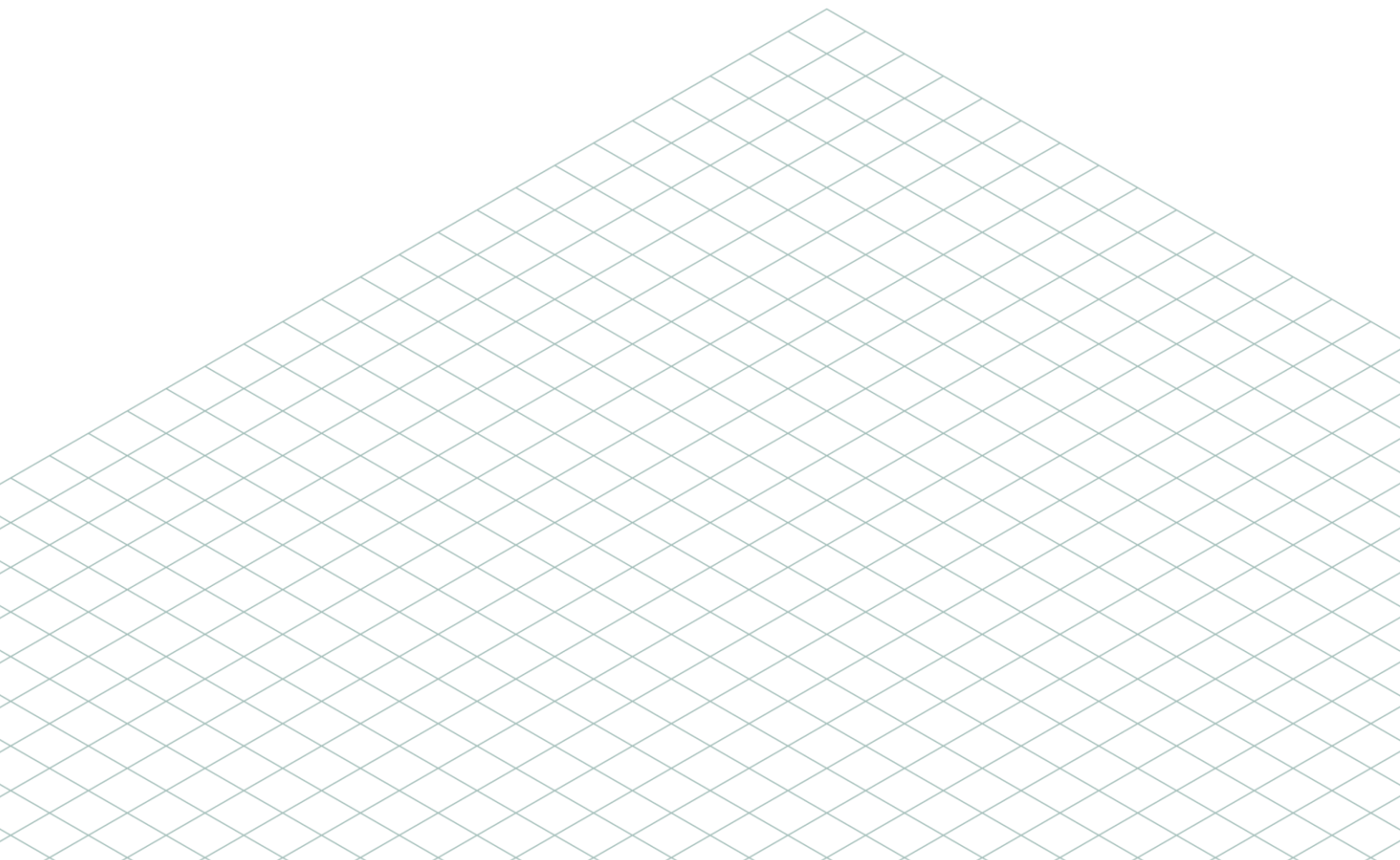




Factory2 (v2.15) User Manual

Updated May 2025



Release notes

Release	Description	Author
18==052025	First Release	KP

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Table of Contents

1	About This Document	1
1.1	Purpose of this Document	1
1.2	How to use this Document	1
1.3	Application.....	1
1.4	Symbols Used	1
2	Introduction to FRAMECAD Factory2.....	2
2.1	Software Overview.....	2
2.2	Start-up and Shut-down Procedure	3
2.3	Admin Menu	4
2.3.1	Go to the Admin Menu	4
2.3.2	Run the Machine in Burn in Mode	5
2.3.3	Update the Script	6
2.3.4	Update the Factory2 Package.....	7
2.3.5	Importing machine parameters	9
2.3.6	Exporting tar file	12
2.3.7	Set System Time/Date	14
2.4	Navigating FRAMECAD Factory2	15
2.5	Manual, Semi-auto and Automatic Control Modes.....	18
2.5.1	Manual Control Mode	20
2.5.2	Automatic Mode	22
2.5.3	Semi-Automatic Control	25
2.6	Schedule Screen.....	26
2.6.1	Job Schedule Management	27
2.6.2	Creating Manual Jobs.....	28
2.6.3	Job Priorities.....	28
2.6.4	Job Status	29
2.6.5	To Reschedule a Job	30
2.6.6	Purge	30
2.6.7	Deleting a Job.....	30
2.6.8	Changing the Job Order	31
2.6.9	Edit Stick Properties	31
2.7	Setup Menu Screens.....	36
2.7.1	Setup - Machine Setting Screen	36
2.7.2	Setup - Coil Screen	40
2.7.3	Setup - [Machine Setting] Rafts Screen	42
2.7.4	Setup - Tools Screen.....	43

2.7.5	Setup - [Motion Control] MDX61B.....	51
2.7.6	Setup - [Motion Control] Servo Motors	57
2.7.7	Setup - [Motion Control] Rafts Motion Control	63
2.7.8	Setup - [Inkjet] Printers	65
2.7.9	Setup - Hydraulics	77
2.7.10	Setup - Strip Lubricator	78
2.7.11	Setup - 5T Decoiler	79
2.7.12	Setup - Miscellaneous.....	81
2.8	Internet Connection	92
2.9	Notes about Electrical Safety	92
2.10	Info Menu Screens	93
2.10.1	Info - View I/O Screen	93
2.10.2	Info - I/O Live Charting Screen.....	94
2.10.3	Info - Alarms Screen	95
2.10.4	Info - Maintenance Data Screen.....	98
2.10.5	Info - Event Log Screen	99
2.10.6	Info - DRM Licensing Screen	101
2.10.7	Info - Fieldbus Screen	103
2.11	Updating FRAMECAD Factory2.....	103
2.12	Downloading Factory2 to USB	103
3	Special Features	106
3.1	Downtime Reasons Message Prompt	106
3.2	Entering a Coil ID after a Coil Change	107
3.3	Switching Between Metric and Imperial	108
3.4	Numeric Pad	108
4	Further Support.....	110

1 About This Document

1.1 Purpose of this Document

This manual provides information on FRAMECAD Factory2 v2.14. It is specifically designed for users of FRAMECAD roll-forming machinery using this version.

1.2 How to use this Document

This manual should be used alongside the Operating Manual issued with your machine. It is not intended as a replacement for the original Operating Manual.

1.3 Application

The information contained within this document relates specifically to FRAMECAD machines.

Please note that some variations will exist between machine types. This manual includes images that may differ to those used on some machines. Where a setup and configuration procedure is defined, every effort has been made to cover all variations and versions where possible.

1.4 Symbols Used

The following symbols may be present throughout this document. An explanation of each symbol is shown.

ICON/TEXT	MEANING	CONSEQUENCE IF DISREGARDED
	An important note highlighting a critical requirement	• The procedure or task may not perform as well as expected • Damage may be done to equipment or property • Minor injury may result
NOTE!		
CAUTION!	Possible dangerous situation	Minor injuries and/or equipment/property damage
 WARNING!	Possible dangerous situation	Severe or fatal injury
 DANGER!		
TIP!	Useful tip or information to help simplify a task or procedure	

2 Introduction to FRAMECAD Factory2

2.1 Software Overview

This section introduces the main functions and features of the FRAMECAD Factory2 software. FRAMECAD Factory2 is the software that ultimately controls all the primary functions of the FRAMECAD roll-forming machinery.

A job "project" that is comprised of frame assembly and manufacturing data (.rfy) is loaded via a USB flash drive or network connection into the FRAMECAD machine, which is running FRAMECAD Factory2. This information is then translated by the software into the various tooling operations and stick lengths to produce the required framing components.

The FRAMECAD Factory2 software also allows the operator to:

- Reconfigure the manufacturing order of panel assemblies in the job schedule.
- Add / Remove tooling operations.
- Collect diagnostic information on items such as material produced, waste produced, tool operation counts and an operation log.
- Calibrate the machine for stick length accuracy and tool operation placement accuracy.
- View the shape and status of the current frame being produced.
- Manage the overall speed and acceleration of the machine.
- Manually operate the machine and all its tooling operations.
- View the status of the electrical input/output for troubleshooting purposes.
- Set the up/down times for each tool operation.
- Trend various operating parameters in near real time.

Manufacturing and machine performance information is entered via the Operator Touch screen. Minimal finger pressure is required to activate the touch screen commands. Sharp or solid objects should never be used to "tap" or "drag" across the screen. The screen has a USB2 port which can be used to accept USB memory sticks. You can also plug in a keyboard and/or mouse to control the screen.

NOTE!

This manual provides information on FRAMECAD Factory2 v2.15 only. For all other versions please discuss with your regional FRAMECAD office or visit my.framecad.com

2.2 Start-up and Shut-down Procedure

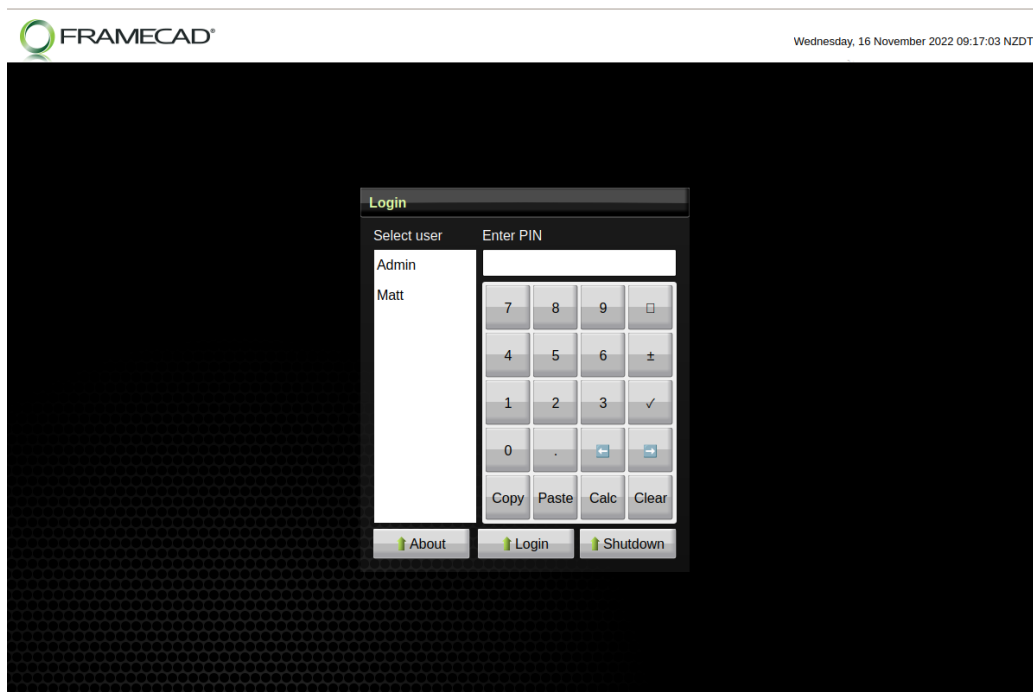
Whenever the FRAMECAD machine is powered up, FRAMECAD Factory2 will automatically load. During this “boot-up” sequence the system will complete general checks and display information text on the Operator Screen; this is normal.

Once FRAMECAD Factory2 has completed the general checks, you will be presented with the Login screen where you will need to select a User and associated PIN number to continue.

IMPORTANT SECURITY NOTE!

All FRAMECAD machines are shipped by default with Admin user access only. It is highly recommended that a site security policy is developed around user access that meets your security requirements. Non-Admin users cannot change many of the machine configuration settings inside the FRAMECAD Factory2 software.

All events and actions initiated from FRAMECAD Factory2 software will be recorded against the user logged in at the time.



FRAMECAD Factory Login screen

To shutdown FRAMECAD Factory2 you will need to press the **Logout** button on the top right of the screen. You will be prompted to confirm, if accepted, the system will log off and return to the login screen. To shut down, you will need to press the **Shutdown** button. This will display information only text as it fully closes. Once fully shutdown, the electrical power to the machine can be turned OFF.

All FRAMECAD machines are fitted with an Uninterruptable Power Supply (UPS) unit that is designed to provide a battery backup supply for the computer system if the main electrical power supply to the machine is accidentally disconnected or fails. If the main electrical supply is disconnected for any reason, the UPS unit will switch over to battery backup and issue a shutdown signal to the computer system. The UPS unit will then continue to maintain battery supply for a period long enough to allow FRAMECAD Factory2 to complete an orderly shutdown.

TIP!

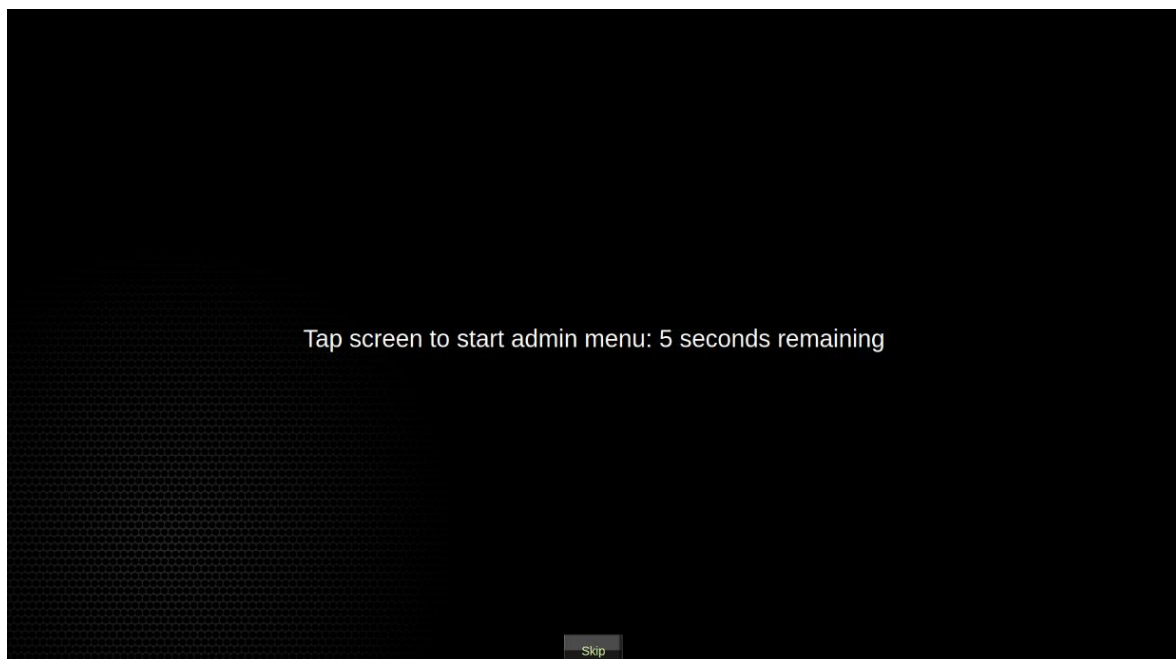
It is always good practice to properly log out of FRAMECAD Factory2 whenever you shut down the software. AVOID switching the electrical power off to the machine without logging off. Once the software has fully shut down then you can turn the electrical power OFF to the machine.

2.3 Admin Menu

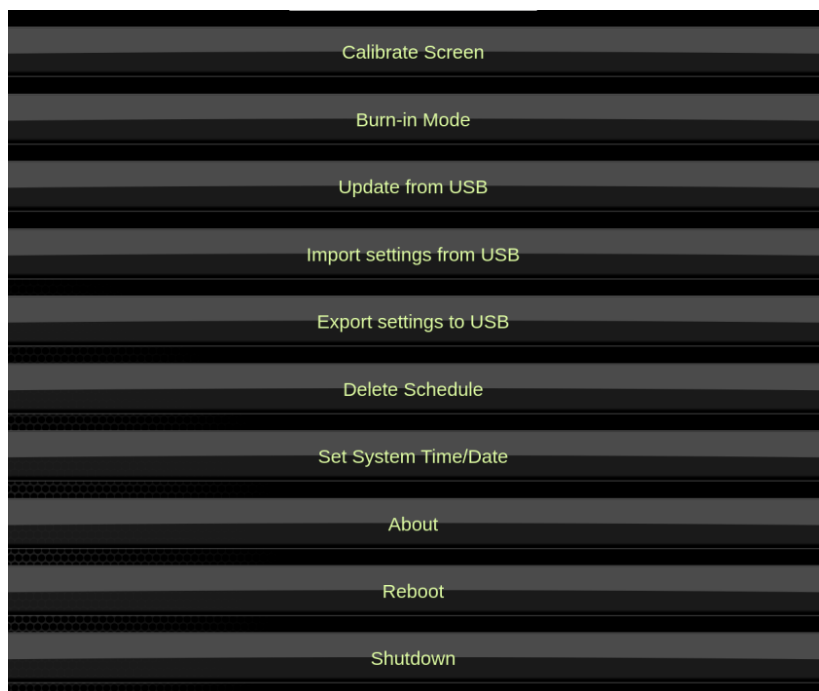
This section contains instructions for accessing and using the Factory2 Admin menu.

2.3.1 Go to the Admin Menu

Turn on the main power switch and tap the screen before the on-screen 5 second countdown has finished.



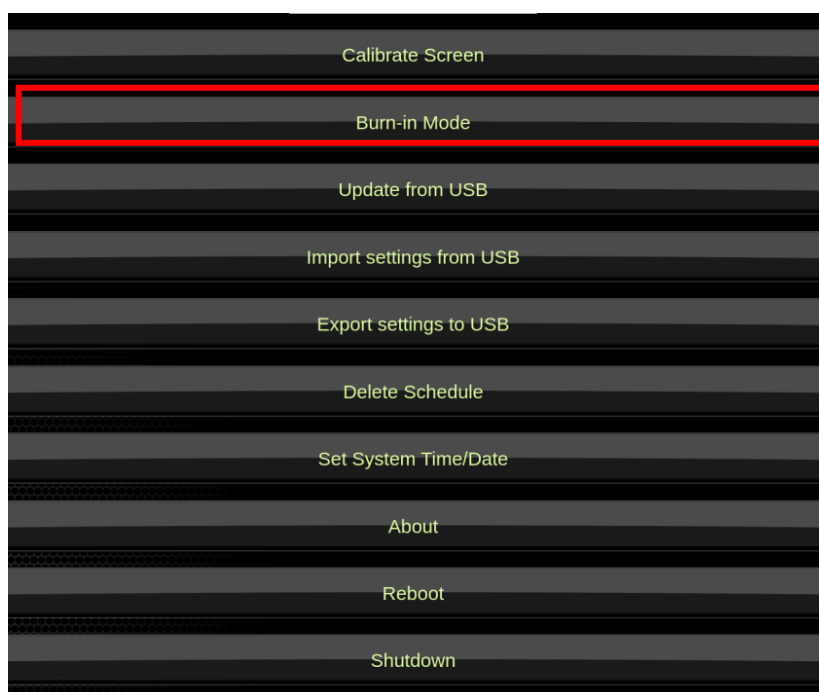
This will open the Admin Menu.



2.3.2 Run the Machine in Burn in Mode

Burn in mode is used to check that the hydraulic hosing is tight and connected.

1. In the Admin Menu, press the "Burn-in Mode" button.
2. Check load on the gearbox without steel in the machine
3. Diagnose general machine issues without scrapping steel

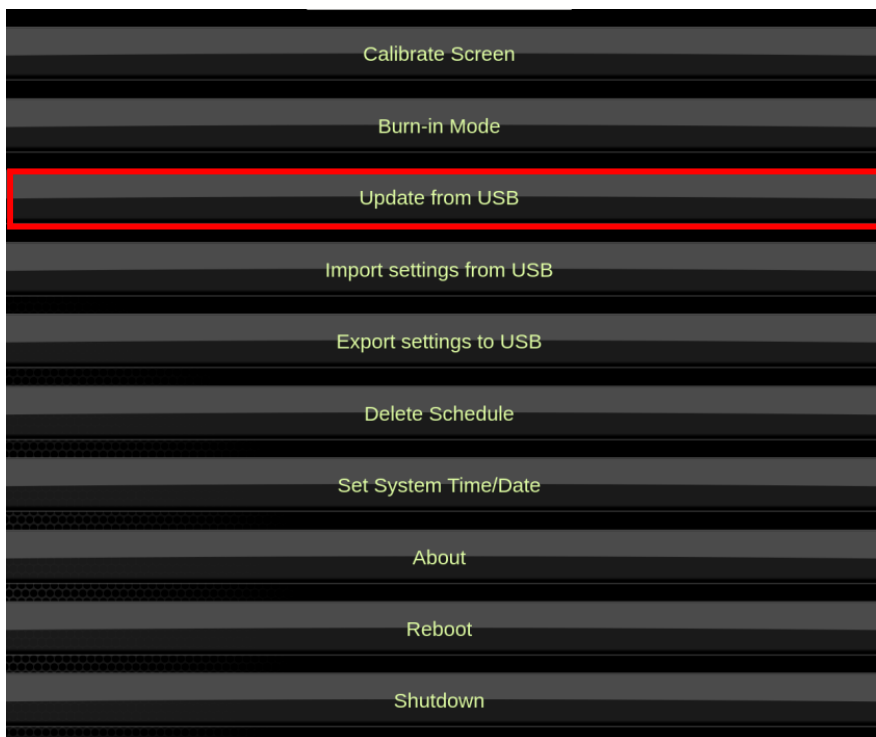


2.3.3 Update Scripts

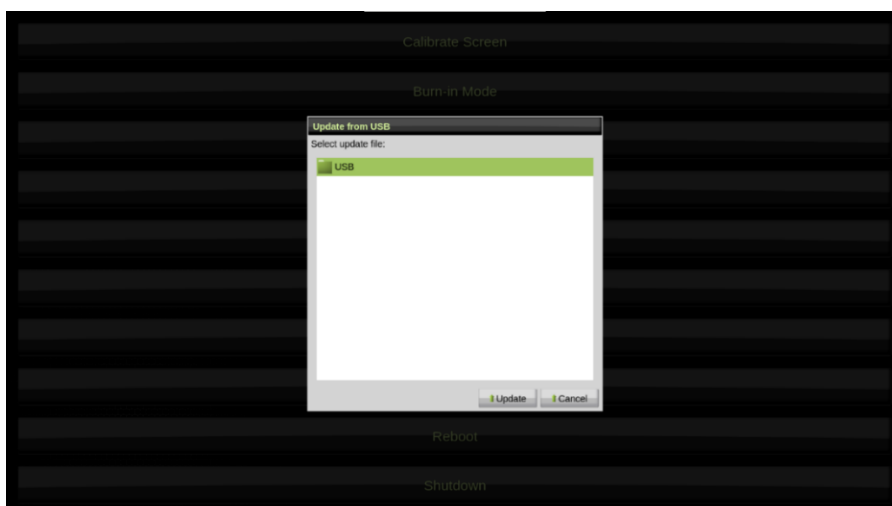
This is done when FRAMECAD provides a script that updates the Factory2 software when a hardware or configuration change is made to the machine.

This script will be provided by a FRAMECAD technician or staff member.

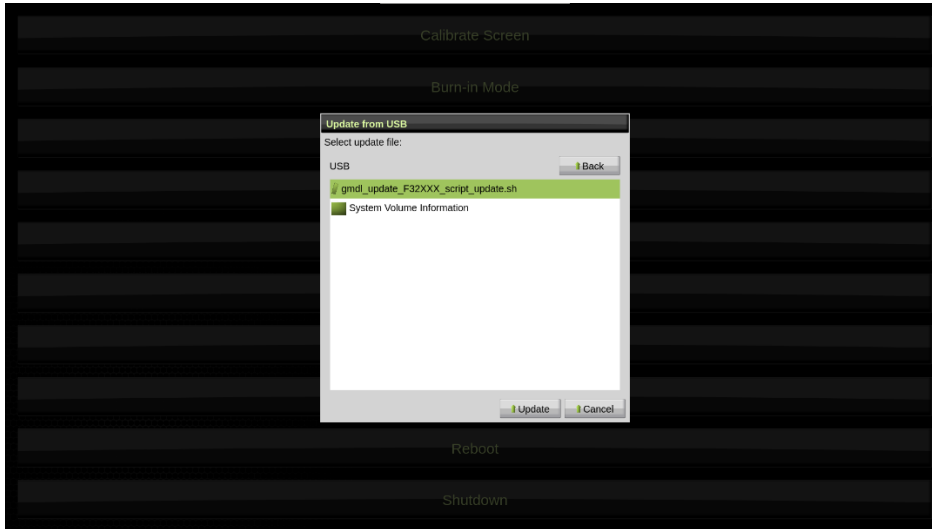
1. Transfer the script onto a USB flash drive.
2. Insert the USB Drive into the USB port on the front of the Operator Touchscreen.
3. In the Admin Menu, press the "Update From USB" button.



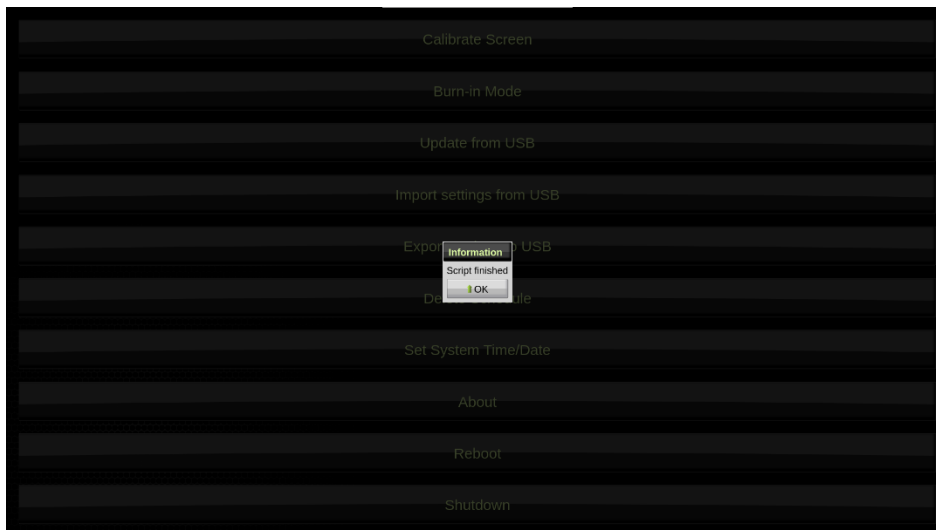
4. Select USB in the pop up that opens. This will now show the files and folders on the USB flash drive.



5. Select the script and press the Update button.

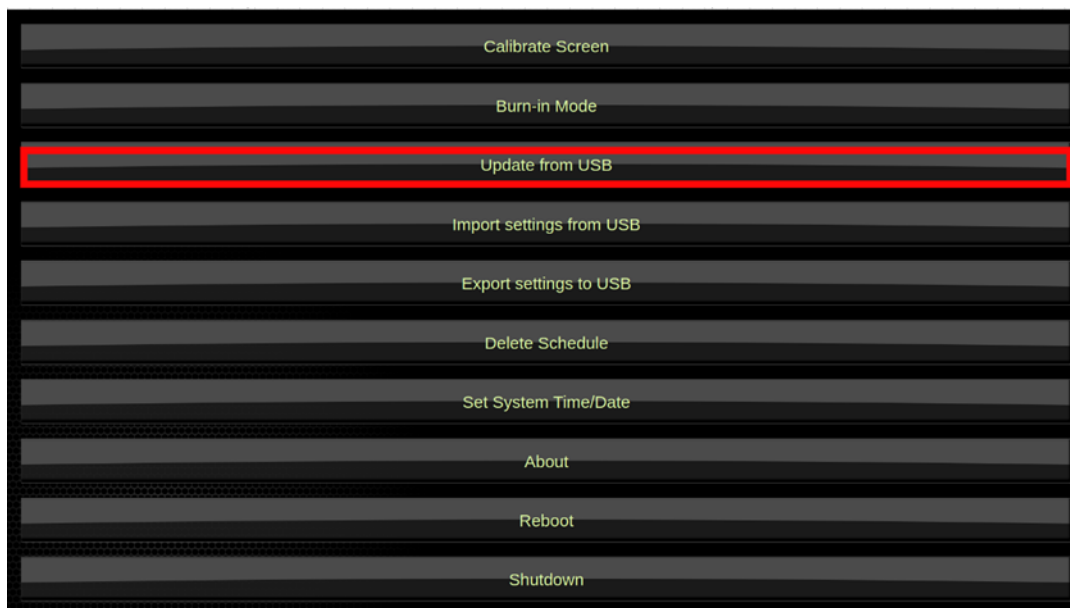


6. The update will now be applied. Once finished, a pop up showing "Script Finished" will appear.
7. Press OK to confirm your upgrade and return to the Admin menu.

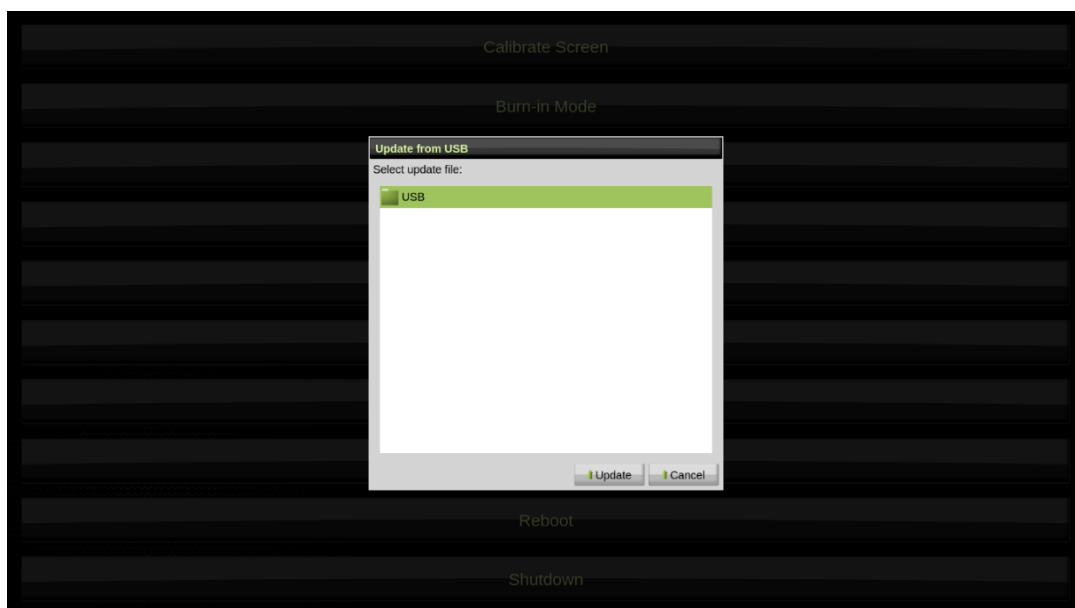


2.3.4 Update the Factory2 Package

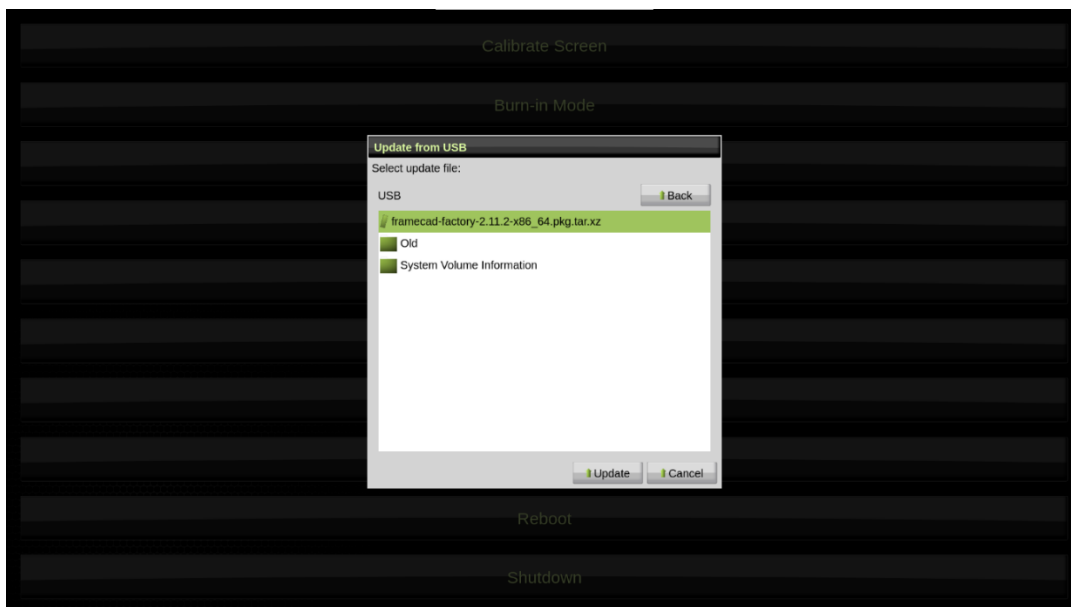
1. Download the FRAMECAD Factory2 package from my.framecad.com and transfer the package onto a USB flash drive.
2. Insert the USB Drive into the USB port on the front of the Operator Touchscreen.
3. In the Admin Menu, press the "Update From USB" button.



4. Select USB in the pop up that opens. This will now show the files and folders on the USB flash drive.

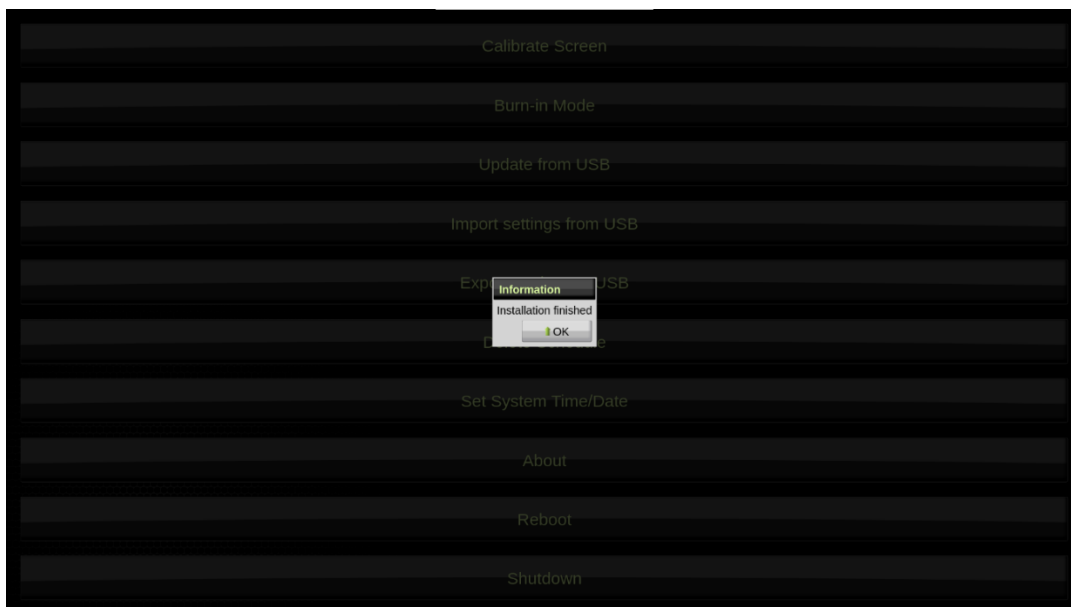


5. Select the FRAMECAD Factory2 package and press the **Update** button.



6. The update will now be applied. Once finished, a pop up showing "Installation Finished" will appear.

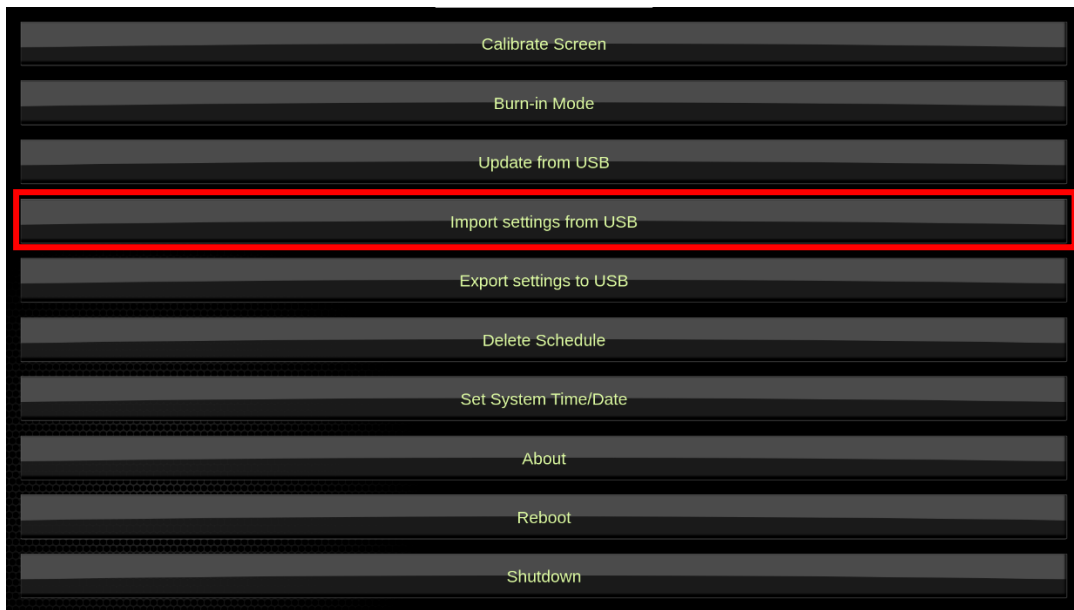
Press **OK** to confirm your upgrade and return to the Admin menu.



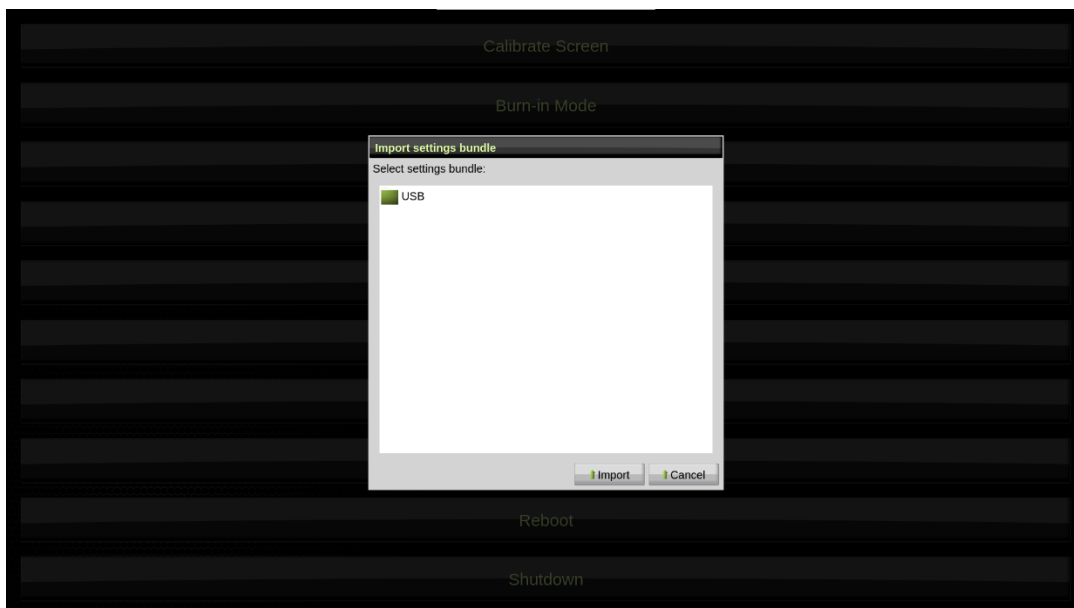
2.3.5 Importing machine parameters

This is done to restore the parameters of the software for this machine from a .tar.gz file.

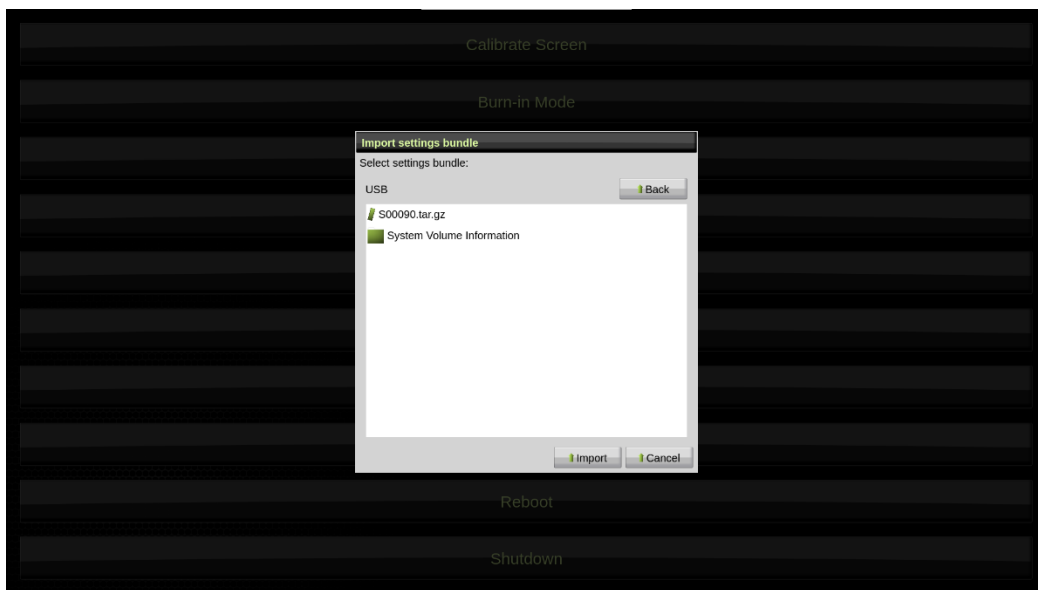
1. Press "Import settings from USB"



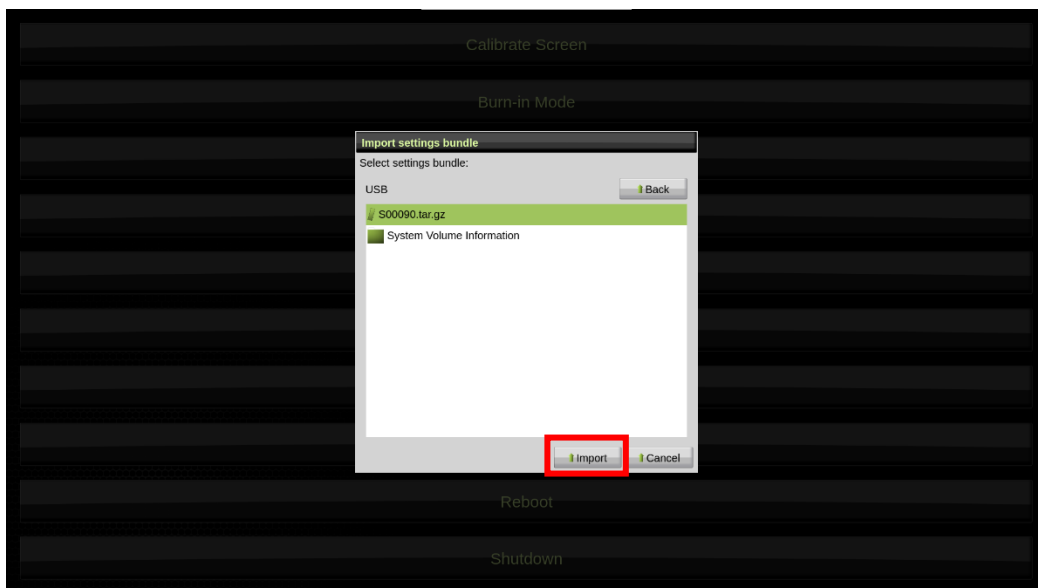
2. In the pop-up menu that opens select the USB folder to open it.



