Laser Engraving System

Cabinet

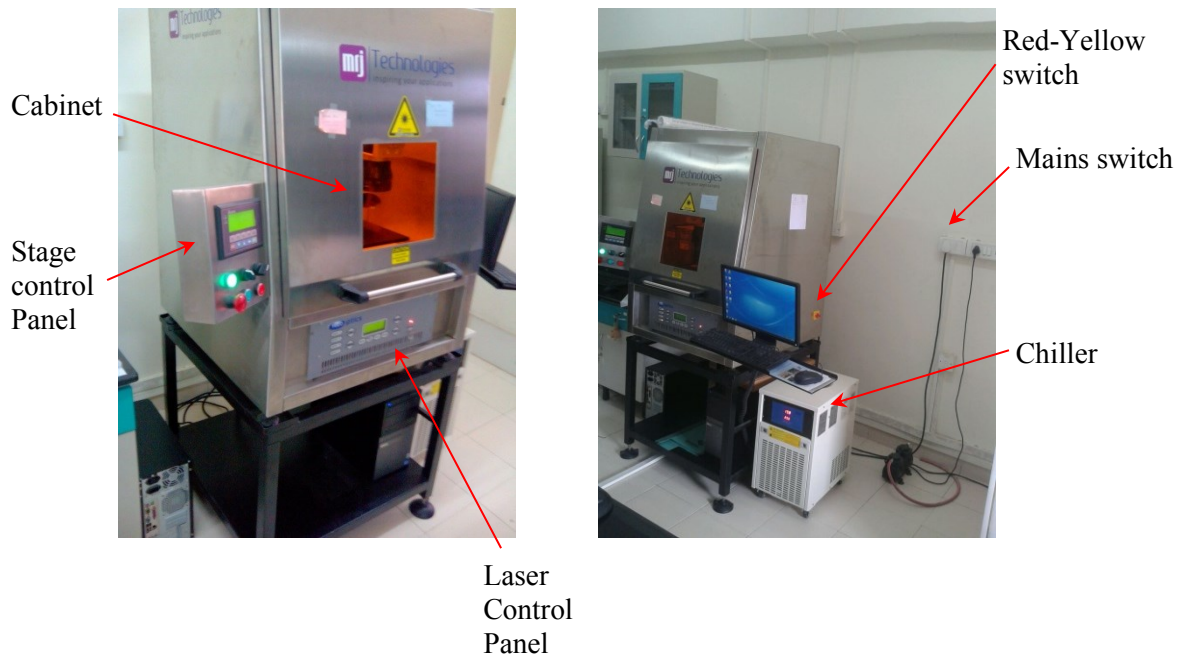Stage control Panel

Red-Yellow switch

Mains switch

Chiller

Laser Control Panel

Components of the Laser Engraving System:
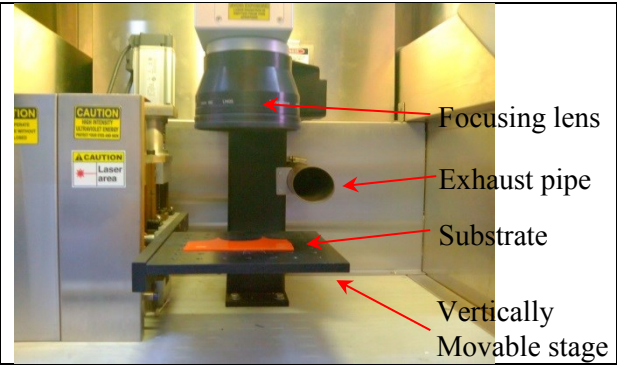
- Laser Control Panel
- Stage Control Panel
- PC
- Cabinet

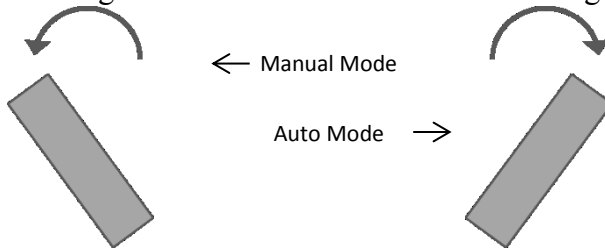| Laser Control Panel	
Stage Control Panel	

