unloading process has two operating options. When Unloading pallet is full, Towermak decides to action according to operator's choice. If "Bring Pallet To Front" is selected, Towermak brings unloading pallet to operator station. If "Send Pallet To Empty Rack" is selected, Towermak sends unloading pallet to first empty rack.

8.Vacuum Unit : Operator can vacuum sheet with semi-automatic commands. Vacuumed sheet can be released to pallet or fork. Sheets thickness must be equal or less than 20 milimeters.

When Caliper measured the sheet thickness, measured value is shown in textbox.

Automatic Control

Automatic Controls are controlled only by Fibermak Laser Machine. To use automatic controls, Auto and Remote mode must be selected.

1. Laser Machine Sheet Request : Received data from Laser Machine is shown in this panel.

2. System Data And Unloading Options : Unloading Pallet Fullness Limit and Unloading Options can be changed in this panel. Measured sheet thickness value is shown in textbox.

3. Laser Machine Signals : Received signals from Laser Machine are shown in this form.

IO STATUS

Digital IO signals are shown in IO status form.

SETTINGS

General settings are listed in this form. HMI Language can be changed and unit of length can be selected inch or metric. If Unit of length are changed, HMI should be restarted for changes activation.

Machine Parameters

Axis calibration and important machine parameters are controlled in “Machine Parameters” form. This page must be used by authorized staff. Operator can not access to this page. Admin user can access and modify all parameters.

Alarms And Error Description Form

Event bar always shows alarm status of Towermak System. Alarm details can be shown via double click to Event bar. All alarms and details can be seen. To return main application page, form should close its exit button.