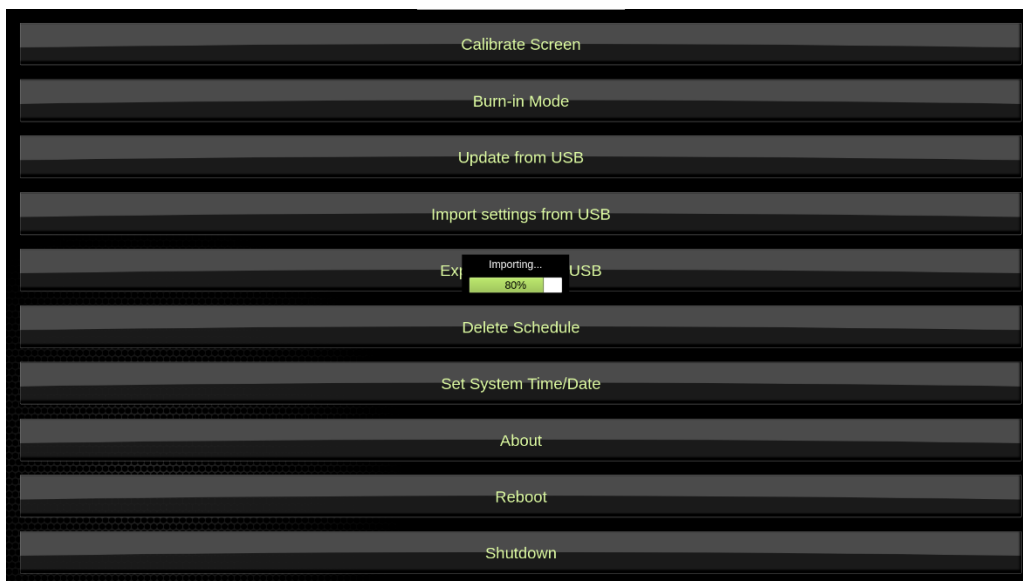
3. Press the .tar.gz file to highlight it.



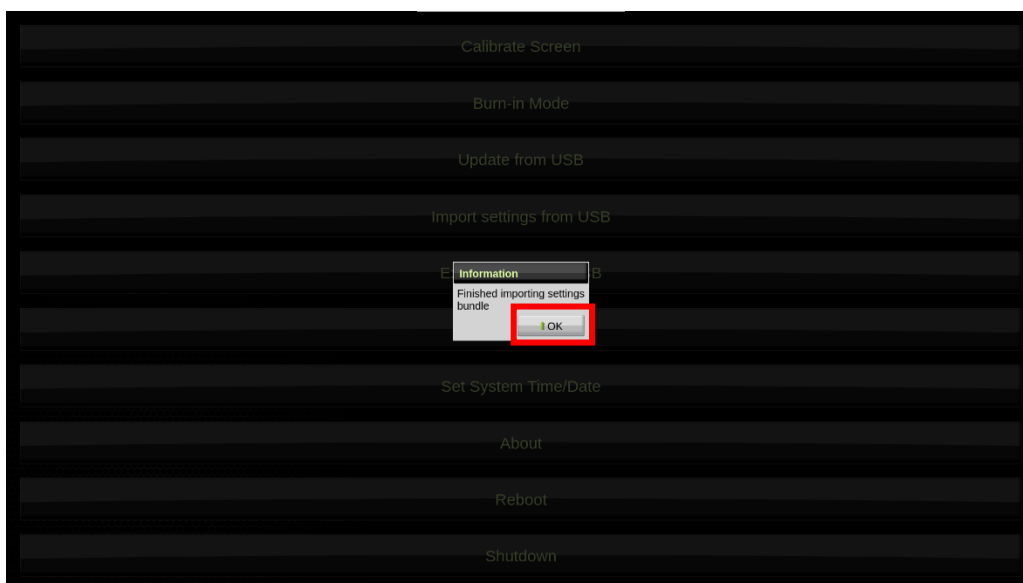
4. Press the Import button to action the file import.



5. The import will begin immediately.



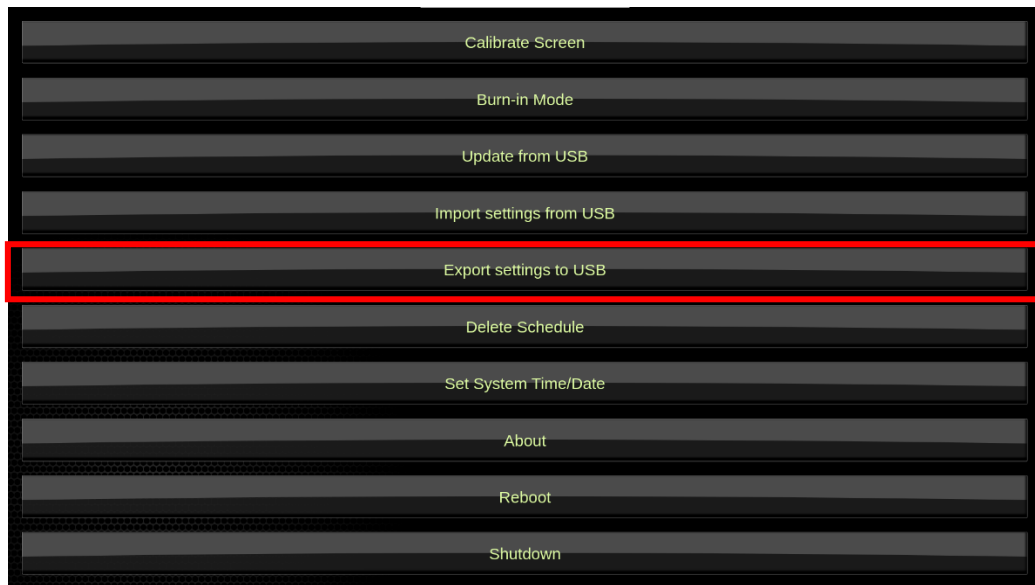
6. When finished a prompt will be displayed. Press the “OK” button.



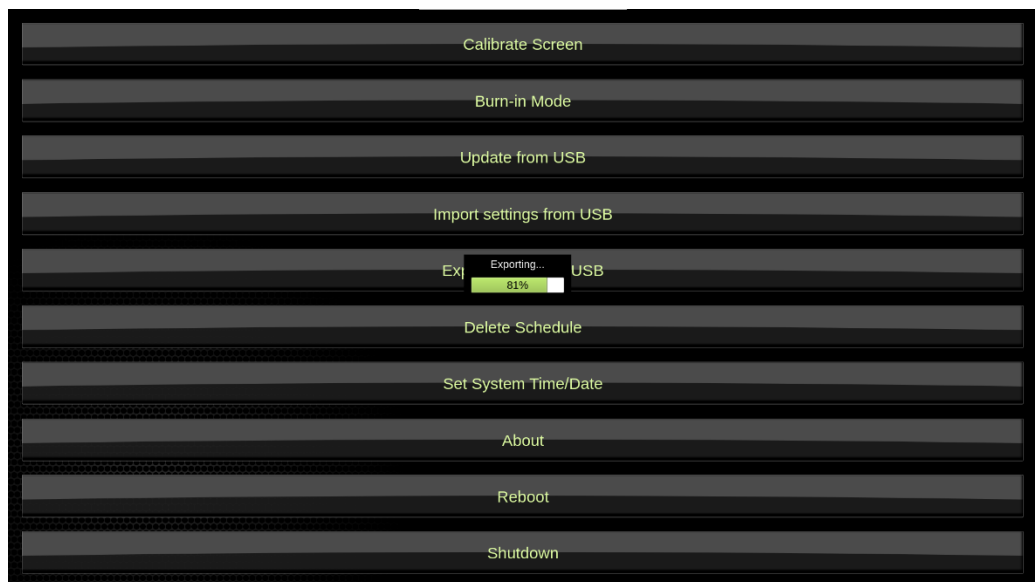
2.3.6 Exporting tar file

This is done to back up the parameters of the software for this machine.

1. Plug in a USB to the Operator Touchscreen.
2. Press “Export settings to USB”

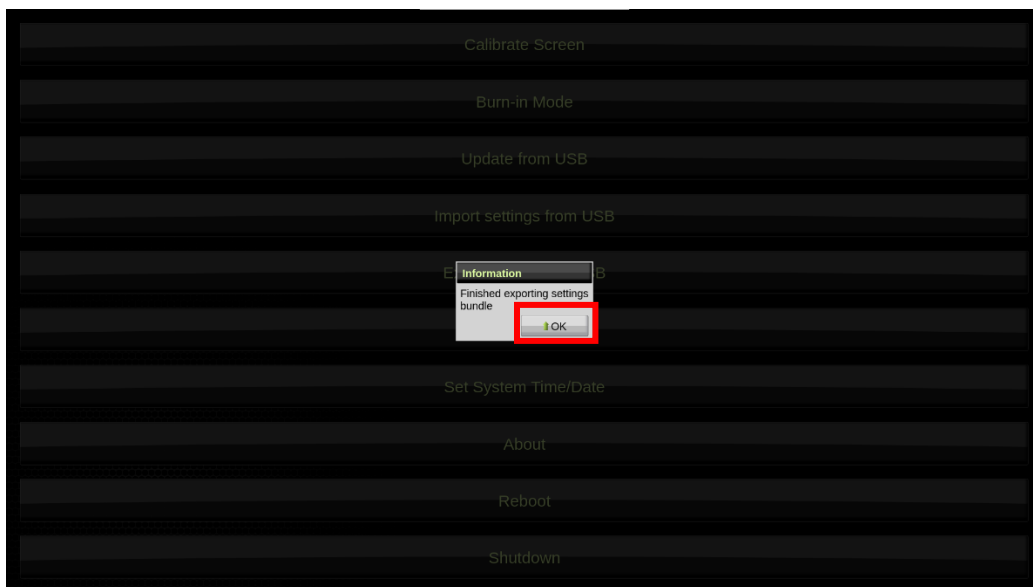


3. The Export will begin immediately.



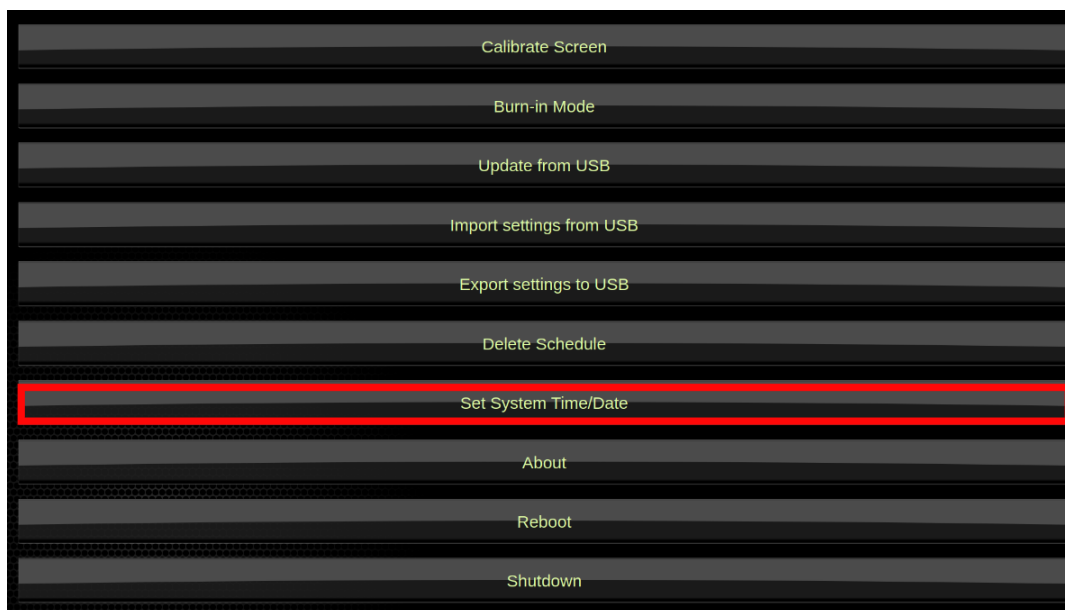
4. When finished a prompt will be displayed. Click "OK".

The tar file will be saved on your USB. The file will have a file type extension in the format: "tar.gz"

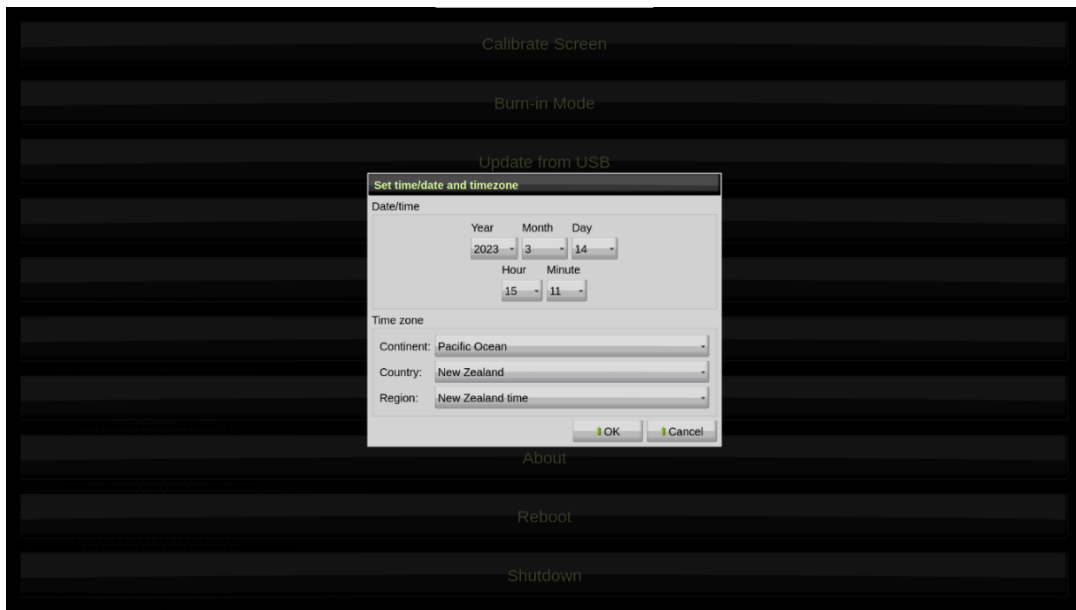


2.3.7 Set System Time/Date

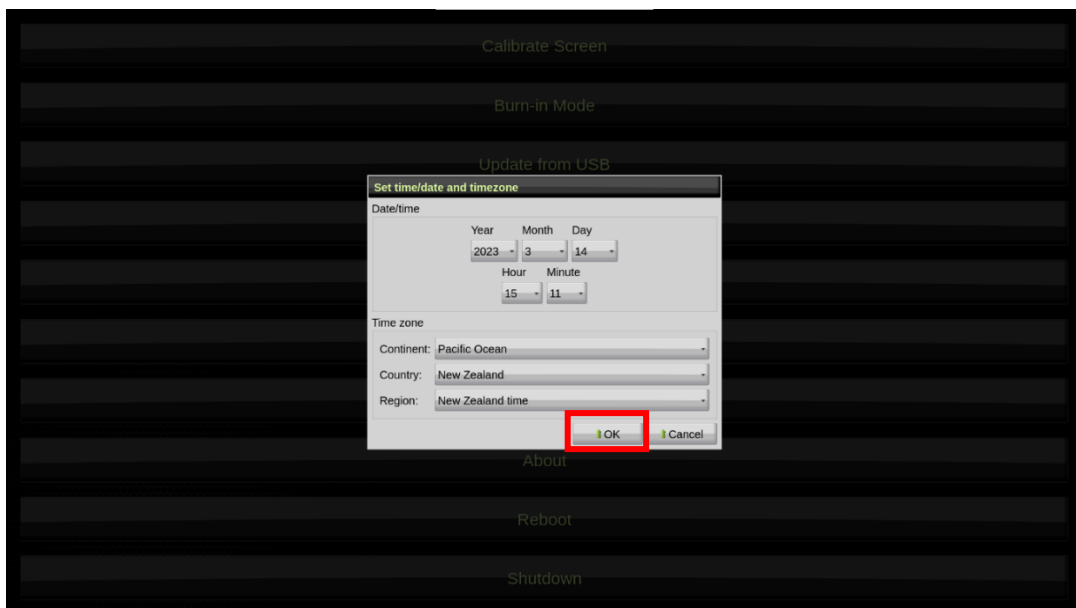
1. In the Admin screen, press the "Set System Time/Date" button.



2. This will open a pop up where you can set the time and date for the local timezone.



3. Enter the Date and Time. Once complete, press **OK** to return to the Admin Menu.



2.4 Navigating FRAMECAD Factory2

The main display of the FRAMECAD Factory2 software is split into two primary areas:

The left side menu allows access to the various job scheduling, setup, and information screens. The menu is in a tabular format and whenever the Operator selects a screen tab from the menu listing, the associated screen will be shown in the main screen display.



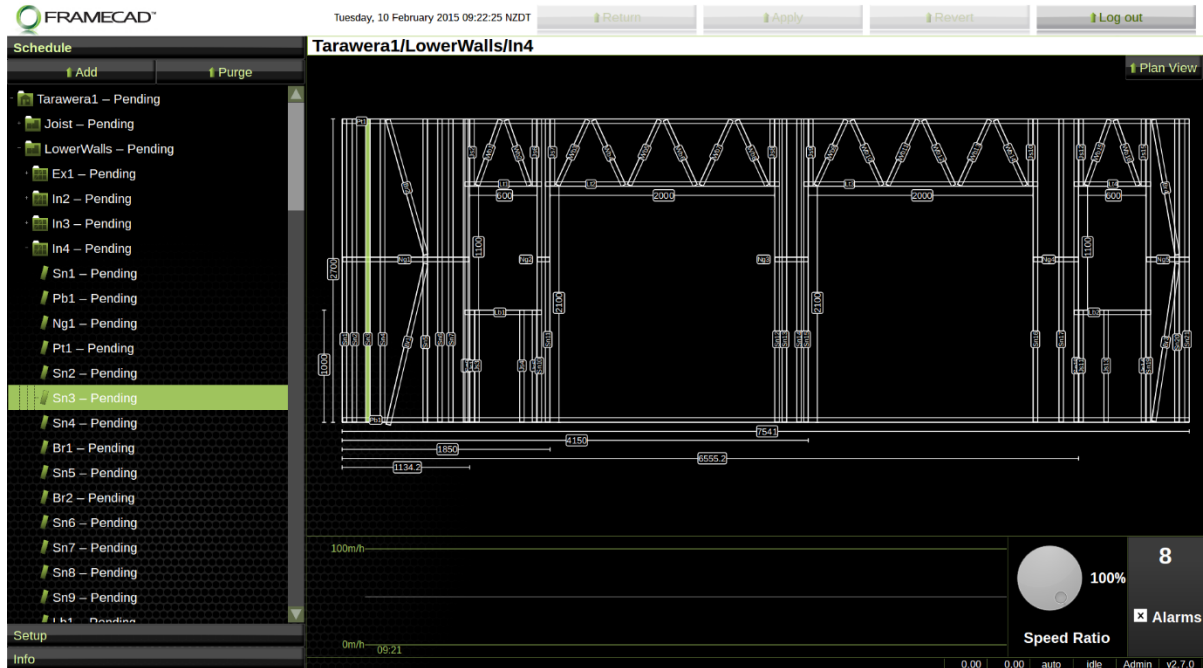
Left Side Menu

Screen Display

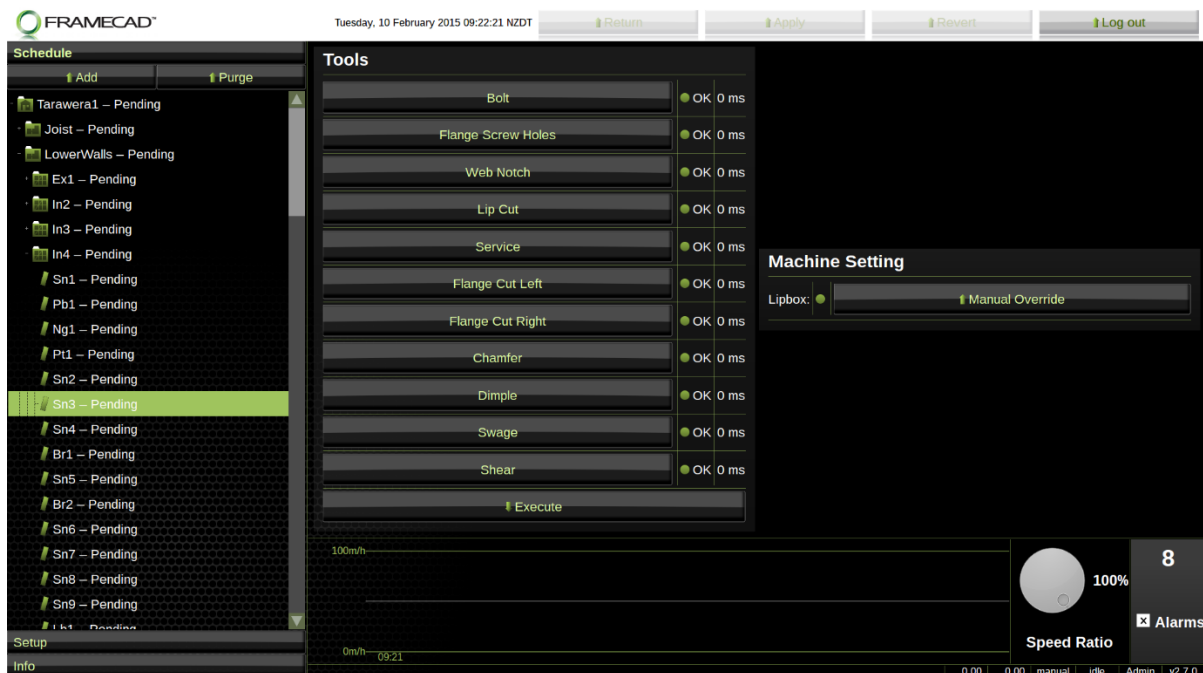
The left side menu has three primary (or root) screen tabs:

Schedule	This tab displays the job schedule screen. From this screen the Operator can view the current status, load, edit, delete, re-schedule and move jobs around in the production queue. This is the main screen used during production. The above picture displays an example of this.
Setup	This tab contains all the screens associated with the setup and configuration of the FRAMECAD machine. Screen access will be dependent on the User security level with only Admin users granted full access.
Info	This tab contains a collection of screens that provide feedback and information on the FRAMECAD machine. Here the Operator will find details on the machine inputs and outputs, licensing, productivity, alarms, and service-related information.

When running in Automatic control, the screen display will show the **Automatic Home** screen with information on the current project progress. The project *schedule list* will be shown in the left side menu. The schedule list not only shows the various sub-assemblies that comprise the project but also the order in which they will be made. Each sub-assembly can then be viewed by selecting the item from the schedule list. An example is shown below:



When running in Manual control, the screen display will show the **Manual Home screen** with individual hydraulic punch operation buttons and cycle times. An example is shown below.



Regardless of whatever screen is currently being displayed, the Operator can return back to the Home screen by pressing the **Return** button. The actual Home screen displayed will depend on the current control mode (i.e. either Automatic or Manual).

At the top right of each screen there are 4 buttons:

	Pressing this button will return the Operator back to the Home screen for the currently selected control mode (either Automatic or Manual – see below for more detail). This button will only be highlighted if the Home screen for the current control mode is not already being displayed.
	Whenever a value or parameter is changed inside FRAMECAD Factory2, this button will be highlighted prompting the Operator for confirmation of the new setting. Setting changes <i>will not be saved</i> until the Apply button is pressed.
	Once a value or setting change has been entered inside FRAMECAD Factory2, the Operator can cancel the change and revert back to the original setting by pressing this button.
	This will return the user to the login screen if the user confirms they want to logout.

2.5 Manual, Semi-auto and Automatic Control Modes

The FRAMECAD Factory2 software has 3 control modes:

Manual

In this control mode, the Operator can select individual tool operations to activate and drive the steel strip forward or reverse. In Manual control all operations must be user initiated.

Automatic

In this control mode, the FRAMECAD Factory2 software will *automatically* process all items occurring in the job schedule. This will start with the first item in the job schedule and will create one frame at a time sequentially down the schedule. At the end of a frame, the job schedule will be re-scanned from the top of the list to find any items which may have been added, moved, or remade since starting. This way it keeps the various job parts together.

It will then begin the next job folder it finds with the Pending status.

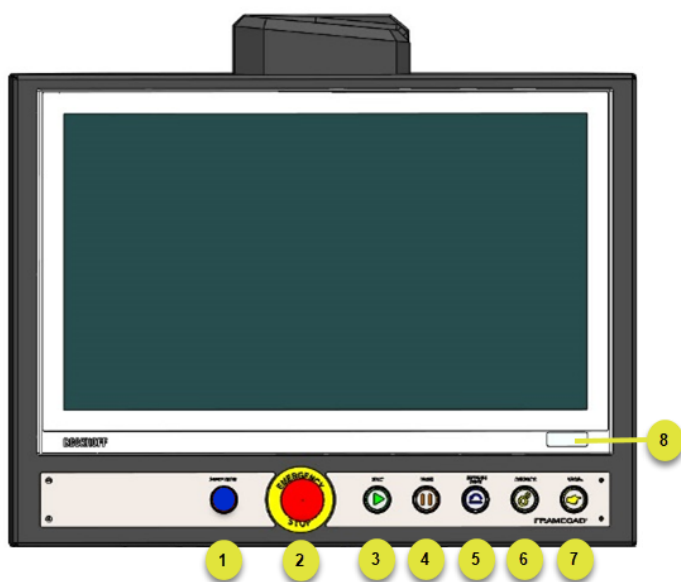
The production rates are shown in the trend graph at the bottom of the Operator Touchscreen. This graph displays the rate of steel produced.

Semi-Auto

This is a combination of both Automatic and Manual control. In this control mode, the FRAMECAD Factory2 software will automatically process all items occurring in the job schedule as per the fully Automatic control mode BUT the Operator must use the Inch selector switch position mounted on the side of the machine to progress the steel strip (i.e. steel movement is under manual Operator control).

The steel strip is progressed through the machine at the reduced Manual (Inch) control speed.

This control mode can be useful for running out complicated or troublesome pieces in the machine.



Operator Screen Control Buttons

NUMBER IN DIAGRAM	BUTTON SYMBOL	ACTION
1.		SAFETY RESET button
2.		EMERGENCY STOP button
3.		START button
4.		PAUSE button
5.		SOFTWARE RESET button
6.		AUTOMATIC MODE button
7.		MANUAL MODE button
8.	-	USB port

The following procedures describe how to select the required FRAMECAD machine control modes.

2.5.1 Manual Control Mode

Selecting Manual from a Stopped State

When the machine is in a stopped state, you can initiate Manual control mode following the instructions below.

Button	What happens when using the buttons
The default control mode for the FRAMECAD Factory2 Software is Manual.	
	To initiate Manual control mode, press the Manual button. The button light will turn on to indicate the machine is in Manual control mode.

Selecting Manual from Automatic

When the FRAMECAD Factory2 software is running in Automatic control mode, you can switch to Manual control mode using the instructions below.

	If the machine is currently rolling steel in Automatic mode, then press the Pause button to suspend Automatic production.
	Press the Software Reset button to suspend automatic production.
	The Manual Button should be illuminated when in Manual Control Mode.

Manual Forward and Reverse

The FRAMECAD machine is equipped with physical Inch selector switches. While the FRAMECAD Factory2 software is in Manual control, the roller section can be rotated either forward or reverse by rotating any of the Inch selector switches. This can occur with or without steel strip in the machine.

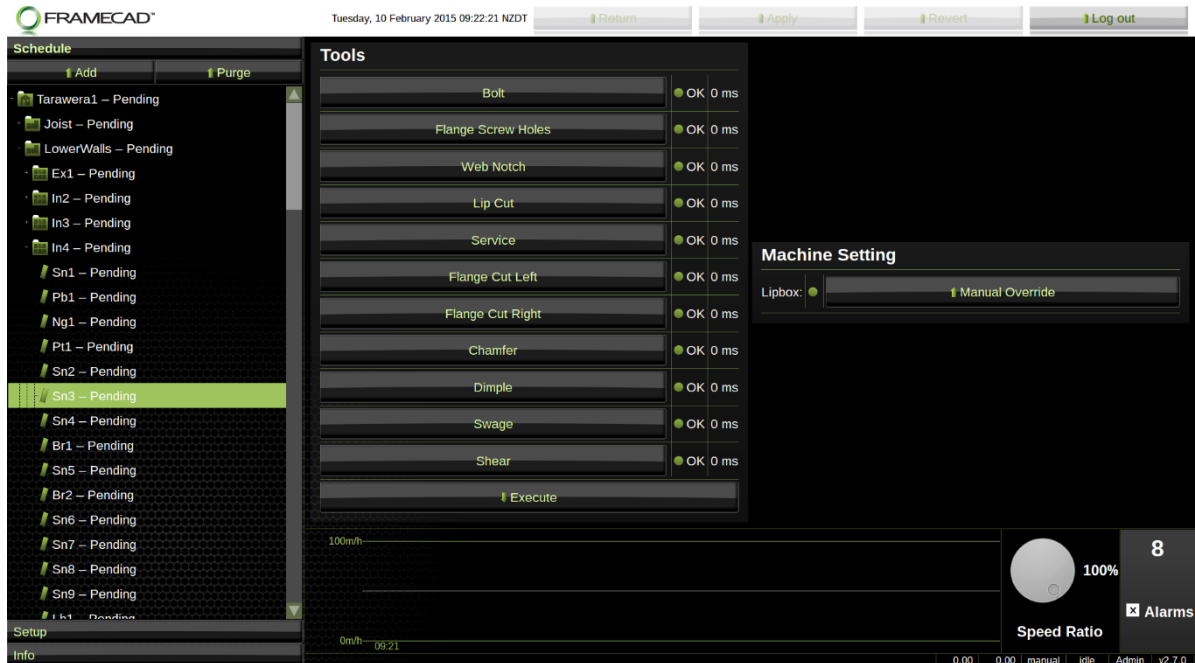


Manual Home Screen

From this screen you can also turn on/off the Lip Box unit (i.e. form profile with or without lips respectively) on a machine with a hydraulically controlled lipbox.

NOTE!

The tools shown in the following screenshot(s) may vary to actual depending on machine configuration at time of order placement.



To actuate a tool, select the required tool (Punch) operation, then press the **Execute** button to operate.

If the hydraulic pump *is not running* when the **Execute** button is first pressed, then:

- The hydraulic tool operation will not be performed.
- The hydraulic pump will start and allow pressure to build.
- Once the hydraulic system is at the required pressure the Operator can press the **Execute** button to operate the hydraulic tool.

If the hydraulic pump *is already running and is at the required pressure*, then the hydraulic tool operation will be performed immediately.

This screen will also provide feedback information on the configured cycle time for each tool operation (see also [Setup – Tools Screen](#)).



Status Indicator Light – will turn green when the tooling operation is complete and hydraulic pressure is available.

Time in milliseconds – this is the cycle time of the last tool operation.

2.5.2 Automatic Mode

Selecting Automatic Control from Manual Control

The default control mode for the FRAMECAD Factory2 software is Manual. To select Automatic control mode, use the following method:

Button	Automatic Control Mode
	The Manual button lamp should be illuminated when in Manual control mode.
	Press the Automatic button to select Automatic control mode. The Automatic button lamp will illuminate.
	Press the Start button to commence fully Automatic operation.

NOTE!

Automatic production will only commence if a job file has been loaded and is pending ([Setup Menu Screens](#)).

Pausing Automatic Control

If the FRAMECAD Factory2 software is running in Automatic control and you wish to momentarily suspend operations use the following method.

Button	Pausing Automatic Control Mode
	Press the Pause button to suspend Automatic production.
	Press the Pause button again to resume Automatic production.

Automatic controlled stop

If the FRAMECAD Factory2 software is running in Automatic control mode and you wish to end production *after* the current stick being processed is complete, then use the following method.

Button	Automatic Controlled Stop
	The Start button AND Automatic button lamps should both be illuminated when running in Automatic.
	Press the Start button to commence a controlled production stop. The Start button lamp will flash to indicate a controlled production stop is in process. Once the current stick has been completed the machine will stop production and return to Manual control (the default control mode).

Running a Production Job

To view the jobs being manufactured in Automatic control, select the job schedule screen from the left side menu.

Once the FRAMECAD Factory2 software has been started in Automatic control, the software will start making the first item in the job schedule and will create one frame assembly at a time. At the end of each frame, the job schedule will be re-scanned from the top of the list to find any items which may have been added, moved, or remade. This way it keeps job batches together.

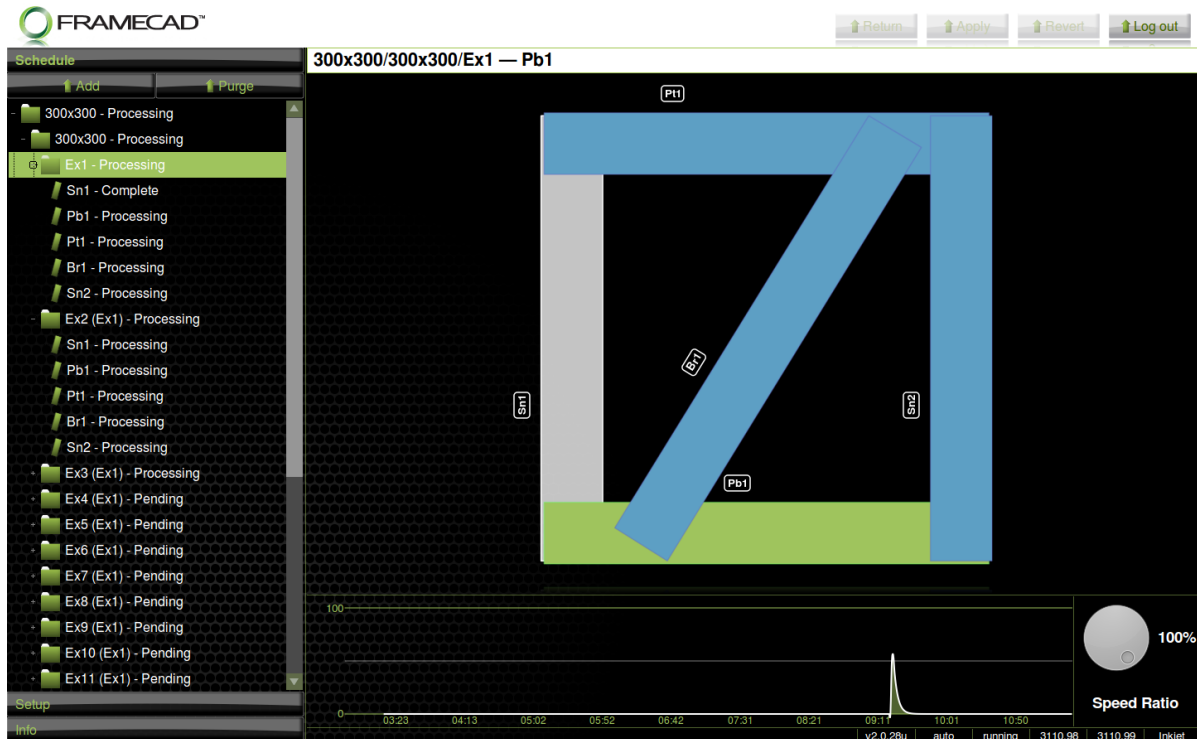
The FRAMECAD Factory2 software will then begin the next job folder it finds with the *Pending* status.

Viewing the Automatic Home Screen

If the Automatic Home screen is not currently being displayed press the **Return** button.

The Automatic Home screen will display the status of the job and job sub-assembly. The stick shown in GREEN will be the next stick to exit the machine.

Sticks shown in BLUE are still being processed and are waiting in the queue.
Sticks shown in GREY have already been completed and exited the machine.



Reset Automatic Production

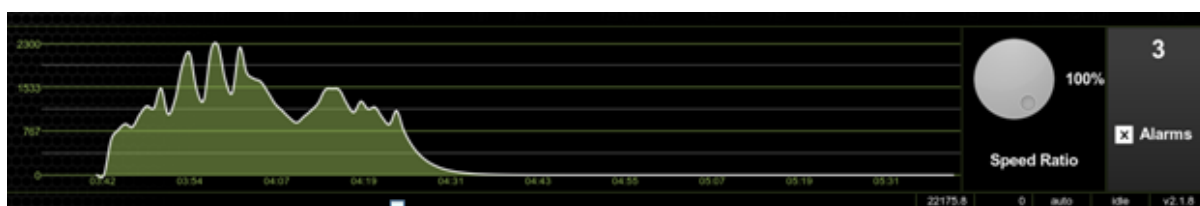
Button	Reset Automatic Production
	At any time, the Automatic production of the job schedule can be reset by pressing the Pause button to suspend, followed by the Software Reset button.

This will:

1. Stop the Automatic production sequence.
2. Reset the production status memory back to the start of the job schedule.
3. Place the FRAMECAD Factory2 software back in the default Manual control mode.
4. Stop all steel strip motion and hydraulic tooling operations in the machine.

Automatic Production Speed Adjust

When running in Automatic control mode, the Schedule Screen will also display the average production rate (processed steel / hour averaged over the last 8-hours of automatic production) in graphical form at the bottom of the screen.



To the right of the graph is the FRAMECAD machine *Speed Ratio* dial. To increase or decrease the operating speed of the machine, the dial can be turned either left or right respectively. The dial is calibrated in % of Feed-rate as set in the Setup / Motion Control screens (see [Setup Menu Screens](#) for more detail on this).

This speed adjustment is only valid for Automatic control and has **no effect** on the speed of the machine in Manual control.

2.5.3 Semi-Automatic Control

To select Semi-Automatic control mode, use the following method.

Button	Semi-Automatic Control Mode
	Press the Automatic button once to select normal Automatic control mode. The Automatic button lamp will illuminate indicating that the machine is now in the Automatic control mode.
	Press the Automatic button a second time to switch into Semi-Automatic control mode. The Automatic button lamp will <i>flash</i> ON and OFF to indicate the FRAMECAD Factory2 software is now in the Semi-Automatic control mode.
	Press the Start button to commence Semi-Automatic operation.
	Turn the Inch selector switch to the FORWARD position (mounted on the top side covers) to progress the steel strip through the machine. Once the steel reaches the required tool operation position it will automatically stop, actuate the tool, and then wait for the Operator to progress the steel manually through the machine to the next tool position and so on.
	Once in the Semi-Automatic control state, pressing the Automatic button again (a third time) will return the FRAMECAD Factory2 software back to normal Automatic control mode.

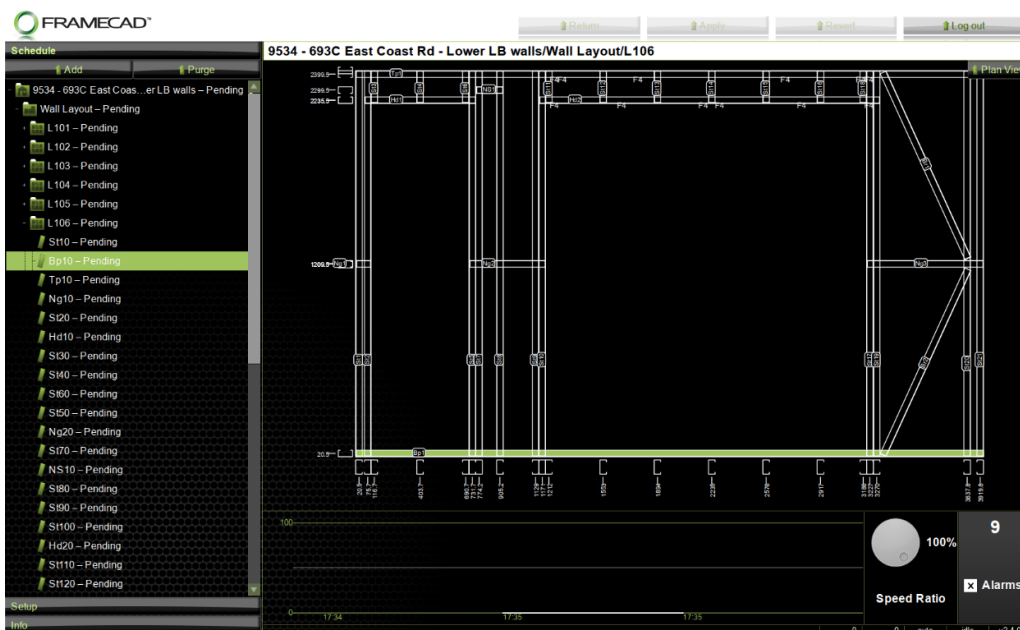
TIP!

Operators can toggle back and forth between the Automatic mode and Semi-Automatic mode at any time by pressing the Automatic button.

2.6 Schedule Screen

The Schedule screen is used to manage the production jobs being run. From here an Operator can load new production projects, rearrange the order of manufacture, re-schedule jobs, delete jobs and view the progress on a job currently being made.