Cabinet Inside – Stage and Lens	Focusing lens Exhaust pipe Substrate Vertically Movable stage

Switching the System ON

Step 1	Switch on the Mains (at the back of the machine, on the wall).
Step 2	Switch on the Red-Yellow switch on the right of the machine.
	Wait for the chiller temperature to come to $20^{o}C$
Step 3	Switch on the PC by pressing the CPU placed below the machine.
	Wait for the circle next to the arrow of the mouse to stop rotating.
Step 4	Turn on the Power Key switch in the Laser Control panel.
	Wait for 1-2 minutes.
	Turning ON the Laser
	Laser Control Panel
Step 5	Press the Diode button, QS-ON button and SHT-ON button.
	Wait for 3-5 minutes.
Step 6	Set the current to required value, for example 31 A for PET sheet. This should be done by using the Up arrow in the Laser Control Panel. Make sure that the arrow button is <u>not</u> kept pressed till the required current value is reached. It should always be done in steps of 3 A. Note: Current arrow buttons (Up and Down arrows) are to be used for changing the current. The set current and the actual diode current are represented by IS and IA respectively. By manipulating the arrows, the set current can be changed. The actual current cannot be manipulated. It tries to approach the set current value. The maximum value of IS value is 32.5A. Do not go beyond this value.
Step 7	Press the PRF arrow buttons (Up and Down arrows) for changing the frequency or repetition rate. The optimum PRF value (as specified by the engineer) is 30-35 kHz.
Step 8	Now wait for 10 minutes.
	Setting the Stage
Step 9	First, make sure that the machine is in Manual Mode. Manual Mode means that

the key switch on the Stage Control Panel is to the left and not glowing.

← Manual Mode

Auto Mode →

While waiting for the current to stabilize, in the last 3 minutes, reset the stage to its initial position by pressing the Red-Round button. Wait for the Red-Round button to stop glowing.
Note: while the Red-Round button is glowing, check through the machine cabinet whether the stage is moving down. If not, then check whether the knob on the Stage Control Panel has been pulled out.

Step 12	After the stage has reset to its initial position, get the machine to the Auto Mode. This is done by bringing the key switch on the Stage Control Panel to the right. The key should glow now.
Step 13	Now, enter the desired height using the display and buttons in the Stage Control Panel. Stage Control Panel Parameters: Object Height (in mm) Step size (in μm) Depth size (in μm) The machine is programmed automatically to calculate the number of passes the laser has to run.
Step 14	Now, press the Green-Round button to let the stage to the desired position. Wait for the Green-Round button to stop glowing.
Step 15	Meanwhile, open the desired program in the software. The following commands should be there for the first run- 1. External Trigger 2. Delay 1.5 sec 3. Feature to be drawn 4. Custom Output • Tick on Laserport 1 (8 bit) • Value of Laserport1 (8 bit) should be set to 1 • Tick on Pulse Output • Value of Pulse Output should be set to 100 msec
Step 16	Press F2 to start the laser start dialogue box.
Step 17	Press start

Switching the System OFF

Step 1	Bring down the current to 0 A. This should be done by pressing the Down arrow on the Laser Control Panel in steps of 3 A.

Step 2	Now wait for 10 minutes.
Step 3	While waiting, reset the stage by pressing the Red-Round button on the Stage Control Panel.
Step 4	After 10 minutes of wait, press the following buttons in the order that they have been mentioned here: QS-ON button , SHT-ON button, Diode button. Note: Maintain the order.
Step 5	Wait for 3 minutes.
Step 6	Now turn off the Power Key switch of the Laser Control Panel.
Step 7	Shut down the PC.
Step 8	Switch off the Red-Yellow switch on the right of the machine.
Step 9	Switch off the Mains (at the back of the machine, on the wall).