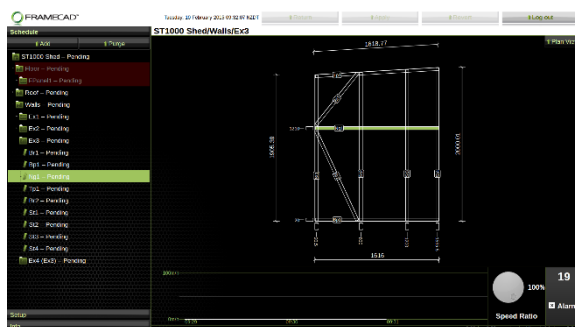
To open the Schedule screen, select the Schedule tab from the left side menu. The project *schedule list* will be shown in the left side menu. The schedule list shows the various sub-assemblies that comprise the project and the order in which they will be made. Each sub-assembly can then be viewed by selecting the item from the schedule list. An example is shown below:



Schedule List

Sub-assembly Display

The sub-assembly display can be altered to show either a **Plan** or **Elevation** view of the assembly. The view can be toggled by selecting the desired view button in the top right-hand corner.



Elevation view shows the current frame portion being run



Plan view shows the top down view

Once in the job schedule screen, the Operator can view the status of the current production job(s) and manage the complete job schedule.

The following procedures explain the various job management functions available within FRAMECAD Factory2.

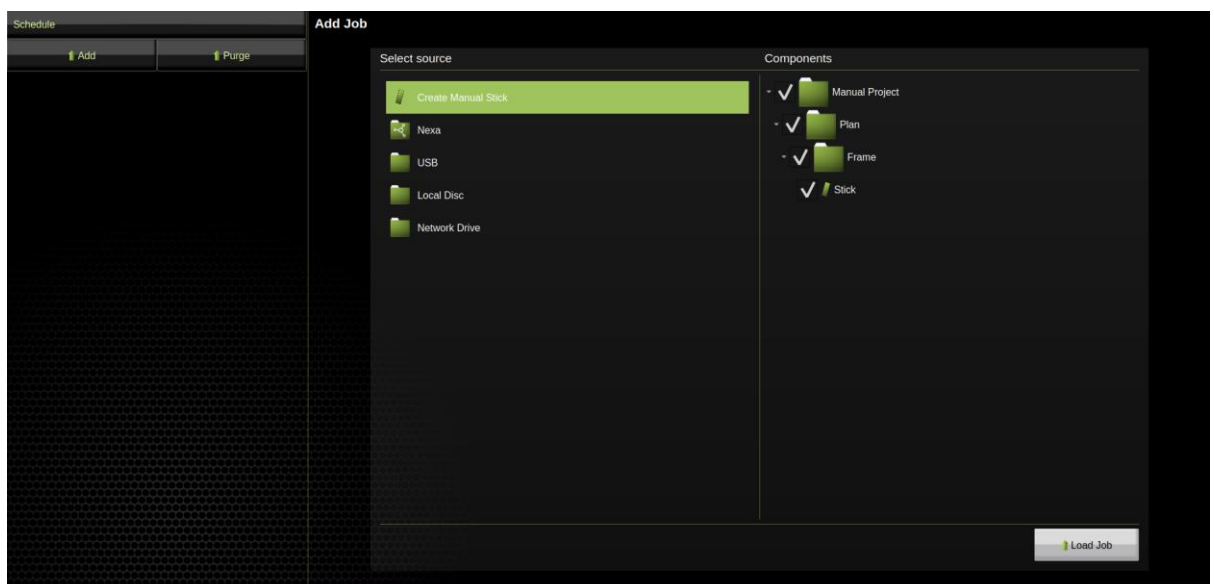
2.6.1 Job Schedule Management

To Load a New Job

Select the Schedule tab from the left side menu to open up the job schedule screen.

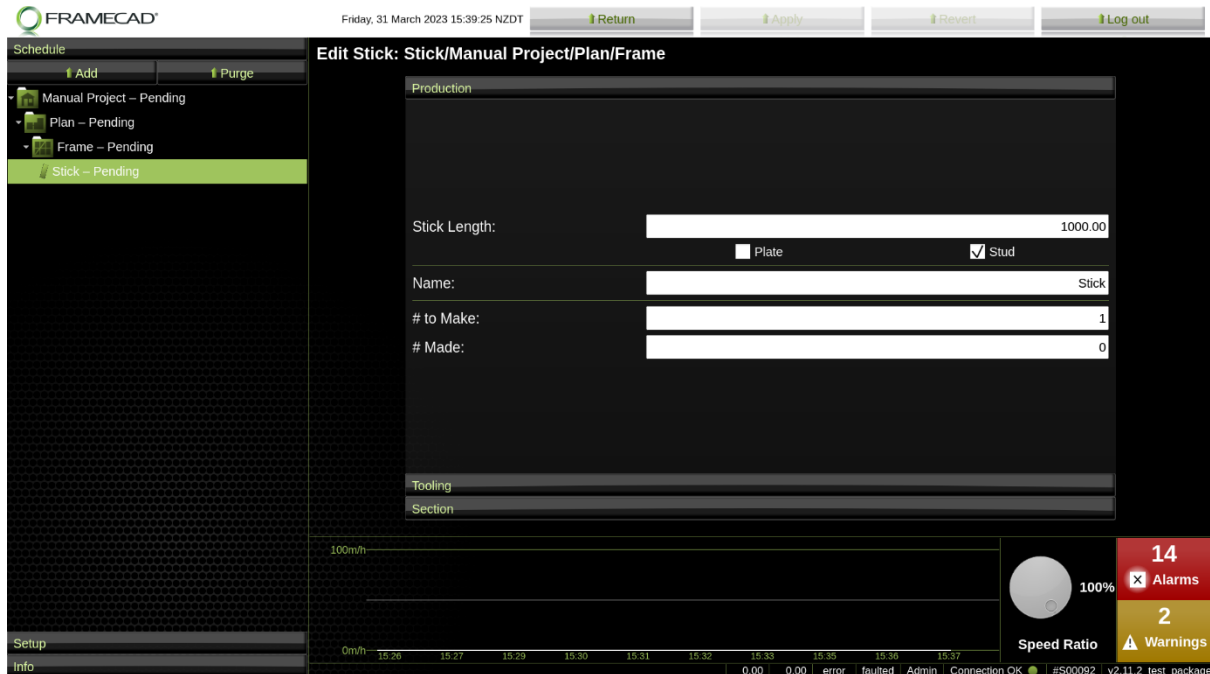
If the job to be loaded is stored on a USB flash drive, make sure it is inserted into the USB port on the front of the Operator Touchscreen. If there is an LED on the USB flash drive, wait until the LED stops flickering - this indicates that it has been recognised by the computer.

1. Press the **Add** button.
2. Select the source location for the job file; for example: USB
3. Find the job file in the source directory and select it. This will move the job file into the components window.
4. Select the whole job or just parts of it by expanding the job file out (double tap the various sub-folders).
5. The frames and individual sub-frame pieces (or "sticks") that the machine will produce will be checked with a white tick next to the name. To select ALL tick the job root folder in components list.



When the desired jobs (or job sub-assemblies, e.g. frames) have been selected press the **Load Job** button to load the job into the production list.

Loaded jobs will be displayed in the job schedule shown on the left-hand side. If you already have jobs loaded, then by default the newest added job will appear below the existing jobs in the job schedule.



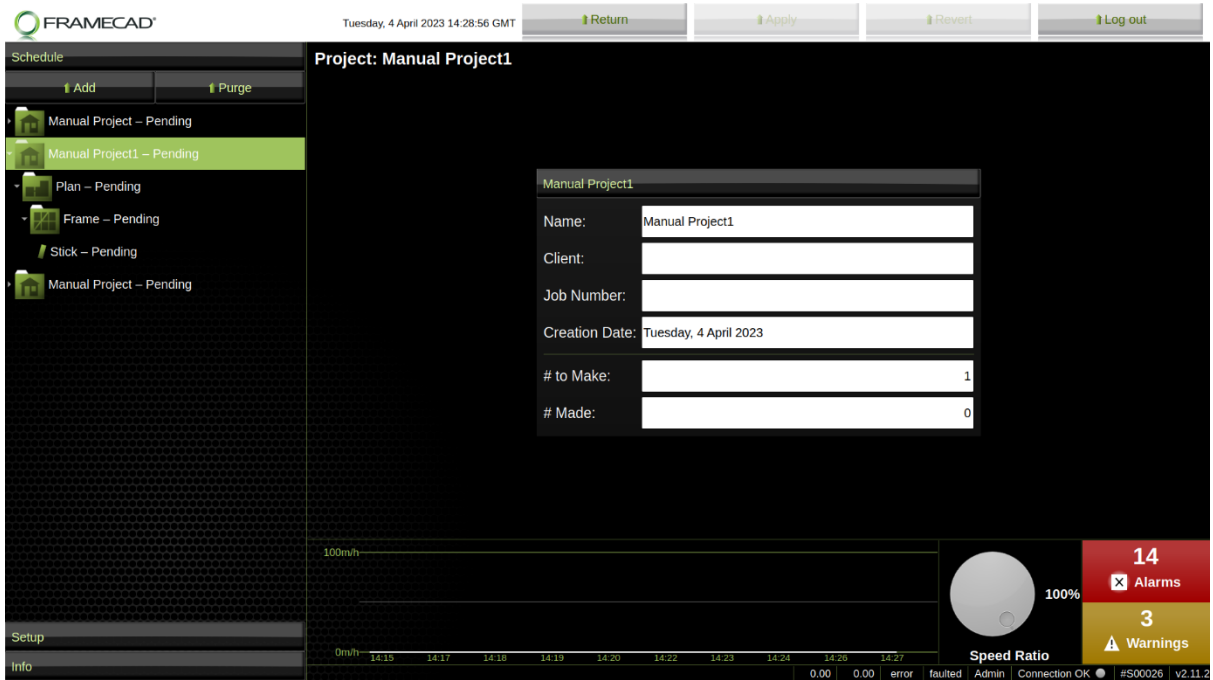
2.6.2 Creating Manual Jobs

FRAMECAD Factory2 allows for jobs to be entered directly into the machine without loading from an alternate source. This can be very useful for producing test pieces while calibrating/tuning the machine.

To create a manual job, select **Create Manual Stick** from the **Select Source** directory. You can then edit the properties of the stick as described in the section [Edit Stick Properties](#).

2.6.3 Job Properties

Name	The name of the job.
Client	The client for this job.
Job Number	The identifying number for this job.
Creation Date	The date the job was created.
# to Make	The number of times this job will be run.
# Made	The number of times this job has been run so far.



FRAMECAD® Tuesday, 4 April 2023 14:28:56 GMT

Return Apply Revert Log out

Schedule

Add Purge

Manual Project - Pending

Manual Project1 - Pending

Plan - Pending

Frame - Pending

Stick - Pending

Manual Project - Pending

Project: Manual Project1

Manual Project1

Name: Manual Project1

Client:

Job Number:

Creation Date: Tuesday, 4 April 2023

to Make: 1

Made: 0

100m/h

0m/h 14:15 14:17 14:18 14:19 14:20 14:22 14:23 14:24 14:26 14:27

0.00 0.00 error faulted Admin Connection OK #500026 v2.11.2

Speed Ratio 100%

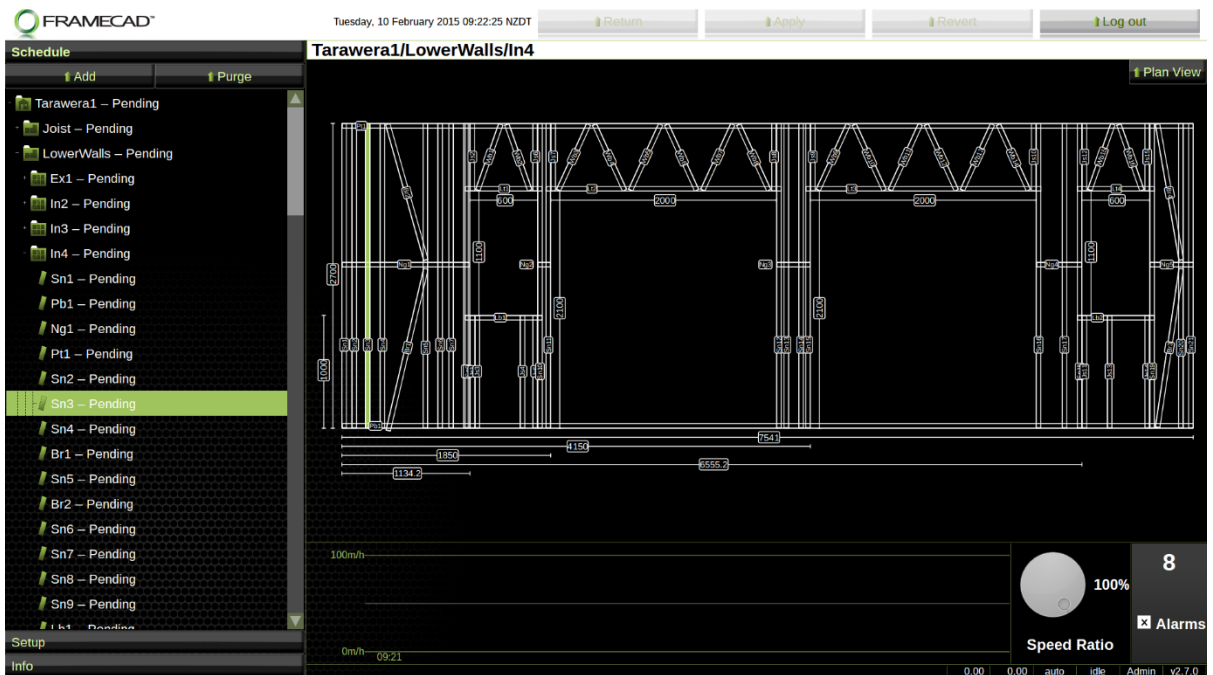
14 Alarms

3 Warnings

2.6.4 Job Status

Jobs in the job schedule have 3 states:

- Pending** The job is queued waiting to be run through the machine.
- Processing** The job is being run through the machine and is currently being produced.
- Completed** The job has successfully been produced by the machine.



FRAMECAD® Tuesday, 10 February 2015 09:22:25 NZDT

Return Apply Revert Log out

Schedule

Add Purge

Tarawera1 - Pending

Joist - Pending

LowerWalls - Pending

Ex1 - Pending

In2 - Pending

In3 - Pending

In4 - Pending

Sn1 - Pending

Pb1 - Pending

Ng1 - Pending

Pt1 - Pending

Sn2 - Pending

Sn3 - Pending

Sn4 - Pending

Br1 - Pending

Sn5 - Pending

Br2 - Pending

Sn6 - Pending

Sn7 - Pending

Sn8 - Pending

Sn9 - Pending

Sn10 - Pending

Setup

Info

Tarawera1/LowerWalls/In4

Plan View

100m/h

0m/h 09:21

0.00 0.00 auto idle Admin v2.7.0

Speed Ratio 100%

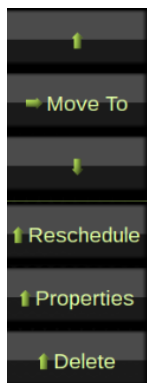
8 Alarms

NOTE!

If the job file has been designed for a different machine or a different profile to what the machine is configured for, or the steel properties don't match the currently loaded coil, it will be highlighted in red.

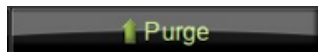
2.6.5 To Reschedule a Job

Once a job has been completed and you want to repeat (re-schedule) the complete job or a part of it, simply select the complete job folder or sub-assembly (e.g. a frame) from the job schedule list. The following pop-up menu will appear with the option to *reschedule* the item.



Press the **Reschedule** button to re-make the item selected from the job schedule list. The job status for the re-scheduled items will now revert from **completed** to **pending**.

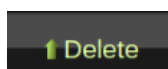
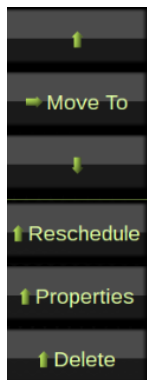
2.6.6 Purge Completed Jobs



Purges/deletes all completed jobs in the schedule field and leaves all pending jobs.

2.6.7 Deleting a Job

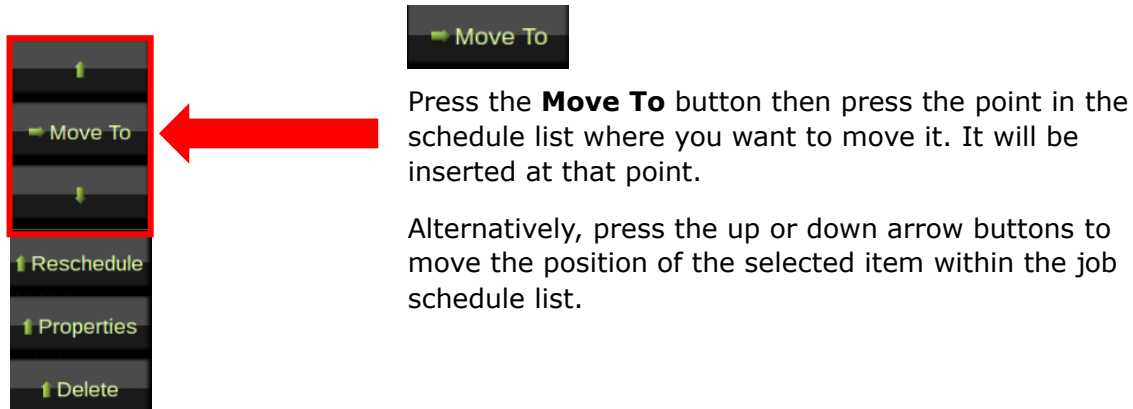
If you would like to delete a job or sub-assembly (e.g. a frame), simply select the complete job folder or sub-assembly (e.g. a frame) from the job schedule list. The following pop-up menu will appear with the option to *delete* the item from the job schedule list.



Press the **Delete** button to remove the selected item from the schedule list.

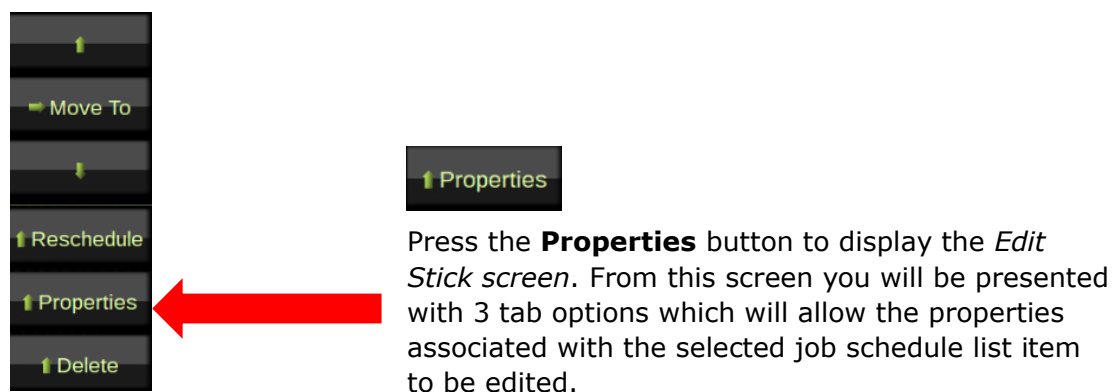
2.6.8 Changing the Job Order

If you would like to change the order that the jobs will be produced by the machine, simply select the complete job folder or sub-assembly (e.g. a frame) you want to move within the job schedule list. The following pop-up menu will appear with the options to move the item up or down the job schedule list.



2.6.9 Edit Stick Properties

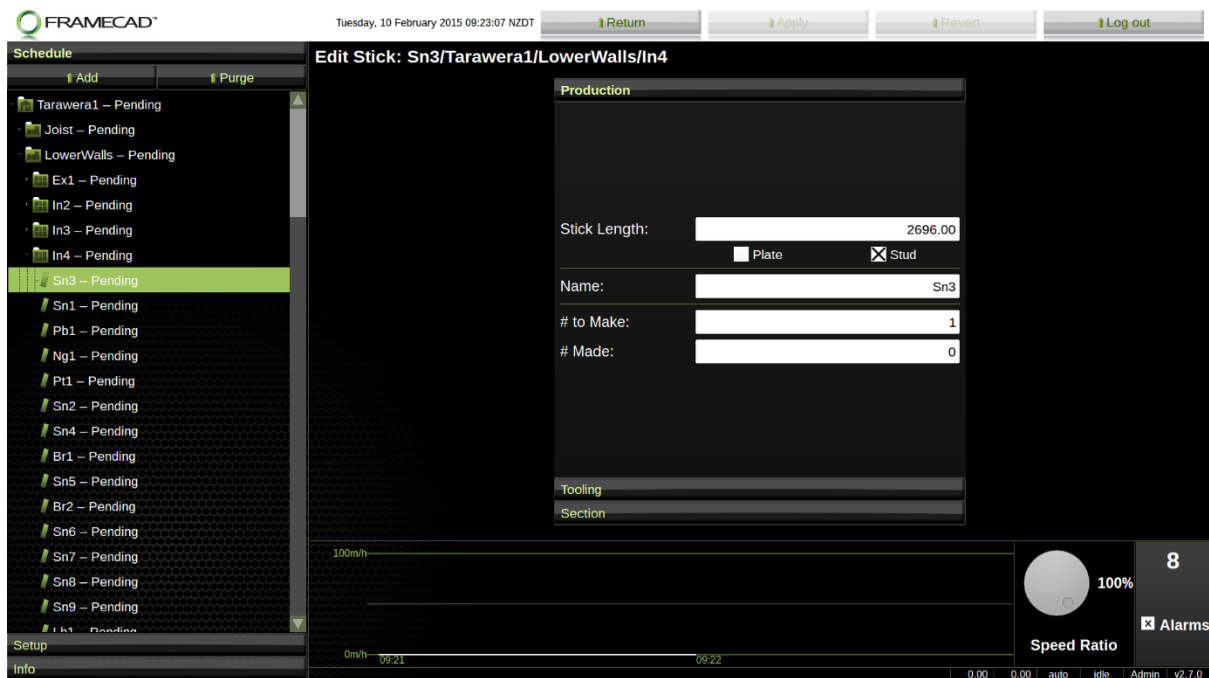
If you want to review or edit the properties (tool operations, length, quantity etc.) of a stick (individual element within a frame assembly) simply select the component you want to *edit* from the job schedule List. The following pop-up menu will appear with the option to edit the item properties



The options available from the **Edit Stick** screen are discussed in more detail below:



The Production tab will display information relating to the length, quantity still to be made and the number already made. The stick can also be identified as a *Plate* or *Stud*.



Stick Length

This is the total length of the stick to be made. If you change this, you may also need to adjust some of the other tool positions to maintain the relative position of these to each end of the stick.

to Make

This is the total quantity of this particular stick to be made.

Made

This displays the quantity of this particular stick that has *already been made*.

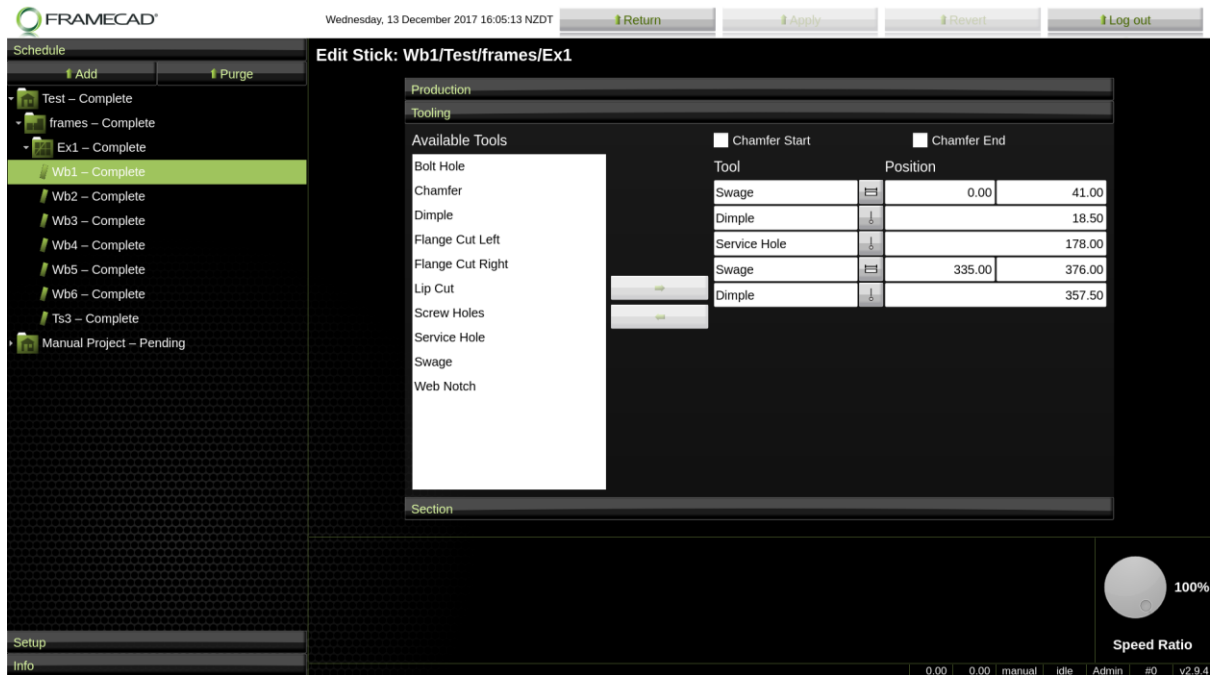
Tooling

The Tooling tab will display information relating to the tool functions and their relative positions on the stick. Tool functions can therefore be added, deleted, or moved around the stick.

You can also choose to add a Chamfer tool operation at the start and/or end of each manufactured stick.

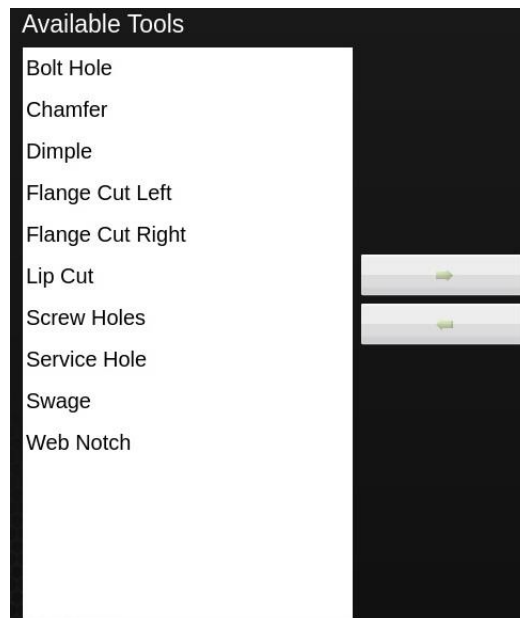
NOTE!

The tools shown in the following screenshot(s) may vary to actual depending on machine configuration at time of order placement.



Available Tools

This selection box displays the tools available on the FRAMECAD machine. From here you can scroll down the tool list and manually Add or Remove tools via the button options to the side. Any tools that are added will then be displayed in the Tool & Position list.



Tool & Position List

This is where all the tool operations are listed for this specific stick. It also lists the position, relative to the leading-edge end of the stick, that the tooling function will be placed.

The tooling operations are of the two types:

'Point' tool operations:

1. Bolt Hole
2. Chamfer
3. Dimple
4. Screw Holes
5. Service Hole

Length tool operations:

1. Flange Cuts
2. Lip Cut
3. Swage
4. Web Notch

To edit the positions, select the required position value text box. An on-screen keypad will be displayed allowing you to edit the value.

Chamfer Start		Chamfer End	
Tool		Position	
Swage		0.00	41.00
Dimple		18.50	
Service Hole		178.00	
Swage		335.00	376.00
Dimple		357.50	

Example of a stick

For the 'Length' tools like Swage as shown above, the START and the END of the tool positions must be given.

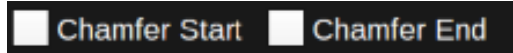
That allows punching of cut-outs longer than the physical tool.

NOTE!

If a tool position value is entered outside the Stick Length setting, the value text box will be highlighted in red.

Chamfer Start and Chamfer End

The Chamfer Start and Chamfer End checkboxes can be used to force a chamfer tool operation to be included at either the start or end of a stick.



Section

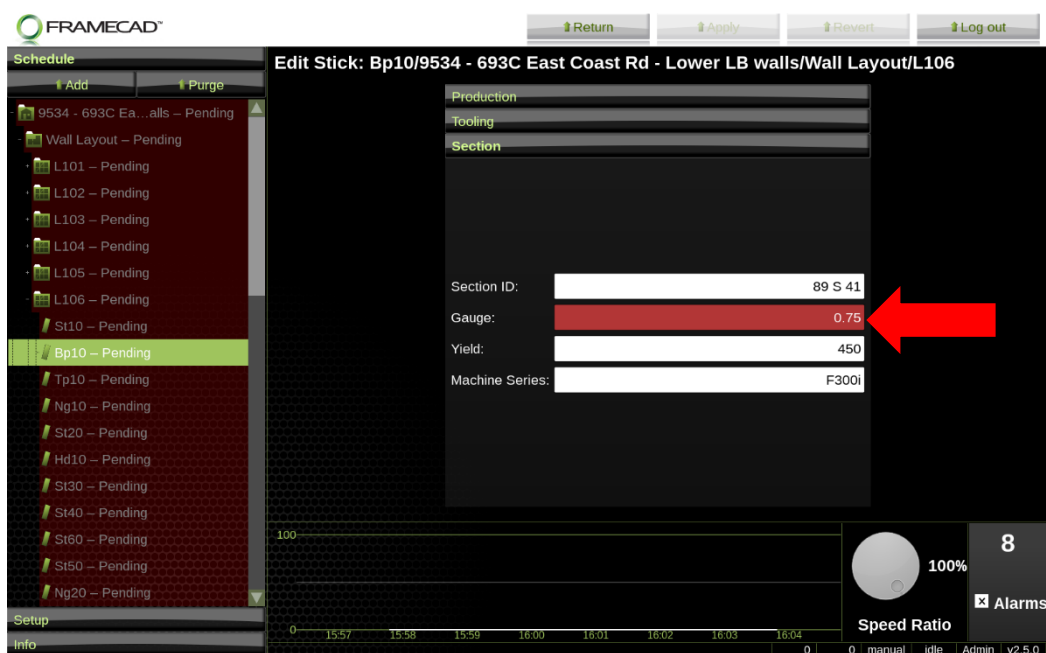
The Section tab displays information on the specific section specified. This will include:

- Section ID** The name of the section you are reviewing the properties of.
- Gauge** The "Gauge" or material thickness specified in the job file.
- Yield** The given yield strength of the steel specified in the job file.
- Machine Series** The machine type that the job file was designed for.

TIP!

If a job file specifies a different profile size or material thickness to what the machine is currently configured for (see [Setup - Machine Setting Screen](#)) the item will be highlighted in red.

The job property that is causing the issue can then be reviewed and corrected – see example below.



Example – the Gauge value for the Job shown above is different to the machine setting – see [Setup - Machine Setting Screen](#).

2.7 Setup Menu Screens

Selecting the Setup menu tab from the left side menu will allow access to the various screens for configuring the FRAMECAD machine. This section introduces the available screens and functions that are included.

CAUTION!

Most of the data included in these screens is factory set and will not need editing. These parameters are highlighted below. Always consult an authorised FRAMECAD technician if you are not sure BEFORE making any changes.

It is highly recommended that a site security policy is developed that ensures suitable protection of critical parameter settings. Non-Admin users cannot change many of the machine settings such as tool offsets or parameters.

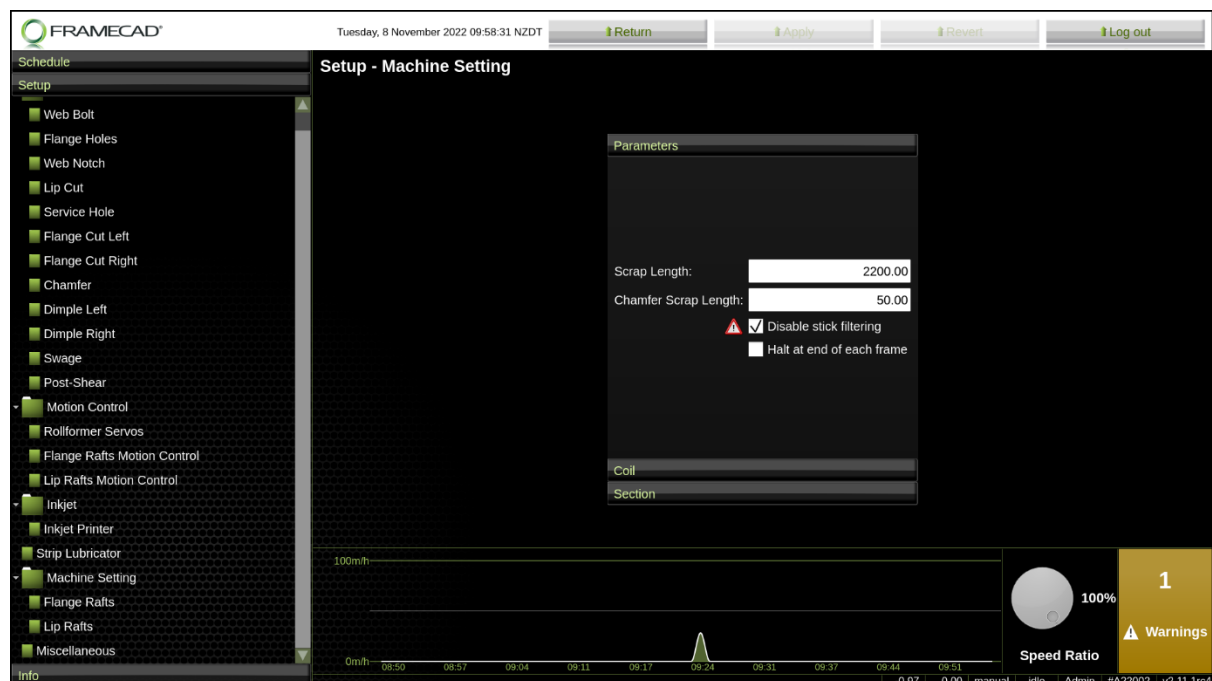
2.7.1 Setup - Machine Setting Screen

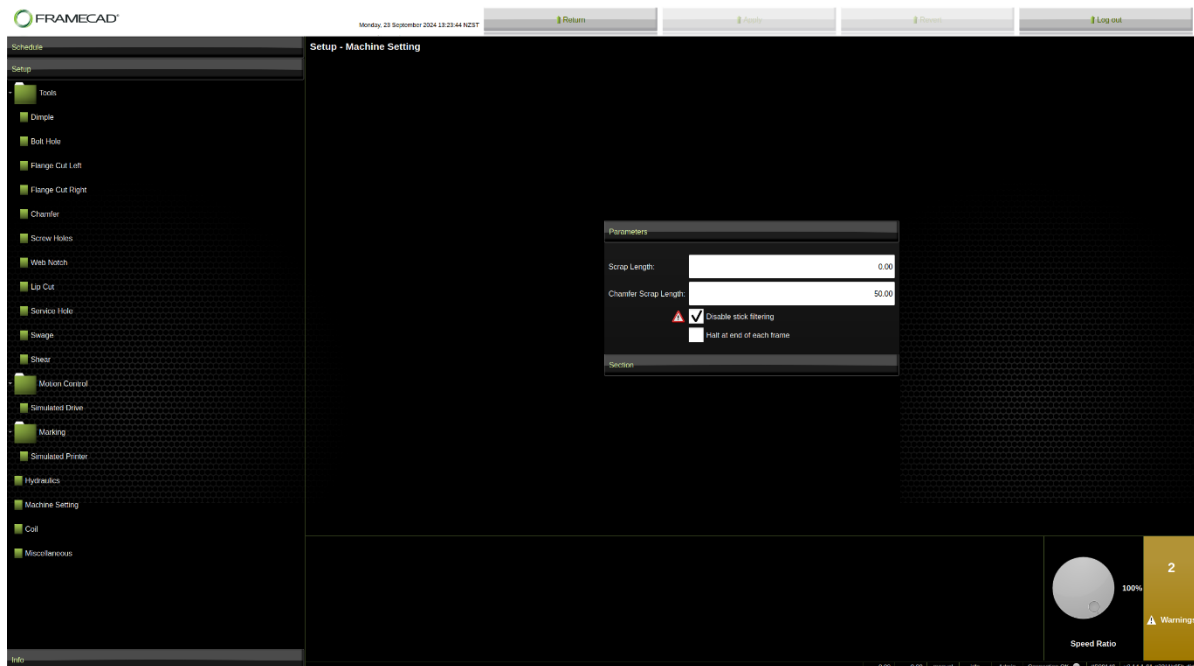
This screen allows the general profile setup and configuration of the FRAMECAD machine.

From this screen you will have the option to select from three menu tabs. Selecting these tabs will allow you to view and/or edit the different properties associated with the general machine setup. These options are discussed below:



The Parameters tab allows the Operator to determine how any *automatic* scrap steel produced on the machine is to be managed.





Scrap Length (mm)

Whenever the FRAMECAD machine is first placed into Automatic control, any steel strip inside the machine at commencement of production will be wasted as *scrap*. However, this scrap material can be cut up into smaller lengths if required. Often this steel can be put to use elsewhere and so the Operator can determine a more usable *scrap length*.

Note!

The machine will still produce the same quantity of scrap but will cut it into the length(s) entered in this field.

Chamfer Scrap Length (mm)

The Chamfer Scrap Length is used to adjust the length of scrap removed when a stick with end chamfers is manufactured.

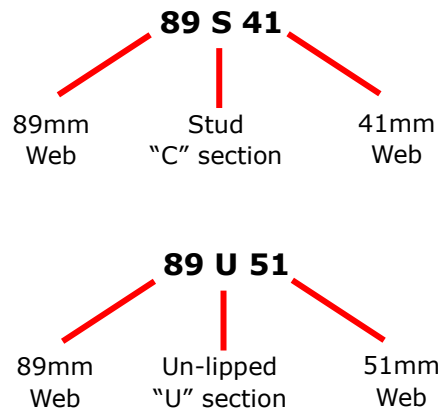
Section

The Section tab will allow basic data around the type of *profile* specification required for a particular project to be configured. This specifies its measurements, including profile width, flange height, section type (e.g. S or T).

Machine section type

This defines the basic profile types available on the machine. Each profile is labelled according to a standard code that encapsulates the basic shape and dimensions of the profile.

Here's an example (using a metric profile size):



This allows the Operator to choose if the machine will produce "C" or "U" section profile sticks. The Lip Box configurations differ based on the machine type.

FRAMECAD machines with a hydraulically controlled Lip Box unit can engage or disengage the Lip Box by changing the section (Using the example above, if the Operator set the machine to run "89 U 51", the Lip Box would be automatically disengaged to run un-lipped "U" section. With the Lips turned OFF, the side flange height will be longer).

FRAMECAD machines with a mechanically controlled Lip Box unit will need to manually engage or disengage the Lip Box.

Refer to your Operating Manual for more information on profile type.

Changing profile type:

Select the profile option from the box and press the **Software Reset**  button. The job schedule will be refreshed and will indicate the chosen section as the selected profile.

Plate / Stud Checkboxes

You can alter the machine section types displayed in the list by checking the Plate or Stud checkboxes.

Disable stick filtering

If a job file specifies a different profile size or material thickness to what the machine is currently configured for (see [Setup Menu Screens](#)) the item will be highlighted in red. The job property that is causing the issue can then be reviewed and corrected – see example below. This feature can also be turned OFF by selecting the **Disable stick filtering** checkbox.

FRAMECAD® Friday, 25 November 2016 10:46:09 NZDT Return Apply Revert Log out

Setup - Machine Setting

Parameters

Scrap Length: 1500.00
Chamfer Scrap Length: 50.00

☒ Disable stick filtering
☐ Halt at end of each frame

Coil
Section

100m/h
0m/h 10:36 10:37 10:38 10:39 10:40 10:41 10:42 10:43 10:44 0.00 0.00 manual idle Admin #0 v2.8.4

Speed Ratio 100% **9 Alarms** **1 Warnings**

FRAMECAD® Friday, 25 November 2016 10:46:30 NZDT Return Apply Revert Log out

Alarms

Hydraulic phase rotation
Acknowledged
Friday, 25 November 2016 10:35:56 NZDT

Inkjet communication error
Acknowledged
Friday, 25 November 2016 10:35:56 NZDT
No reply

Emergency stop
Acknowledged
Friday, 25 November 2016 10:35:56 NZDT

Guards open
Acknowledged
Friday, 25 November 2016 10:35:56 NZDT

No strip at infeed
Acknowledged
Friday, 25 November 2016 10:35:56 NZDT

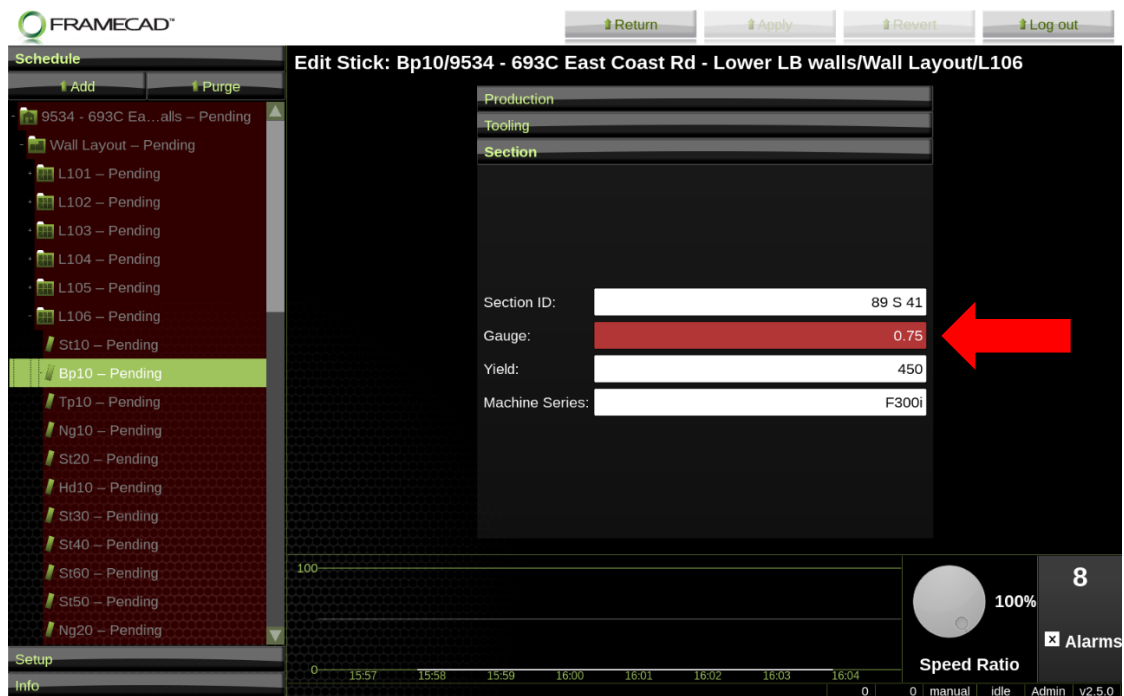
Acknowledge All

Warnings

Stick filtering disabled
Friday, 25 November 2016 10:45:55 NZDT

100m/h
0m/h 10:36 10:37 10:38 10:39 10:40 10:41 10:42 10:43 10:44 0.00 0.00 manual idle Admin #0 v2.8.4

Speed Ratio 100% **9 Alarms** **1 Warnings**



Example – the Gauge value for the Job shown above is different to the machine setting – see [Setup - Machine Setting Screen](#)

If any of the machine section settings are changed, the Operator will be prompted to perform a Software Reset (by pressing the **Software Reset** ☹️ button).

2.7.2 Setup - Coil Screen

This screen allows the operator to enter their coil details into their FRAMECAD machine.

Coil Data

Coil Data	
Coil label:	Coil123
Gauge (mm):	0.55
Standard:	EN 10346
Grade:	S390GD
Coating:	Z180
Strip width:	89
Weight (kg):	1000.00
Swap	
Length (m):	2498.27
Alert below length:	10.00

Coil Label

The Operator can enter the identification number of the steel coil being used. This is logged by the software. To change the Coil Label, select the text box and use the on-screen keyboard to enter the coil identification number or description.

Gauge

The Operator can select the Base Metal Thickness (BMT) of the steel being used on the machine.

Note!

BMT as expressed here is the uncoated thickness of the steel. This may differ to the *design thickness* of the steel being used.

Standard

The Operator can configure the specified *standard* that the steel must comply with. This setting defines the properties the steel has been manufactured to. This should match the specification as shown on the *mill certificate* supplied with the steel coils.

Grade

The Operator can select the *tensile strength* (or Grade) of the steel being used. This should match the tensile strength as shown on the *mill certificate* supplied with the steel coils.

Coating

This allows the Operator to specify the type of coating applied to the steel surface. This should match the coating as shown on the *mill certificate* supplied with the steel coils.

Remaining Length / Weight

FRAMECAD Factory2 has an inbuilt coil "weight-to-length" and "length-to-weight" calculator. Depending on which value is available, the operator can swap between entering the weight or entering the length. This will then calculate the other value if the other coil details have been entered (gauge, coating, strip width, etc). When running the machine, the calculator will automatically update the length and weight fields.

The user can also specify a value in the 'Alert Below Length' box to warn them when the coil is running low.

2.7.3 Setup – [Machine Setting] Rafts Screen

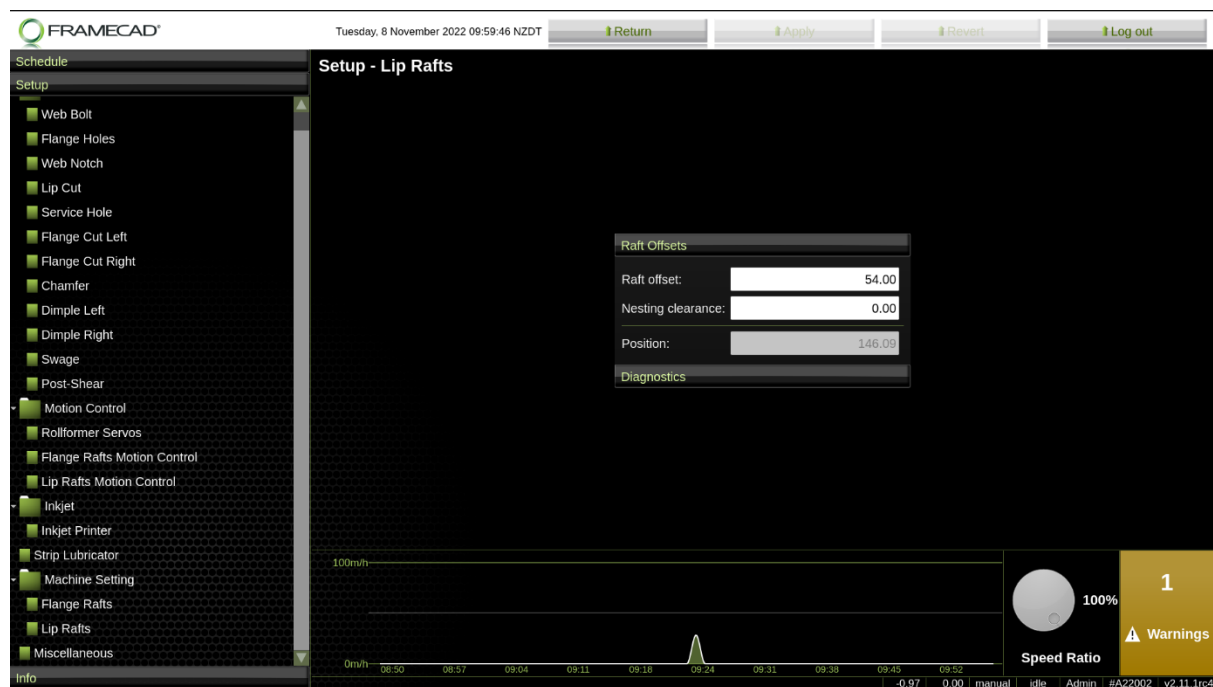
This screen contains information about the rafts which controls the web width and flange height of the profile.

CAUTION!

These settings should not be changed unless advised by a FRAMECAD technician. Incorrect settings can have detrimental effects on the performance, safety and accuracy of the FRAMECAD machine.

Rafts Screen

(Setup / Machine Setting / Rafts Screen)



The Raft Offsets tab will allow the operator to adjust the raft position with respect to the encoder datum. This is required when calibrating the rafts.

Raft offset This is the offset applied to the raft position with respect to the encoder datum.

Nesting clearance This is an additional clearance that can be added between stud and plate sections.

Position This is the current position of the rafts.



The Diagnostics tab displays the current state of the rafts and the current position. This can be used to diagnose faults and issues with the rafts.

State This is the current state of the rafts. It will indicate whether the rafts are inhibited or not.

Position This is the current position of the rafts.

2.7.4 Setup – Tools Screen

The Tools screen contains setup data on each of the hydraulic tooling operations available on the FRAMECAD machine.

This screen defines the physical location of each tool in the machine relative to a fixed datum point and the way the tool operation will be performed.

Tools Screen

(Setup / Tools Screen)

To review or edit the configuration of a particular tool, simply select the required tool tab from the list shown in the left-side menu.

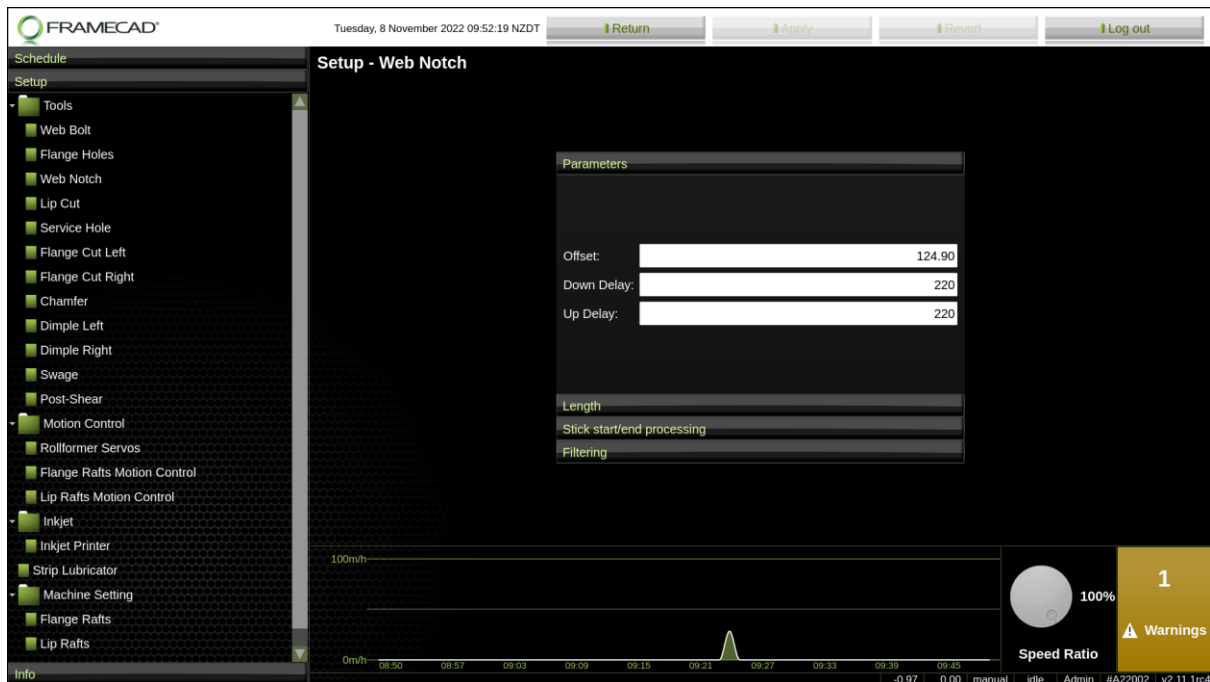
Parameters

In the **Parameters** menu the tool's Offset, Down Delay and Up Delay are set up.



WARNING!

The tool configuration values are factory set and should only be adjusted if directed to by a FRAMECAD technician. Incorrect adjustment can significantly alter the performance and/or quality of the product being made. Extreme caution is advised.

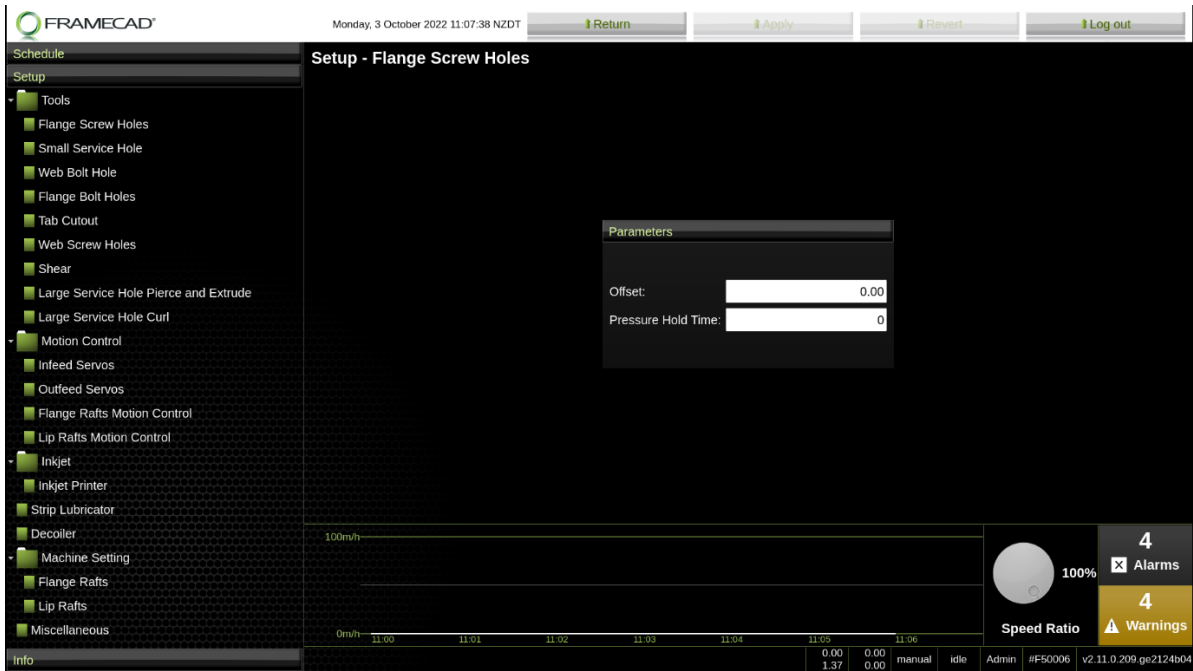


Offset (mm)

The tool *offset* value is the actual physical position of each successive tool relative to the centre of the *first* tool on the machine. These are therefore termed the *datum* tool positions and have an offset value of 0. The offset value for each subsequent tool position will therefore be equal to the distance in mm between the centre of a datum tool and the centre of the respective tool.

Up & Down Delay Times (ms)

The sum total of the Up and Down times (in milliseconds) is the time allowed for the tool to complete its operating cycle. The hydraulic solenoid valve will remain energised for the period defined in the Down Delay time. Once de-energised the software will wait for the Up-Delay time to elapse before allowing the steel strip to be progressed to the next tool (this is to allow the tool sufficient time to return to its fully retracted position).



Monday, 3 October 2022 11:07:38 NZDT

Return Apply Revert Log out

Schedule

Setup

Tools

- Flange Screw Holes
- Small Service Hole
- Web Bolt Hole
- Flange Bolt Holes
- Tab Cutout
- Web Screw Holes
- Shear
- Large Service Hole Pierce and Extrude
- Large Service Hole Curl

Motion Control

- Infeed Servos
- Outfeed Servos
- Flange Rafts Motion Control
- Lip Rafts Motion Control

Inkjet

- Inkjet Printer
- Strip Lubricator
- Decoiler

Machine Setting

- Flange Rafts
- Lip Rafts
- Miscellaneous

Info

Setup - Flange Screw Holes

Parameters

Offset: 0.00

Pressure Hold Time: 0

100m/h

0m/h 11:00 11:01 11:02 11:03 11:04 11:05 11:06

0.00 0.00 manual idle Admin #F50006 v2.11.0.209.ge2124b04

Speed Ratio 100%

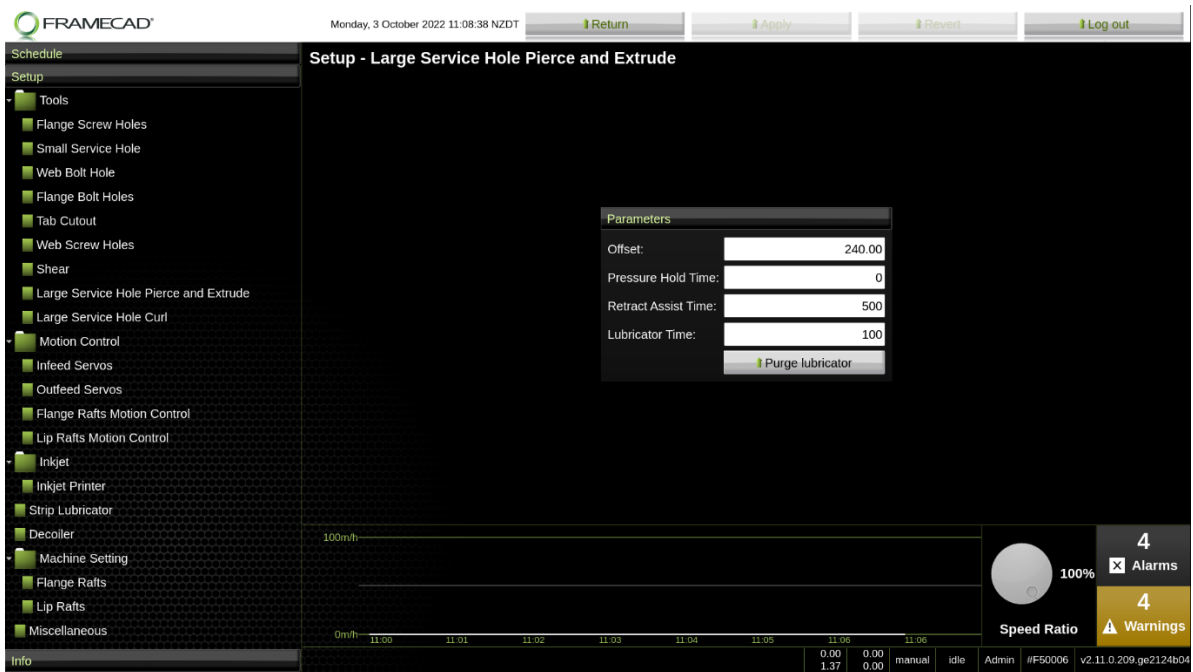
4 Alarms

4 Warnings

Pressure Hold Time

Tooling on some machines use pressure hold times instead of up and down delay times.

The pressure hold time (in milliseconds) determines the tool operation cycle time.



Monday, 3 October 2022 11:08:38 NZDT

Return Apply Revert Log out

Schedule

Setup

Tools

- Flange Screw Holes
- Small Service Hole
- Web Bolt Hole
- Flange Bolt Holes
- Tab Cutout
- Web Screw Holes
- Shear
- Large Service Hole Pierce and Extrude
- Large Service Hole Curl

Motion Control

- Infeed Servos
- Outfeed Servos
- Flange Rafts Motion Control
- Lip Rafts Motion Control

Inkjet

- Inkjet Printer
- Strip Lubricator
- Decoiler

Machine Setting

- Flange Rafts
- Lip Rafts
- Miscellaneous

Info

Setup - Large Service Hole Pierce and Extrude

Parameters

Offset: 240.00

Pressure Hold Time: 0

Retract Assist Time: 500

Lubricator Time: 100

Purge lubricator

100m/h

0m/h 11:00 11:01 11:02 11:03 11:04 11:05 11:06

0.00 0.00 manual idle Admin #F50006 v2.11.0.209.ge2124b04

Speed Ratio 100%

4 Alarms

4 Warnings

The large service hole tool on the FL650 requires multiple valves to perform the operation. These can be set up on the **Parameters** tab.

Retract Assist Time (Large Service Hole)

The time (in milliseconds) for the retract assist value to operate.

Lubricator Time (Large Service Hole)

The duration (in milliseconds) of constant lubrication, which starts when the tool starts extending.

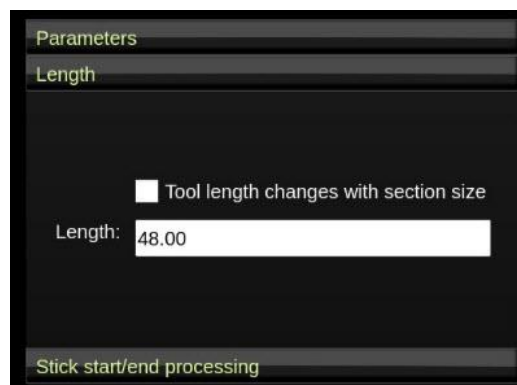
Tool Sequence

The tool starts extending until the control system has seen that the pressure has reached the tool's set pressure for at least the pressure hold time. Then the tool will start to retract and continue until the pressure has reached the tool's set pressure. Normally the pressure hold time should be set to zero. If the tool is blunt, it may be necessary to increase this value.

Length

This tab is for the 'Length tools' only, such as Flange Cut, Lip Cut, Swage, and Web Notch.

This setting tells the software the physical length of the tool, so it can calculate how many times to punch the tool.



Parameters

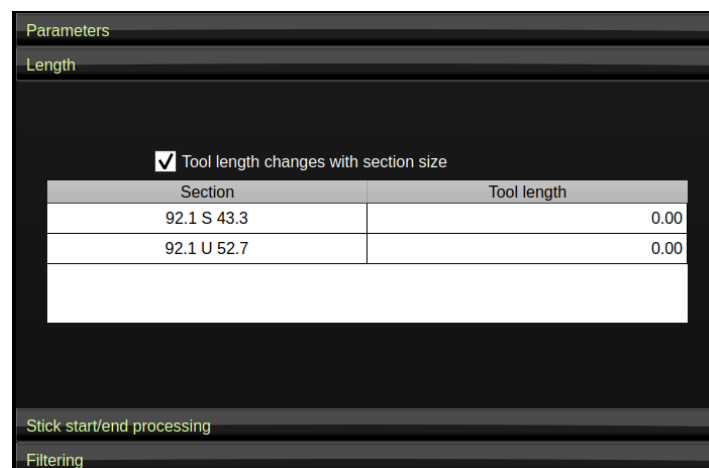
Length

☐ Tool length changes with section size

Length: 48.00

Stick start/end processing

Some tools may have different lengths for different profiles. Check the 'Tool length changes with section size' box to enter the tool length for each profile:



Parameters

Length

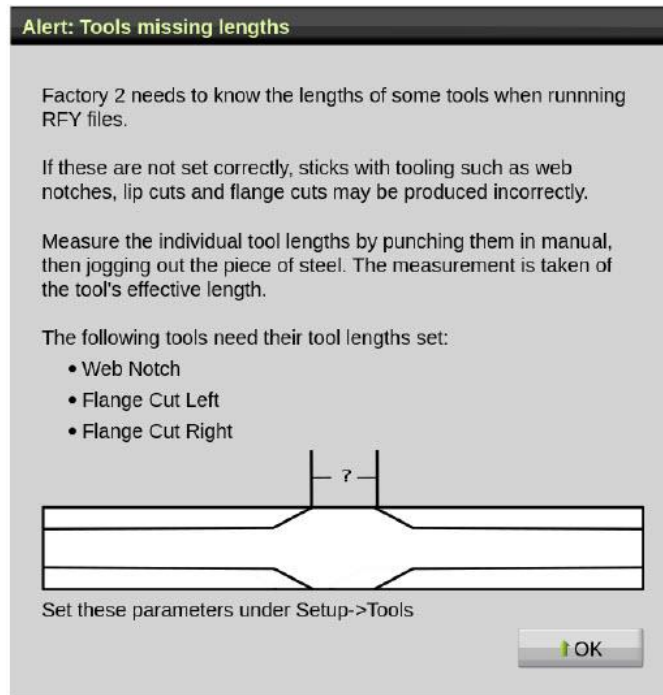
☒ Tool length changes with section size

Section	Tool length
92.1 S 43.3	0.00
92.1 U 52.7	0.00

Stick start/end processing

Filtering

The length for the Web notch, Lip cut, Swage and Web Notch must be set up, otherwise the alert message comes up:



If you try to run a stick with tools that haven't had their tool lengths set up, the machine will stop and display the following alarm message:

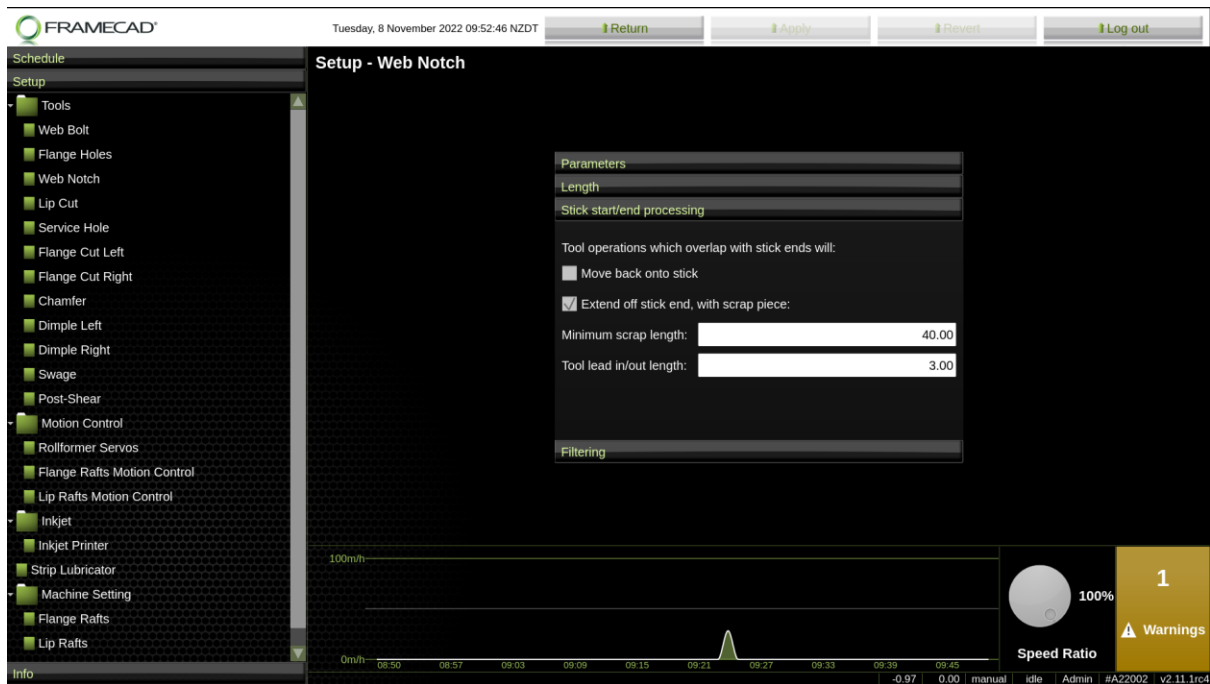


A warning message will also be displayed all the time to remind you that the tool length has to set up.



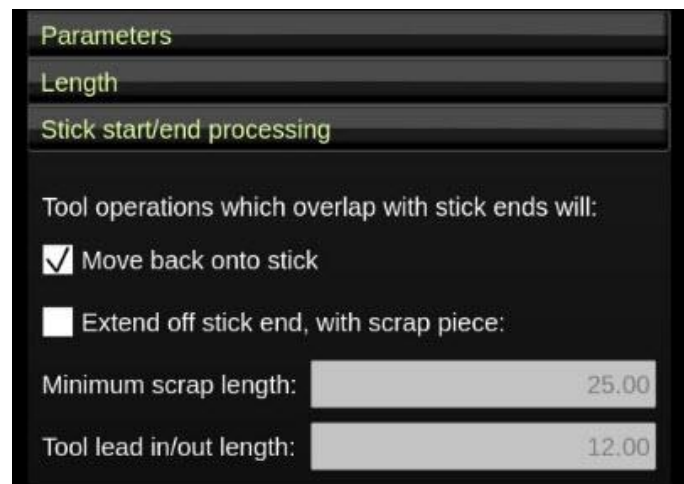
Stick Start / End Processing

This tab controls situations where a physical tool is longer than the tooling operation needed at both ends of a stick.



Move back onto stick

Tool operation is entirely positioned over the stick without affecting the neighbouring stick.



Extend off stick end, with scrap piece

Tool may overhang the end of the stick, but a scrap piece has to be added, so the next stick is not affected. The minimum length of the scrap piece can be setup.

Parameters

Length

Stick start/end processing

Tool operations which overlap with stick ends will:

☐ Move back onto stick

☒ Extend off stick end, with scrap piece:

Minimum scrap length: 25.00

Tool lead in/out length: 12.00

Filtering

FRAMECAD

Tuesday, 8 November 2022 09:53:45 NZDT

Return

Apply

Revert

Log out

Schedule

Setup

Tools

Web Bolt

Flange Holes

Web Notch

Lip Cut

Service Hole

Flange Cut Left

Flange Cut Right

Chamfer

Dimple Left

Dimple Right

Swage

Post-Shear

Motion Control

Rollformer Servos

Flange Rafts Motion Control

Lip Rafts Motion Control

Inkjet

Inkjet Printer

Strip Lubricator

Machine Setting

Flange Rafts

Lip Rafts

Setup - Web Notch

Parameters

Length

Stick start/end processing

Filtering

Filter out contiguous sections of punching

Filter cut-outs greater than length: 165.00

Merge tag length: 20.00

Minimum bridge-piece length: 25.00

Actions

☒ Break up the cut-out by removing an operation

☐ Show alert: Too many contiguous punches, added bridge-piece(s);

☒ Continue running machine

☐ Pause machine

100m/h

0m/h

09:50

09:57

09:03

09:09

09:15

09:21

09:28

09:34

09:40

09:46

-0.97

0.00

manual

idle

Admin

#A22002

v2.11.1rc4

Speed Ratio

100%

1

Warnings

Occasionally job files can be created with problematic tooling sequences. These job files can create issues with the quality of the product being manufactured and/or the overall performance of the machine. Often, they result in steel jam-ups that can be difficult and time-consuming to remove.

FRAMECAD Factory2 will allow user-configured “filters” to be applied that specifically *look* for tool sequences that have the potential to cause problems. A “filter” can simply be thought of as a set of rules that determine what tooling sequence to watch out for and if encountered, how the sequence will be managed.

The best way to understand filtering is by way of an example:

One of the most common mistakes made is the removal of too much steel from the web surface of a profile (see your Operating Manual for more information). This is often the result of multiple Web Notch tool operations being performed in a continuous series. The problem with this type of tool processing is that it leaves very little steel remaining in the profile. This not only reduces the strength of the stick profile as it is being processed but may also prevent adequate contact with the rollers inside the machine, simply due to the amount of steel that has been removed from the web surface.

Filter Cut-Outs Greater than Length

This is the maximum length of any successive cut-out performed by this tool. If a tool cut-out is greater than this value, the filter will trigger a number of actions that you define (see below) to assist with managing the situation.

Merge Tag Length

This is the maximum length between two adjacent tooling regions, where the distance between the tooling regions will be merged.

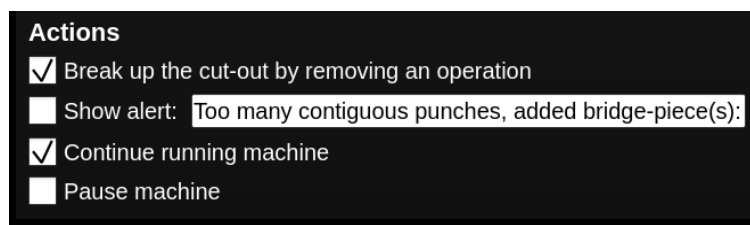
Minimum Bridge Piece Length

This is the minimum length (i.e. *bridge-piece*) between successive cut-outs of the applicable tool. If a bridge-piece shorter than this value is found, the filter will trigger a number of actions that you can define (see below).

When dealing with problematic tooling sequences, the software may leave a bridge piece so there is enough contact with the rollers. This setting will determine the minimum size of the added bridge piece(s).

Actions

This is where you can configure the required actions to take place if/when the filter detects a tooling sequence that falls outside of the criteria entered above for maximum cut-out length. From here you can determine how you would like the machine to respond.



The screenshot shows a dark-themed window titled "Actions". It contains four items:

- ☒ Break up the cut-out by removing an operation
- ☐ Show alert: Too many contiguous punches, added bridge-piece(s):
- ☒ Continue running machine
- ☐ Pause machine

Break Up the Cut-Out by Removing an Operation

Selecting this action will force the software to remove one or more tooling operations to bring the cut-out size back within the criteria established by the filter.

Show Alert

Selecting this action will force the software to display an Alert message on the Operator Screen.

Continue Running the Machine

Select this option to keep the machine running even when the tool scenario defined by the filter has been detected.

Pause the Machine

Select this option to automatically pause the machine when the tool scenario defined by the filter has been detected. This will allow the Operator to make any changes necessary (i.e. edit the stick parameters or place the machine into Semi-Automatic control).

Point Tools

For the 'Point' tools like the Dimple tool, don't require filters.

2.7.5 Setup - [Motion Control] MDX61B

This screen contains information about the MDX61B which controls the overall speed and positioning of steel strip within the machine.

CAUTION!

These settings should not be changed unless advised by a FRAMECAD technician. Incorrect settings can have detrimental effects on the performance, safety, and accuracy of the FRAMECAD machine.

MDX61B SCREEN

(Setup / Motion Control / MDX61B Screen)

From this screen you will have the option to select from three menu tabs. Selecting these tabs will allow you to view and/or edit the different properties associated with the MDX61B VFC. These options are discussed below:

Encoder

The Encoder tab is used when checking the calibration of the Encoder. In order to accurately position the steel strip during production, the FRAMECAD Factory2 software needs to be able to precisely convert the electrical pulses received from the strip encoder into a unit of length. This is a function of the number of pulses produced by the strip encoder in a single revolution (i.e. one turn of the encoder input shaft) and the gearing ratio between the strip encoder input shaft and the diameter of the bottom encoder wheel that runs along the surface of the steel strip. Knowing these quantities allows the system to accurately calculate the scale factor in mm/pulse.

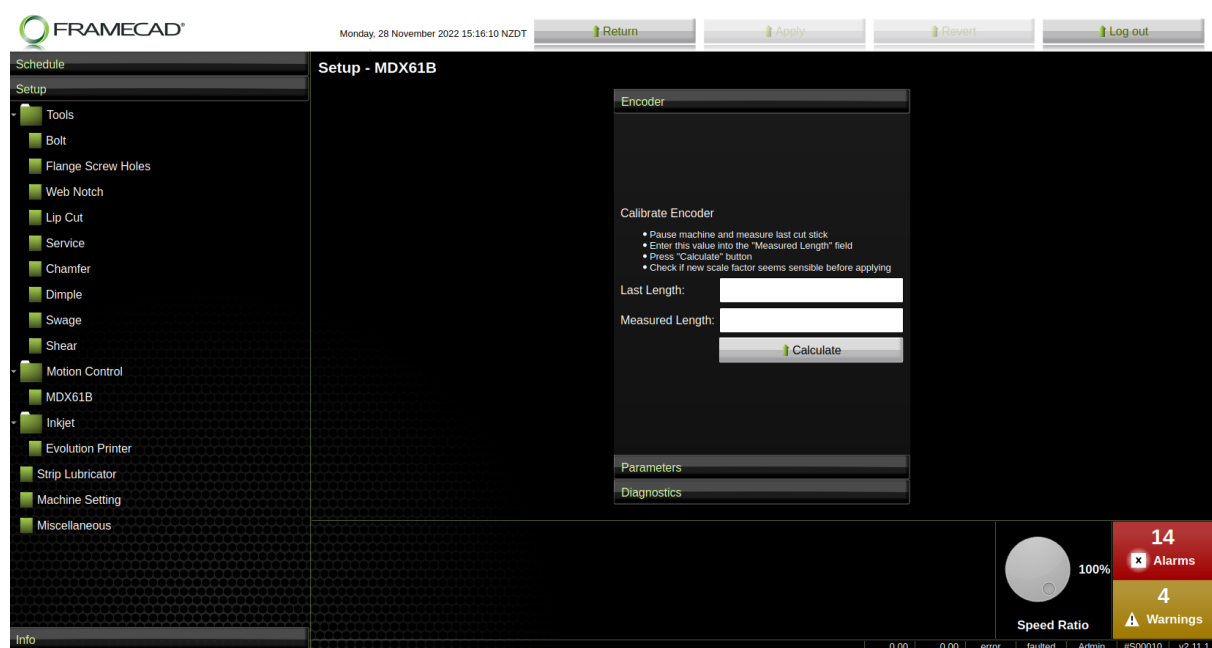
As the number of encoder pulses per revolution or the exact diameter (and therefore circumference) of the bottom encoder wheel are not always easily determined by direct measurement, the control system can be made to automatically compute the correct scale factor (or mm/pulse).

Prior to commencing production, the Scale Factor will need to be checked and a calibration completed to ensure accurate positioning of steel inside the machine.

The information found under the Encoder tab allows the encoder scale factor to be easily calculated. To complete calibration, the Operator simply has to enter the *Measured Length* of the last stick made. See your Operating Manual for more information on scale-factor calibration.

TIP!

Machine accuracy and performance can also be impacted by slippage of the encoder shaft. Before making adjustments to the encoder scale factor always check the infeed guide setup and ensure the encoder shaft locking screws are securely fastened to prevent any slippage during rotation. See your Operating Manual for more information on setting up the infeed guide assembly.



Last Length

This is the length of the last stick made as determined by the FRAMECAD Factory2 software. Typically, this is used during the strip encoder calibration procedure.

Measured Length

This is the *actual measured* length of the last stick made as determined by the Operator. Typically, this is used during the strip encoder calibration procedure where the Operator will determine the length of the last stick made using an

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accurate tape measure and enter the value directly into this text box. Once the measured length value has been entered the Operator can press the **Calculate** button to have FRAMECAD Factory2 automatically calculate the correct Scale Factor for the encoder. See your Operating Manual for more information on scale-factor calibration.

Parameters

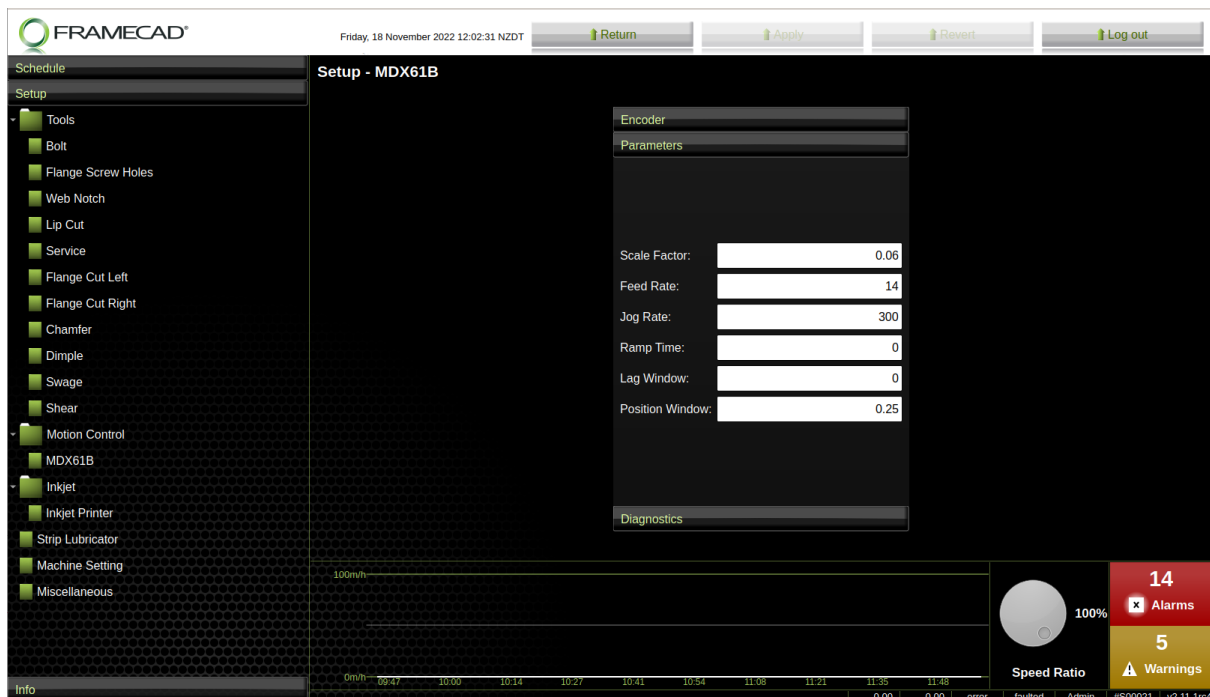
The Parameters tab displays information on the current Scale Factor along with various speed and acceleration settings for the Variable Frequency Controller (VFC).

CAUTION!

The settings inside this tab will alter the overall speed at which steel is positioned inside the machine. Do not change these settings unless you are fully aware of how any alterations will impact the performance from the FRAMECAD machine.

If the machine is run at maximum speed, ensure all personnel in close vicinity to the machine are aware of the danger zones and are prohibited from entering these during production (see your Operating Manual for more information on danger zones around the machine).

Never allow personnel to walk directly in front of the outfeed end of the machine as steel product is ejected at high velocity. Failure to do so may cause serious injury.



Scale Factor

This is the calculated encoder Scale Factor. Although the value here can be edited directly it is highly recommended that Operators follow the calibration procedure shown in your Operating Manual.

Feed Rate

This is the maximum speed in RPM (revolutions per minute) that the rolling section servo motor will be permitted to rotate at. As the speed of rotation at the rolling section ultimately determines the speed at which the steel strip is progressed through the machine, this value will contribute significantly to the overall production output. The maximum permissible value allowed here is 3000(RPM).

If the Operator adjusts the Speed Ratio dial this will adjust the *actual* feed rate to a *percentage* of this value.

NOTE!

The Feed Rate value relates directly to the rotation speed of the rolling section servo motor - not the roller section itself. The actual speed of the rolling section will be a derivative of the drive chain gearing, including the servo motor gearbox reduction.

Jog Rate

This is the maximum speed in RPM (revolutions per minute) that the rolling section servo motor will be permitted to rotate at whilst in the Manual control mode. Typically, this value is set to around 500(RPM).

NOTE!

The Speed Ratio dial has no impact on the Jog Rate.

Ramp Time

This is the time in milliseconds that the FRAMECAD Factory2 software will attempt to accelerate the rolling section servo motor up to the maximum desired speed (see Feed Rate above). Likewise, the FRAMECAD Factory2 software will also try to decelerate the rolling section servo motor back down to 0 RPM using the same ramp time setting.

If this value is set too *low*, the VFC may fault, simply because it cannot ramp the servo motor to the required speed in the given time. If this value is set too *high*, then the overall production rate will be unnecessarily reduced.

Lag Window

FRAMECAD machines, with a MDX61B VFC, are equipped with two high resolution encoders: the first for measuring the strip position and the second for determining both the angular position and speed of the rolling section servo motor. Both encoder signals are sent back to the VFC unit inside the AC Electrical

Cabinet which uses these values to accurately manage the speed and position of steel strip within the machine.

Ideally there should be very little difference between the scaled feedback from these two encoders. However, small variations do exist because of chain tension, slippage between rollers or even stretch in the steel itself. As one encoder infers position based on the number of servo motor revolutions and the other is reading position directly from the moving steel strip these small variations are inevitable. In fact, the VFC uses these very variations to compensate for any mechanical tolerance within the machine and is the reason why positioning is so accurate. This difference between the encoder feedback values is called the *Lag Window* (because typically the Strip encoder value is lagging behind the motor encoder value).

The VFC unit constantly monitors the Lag Window to make sure that the differences between the two encoder values remain acceptable during Automatic control. If the variation becomes too great, then the VFC will assume that a problem has occurred and trigger a fault message that will cause the FRAMECAD Factory2 software to stop the FRAMECAD machine. The most common reason for a large variation is when the steel strip “catches” or hits a tool or guide inside the machine. The consequence of this is the steel strip encoder feedback slips further behind the servo motor encoder value than allowed.

The value in the Lag Window parameter will determine the largest allowed variation between the two encoders. Too large a value and the VFC may not respond in time to a steel jam up in the machine; too low a value will make the VFC too sensitive to minor differences. The value represents the number of *pulses* allowed between the two encoders and is factory set before shipping and should not be changed unless advised by an authorised FRAMECAD technician.

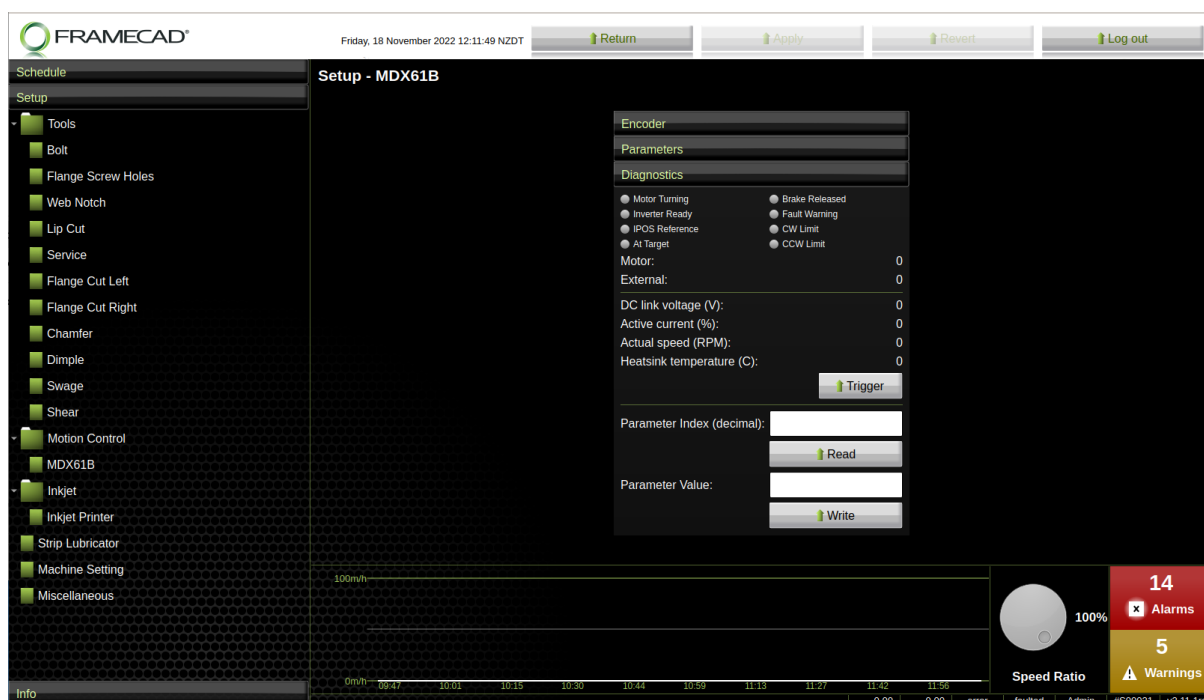
Diagnostics

The Diagnostics tab provides specific information on the VFC. It also allows direct manipulation of the internal VFC parameters. Access is provided for diagnostic and servicing purposes ONLY. Any alterations to the settings inside the VFC may alter the performance and operation of the entire FRAMECAD machine. For this reason, **no changes** should be made unless directed to by an authorised FRAMECAD technician.



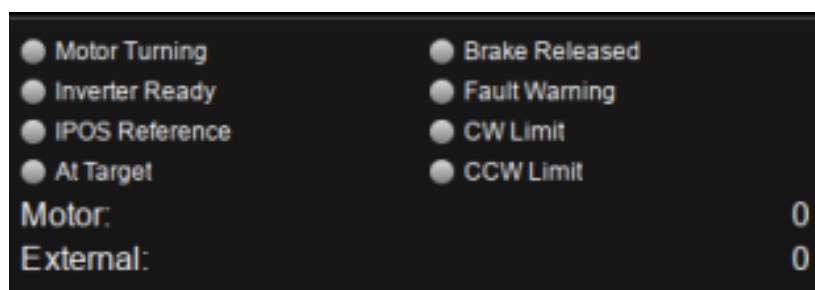
WARNING!

The MDX61B parameters/values are factory set and should only be adjusted if directed to by an authorised FRAMECAD technician. Incorrect adjustment could cause catastrophic damage to the machine tooling and/or rolling section.



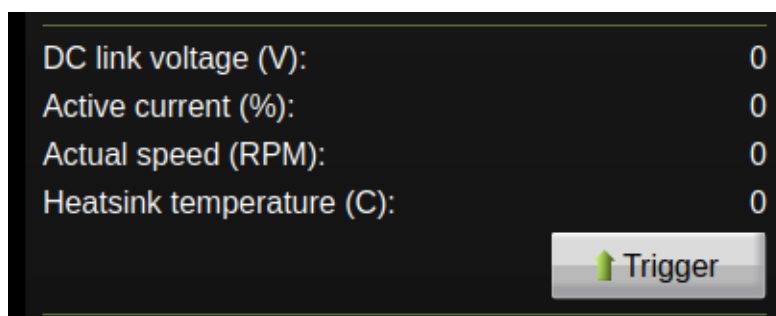
VFC Status Indicators

The information contained in this section can be used by qualified technicians to diagnose specific faults on the MDX61B VFC. The status information also provides the raw (un-scaled) encoder data from both the Strip and Motor encoders.



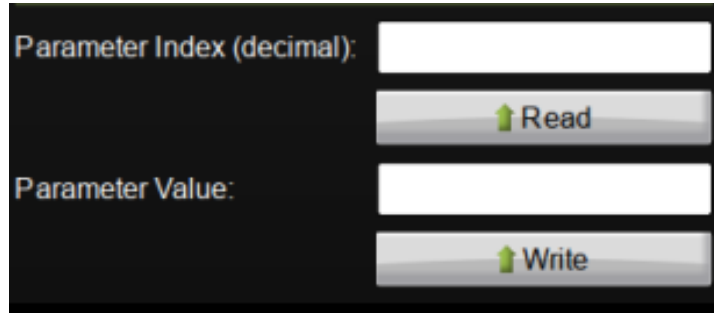
Monitoring

The information contained in this section can be used for further diagnosis of MDX61B VFC faults.



Parameter Index/Parameter Value

The values allow direct access to the VFC internal memory AND SHOULD NOT be changed unless under the strict guidance of an authorised FRAMECAD technician.



2.7.6 Setup - [Motion Control] Servo Motors

This screen contains information about the Servo Motors which control the overall speed and positioning of steel strip within the machine.

CAUTION!

These settings should not be changed unless advised by a FRAMECAD technician. Incorrect settings can have detrimental effects on the performance, safety and accuracy of the FRAMECAD machine.

Servo Motors Screen

(Setup / Motion Control / Servo Motor Screens)

This section is relevant for Infeed Servos and Rollformer Servos:



The Encoder tab is used when checking the calibration of the Encoder. In order to accurately position the steel strip during production, the FRAMECAD Factory2 software needs to be able to precisely convert the electrical pulses received from the strip encoder into a unit of length. This is a function of the number of pulses produced by the strip encoder in a single revolution (i.e. one turn of the encoder input shaft) and the gearing ratio between the strip encoder input shaft and the diameter of the bottom encoder wheel that runs along the surface of the steel strip. Knowing these quantities allows the system to accurately calculate the scale factor in mm/pulse.

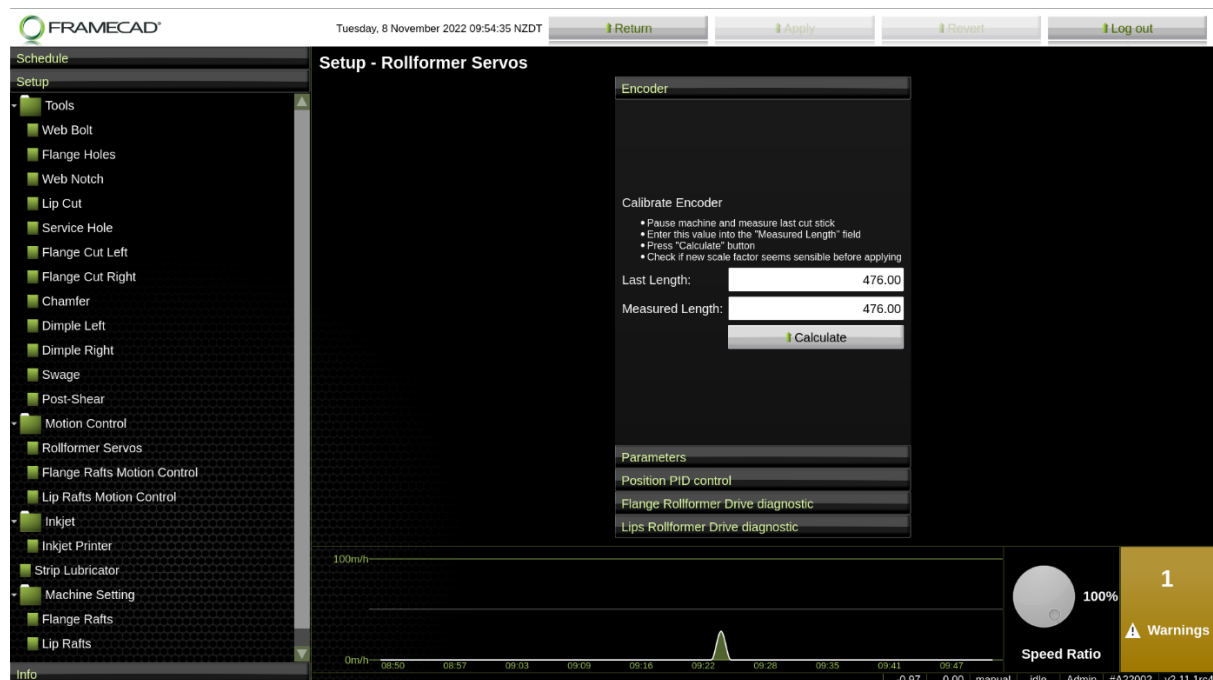
As the number of encoder pulses per revolution or the exact diameter (and therefore circumference) of the bottom encoder wheel are not always easily determined by direct measurement, the control system can be made to automatically compute the correct scale factor (or mm/pulse).

Prior to commencing production, the Scale Factor will need to be checked and a calibration completed to ensure accurate positioning of steel inside the machine.

The information found under the Encoder tab allows the encoder scale factor to be easily calculated. To complete calibration, the Operator simply has to enter the *Measured Length* of the last stick made. See your Operating Manual for more information on scale-factor calibration.

TIP!

Machine accuracy and performance can also be impacted by slippage of the encoder shaft. Before making adjustments to the encoder scale-factor always check the infeed guide setup and ensure the encoder shaft locking screws are securely fastened to prevent any slippage during rotation. See your Operating Manual for more information on setting up the infeed guide assembly.



Last Length

This is the length of the last stick made as determined by the FRAMECAD Factory2 software. Typically, this is used during the strip encoder calibration procedure.

Measured Length

This is the *actual measured* length of the last stick made as determined by the Operator. Typically, this is used during the strip encoder calibration procedure where the Operator will determine the length of the last stick made using an accurate tape measure and enter the value directly into this text box. Once the measured length value has been entered the Operator can press the **Calculate** button to have FRAMECAD Factory2 automatically calculate the correct Scale Factor for the encoder. See your Operating Manual for more information on scale-factor calibration.

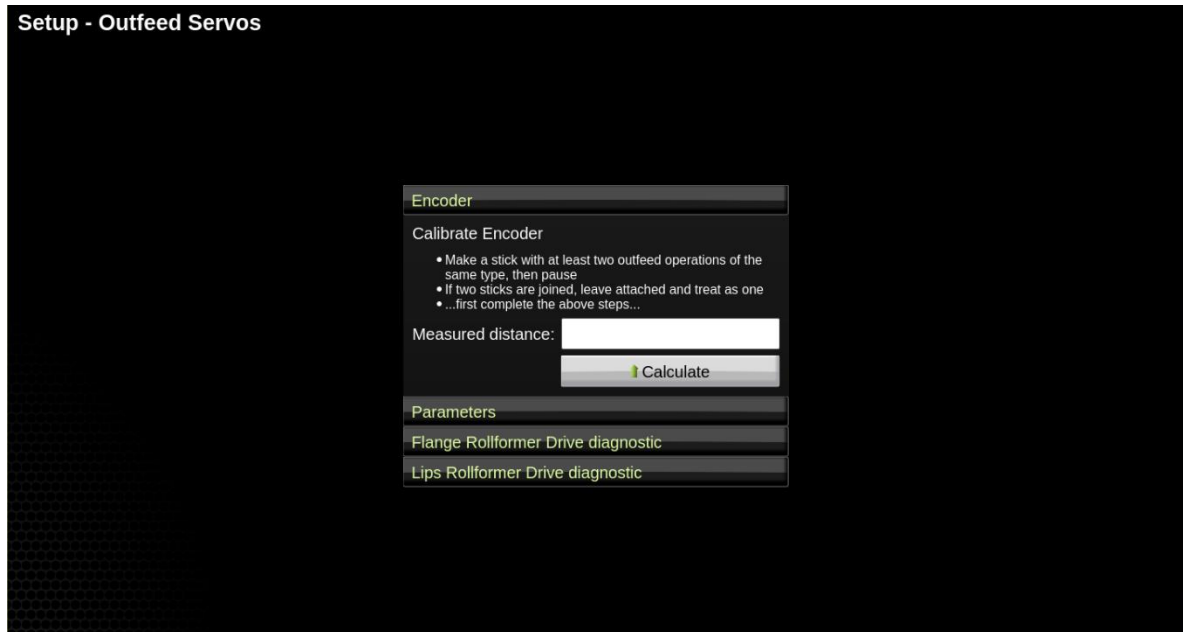
This section is relevant for Outfeed Servos:

Encoder

The Encoder tab is used when checking the calibration of the outfeed Encoder. In order to accurately position the steel strip during production, the FRAMECAD Factory2 software needs to be able to precisely convert the electrical pulses received from the outfeed strip encoder into a unit of length.

TIP!

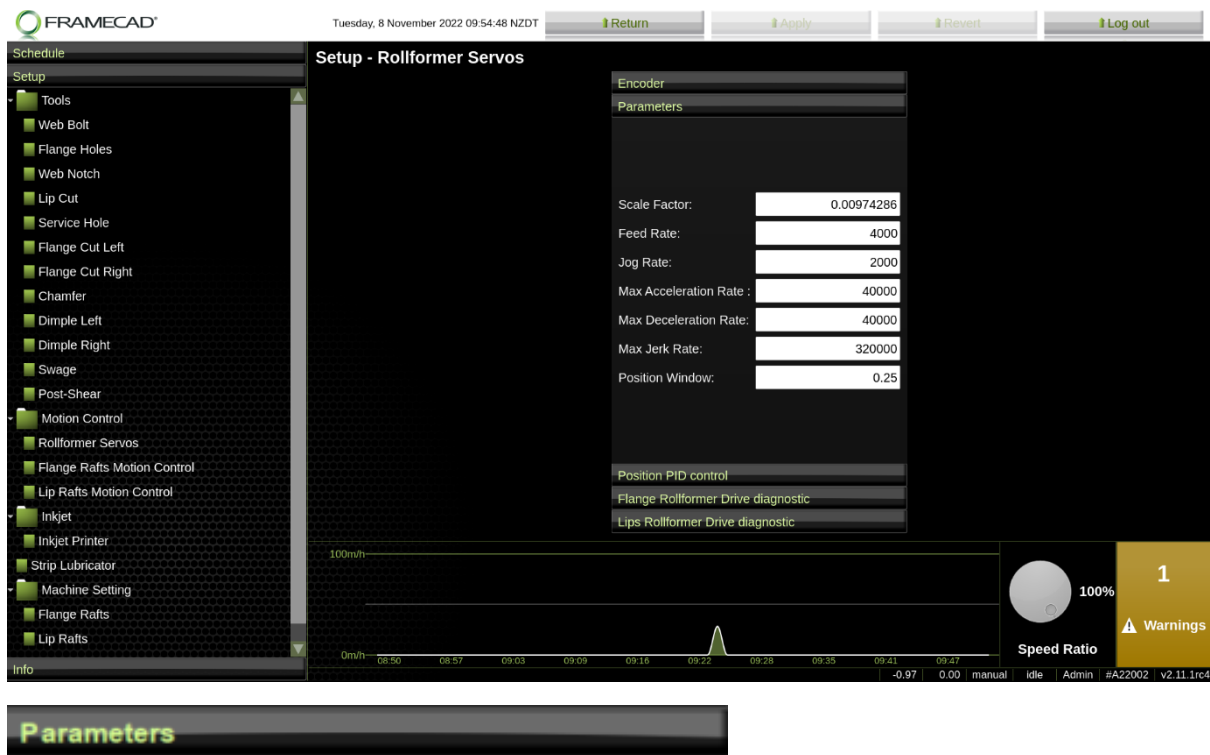
Machine accuracy and performance can also be impacted by slippage of the encoder shaft. Before making adjustments to the encoder scale-factor always check the infeed guide setup and ensure the encoder shaft locking screws are securely fastened to prevent any slippage during rotation. See your Operating Manual for more information on setting up the infeed guide assembly.



Measured distance

This is the *actual measured* length between the two operations on the stick made as determined by the Operator. Typically, this is used during the outfeed strip encoder calibration procedure where the Operator will determine the length using an accurate tape measure and enter the value directly into this text box. Once the measured length value has been entered the Operator can press the **Calculate** button to have FRAMECAD Factory2 automatically calculate the correct Scale Factor for the encoder. See your Operating Manual for more information on scale-factor calibration.

This section is relevant for Infeed Servos and Rollformer Servos:



The Parameters tab displays information on the current Scale Factor along with various speed and acceleration settings for the Beckhoff drive.

Scale Factor

This is the calculated encoder Scale Factor. Although the value here can be edited directly it is highly recommended that Operators follow the calibration procedure shown in your Operating Manual.

Feed Rate

This is the maximum speed in RPM (revolutions per minute) that the rolling section motor will be permitted to rotate at. As the speed of rotation at the rolling section ultimately determines the speed at which the steel strip is progressed through the machine, this value will contribute significantly to the overall production output.

If the Operator adjusts the Speed Ratio dial this will adjust the *actual* feed rate to a *percentage* of this value.

NOTE!

The Feed Rate value relates directly to the rotation speed of the motor - not the roller section itself. The actual speed of the rolling section will be a derivative of the drive chain gearing, including the servo motor gearbox reduction.

Jog Rate

This is the maximum speed in RPM (revolutions per minute) that the motor will be permitted to rotate at whilst in the Manual control mode. Typically, this value is set to around 500(RPM).

NOTE!

The Speed Ratio dial has no impact on the Jog Rate.

Max Acceleration Rate

This is the maximum allowed acceleration rate (in rpm/second) that the FRAMECAD Factory2 software will attempt to accelerate the motor up to the maximum desired speed (see Feed Rate above).

Max Deceleration Rate

This is the maximum allowed deceleration rate (in rpm/second) that the FRAMECAD Factory2 software will attempt to decelerate the motor to 0 RPM.

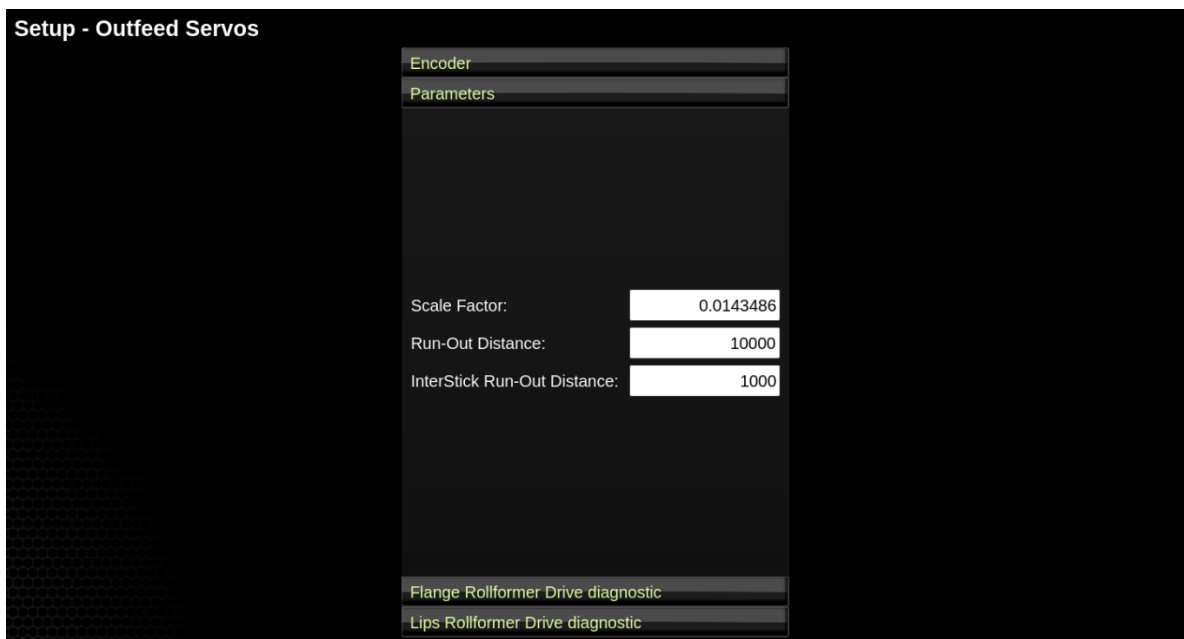
Max Jerk Rate

This is the maximum allowed jerk rate (in rpm per second per second).

Position Window

The maximum allowable error between the expected position and the actual position.

This section is relevant for Outfeed Servos:



Parameters

The Parameters tab displays information on the current Scale Factor along with various speed and acceleration settings for the Beckhoff drive.

Scale Factor

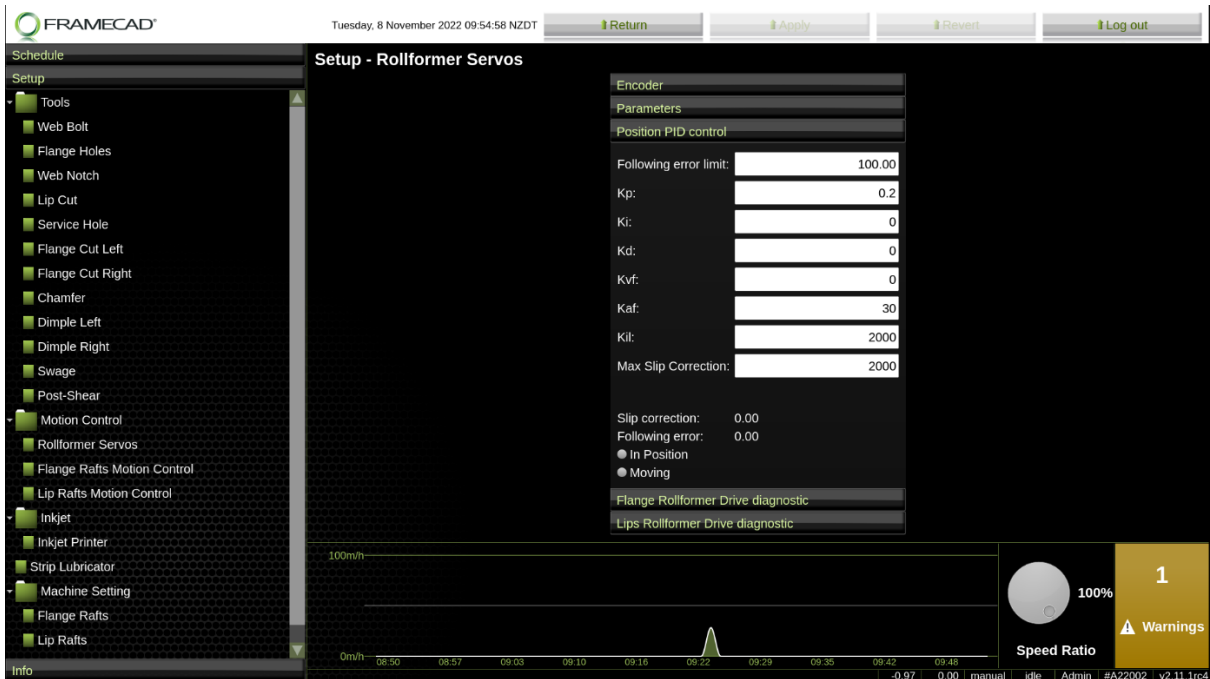
This is the calculated encoder Scale Factor. Although the value here can be edited directly it is highly recommended that Operators follow the calibration procedure shown in your Operating Manual.

Run-Out Distance

This is a fixed number which is the length of the rollformer plus an added safety margin. This is used at the end of automatic production to clear the rollformer of finished sticks.

Inter Stick Run-Out Distance

The distance the rollformer will run on its own to create a gap between the stick that was just cut off and the next stick.



The Position PID control tab is used to adjust the positioning and motion of the servo motors. The settings inside this tab will alter the overall speed and motion of the machine. These settings should only be changed by an authorised FRAMECAD technician.



CAUTION!

These settings should not be changed unless advised by a FRAMECAD technician. Incorrect settings can have detrimental effects on the performance, safety and accuracy of the FRAMECAD machine.

The Diagnostics tabs provides specific information on the Beckhoff drives. This information can be used by authorised FRAMECAD technicians to diagnose and solve problems.

When a drive requires further tuning, an authorised FRAMECAD technician will provide a configuration file to update the drives. The import button will allow the operator to update the drive using a USB. The extension filetype is .xml.

In some cases, the existing drive configuration file will need to be extracted. The operator can export the file by pressing the export button, which will add the file to a connected USB. The filetype is extension .xml.

2.7.7 Setup - [Motion Control] Rafts Motion Control

This screen contains information about the Rafts motion control which controls the overall speed and positioning of the tool, flange and lip rafts within the machine.

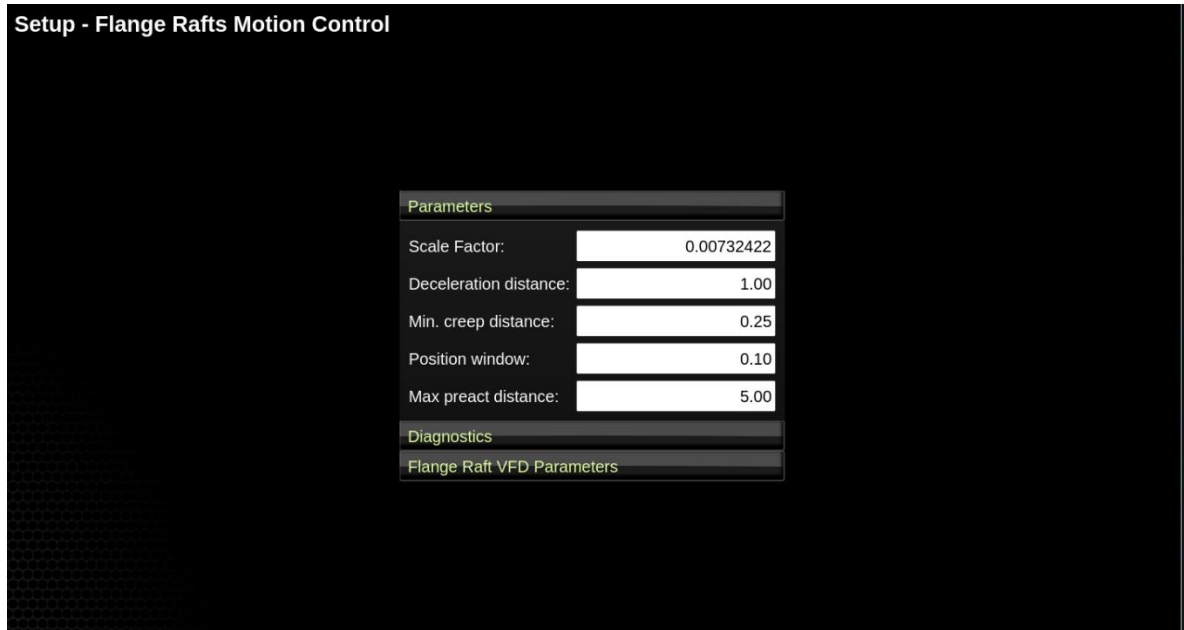
CAUTION!

These settings should not be changed unless advised by a FRAMECAD technician. Incorrect settings can have detrimental effects on the performance, safety and accuracy of the FRAMECAD machine.

Rafts Motion Control Screen

(Setup / Motion Control / Rafts Motion Control Screens)

From this screen you will have the option to select from three menu tabs. Selecting these tabs will allow you to view and/or edit the different properties associated with the drives. These options are discussed below:



Parameters

The Parameters tab displays information on the current Scale Factor along with various speed and acceleration settings for the drive.

Scale Factor

This is the calculated raft Scale Factor. Although the value here can be edited directly it is highly recommended that Operators follow the calibration procedure shown in your Operating Manual.

Deceleration Distance

The distance before rafts aim to begin decelerating to a stable low speed. Ensure this is large enough that the rafts are at a stable low speed for a short period. If this is too small, the rafts won't reach the stable low speed before having to stop

Minimum Creep Distance

The minimum distance to move at a slow speed before reaching the target. This should be set to a large enough value that the rafts are at a stable low speed before beginning deceleration to stop.

Position Window

The maximum allowable error between the expected position and the actual position.

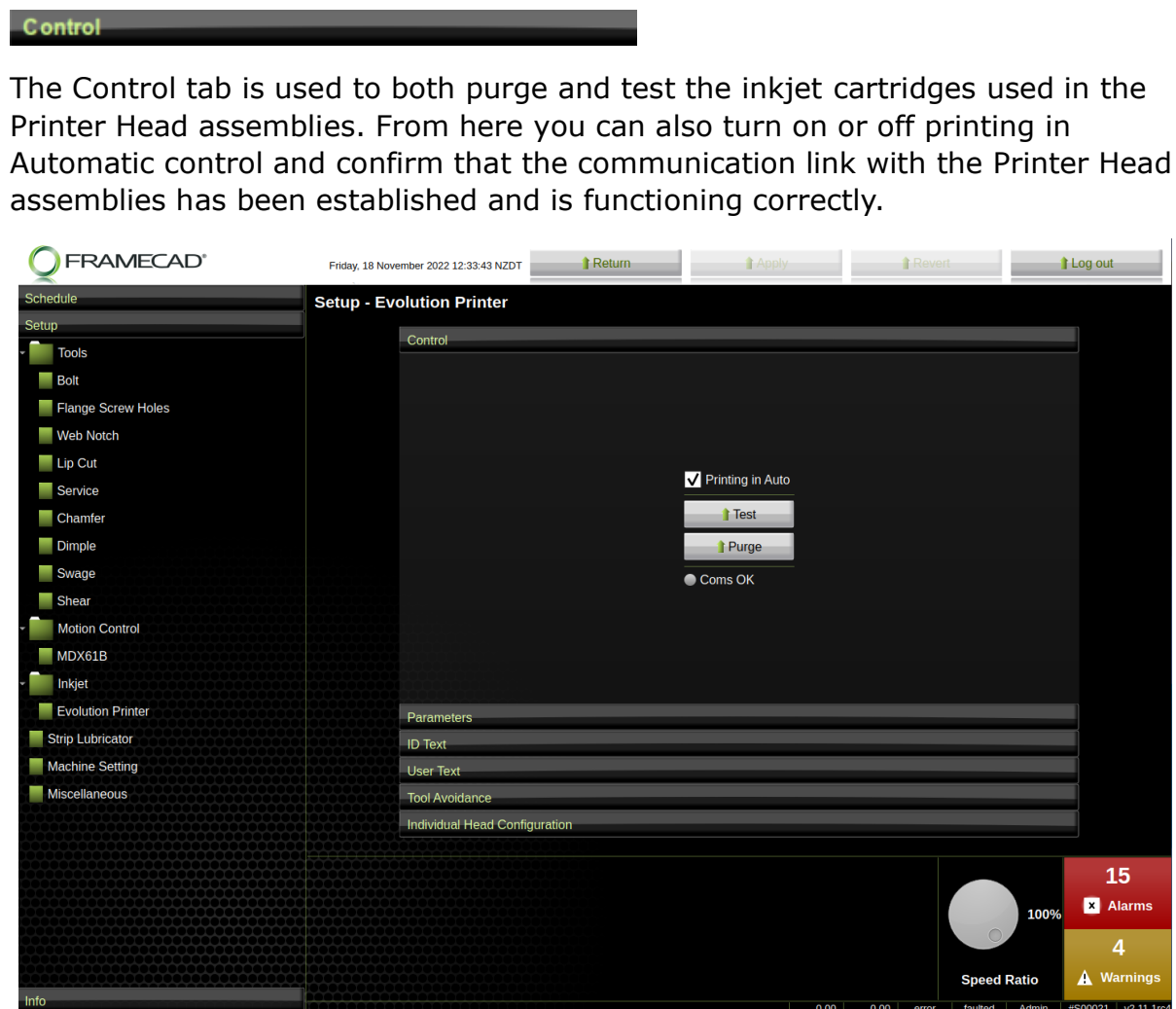
2.7.8 Setup – [Inkjet] Printers

This screen allows the Operator to configure the printer control system on the FRAMECAD machine. Most values displayed here are factory set before the FRAMECAD machine is shipped and should not need any further adjusting unless instructed to do so by an authorised FRAMECAD technician.

Inkjet Printer

(Setup / Inkjet Printer)

This is the Control section for Evolution Printers:



Printing in Auto

This option, if selected, will allow printing in Automatic control. If de-selected, all automatic printing will be disabled.

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On-fly Printing

Typically, the control system will treat a printing operation like any other tool function and momentarily stop before commencing to print text. This results in greater accuracy of where the printed text occurs on the stick.

If the *On-fly Printing* option is selected using this checkbox, the machine **will not** momentarily stop before each print operation. This may result in some variation as to where the printed text will occur on each stick but will increase overall productivity out of the machine.

Test

The **Test** button is used to check the printer system during Manual control mode.

Purge

The **Purge** button is used to draw ink through the cartridge and ensure a consistent flow is available for printing.

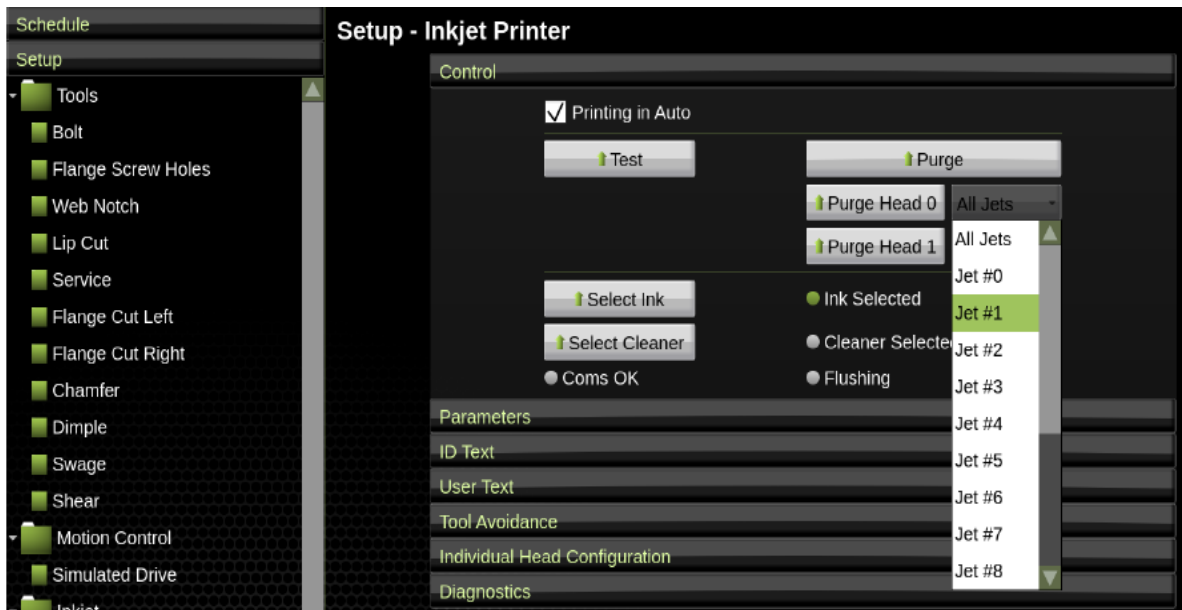
Coms OK

The **Coms OK** indicator will be Green when communications with the Printer Head assemblies has been established and is functioning correctly. If this indicator is not ON (Not Green) then there is a communication issue with the Printer Head assemblies and will need to be resolved before printing can take place.

This is the Control section for Matthews Printers:

A rectangular button with a dark background and the word "Control" in a light green font.

The Control tab is used to both purge and test the inkjet Printer Head assemblies. From here you can also turn on or off printing in Automatic control and confirm that the communication link with the Print Controller has been established and is functioning correctly.



Printing in Auto

This option if selected, will allow printing in Automatic control. If de-selected, all automatic printing will be disabled.

Test

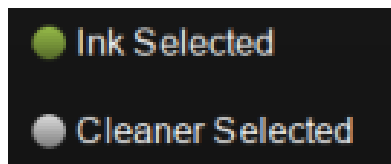
The **Test** button is used to check the printer system during Manual control mode. See your Operating Manual for more information.

Select Ink

The **Select Ink** button is used to switch the print control system over to use Ink. Once pressed the Ink Selected check box will be highlighted to confirm the selection.

Select Cleaner

The **Select Cleaner** button is used to switch the print control system over to use Cleaner (i.e. to flush Ink from the print heads and clean). Once pressed the Cleaner Selected indicator will be green to confirm the selection.



IMPORTANT!

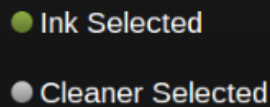
The cleaner and purge functions are used during the inkjet printer head cleaning procedure. Cleaning of the printer heads is important to maintain print quality and operation. Ensure an effective cleaning regime is followed.

Purge

The **Purge** button is used to inject a short burst of either ink or cleaner through both the print heads. The fluid used will be dependent on the selection (i.e. Ink or Cleaner). Refer to the indicators below the **Purge** button to confirm which fluid has been selected.

Note!

You may purge all or individual jets.



Coms OK

The **Coms OK** indicator will be Green when communications with the Printer Head assemblies has been established and functioning correctly. If this indicator is not ON (Not Green) then there is a communication issue with the Printer Head assemblies and will need to be resolved before printing can take place.

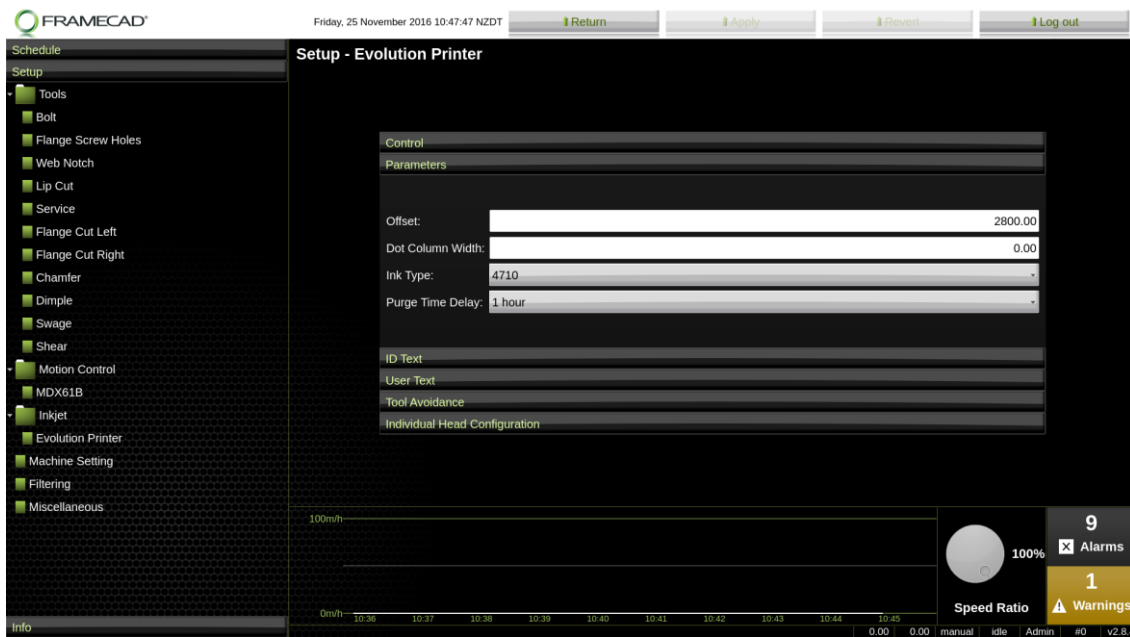
This section is relevant for Evolution Printers:

Parameters

The Parameters tab is used to configure the position of the Printer Head assemblies within the machine, how much physical space each printed message will require and what type of ink cartridge is being used.

Caution!

The printer heads are factory configured prior to installation on the machine. Never adjust these configuration settings unless under the guidance of an authorised FRAMECAD technician.



Offset

This value determines the physical location of the printer heads within the machine. The value relates to the distance in millimetres between the printer head(s) and the centre of the first tool (the datum point) at the start of the machine. The FRAMECAD Factory2 software needs this information to determine where and when to start printing on each stick.

This value is factory set prior to shipping and should not need any further adjustment unless directed to do so by an authorised FRAMECAD technician.

Incorrect settings can cause the print control system to fault or produce poor quality print.

Dot Column Width

The text that is printed on each stick is comprised of a series of dots. This value defines the measured width of a single column of dots. It is required by the FRAMECAD Factory2 software so that it can determine the overall width of the printed text. If the text is too long for the given stick length, the software will truncate the text so that it will fit.

Ink Type

Use this drop-down list box to select the type of ink cartridge being used in the printer system.

Purge Time Delay

The user can select a time period where if the printer is not used, it will automatically purge the cartridges to ensure they do not dry out. If the cartridges are not removed the user will be warned to remove them at half of this interval.

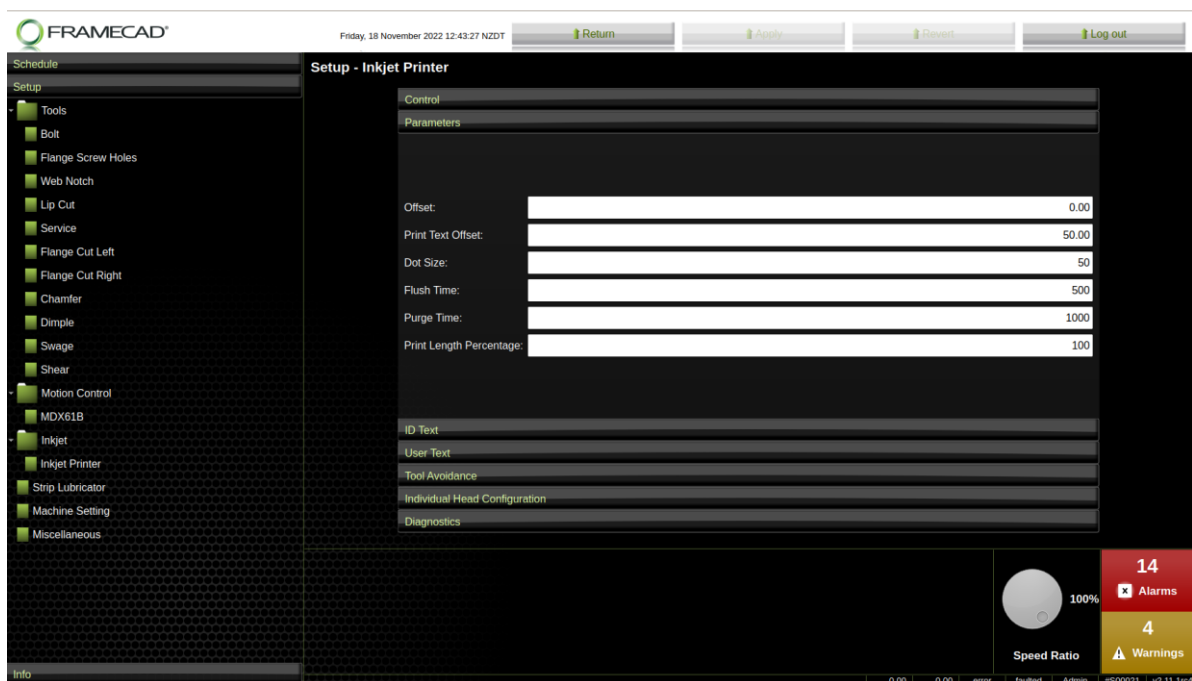
This is the parameters section for Matthews Printers:

Parameters

The Parameters tab is used to configure the position of the Printer Head assemblies within the machine and how much physical space each printed message will require.

Caution!

The printer heads are factory configured prior to installation on the machine. Never adjust these configuration settings unless under the guidance of an authorised FRAMECAD technician.



Offset

This value determines the physical location of the printer heads within the machine. The value relates to the distance in millimetres between the printer head(s) and the centre of the first tool (the datum point) at the start of the machine. The FRAMECAD Factory2 software needs this information to determine where and when to start printing on each stick.

This value is factory set prior to shipping and should not need any further adjustment unless directed to do so by an authorised FRAMECAD technician.

Incorrect settings can cause the print control system to fault or produce poor quality print.

Dot Column Width

The text that is printed on each stick is comprised of a series of dots. This value defines the measured width of a single column of dots. It is required by the FRAMECAD Factory2 software so that it can determine the overall width of the printed text. If the text is too long for the given stick length, the software will truncate the text so that it will fit.

Dot Size

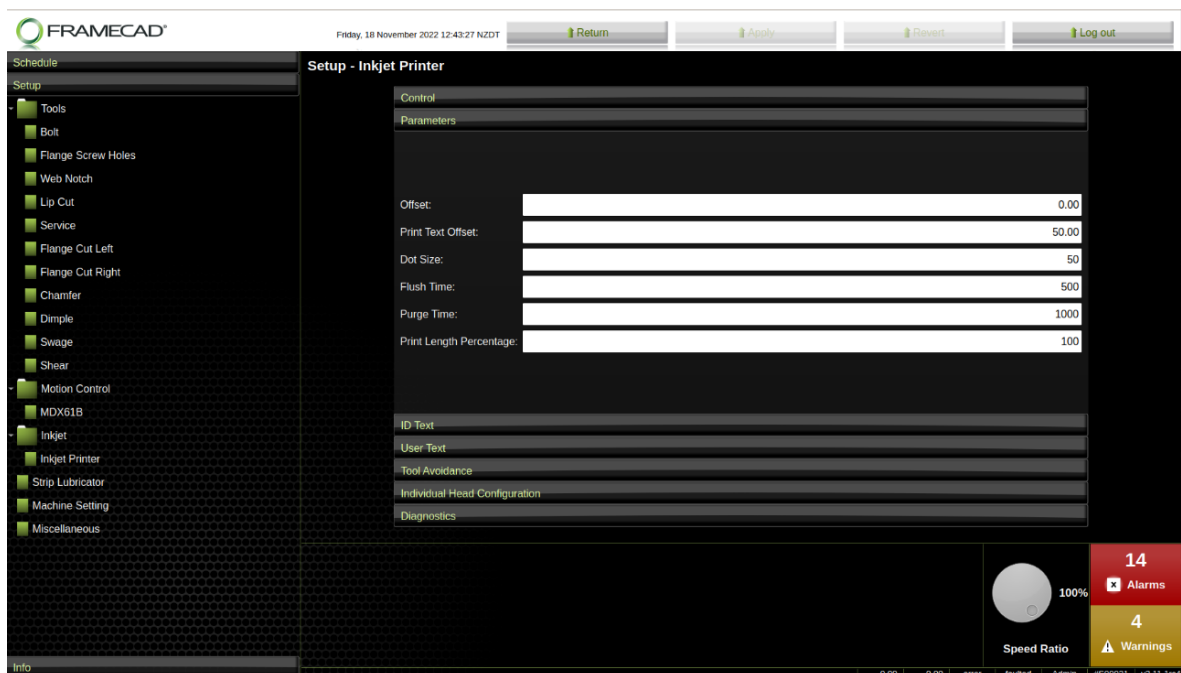
This value determines the physical size of each ink dot. The FRAMECAD machine utilises Matthews 16-valve Printer Heads, where each valve produces an individual "ink dot". The size of that dot is a function of how long the corresponding valve inside the Printer Head is switched on for. The Dot Size parameter is therefore a time value in periods of 10 microseconds (e.g. if Dot Size value = 80, the Printer Head valve on-time = $80 \times 10 = 800$ microseconds).

Flush Time

Whenever the Print Control system is switched between Ink and Cleaner fluid the FRAMECAD Factory2 software will flush the lines for a short period as defined by this value (in milliseconds).

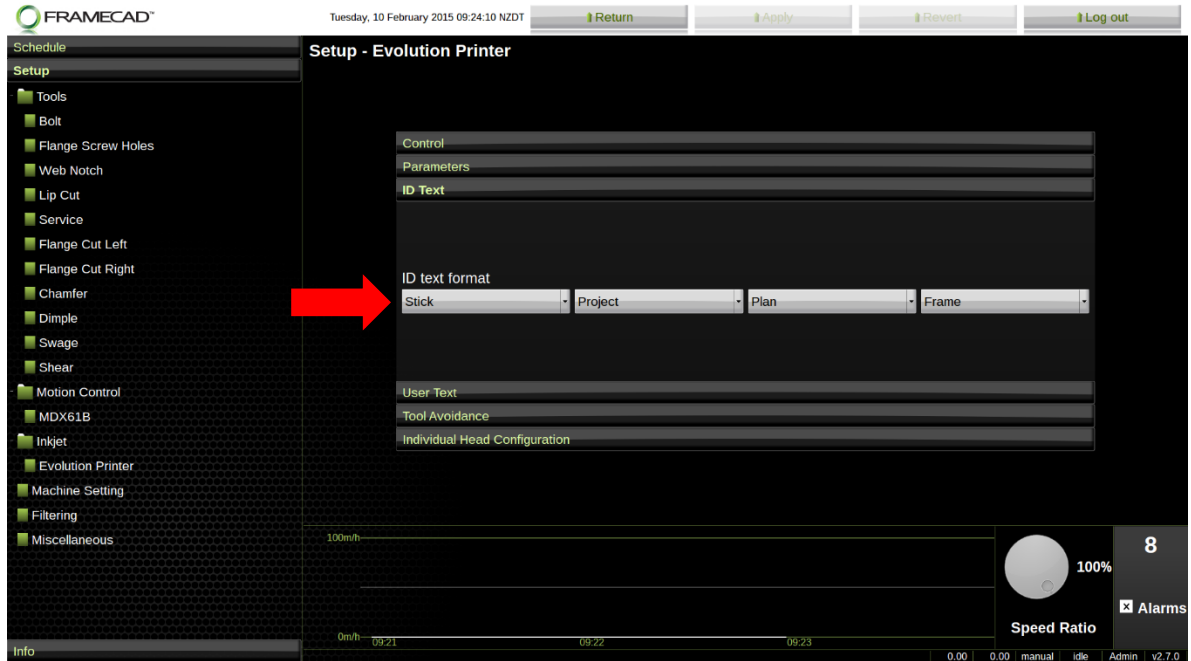
Caution!

The printer heads are factory configured prior to installation on the machine. Never adjust these configuration settings unless under the guidance of an authorised FRAMECAD technician.



ID Text

By default, the identification code printed on each stick will also include information on the *project name*, *plan*, and *frame* details. These various fields can be turned on or off and the printed order of each changed to suit requirements using the drop down list boxes found under this tab.



User Text

Typically, only one side of the stick is used for identification (this is to ensure that the identification information is all on the *same side* of the profile during assembly).

The reverse side of the stick is therefore available for a user-defined message. This message could be the date/time of manufacture, project name, quality assurance details (for example the coil number, shift name, etc.) or the manufacturer's name or contact information.

This tab provides options to select a new user text message from the list, *edit* an existing message or directly import a new text message from a network connection or a USB memory stick.

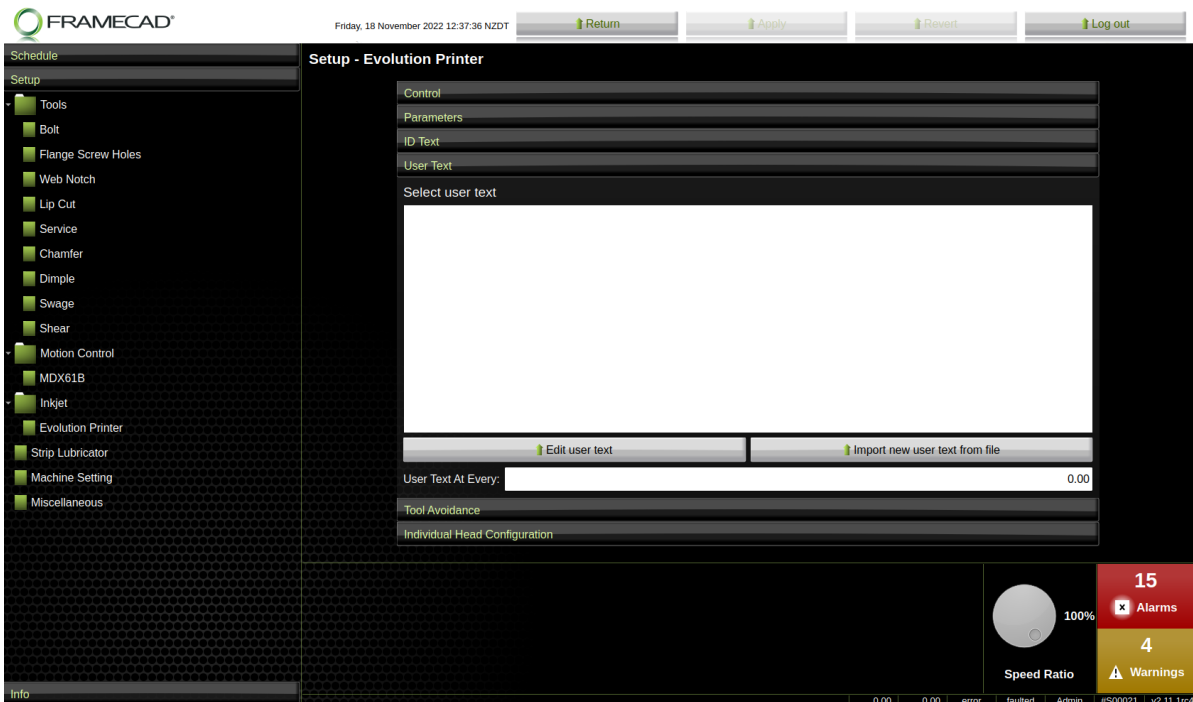
In addition to simple text messages, FRAMECAD Factory2 also incorporates pre-defined **power fields**. A power field can be used to insert a default *system variable* within a particular user text message. Some common examples are:

%date% - this will insert the current system date in the User Text.

%time% - this will insert the current system time in the User Text field.

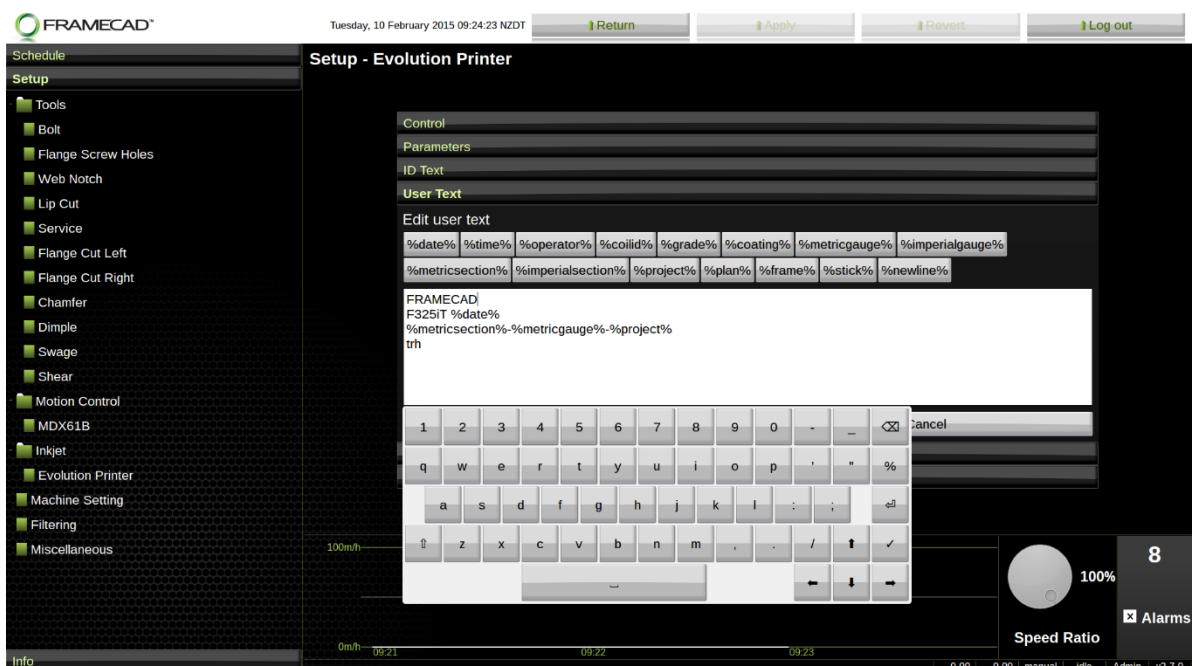
%operator% - this will insert the logged in Operator in the User Text field.

%coiled% - this will insert the current Coil ID number in the User Text field.

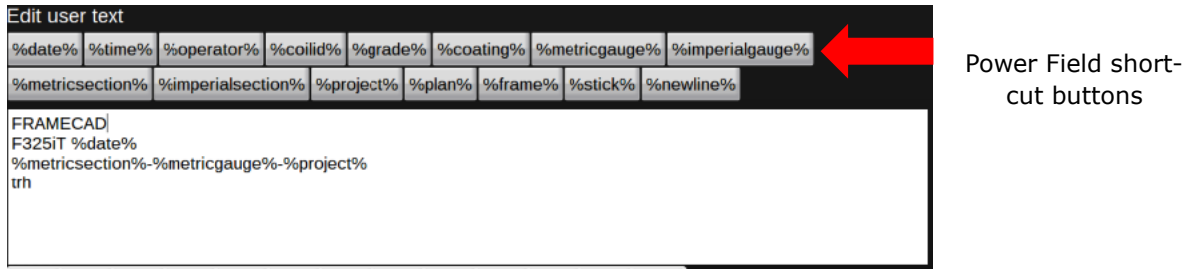


Editing an existing User Text Field

To edit a user text field, simply select the field so that it is highlighted in green then press the **Edit user text** button. You can then use the pop-up keyboard to edit the text as required.



To insert a power field, press one of the short-cut buttons listed above to insert the power field text or directly type in using the pop-up keyboard (remember to use the “%” delimiter).



Power Field short-cut buttons

Creating a New User Text Field

Sometimes it may be preferable to create new user text messages using a user text file. Each separate text message you want listed is then entered on a separate line. Once complete, save this as a *.txt file to a USB memory stick and insert it into the USB port on the front of the Screen Cabinet.

From the User Text tab, press the **Import new user text file** button, double-tap on the USB folder, select the user text file you have just created, and then press 'Load.' The user text messages will be uploaded. You can then choose which user text option you want printed.

IMPORTANT NOTE!

Each User Text message should be entered in a ***single continuous line***. Each new line will be interpreted as a separate User Text message. Messages cannot exceed 48 characters in length.

User Text spacing is not supported for Evolution Printers.

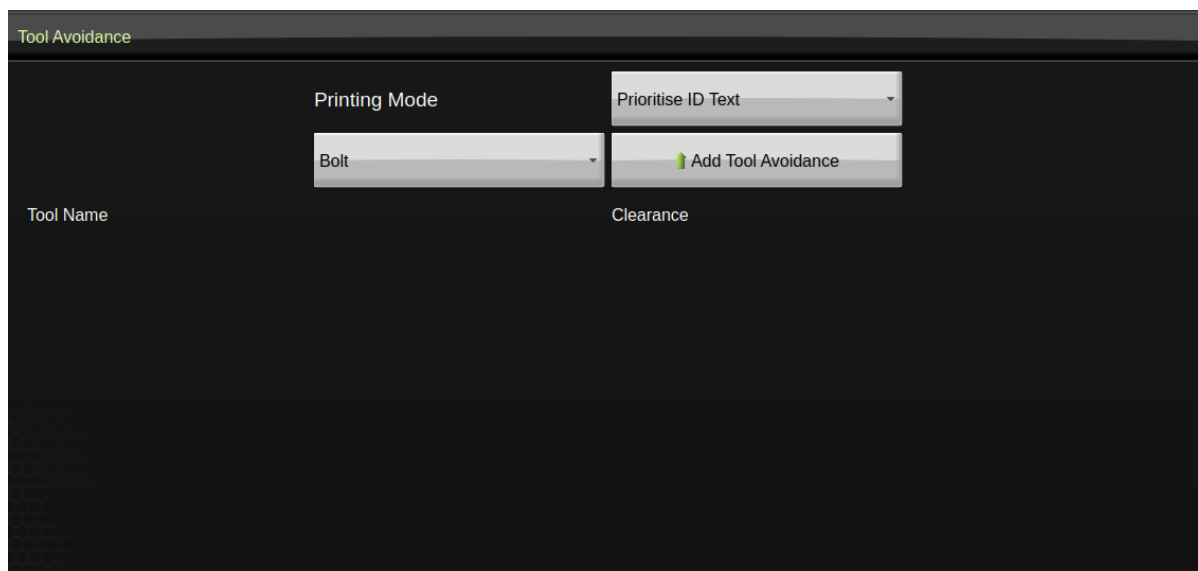
Tool Avoidance

The Tool Avoidance tab allows the Operator to specify tools to *avoid* when printing. The objective here is to force the software to reposition the location of the printed text so that it misses the tool operation(s) specified. A good example is the Flange Cut tooling which removes steel from the same surface used for printing.

Use the Printing Mode Drop Down list to choose which text to prioritise. The three options are:

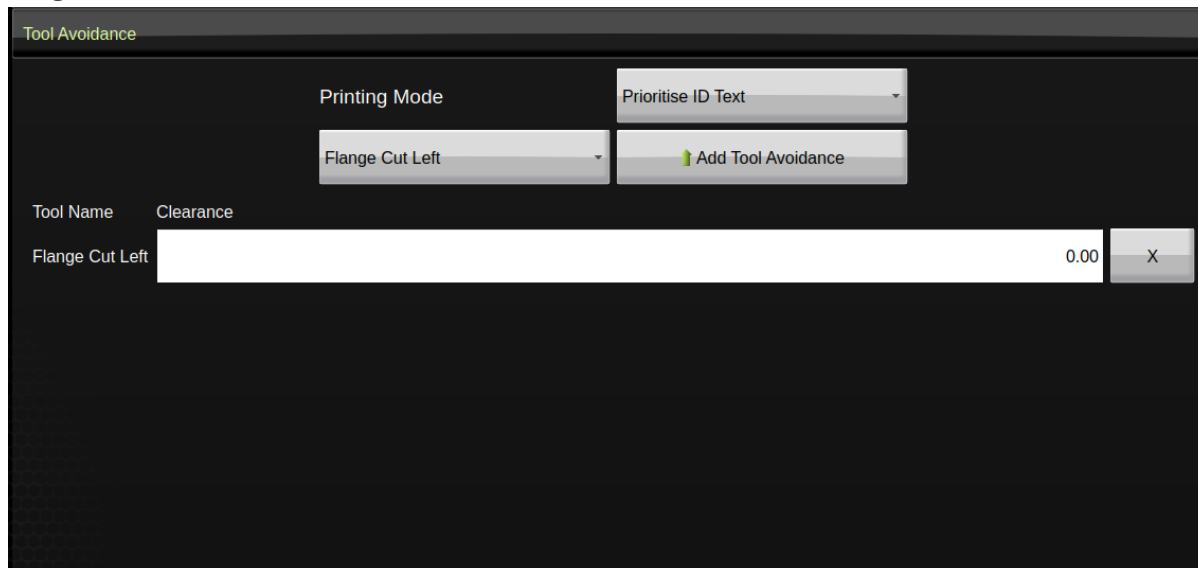
ID Text	The software will position the location of the printing on the largest region, while avoiding the tools added, on the ID Text side
User Text	The software will position the location of the printing on the largest region, while avoiding the tools added, on the User Text side
ID and User Text	The software will position the location of the printing where it can while avoiding the tools added on both sides

Use the Tool Drop Down list to select the tool. Tap the Add Tool Avoidance button to add the tool to the list.



The screenshot shows the 'Tool Avoidance' window. At the top, there's a title bar 'Tool Avoidance'. Below it, there are two dropdown menus: 'Printing Mode' and 'Prioritise ID Text'. Below these, there's a dropdown menu for 'Tool Name' currently set to 'Bolt', and a button labeled 'Add Tool Avoidance' with a green upward arrow icon. Below the dropdowns, there are labels for 'Tool Name' and 'Clearance'.

If the tool is a length tool, the software will avoid it based on the length, entered on the individual tool pages, plus any clearance added in the clearance field. If the tool isn't a length tool, a clearance can be added to avoid the tool.



This screenshot shows the 'Tool Avoidance' window after a tool has been added. The 'Tool Name' dropdown is now set to 'Flange Cut Left'. Below the dropdowns, there's a table with two columns: 'Tool Name' and 'Clearance'. The first row shows 'Flange Cut Left' in the 'Tool Name' column and '0.00' in the 'Clearance' column. To the right of the '0.00' value is a button with an 'X' icon, used to remove the tool avoidance.

The X at the end can be used to remove tool avoidances that aren't required anymore.

This section is relevant for Evolution Printers:

Individual Head Configuration

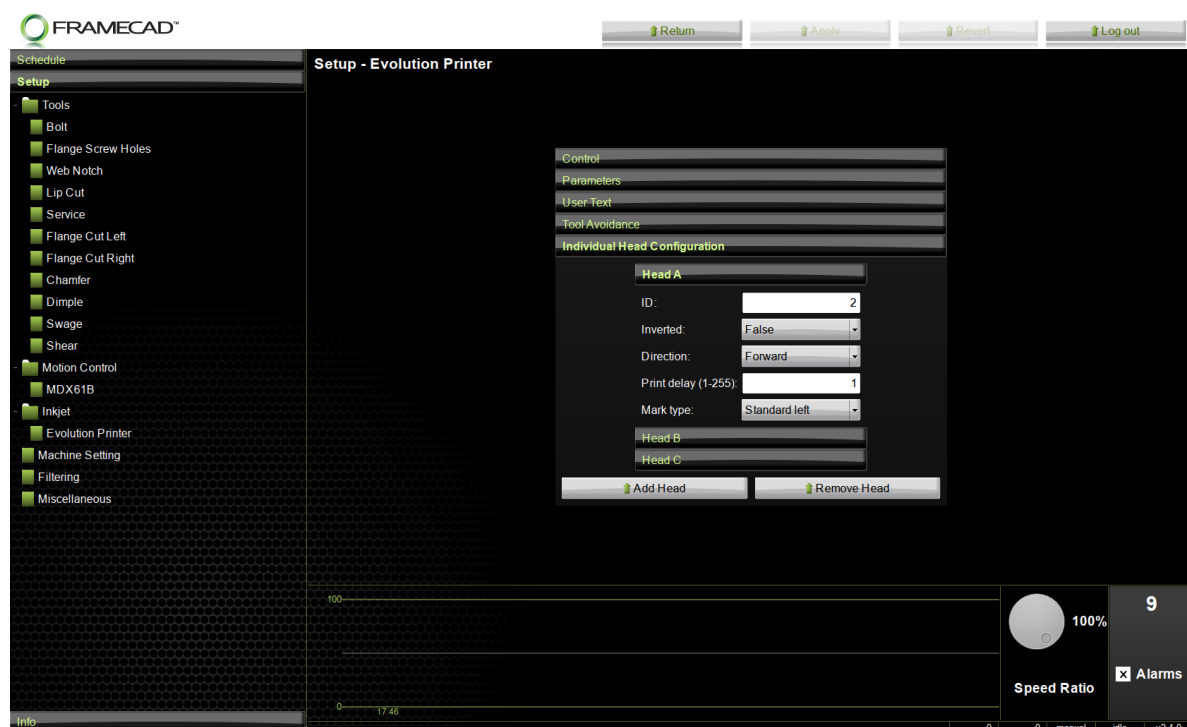
Each Printer Head assembly incorporates its own built-in smart controller and can therefore be uniquely configured. For example, all of the Printer Heads are connected to the Computer via the same serial communication network. This

means a unique network *identifier* is required for each Printer Head so that the Computer “knows” which head to send information to.

This tab allows access to certain configurable parameters for each of the Printer Heads. To view the configuration of a specific Printer Head, select the applicable tab.

Caution!

The printer heads are factory configured prior to installation on the machine. Never adjust these configuration settings unless under the guidance of an authorised FRAMECAD technician.



ID

This is a unique number that identifies the Printer Head on the serial communications network. As there can be up to three Printer Heads on the machine the Printer Heads are factory configured as **1**, **2** or **3**.

Inverted

If this parameter is set to TRUE, the printed text will be *inverted* on the stick.

Direction

This parameter determines the direction the steel must be traversing in before printing can take place, relative to the orientation of the Printer Head. For a Printer Head mounted on the *left hand side* web (relative to the direction of steel movement) this is typically set as “Forward” while a Printer Head mounted on the *right hand side* web will typically be set as “Reverse”.

Print Delay (1 – 255mm)

This parameter simply delays the start of a printed message. The value is actually related to distance where each increment represents a value of 18 Dot Columns widths (approximately 1.5mm). The larger the number (between 1 and 255) the further along the steel the printing will commence.

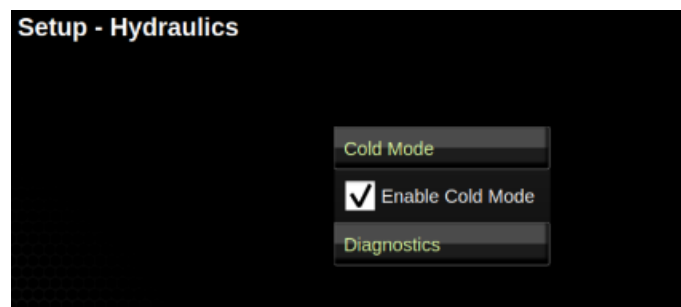
Mark Type

This parameter determines which Printer Head the software will send print messages to, based on the location and orientation of a particular stick being manufactured. This is to ensure that the printed text is always on the correct side and in the right direction for easy assembly. For a Printer Head mounted on the *left hand side* web (relative to the direction of steel movement) this is typically set as "Standard left" while a Printer Head mounted on the *right hand side* web will typically be set as "Standard right".

The **Add Head** and **Remove Head** buttons simply allow the Operator to add or remove Printer Head assemblies.

2.7.9 Setup – Hydraulics

This screen contains information about the hydraulics on the machine and allows the operator to set the machine into "Cold Mode".



Enabling Cold Mode will change the operation of the hydraulics on the machine. Cold Mode can be used as a precautionary measure when temperatures in the operating environment approach the lower operating limit or the number of machine jams seems to increase when temperatures are cold.

When the machine has been left idle for more than 6 hours and Cold Mode is enabled, the first 30 minutes of machine operation will have the hydraulic punch tools punching slower to reduce the likelihood of tools jamming while the hydraulic system is warming up. This will return to normal after 30 minutes.



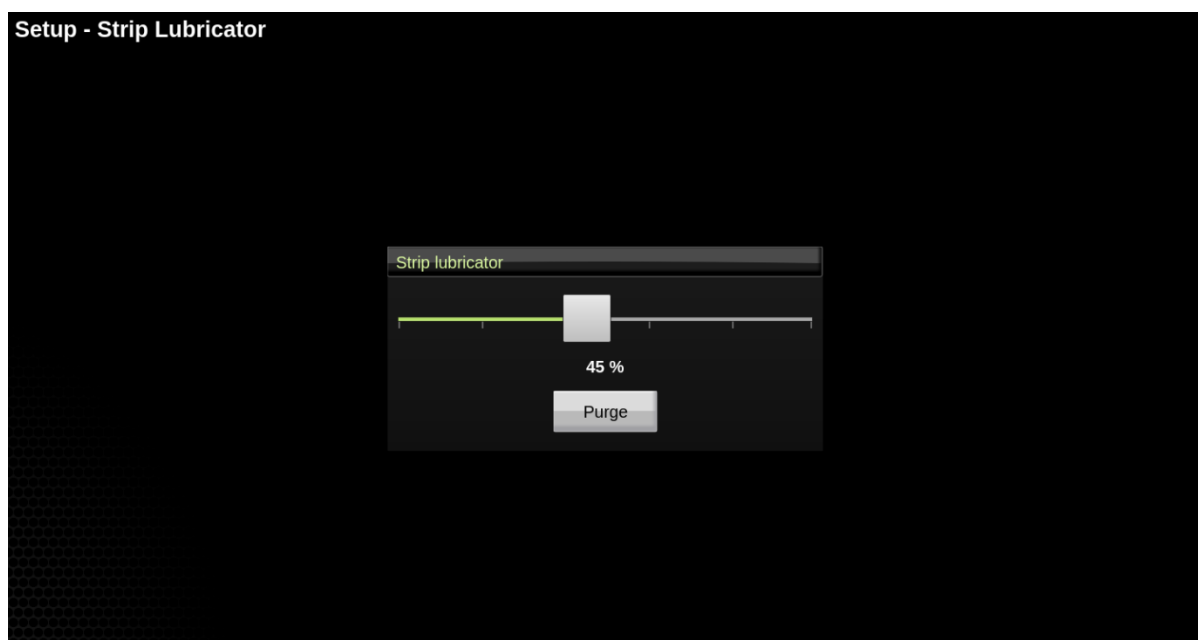
This tab shows the current state of the hydraulics system as controlled by Factory2. When troubleshooting hydraulics issues, this page can be quite beneficial to provide to the FRAMECAD technicians.

2.7.10 Setup – Strip Lubricator

This screen contains information about the strip lubricator and the automated lubrication of the steel strip as it progress through the machine.

Strip Lubricator Screen

(Setup / Strip Lubricator Screen)



This slider controls the amount of lubrication added to the strip. Adjust the lubrication as required.

2.7.11 Setup – 5T Decoiler

This screen allows the user to control the speed and acceleration of the 5T decoiler, calibrate the dancer arm and view diagnostic information.

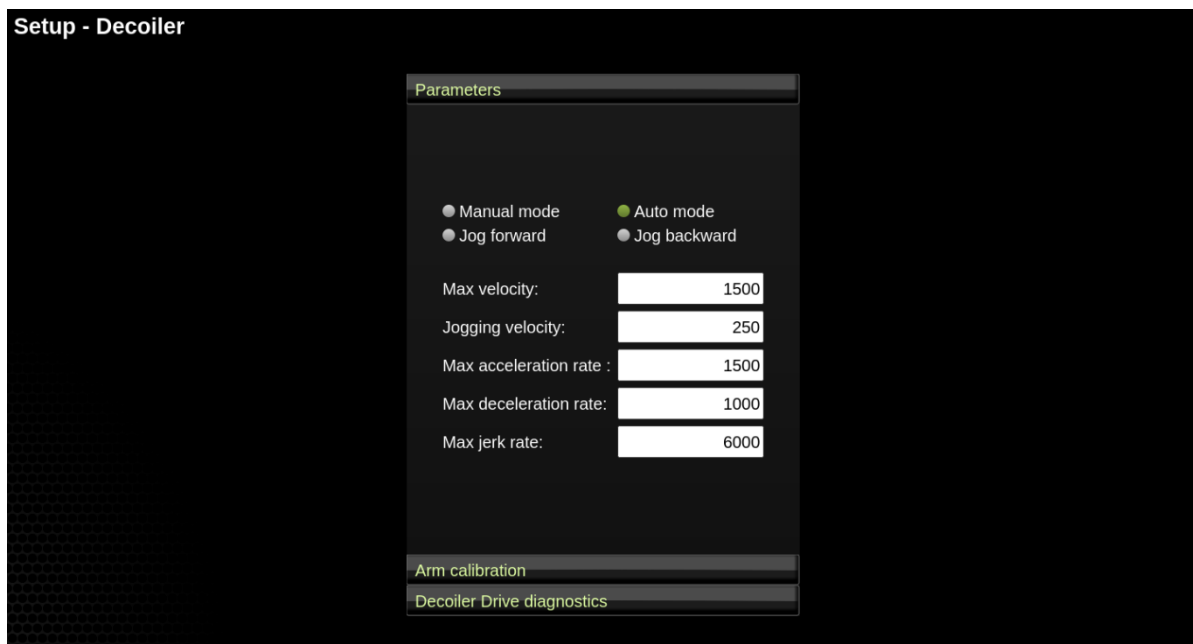
CAUTION!

These settings should not be changed unless advised by a FRAMECAD technician. Incorrect settings can have detrimental effects on the performance, safety and accuracy of the FRAMECAD machine.

5T Decoiler Screen

(Setup / Decoiler Screen)

From this screen you will have the option to select from three menu tabs. Selecting these tabs will allow you to view and/or edit the different properties associated with the decoiler drives. These options are discussed below:



Max velocity

This is the maximum speed in RPM (revolutions per minute) that the decoiler motor will be permitted to rotate at.

Jogging velocity

This is the maximum speed in RPM (revolutions per minute) that the motor will be permitted to rotate at whilst in the Manual control mode

Max acceleration rate

framecad.com

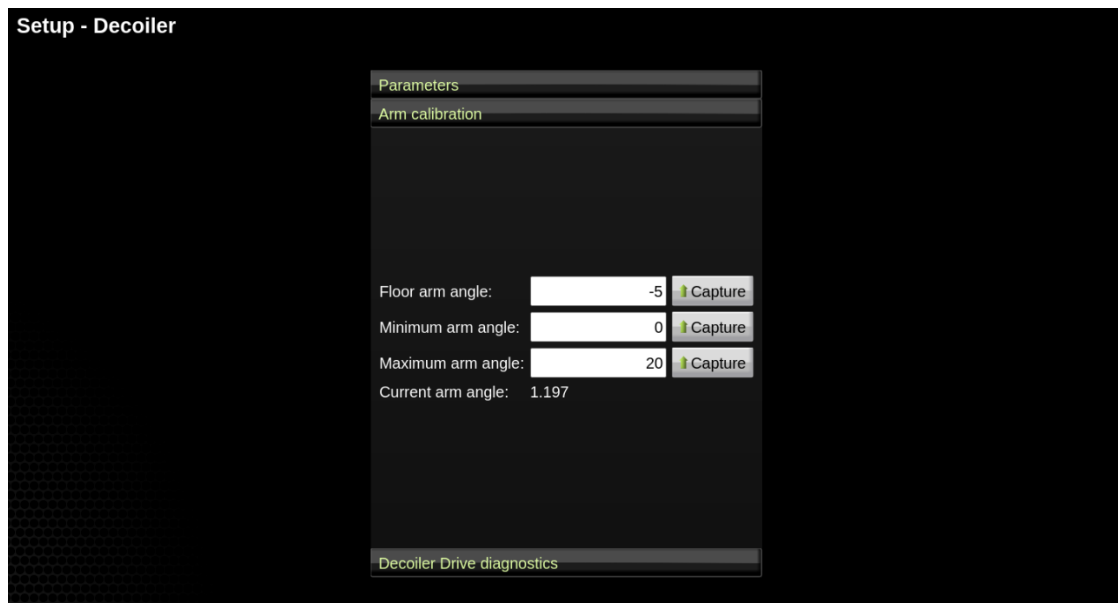
This is the maximum allowed acceleration rate (in rpm/second) that the FRAMECAD Factory2 software will attempt to accelerate the motor up to the maximum desired speed.

Max deceleration rate

This is the maximum allowed deceleration rate (in rpm/second) that the FRAMECAD Factory2 software will attempt to decelerate the motor to 0 RPM.

Max jerk rate

This is the maximum allowed jerk rate (in rpm per second per second).



Floor arm angle

This is set by placing the dancer arm on the floor and pressing the capture button.

Minimum arm angle

This is set by raising the dancer arm at least 2 inches above the floor and pressing the capture button.

Maximum arm angle

This is set by raising the dancer arm to the height of the infeed and pressing the capture button.



Diagnostics

The Diagnostics tabs provides specific information on the decoiler drive. This information can be used by authorised FRAMECAD technicians to diagnose and solve problems.

When the drive requires further tuning, an authorised FRAMECAD technician will provide a configuration file to update the drives. The import button will allow the operator to update the drive using a USB.

In some cases, the existing drive configuration file will need to be extracted. The operator can export the file by pressing the export button, which will add the file to a connected USB.

2.7.12 Setup – Miscellaneous

The Miscellaneous screen allows basic setup and configuration data around language type, User access, machine networking and configurable Pause/Reset reasons.

Setup - Miscellaneous

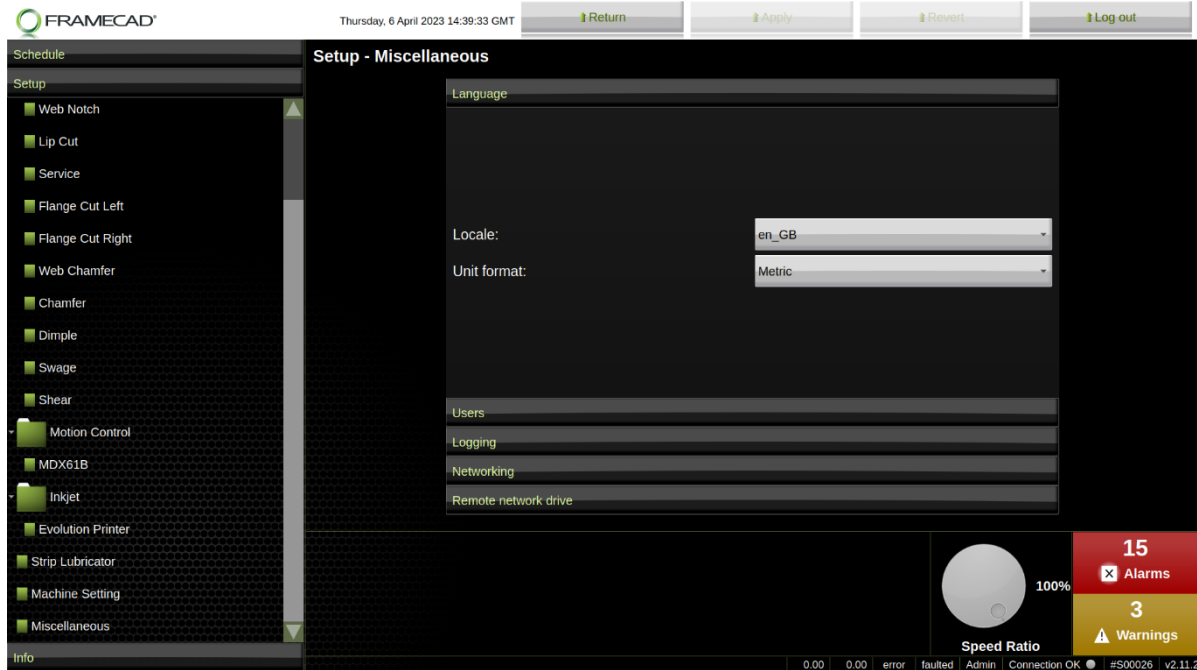
(Setup / Miscellaneous)

From this screen you will have the option to select from five menu tabs. Selecting these tabs will allow you to view and/or edit the different properties associated with the general setup of the machine. These options are discussed below:



The Language tab is used to configure the on-screen Operator display. From here the Operator can select the language to be displayed and the type of units used.

To change the language, simple select the required option from the Locale list box.

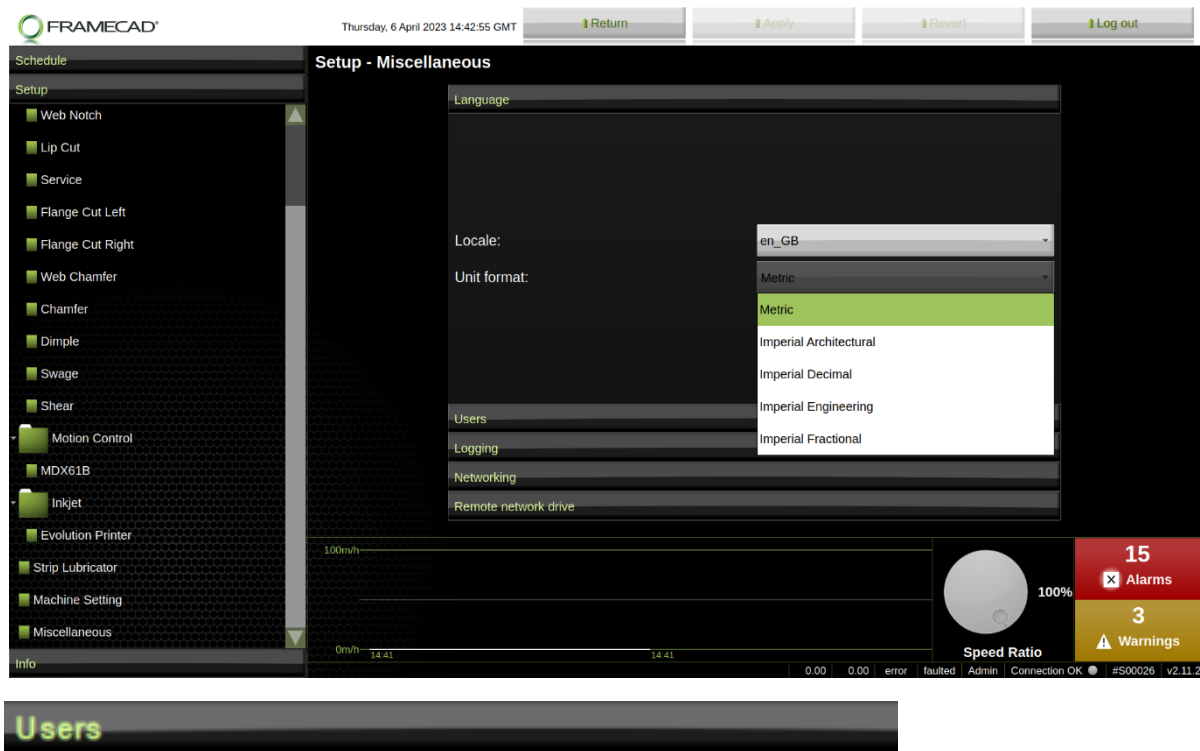


To change the type of units used throughout FRAMECAD Factory2, select the required option from the Unit format list box. There are 5 options available.

Format	Example
Metric	2345.67
Imperial Architectural	7'-8 5/8"
Imperial Decimal	92.349"
Imperial Engineering	7'8.349"
Imperial Fractional	3 5/8"

The above will change the type of units to be displayed and how measurement data is entered into FRAMECAD Factory2.

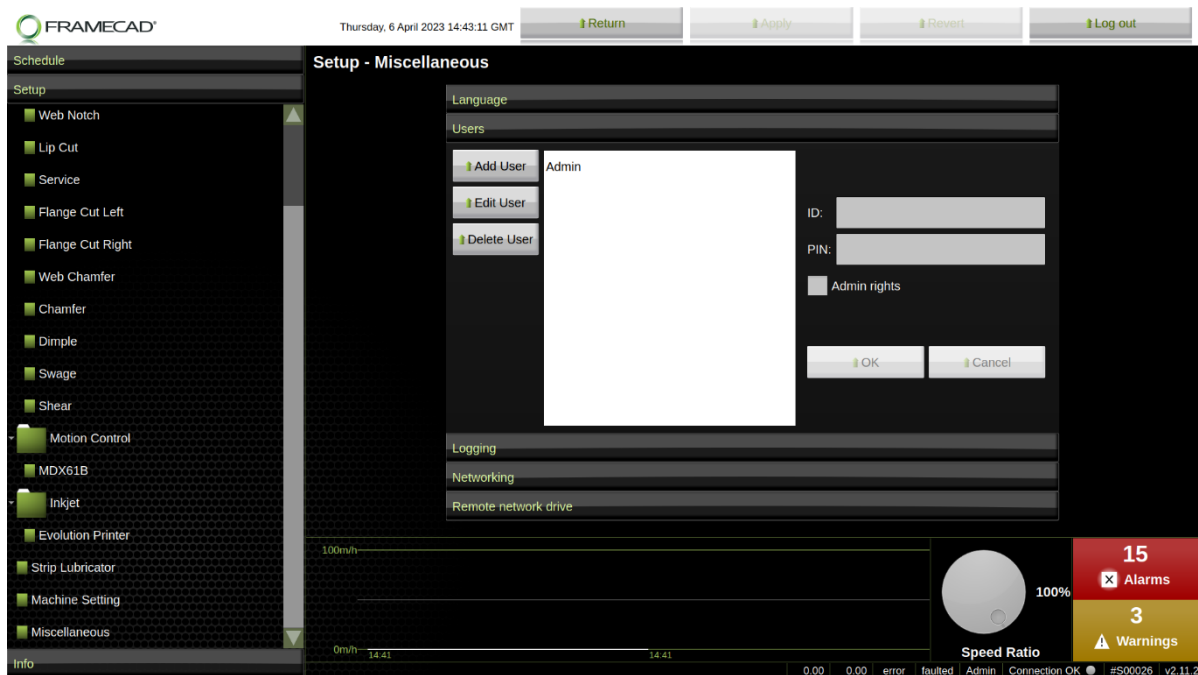
This will also determine the type of profile options available when configuring the machine setting (see [Setup - Machine Setting Screen](#)).



The **Users** tab is where you can add, edit or delete User profiles. By default, only the Admin user is factory configured. New Users can be added (and chosen at the Login screen). FRAMECAD Factory2 will log all events against whichever user is currently logged in.

IMPORTANT SECURITY NOTE!

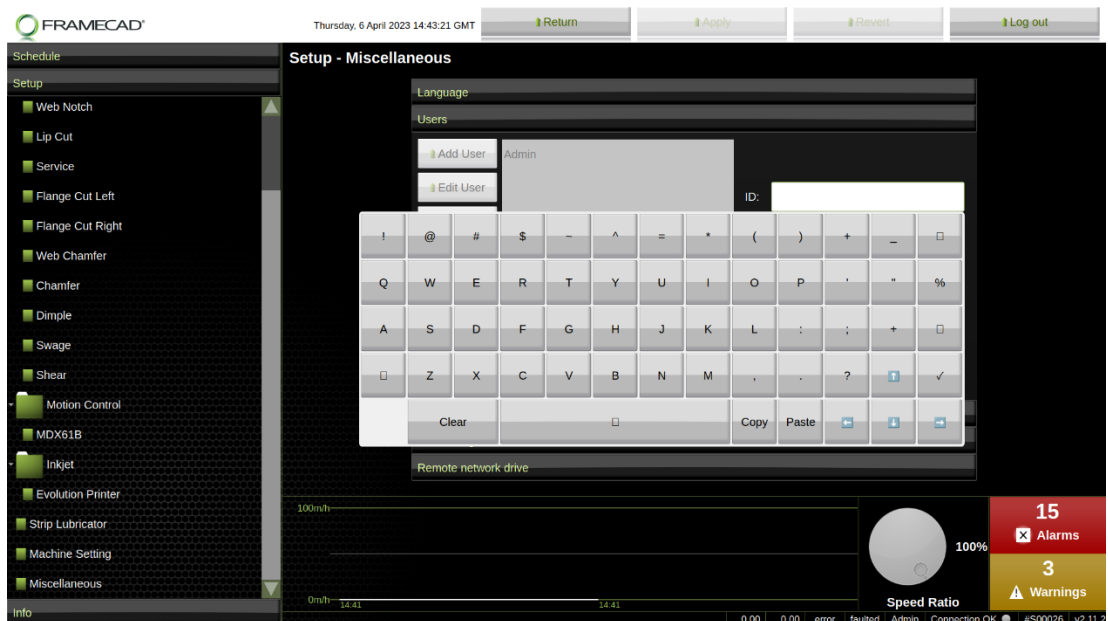
All FRAMECAD machines are shipped by default with Admin user access only. It is highly recommended that a site security policy is developed around user access that meets your security requirements. Non-Admin users cannot change many of the machine configuration settings inside the FRAMECAD Factory2 software. All events and actions initiated from FRAMECAD Factory2 software will be logged accordingly against the user logged in at the time.



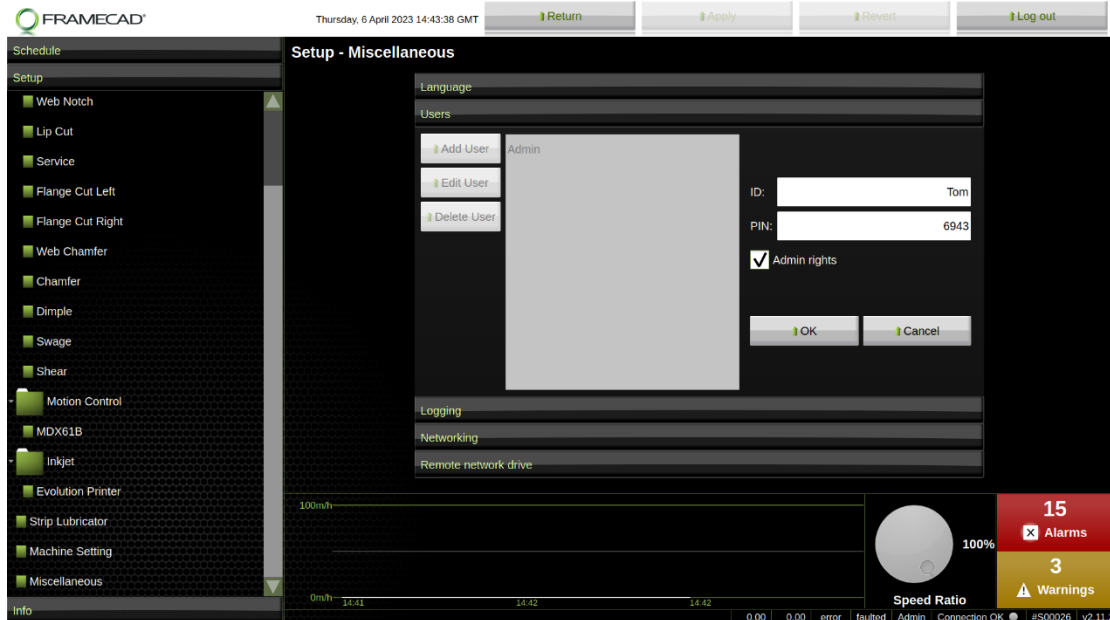
To add a new User, you will need to be logged in as an Admin user (or have Admin user rights). You will also need the new login ID (name) and a unique numerical PIN code.

To Add a New User:

1. Press the **Add User** button.
2. Select the **ID:** text box and using the pop-up keyboard enter the new User ID (name) as shown below.



3. Now select the **PIN**: text box and enter a numerical code that must be entered whenever the new User wishes to login to the machine on start-up.
4. Finally, if you wish the new User to have full Admin rights, you must select the checkbox as shown below:



5. Once complete, press the **OK** button to confirm the addition OR **Cancel** to reject. A User with Admin rights can also **Edit** and **Delete** other users.

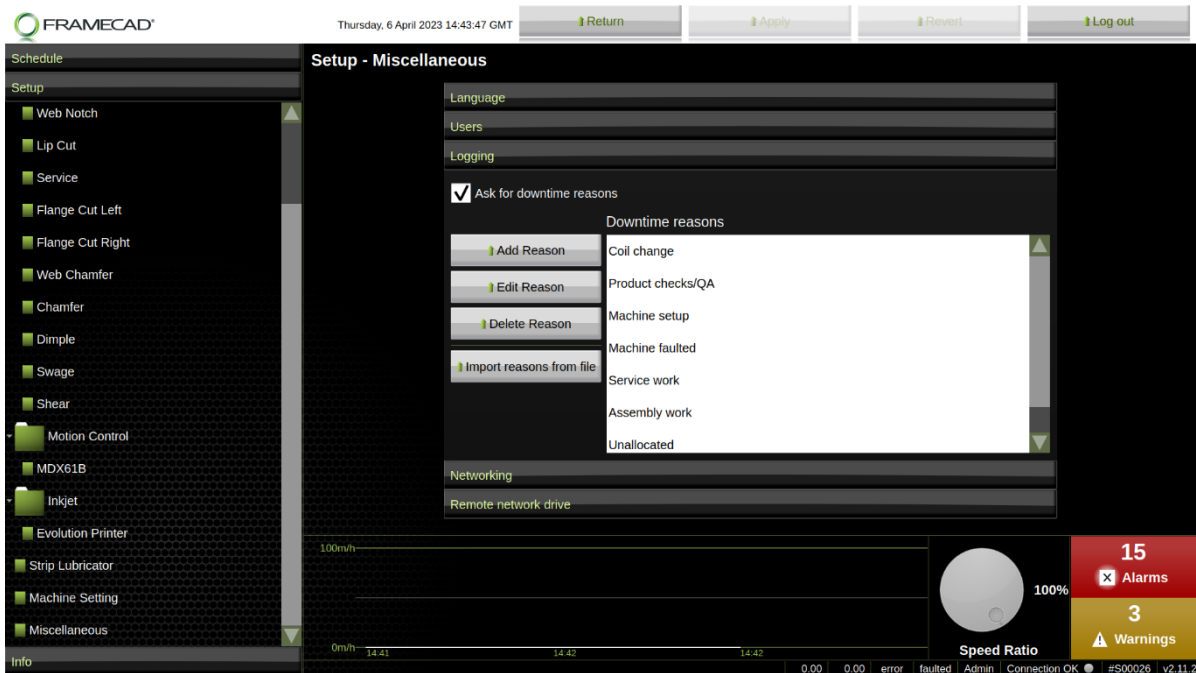
Logging

FRAMECAD Factory2 includes the option to log the reason why a machine was paused or stopped during automatic production. If an unexpected interruption to automatic production occurs for a period of at least 10 seconds, the Operator will be prompted to select from a pop-up list the reason why the machine was stopped the moment the machine resumes automatic production.

These reasons are logged so that events that contribute to *down-time* or steel scrap on the machine can be reviewed.

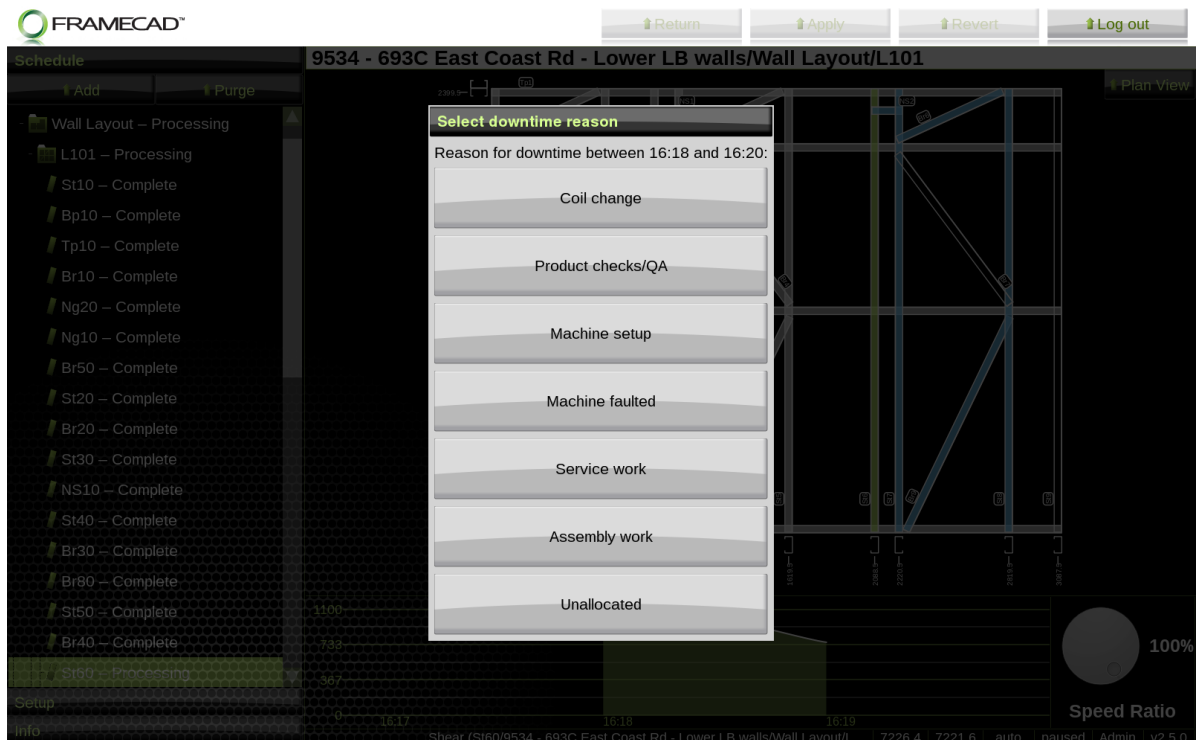
The **Logging** tab includes a simple checkbox to turn ON or OFF the down-time logging feature.

- To turn logging ON select the **Ask for downtime reasons** checkbox.
- To turn logging OFF de-select the **Ask for downtime reasons** checkbox.



With the **Ask for downtime reasons** checkbox selected, the following message prompt will be displayed whenever automation production has been expectantly stopped for at least 10 seconds. The Operator will need to select a reason from the list before the message prompt is removed.

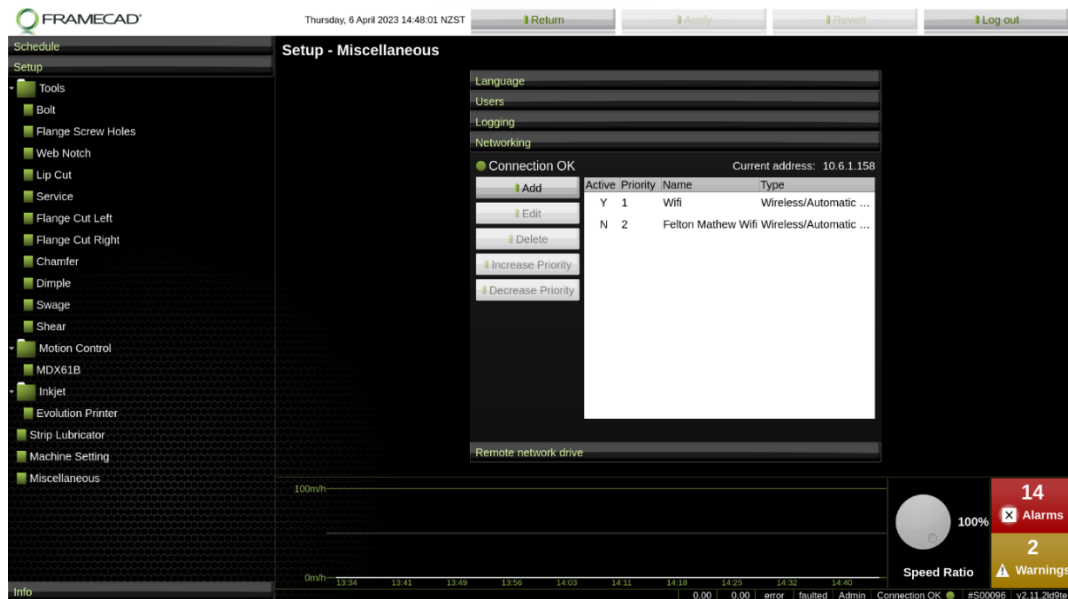
The downtime reason can be edited or imported from plain *.txt file with each reason on new line.



All downtime reasons will be logged so that summary data can be extracted using on-line tools available at my.framecad.com.

Networking

The Networking tab is used to configure network connectivity for the machine. Each machine is supplied network ready for standard wired Ethernet (i.e. a physical cable connection) or wireless.



To add a network connection to the machine, press the **Add** button. You will be presented with 4 options - before commencing, discuss with your IT support team the right solution for your network requirements:

- **Wired/Automatic**

Use this when your network server supports automatic configuration (DHCP) and you have a physical Ethernet cable available at the machine. The Ethernet cable must be plugged into the LAN 2 port on the machine Computer (located in the back of the Operator Screen).

- **Wired/Static IP**

Use this when your network server does NOT support automatic configuration (DHCP) and you must manually enter a Static IP address for connection. You must also have a physical Ethernet cable available at the machine. The Ethernet cable must be plugged into the LAN 2 port on the machine Computer (located in the back of the Operator Screen).

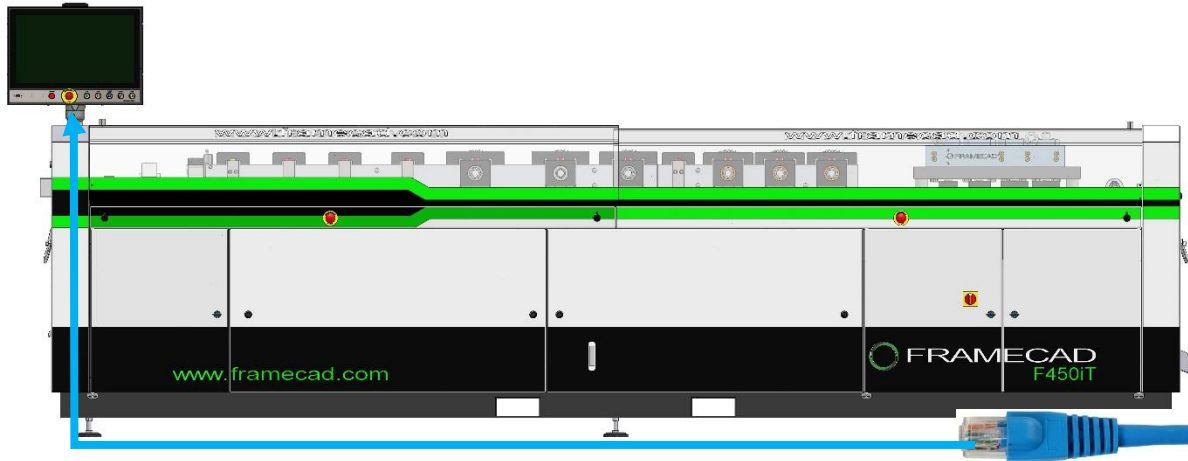
- **Wireless/Automatic**

Use this when connecting to a Wireless network. You must also have available the SSID (Service Set Identifier) name of the wireless network you will connect to along with the correct security key code. An example of how to connect to a wireless network is given below.

- **Modem**

Use this when you do not have an available Ethernet (wired or wireless) connection. This will allow you to connect to a digital cellular network (i.e. as used by mobile phones). Typically, you will need your cellular network username and password as supplied by your cellular network service provider.

Networking example 1: Hard-wired Network Connection (DHCP)



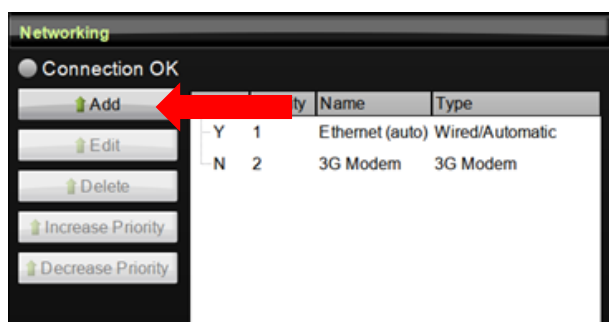
Locate the Ethernet ports in the rear of the screen cabinet and insert your network cable into the second Ethernet port in the screen.

Use only a Category 6 (Cat 6) Ethernet cable to connect the machine to your local area network (up to a maximum 100m). This is to ensure the highest quality signal is available.

Always take care to ensure the cable is correctly routed through the swivel collar and chassis to avoid mechanical damage to the cable itself.

This example assumes your network is configured for DHCP access which will automatically allocate an available IP address to your computer (client) once connected. If the network is not set up for DHCP, you will need to select the **Wired/Static IP** option and enter a static IP address. If you are not sure, please discuss this with you Network Administrator.

Press the **Add** button and select the **Wired/Automatic** option.



You will need to enter two parameters:

1. Name:

Enter here the name you wish to give your hard-wired network or leave as the default setting. This is just a generic name you can choose to help identify various networks you may have configured on your machine.

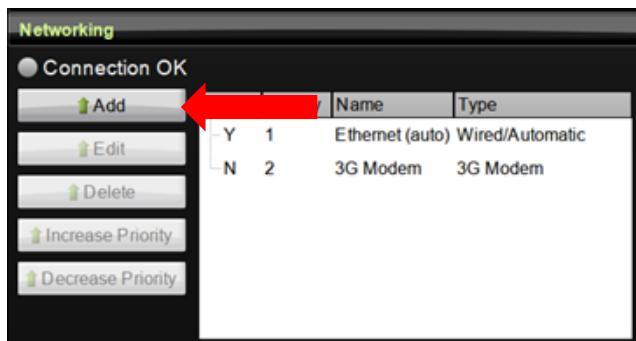
2. Interface:

This identifies the Ethernet port you have connected your cable to on the machine computer. For LAN2 this should be 'eth1'.

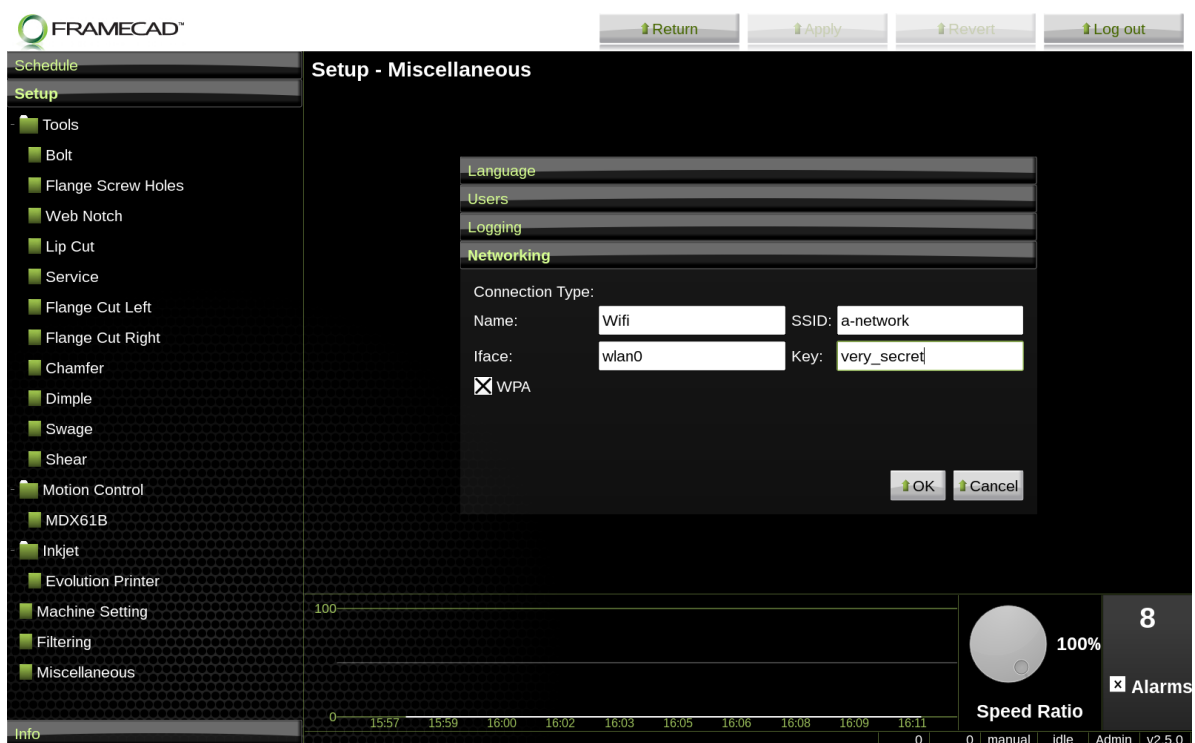
Networking example 2: Wireless Connection

The below is an example of how to connect a wireless network.

Press the **Add** button and select the **Wireless/Automatic** option.



You will need to configure 5 parameters:



1. Name

Enter here the name you wish to give the wireless network or leave as the default setting. Please note this is not the SSID or wireless network name but a generic name you can choose.

2. Interface

This identifies the wireless card and card number installed on the machine computer. Do not change this from the default setting 'wlan0'.

3. SSID

This is the actual wireless network name – you must enter the correct SSID. Your IT support team will be able to provide you with this.

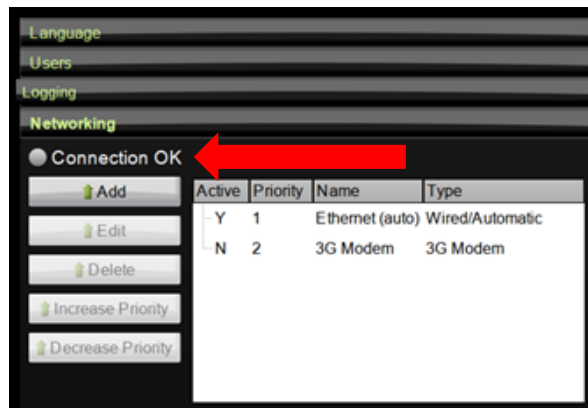
4. Key

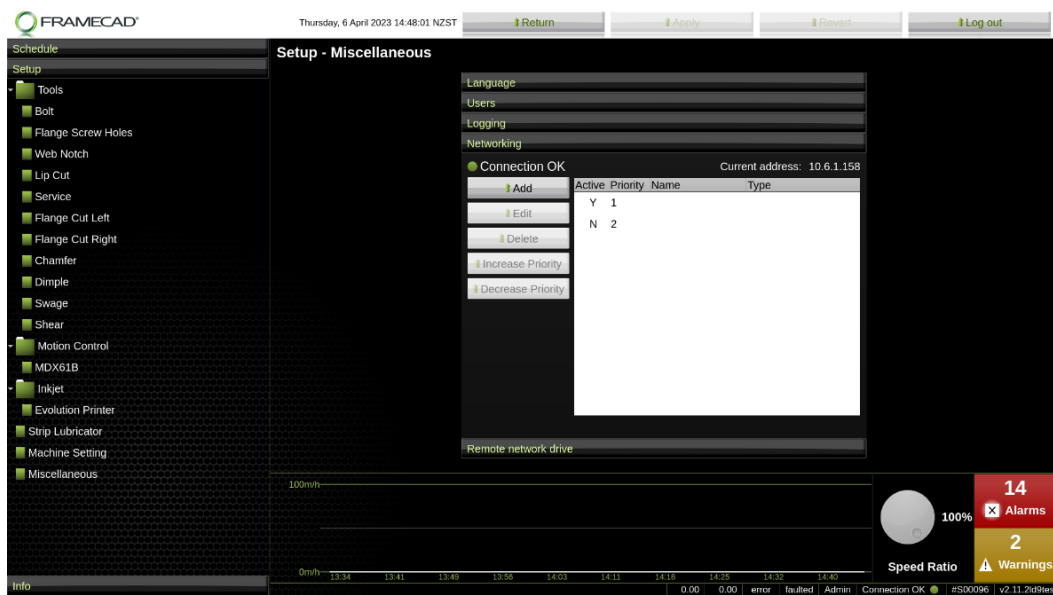
This is the wireless security key (password) to be able to log on to the network. Your IT support team will be able to provide you with this.

5. WPA

Select this option if your network requires WiFi Protected Access to be enabled. Your IT support team will be able to confirm if this is a requirement.

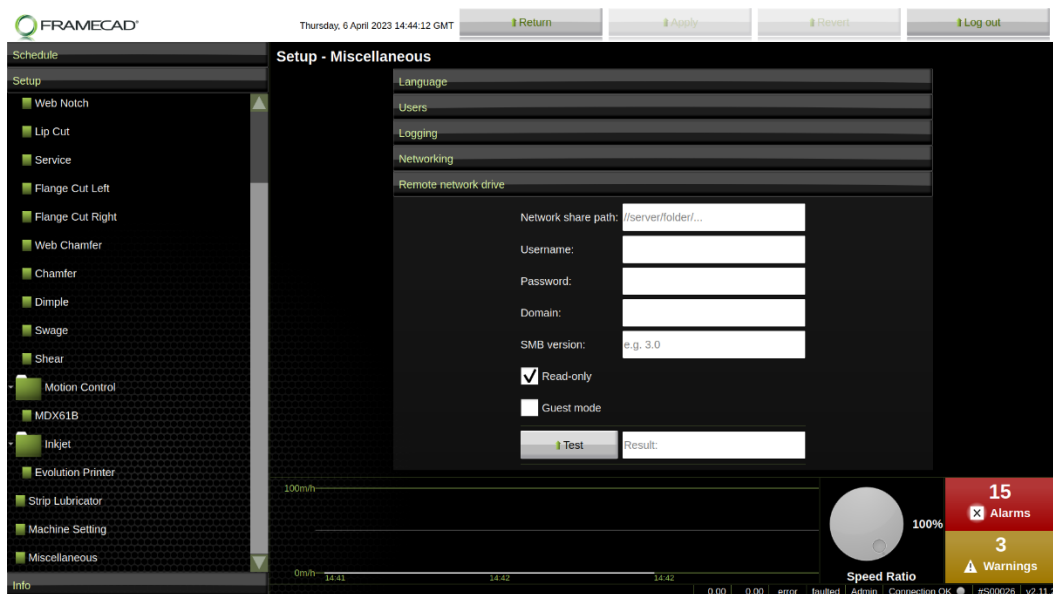
If the network connection has been successful, the Connection OK indicator light will be illuminated green.





Remote network drive

This tab will allow users to configure the machine so they can load jobs from a network drive or location.



Network share path

This is the path of the network drive where the job files will be stored. Please note that the network share path should use forward slashes (/) instead of backward slashes (\).

Username

The username required for accessing the network share path.

Password

The password required for accessing the network share path.

Domain

The domain of the network share path.

SMB Version

This is the CIFS protocol used for accessing the network share path. This is usually 3.0.

Test button

This can be pressed to verify the connection. If the connection is successful, a Success! message will be displayed. If it isn't successful, a Fail message will be displayed.

2.8 Internet Connection

This section describes the two key advantages of connecting the machine to the internet; the first is that it allows remote on-line diagnosis and support by FRAMECAD Aftersales and Engineering staff. This can dramatically decrease the time required to resolve any potential issues or queries as they arise.

The second advantage of being “connected” is that you can then utilise the My Production reporting tools available at the MyFRAMECAD website (my.framecad.com). This area of MyFRAMECAD allows you to schedule events inside a personalised production calendar along with providing detailed production trending and measurement indicators that are directly logged from your machine. These tools are invaluable for optimising factory performance.

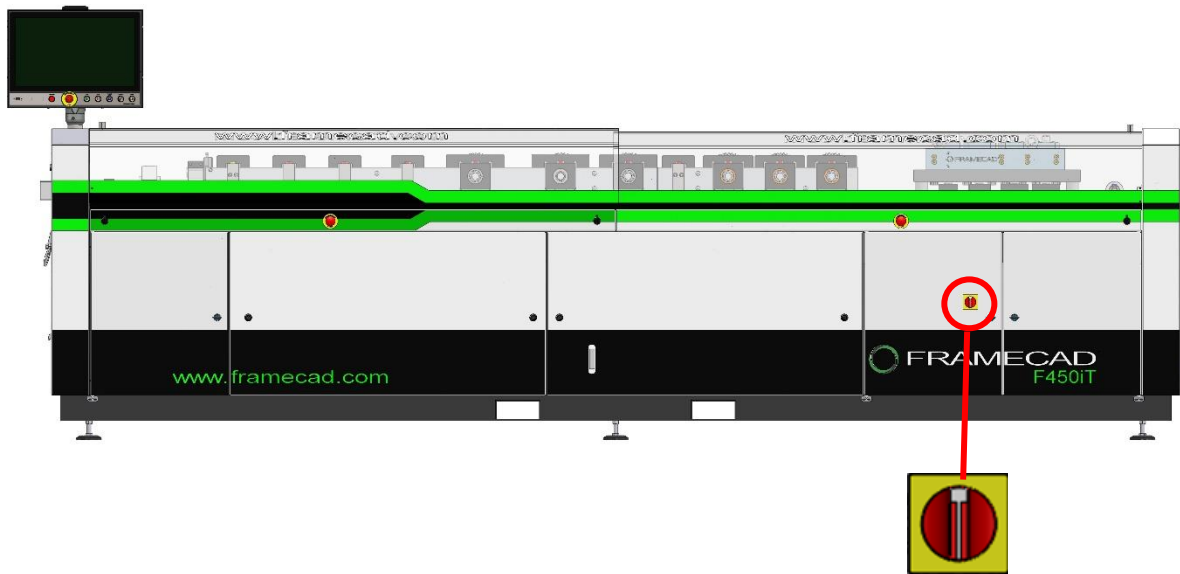
For more information on access to the My Production area, discuss with a member of our Customer Success team (see [Further Support](#)).

2.9 Notes about Electrical Safety

Electrically isolate the machine prior to opening the back of the screen. When accessing the main computer board, avoid touching or wiping hands/fingers/clothing across any electronic printed circuit board. The electronic components on these boards are highly sensitive to static electricity which can accumulate on your body and clothing. Static electrical discharges can result in damage and/or reduce the reliability of electronic devices.

Always discharge any static electricity on your person through contact with a metal surface effectively bonded to earth. Where practical, use anti-static protection (e.g. an anti-static wristband) to ensure your person always remains effectively bonded to earth.

To isolate the machine, ensure the electrical isolator switch is in the off position. The electrical isolator switch is along the side of the machine, shown below.



Electrical Isolation Switch

2.10 Info Menu Screens

Selecting the Info menu tab from the main directory will allow access to various screens that provide information and feedback on the FRAMECAD machine. These screens can be invaluable in diagnosing problems or monitoring performance. The following introduces the available screens and the information provided.

2.10.1 Info – View I/O Screen

I/O View Screen

(Info / I/O View Screen)

The I/O View Screen displays the logical state of the *inputs* & *outputs* (I/O) on the FRAMECAD machine. Digital inputs provide the logical state of the various buttons and sensors on the machine. Digital outputs provide the digital state of the solenoid valves, indicator lamps (buttons) and motor stop/start contactors.

Logic State 1 (input or output is "ON"): Green

Logic State 0 (input or output is "OFF"): Grey

In addition to the logical state of the I/O, this screen also provides information on the physical connection point of the input or output. This will relate to the type of I/O device being used. These connection details can then be cross-referenced to the Electrical Circuit diagrams for more detail.



TIP!

The I/O view screen can be extremely useful for diagnosing issues that may arise on the machine. It is highly recommended that operators familiarise themselves with the detail shown here.

The information displayed on the view I/O screen will vary depending on the machine type and the various input/output modules types used. The example given above is for demonstration purposes only and may vary to the one displayed on your machine.

2.10.2 Info – I/O Live Charting Screen

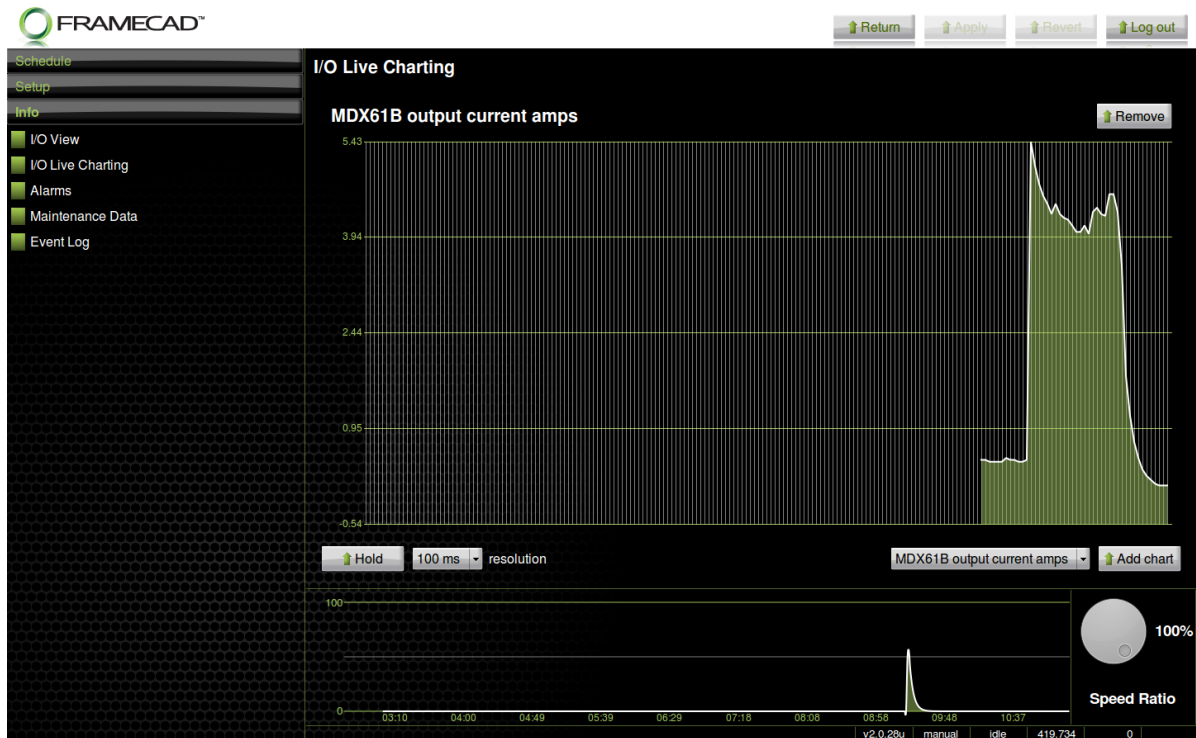
I/O Live Charting Screen

(Info / I/O Live Charting Screen)

The I/O Live Charting Screen allows the Operator to trend (*chart*) various operations of the machine while it is running. A typical example is displayed here, with a trend of the VFC (MDX61B) output current amps. There are many other machine variables that can be trended, including multiple trends updated at the same time.

Trending can be a useful tool in measuring machine performance, determining maintenance/service requirements and monitoring general productivity.

Trends can be selected from the drop-down selection list and then added using the **Add Chart** button.

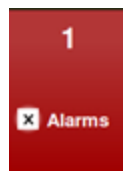


2.10.3 Info – Alarms Screen

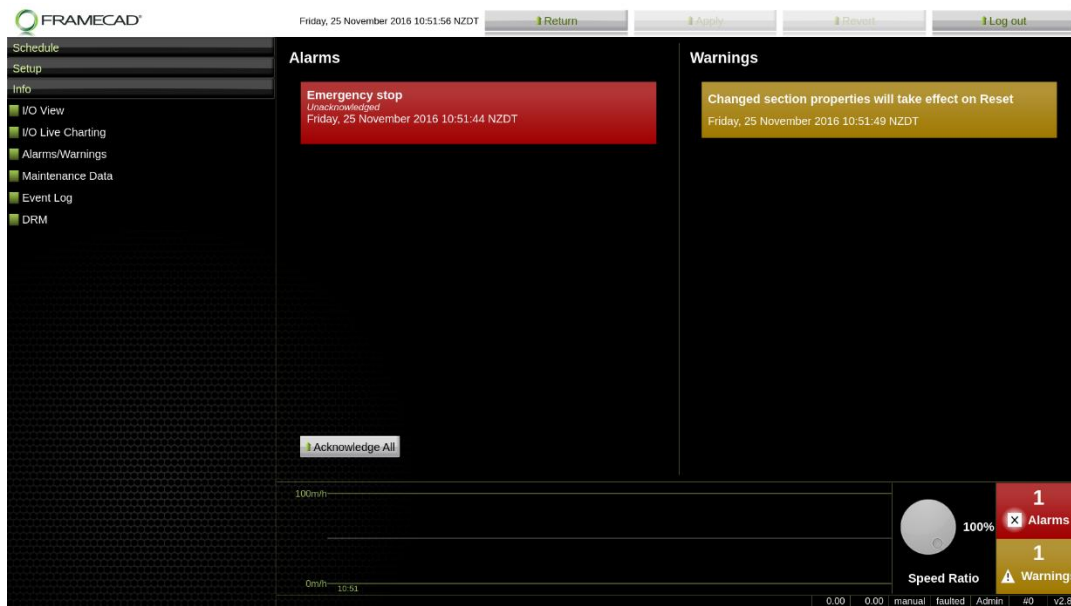
Alarms Screen

(Info / Alarms Screen)

The FRAMECAD Factory2 software will monitor the machine performance and input state of various sensors on the FRAMECAD machine to determine if there are any serious problems that will impact machine performance and/or could compromise the safety of the Operator. If an issue is detected then an *Alarm* condition will be created, this will typically involve stopping machine production. Whenever an Alarm state is activated, the Alarm screen will be automatically displayed. If the Operator navigates away from the Alarm screen while an Alarm is still active the following shortcut will appear in the bottom right-side of the currently displayed screen:



Touching this short-cut will take the Operator directly to the Alarms screen where any active alarm states will be displayed. See example below:

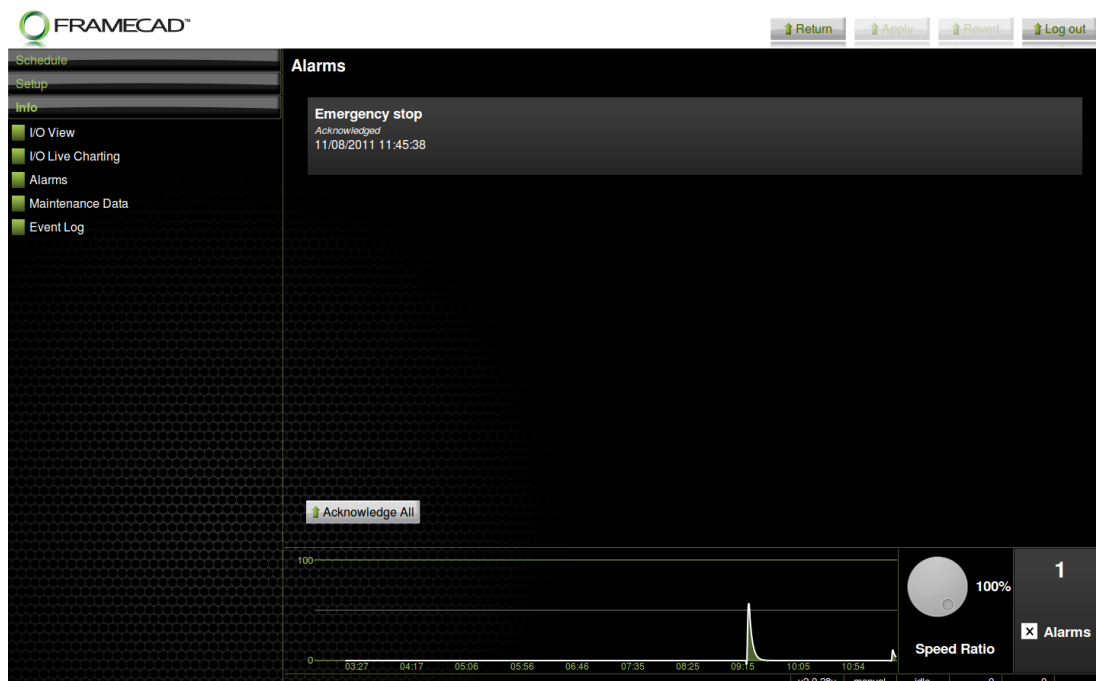


New and *unacknowledged* alarms will always be displayed in a red banner in the alarm list. As per the example shown above.

Operators must acknowledge an alarm by pressing the **Acknowledge All** button. If the condition that caused the alarm event is still present, the alarm message will continue to be displayed but the banner will change colour from red to grey.

By acknowledging an alarm, an Operator can distinguish between *new* (in red) and *old* (greyed-out) alarm events.

An example of an acknowledged alarm is shown below.

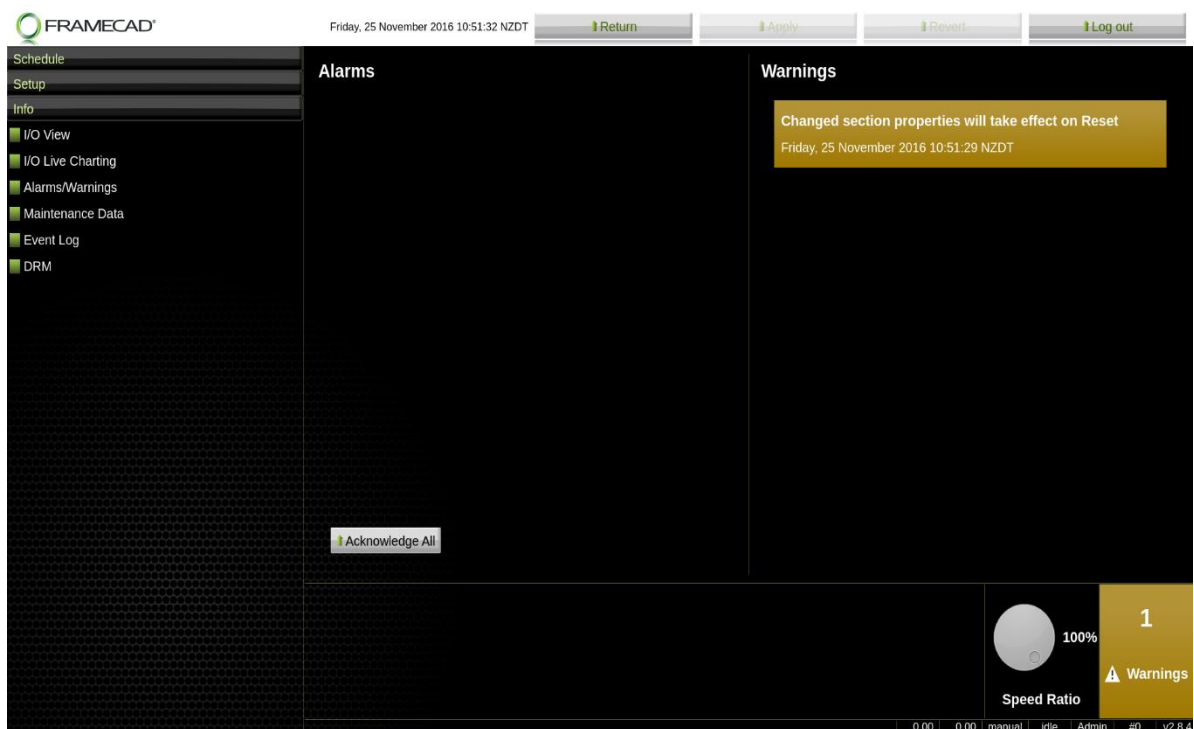


Clearing the Alarm Condition

If the problem that triggered the alarm has been addressed and the user has acknowledged the alarm, the alarm notification will be automatically removed from the alarm list.

If an alarm remains in the list, then the condition or event that triggered the alarm has not been resolved and further investigation is required. In the example shown above the emergency stop button needs to be released and the safety control circuit reset before the alarm is removed from the list.

The Alarms screen includes a **Warning Indicator** as well. See below:



Warnings will not stop the machine operation but will stay until the warning condition disappears. Warnings cannot be acknowledged.

Most alarms, however, will require the alarm state to be properly cleared before operation can resume

NOTE!

Once acknowledged, some minor alarm messages will allow the machine to operate even if the alarm condition is still present.

An example of this is the "Inkjet Comms Fault" alarm; this is where communication with the printer controller(s) has failed. The machine will still allow you to re-start automatic production in this state as it is not deemed either dangerous or damaging to the machine.

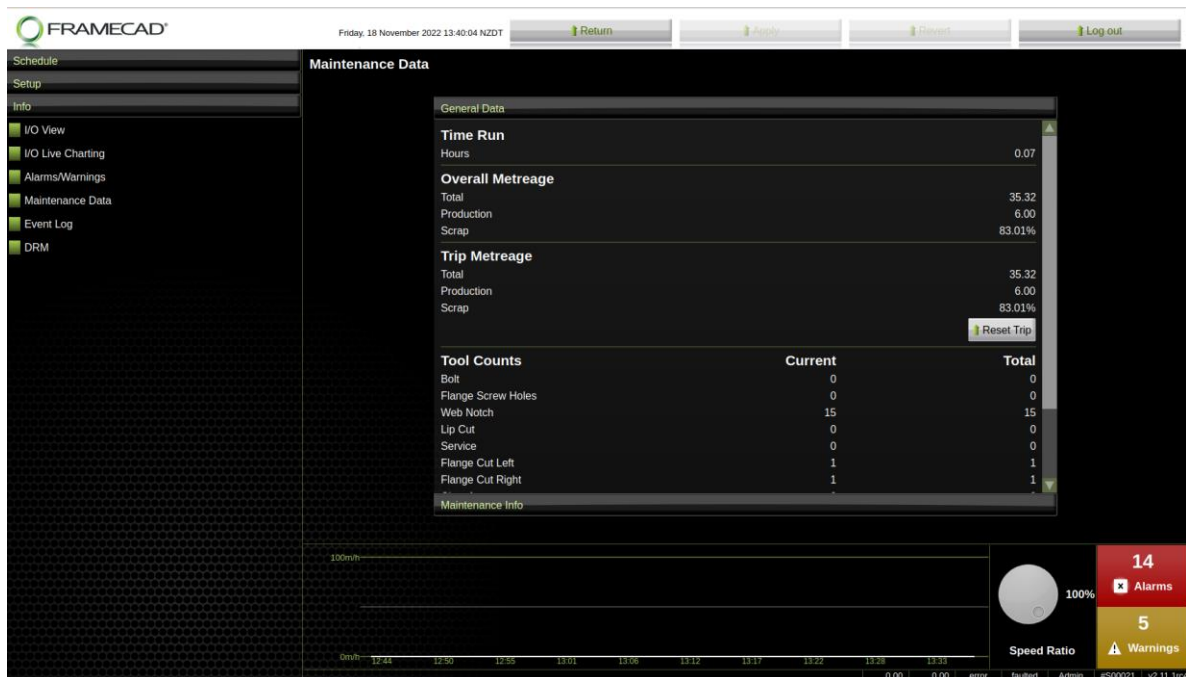
2.10.4 Info – Maintenance Data Screen

Maintenance Data Screen

(Info / Maintenance Data Screen)

The Maintenance Data screen provides information on production, steel consumption and a running count of hydraulic tool operations. This data is invaluable for planning service and maintenance regimes.

Time and frequency of tooling operations are two of the most significant indicators of determining when and what service is required. All tools eventually wear and hydraulic oil, filters etc. will need replacing with time and use. This screen should therefore be an integral component of the FRAMECAD machine management strategy. Maintaining an effective service plan is crucial to ensuring the continued performance of the machine.



This screen is split into four sections:

Time Run

This is the total time the FRAMECAD machine has been available for "production". The time is derived from the number of hours the hydraulic power-pack has been running which is a direct indication of the number of hours the machine has been technically available for production.

Overall Meterage

The totals included in this section cannot be reset. They are a total running count of the steel processed through-out the life of the machine.

Total

This is the total length of steel strip processed on the FRAMECAD machine, including all waste (scrap) material processed in either Automatic or Manual control modes.

Production

This is the total amount of steel strip processed in Automatic control mode **ONLY**. In other words, this is technically the amount of *usable* product run off the machine.

Scrap

This is the amount of estimated scrap steel generated on the machine. It is calculated as follows:

$$\text{Scrap(\%)} = 100 \times (\text{Total-Production}) / \text{Total}$$

Trip Meterage

The totals included in this section are calculated in the same way as the as those in the **Overall Meterage** section (see above), **however** they can be reset using the **Reset Trip** button. They can therefore be used to monitor the meterage of steel over any given period.

Tool Counts

This is the number of individual tool operations that have taken place on the machine in both Automatic and Manual control modes. This is useful method for planning scheduled service and maintenance of the tooling.

NOTE!

The maintenance data screen should be an integral component of the FRAMECAD machine management strategy. Productivity performance and even service planning can be driven from the data included on this screen.

Maintaining an effective service plan is crucial to ensuring the continued performance of the machine.

2.10.5 Info – Event Log Screen

Event Log Screen

(Info / Event Log Screen)

FRAMECAD Factory2 has a built-in event log that captures various actions and/or events that take place on the FRAMECAD machine. This screen allows access to this logged data.

The data can be segmented and displayed according to the date, the type of event and User.



The type of events to display can be selected via the drop-down selection box as shown below:



The event dates can be selected via the drop-down Calendar as shown below:



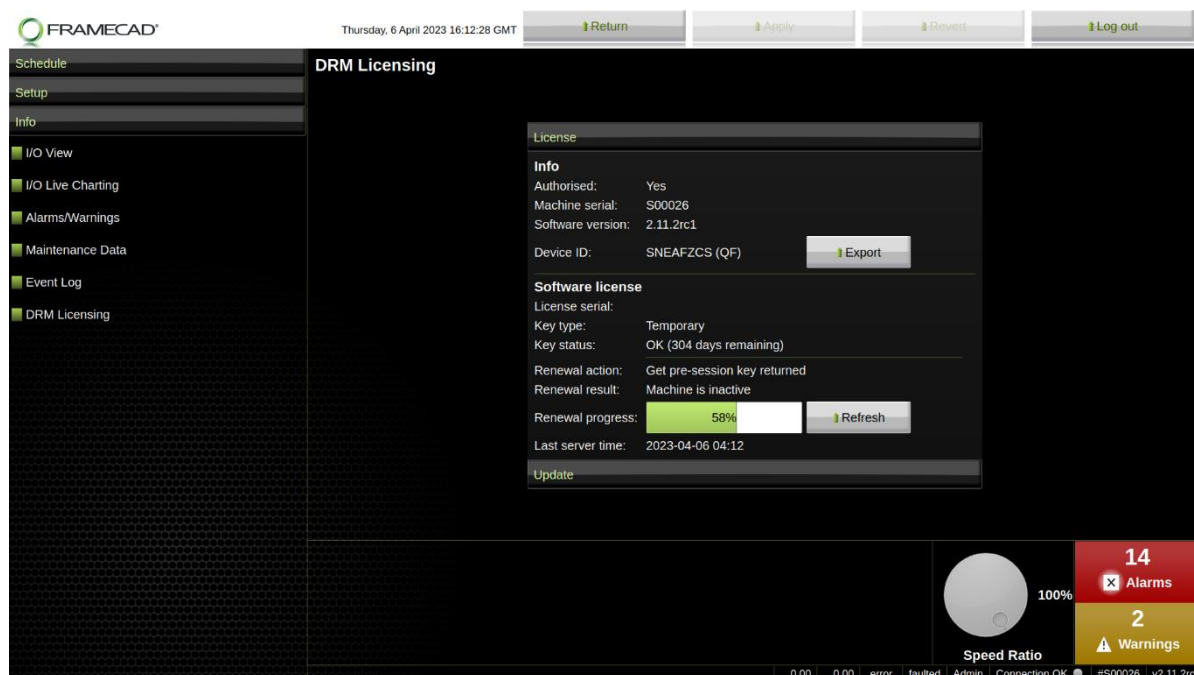
This screen also includes options to configure the number of events displayed on each page via the **Events per page** dropdown box. To switch between the various event log pages, standard navigation buttons are also provided:

	Go to the First recorded event log page
	Go to the event log page immediately preceding the currently displayed page
	Go to the event log page immediately following the currently displayed page
	Go to the Last recorded event log page

2.10.6 Info – DRM Licensing Screen

The DRM (Digital Rights Management) Licensing screen provides information on the current status of the FRAMECAD Factory2 software license.

The type of license purchased with the machine will determine the information displayed. Of particular note is the expiry date information.

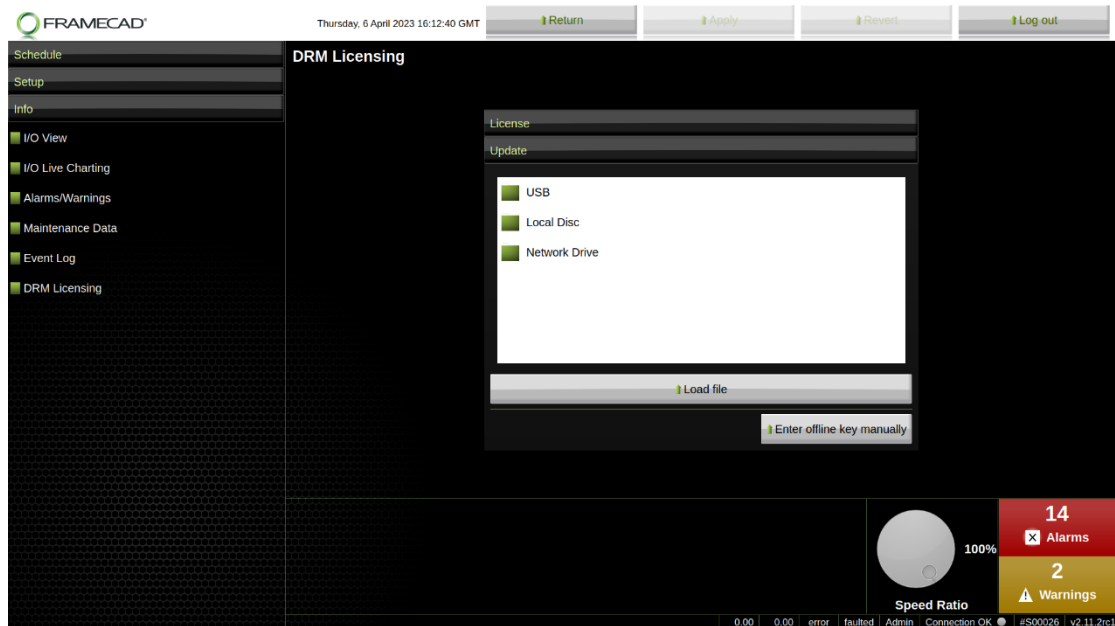



Export

This exports a .m2f file onto an attached USB drive this will then be uploaded to MyFRAMECAD via a PC. The system will generate a corresponding .f2m file which contains an offline license.

Refresh Button

This refreshes the communication between the machine and the server.



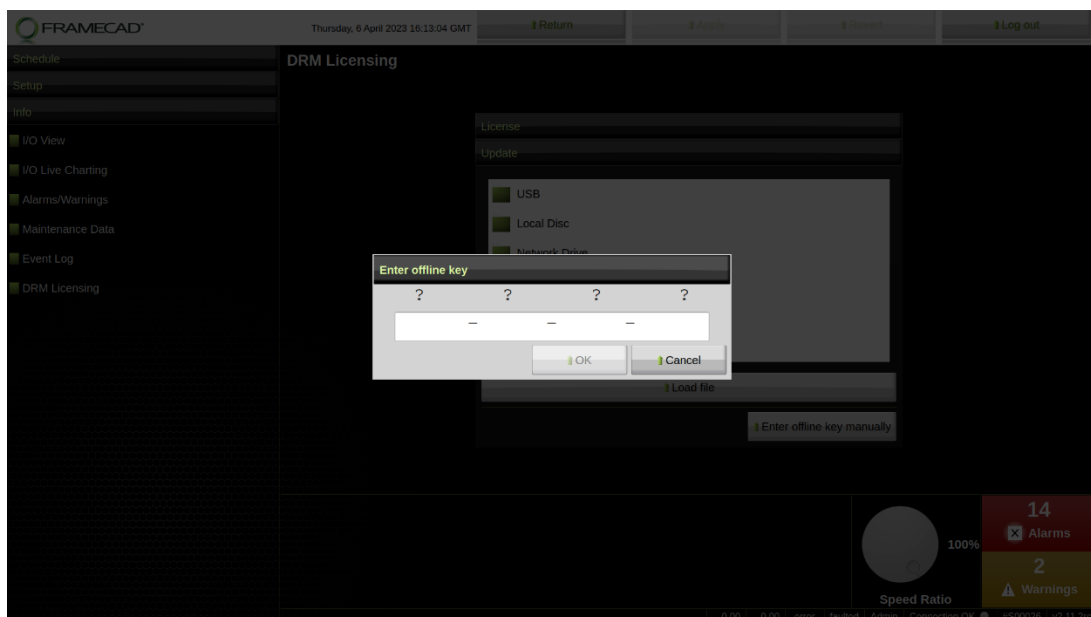
Update

Load file

This is used to update your HASP or use the .f2m file to activate an offline license.

Enter offline key manually

This tool allows you to manually enter your offline key by typing it in directly.



2.10.7 Info – Fieldbus Screen

The Fieldbus screen provides information on whether Factory2 is able to communicate with the I/O modules, drives and printer on the machine.

2.11 Updating FRAMECAD Factory2

As a company that thrives on innovation, FRAMECAD is committed to the process of continuous improvement and development of all its products, including FRAMECAD Factory2. As new enhancements or features are introduced, software updates are released that can be installed to ensure that your FRAMECAD machine is always running with the latest version.

IMPORTANT NOTE!

If you are not currently running a version of FRAMECAD Factory2, please discuss with our aftersales team as other updates will be required first. See [Further Support](#) for contact details.

2.12 Downloading Factory2 to USB

The following procedure will show you how to download FRAMECAD Factory2.

Updating FRAMECAD Factory2

Tools Required

- USB Memory Key with the latest FRAMECAD Factory2 software update file loaded onto it (visit to download)
- PC or laptop
- You must already be running a version of FRAMECAD Factory2 in order to use this method.

Updating FRAMECAD Factory2

Step 1

On a PC or laptop go to the my.framecad.com website and login to MyFRAMECAD.

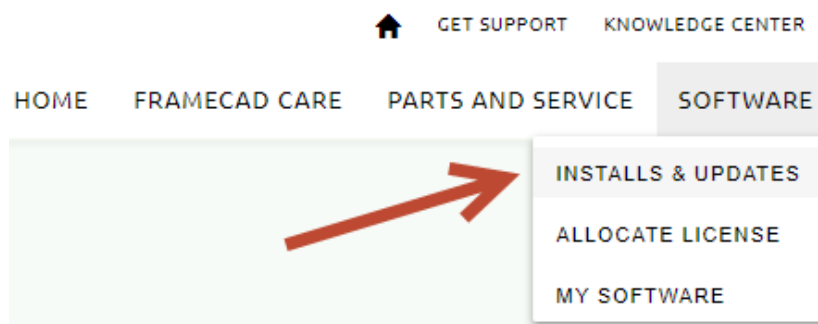
Log in

This field is required.

[Existing Customer?](#)
[Forgot password?](#) [Request Access](#)

Step 2

From the Software menu select **Installs & Updates**



Step 3

Scroll down to the FRAMECAD Factory2 section and check FRAMECAD Factory. Choose the right version for your equipment and press Open to download.

FRAMECAD FACTORY2

Note
The latest installer (v2.9+) includes support for RPY format. Please download the 'Factory 2 RPY File Format' document in the table below and follow the instructions to set up your Factory 2 software for the use of the new features.

- Runs on Linux provided with the machine
- [Click here](#) for information about 32/64 bit versions.

FILE NAME	VERSION	DATE RELEASED	FILE SIZE	
FRAMECAD Factory 2 Installer - 32-bit	2.9.11	24/Apr/19	114.3 MB	OPEN
FRAMECAD Factory 2 Installer - 64-bit	2.9.10	26/Feb/19	28.4 MB	OPEN
FRAMECAD Factory 2 Setup Instructions	2	17/Apr/14	720 B	OPEN
FRAMECAD Factory 2 Release Logs	2.9	24/Apr/19	4.5 KB	OPEN
FRAMECAD Factory 2 Supplementary Manual	2.7	04/Mar/15	9 MB	OPEN
Factory 2 RPY File Format	-	29/Nov/17	243.3 KB	OPEN

Once the file has finished downloaded, save it to a USB Memory key so that it can be taken to the machine and installed.

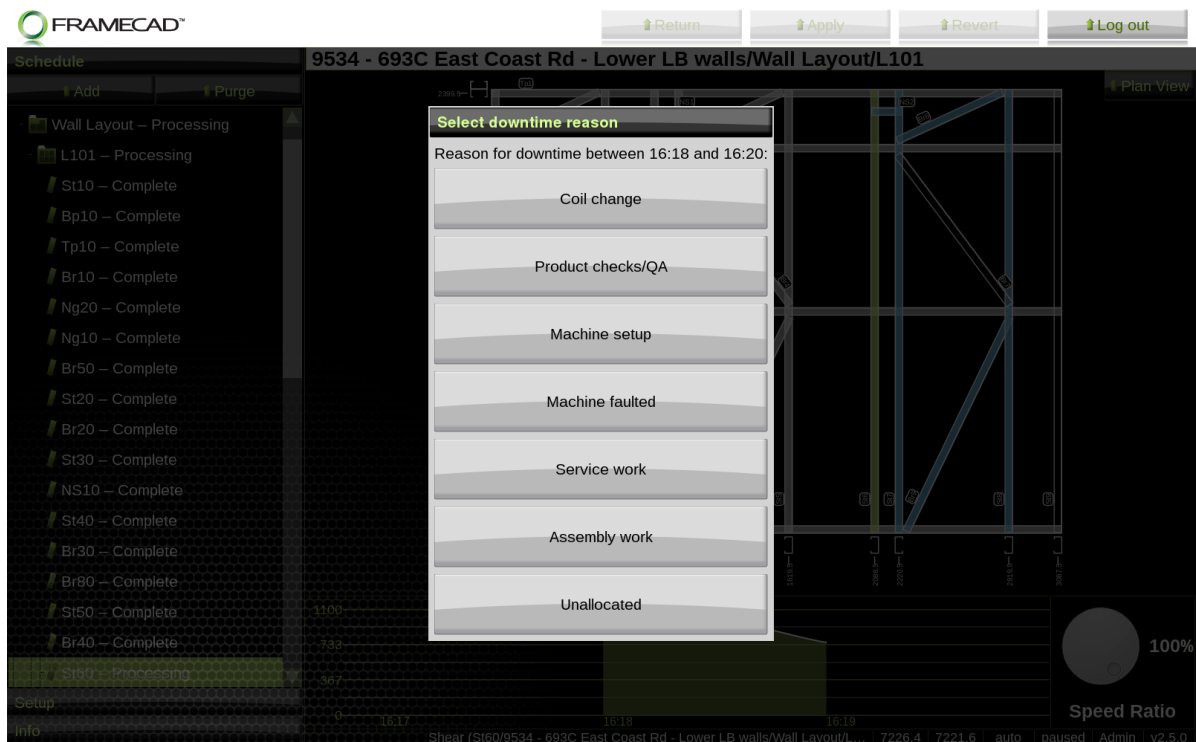
To install the update from USB onto the machine, refer to [Update the Factory2 Package](#).

3 Special Features

3.1 Downtime Reasons Message Prompt

FRAMECAD Factory2 v2.14 includes the option to log the reason why a machine was paused or stopped during automatic production. These reasons are logged so that events that contribute to down-time or steel scrap on the machine can be reviewed.

If the downtime logging is turned ON (see [Setup – Miscellaneous](#)) the following message prompt will be displayed whenever automatic production has been expectantly stopped for at least 10seconds. The Operator will need to select a reason why the machine was stopped, the moment the machine resumes automatic production, from the list before the message prompt is removed.



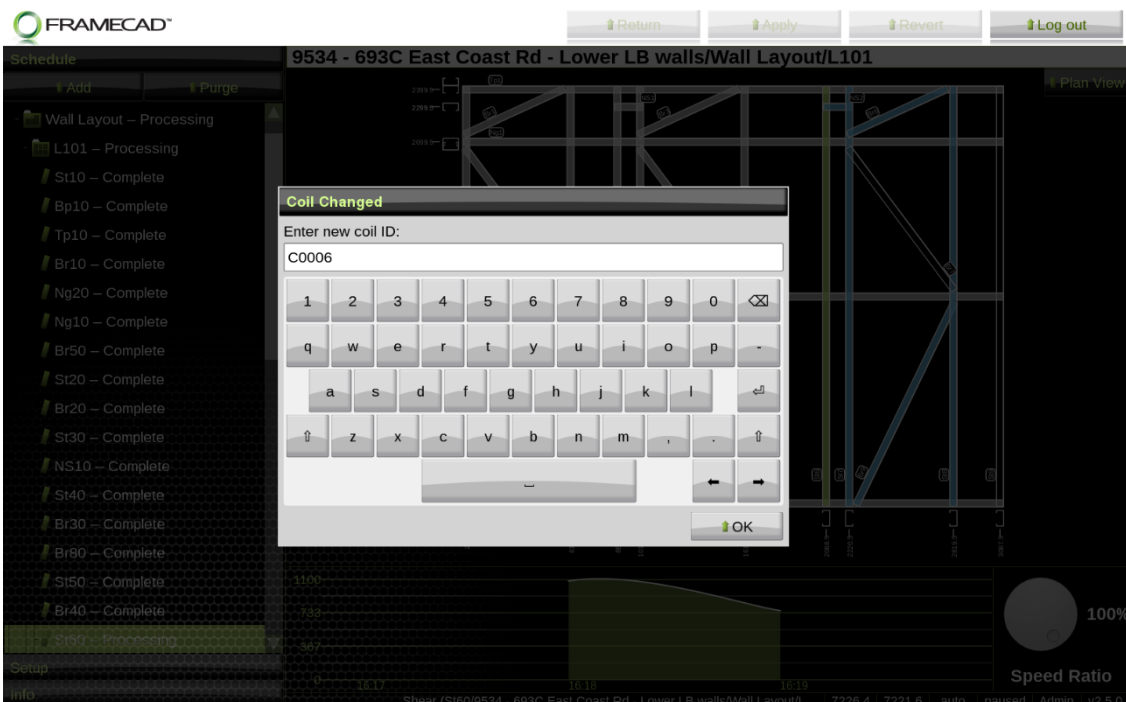
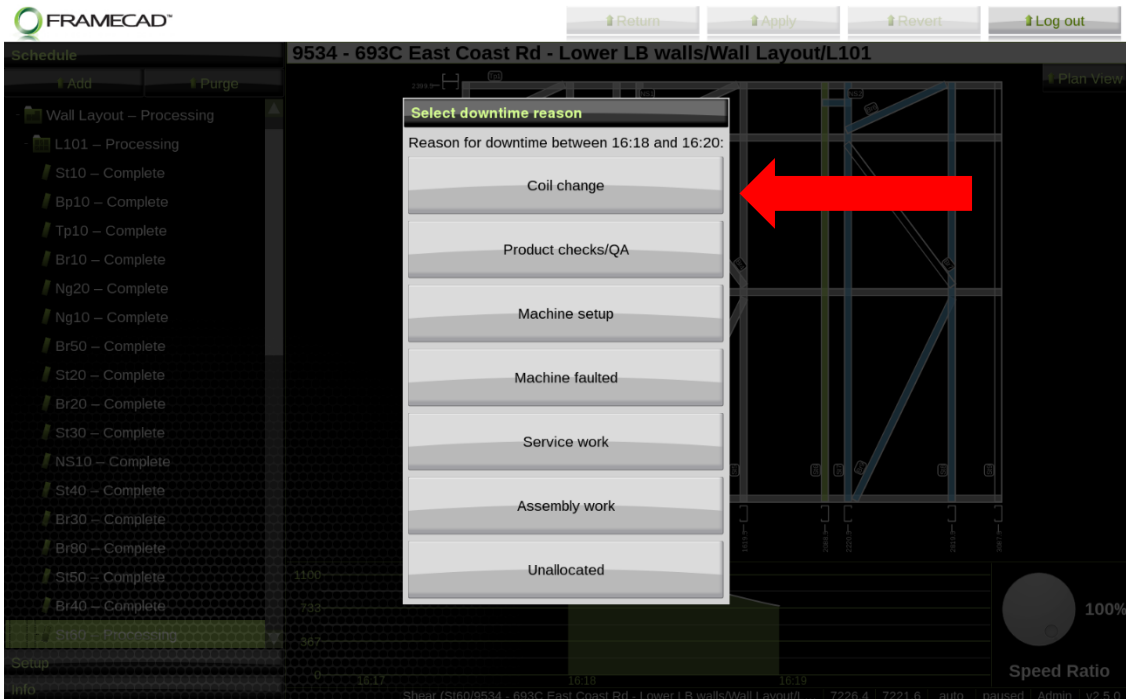
All downtime reasons will be logged so that summary data can be extracted using on-line tools available at my.framecad.com.

TIP!

The downtime reasons prompt can be turned on or off under the **Setup – Miscellaneous Screen**. See [Setup – Miscellaneous](#).

3.2 Entering a Coil ID after a Coil Change

If the Operator selects Coil change as a downtime reason (see [Downtime Reasons Message Prompt](#)) they will then be prompted to enter a coil identification number or description as shown below. This will be logged so that it can be used for production reporting using online tools available at my.framecad.com.



3.3 Switching Between Metric and Imperial

FRAMECAD Factory2 v2.14 has the ability to switch between metric and imperial measurement units. Switching the unit format will change the way measurement data is both entered and displayed inside FRAMECAD Factory2. This will also determine the type of profile options available when configuring the machine setting.

For more information on switching between metric and imperial dimensions, please see [Setup – Miscellaneous](#).

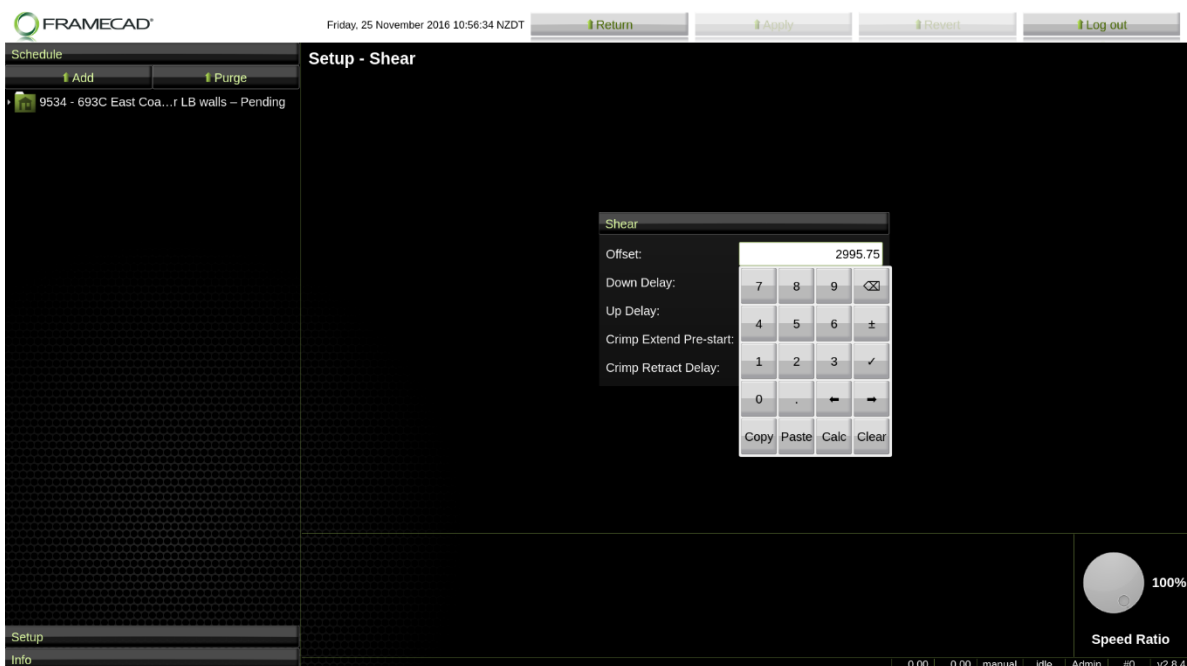
For more information on configuring the machine setting, see [Setup - Machine Setting Screen](#).

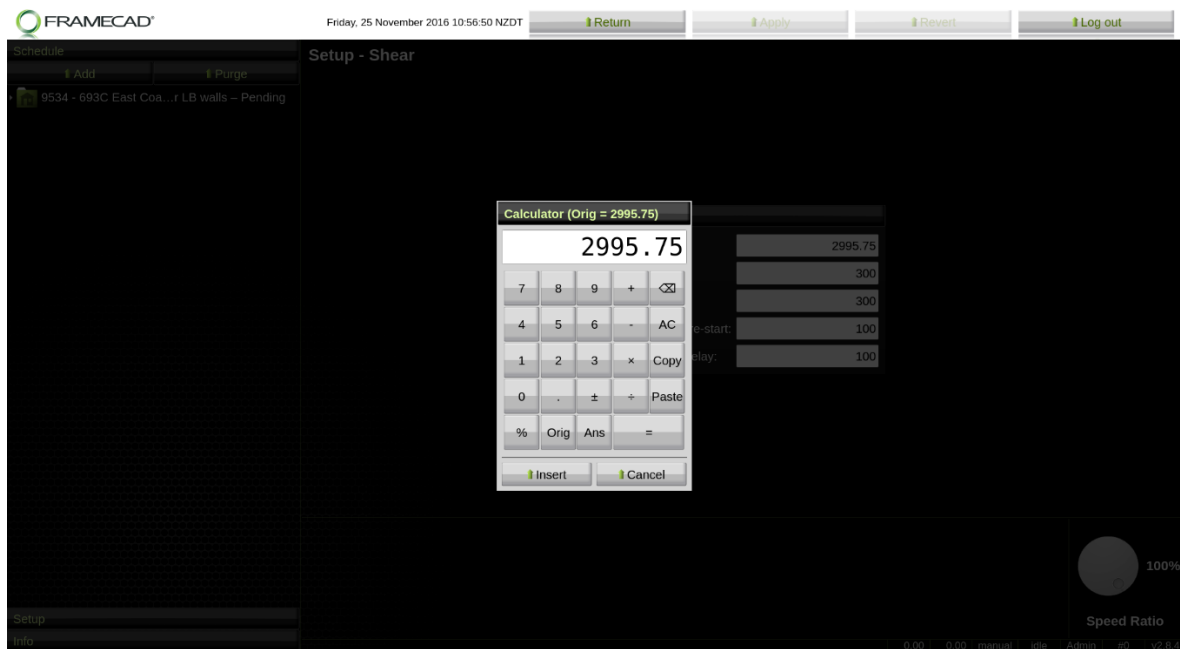
3.4 Numeric Pad

The numeric pad allows to enter various data.

The "Calc" button launches a calculator with the current field value preloaded:

1. Operator can perform arithmetic in the usual way with a standard desk calculator
2. Pressing "Orig" pastes in the "original" value from the current field value
3. Pressing "Ans" pastes in the previous calculation's answer again
4. Once done, operator can press "Insert" to paste the result of the calculation back into the field being edited



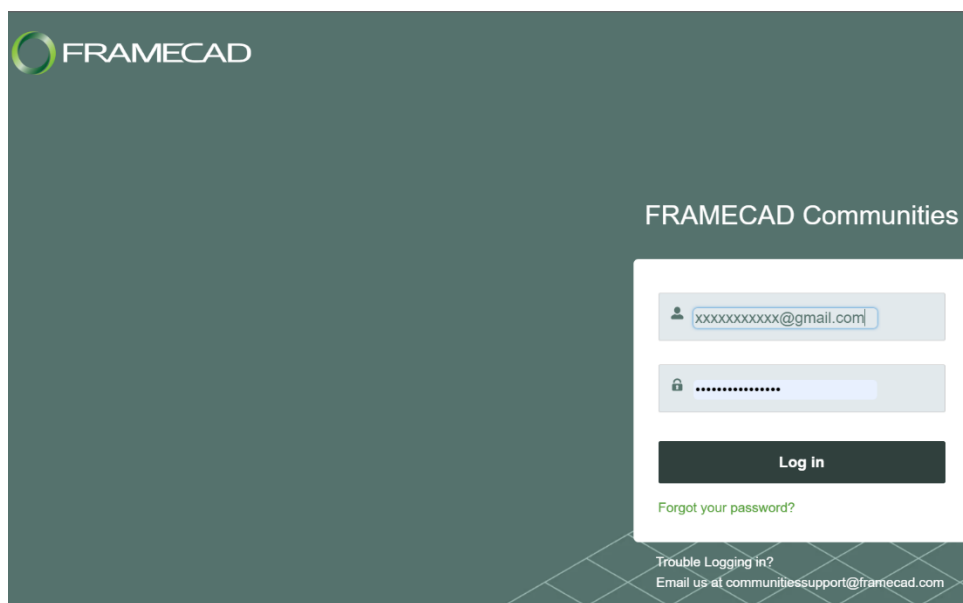


4 Further Support

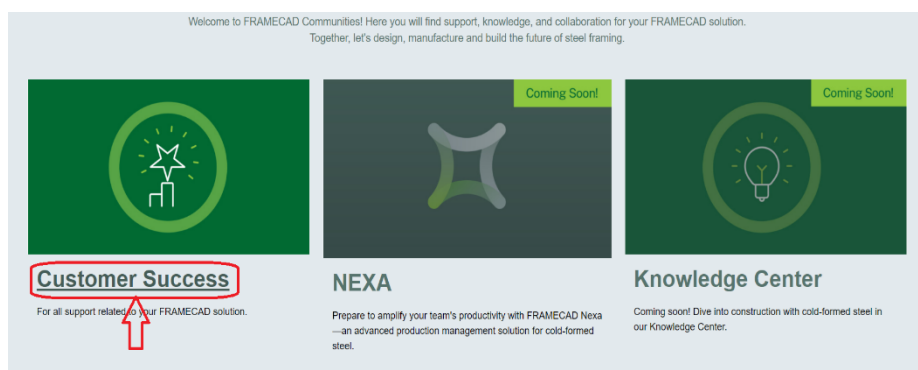
Customers can request all and any support via FRAMECAD's customer portal called "Communities":

<https://communities.framecad.com/s/login/>

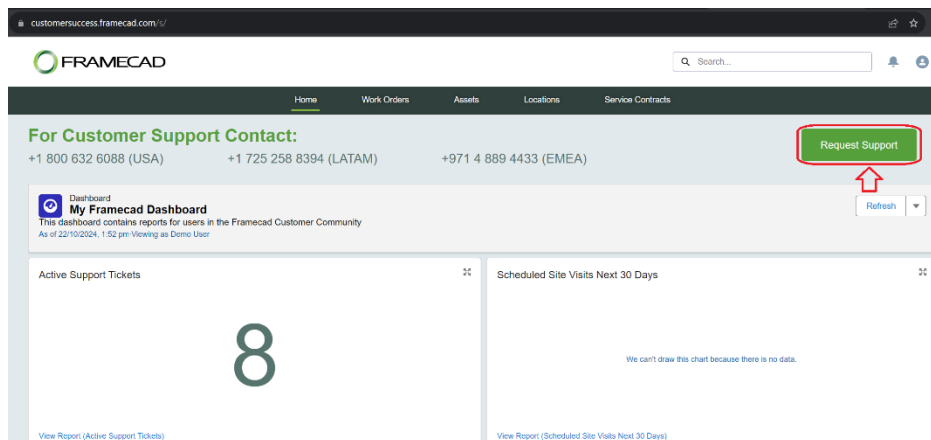
1. Log in using your credentials:



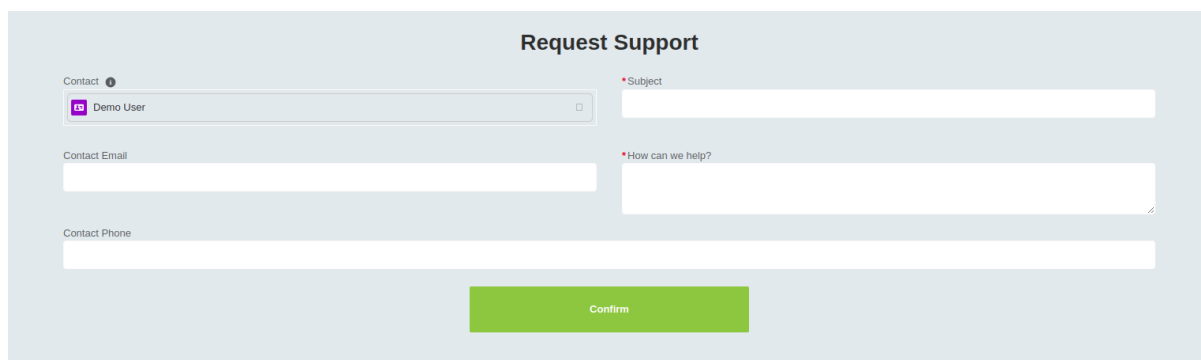
2. Click on Customer Success:



3. Choose "Request Support":



4. In the subject, add the subject of the issue and a short description of the problem. Fill out all the other fields as well and hit "Confirm":



The screenshot shows the 'Request Support' form. It has a light blue background. The form includes the following fields:

- Contact:** A dropdown menu showing 'Demo User'.
- Contact Email:** A text input field.
- Contact Phone:** A text input field.
- Subject:** A text input field with a red asterisk indicating it's required.
- How can we help?:** A text input field with a red asterisk indicating it's required.

 At the bottom of the form is a green 'Confirm' button.

5. A service request will be created with a number. Add relevant error screenshots and files by clicking on "Upload Files".