



INNOVA
Drilling & Intervention

Innova Engineering Cementing Module

How to Guide

Rev 1.1

Contents

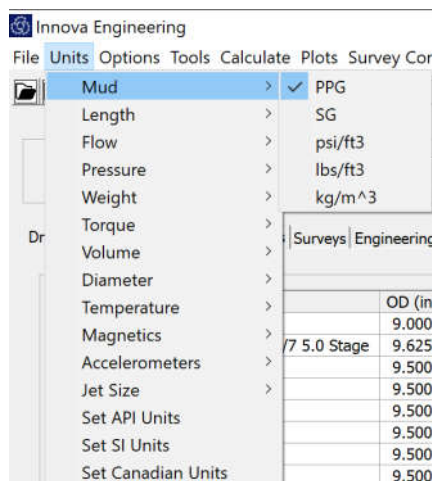
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1.0 – Getting Started

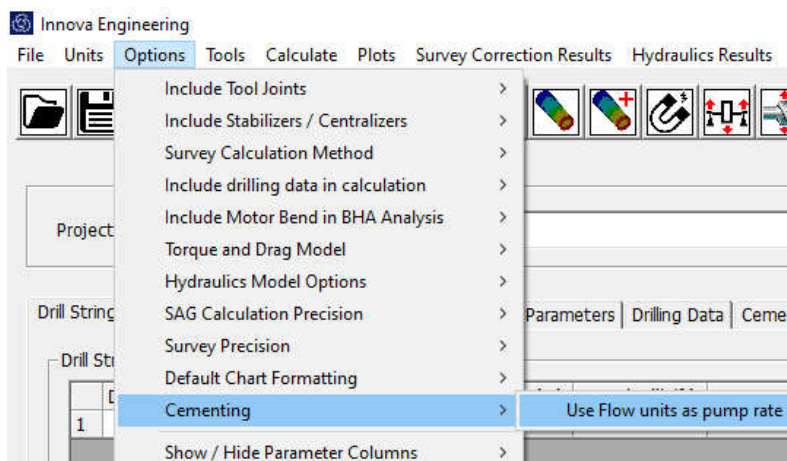
This document describes the cementing module within Innova Engineering and details the steps required to correctly utilise its functionality.

2.0 – Setup

- **Units:** Ensure that all units are correctly selected, based on requirements.



- **Options Menu – Cementing:** The default flow rate in the Cementing tab is barrels per minute (**bbls/min**). This option allows the user to “Use flow units as pump rate”, which means the flow rate used in the cementing tab will match whatever the user has selected as the flow units from the units menu. This is useful when using the cementing section to simulate pumping pills etc.



3.0 – Required Inputs

To utilise the cementing modules functionality, the following inputs are required.

3.1 - Drill string, Well Geometry & Fluids Tab

- Drill String:** Required inputs are component, description, OD, ID, TJ OD, TJ ID and length. Input the assembly as accurately as possible including the drill pipe to surface (note, for the last component e.g. DP to surface, the user does not have to input the exact length as the program will do this automatically based on the calculation depth. Inputting a nominal value of 10 is fine). Note that once a component type has been selected from the dropdown menu, it is possible to right click on the line and choose "**select from Library**", which will open the components library. The user can then select the appropriate component and select the option to insert it directly into the drill string grid.

Drill String, Well Geometry and Fluids | Surveys | Engineering Parameters | Drilling Data | Cementing

Drill String

	Description	OD (in)	ID (in)	TJ OD (in)	TJ ID (in)	Weight (lb/ft)	Component	Length (ft)	Total Length (ft)	Non-Magnetic
1	9.625 Casing (47lb/ft)	9.625	8.681	9.625	8.681	47	Casing / Tubing	3000.000	3000.00	☐
2	5 S-135 IEU(19.5lb/ft) Drill Pipe	5	4.276	6.625	3.5	22.61	Drill Pipe		5000.00	☐
3										☐

Context menu options: Insert Before, Insert After, Delete, Copy Ctrl+C, Paste Ctrl+v, **Select from Library**

- Bit / Float TFA:** If a float or bit has been included in the assembly, then it is important to enter the relevant TFA as this is required to calculate the pressure drop across this component, which is used in the **pump pressure** calculation. This is entered in the bit, casing or liner component details section.

Component Details	BHA Weight (Buoyed) :
Connection Top	BTC
Connection Bottom	BTC
Float TFA (sq in)	1.2080

- Well Geometry:** Input casing, liner, riser and open hole details including depths and ID's. For open hole, the ID is the same as the OD. Note that the user should only enter the well geometry which is relevant for the section in question and should not enter the entire casing string here.

Well Geometry

	Type	MD (ft)	TVD (ft)	ID (in)	OD (in)
1	Riser	2000.00	1923.643	18.750	20.000
2	Casing	3500.00	3134.936	12.800	13.375
3	Open Hole	5000.00	4099.118	12.250	12.25
4					

- Fluid Properties:** Input mud weight, PV and YP. These inputs relate to the fluid in the wellbore prior to starting the cement job.

Fluid properties

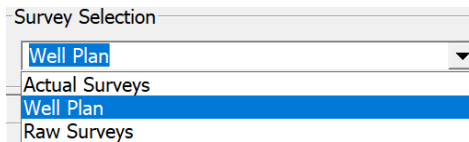
Mud Weight (ppg)	9.5
Add Fluid	PV 10
Fluid Library	YP 10

3.2 - Surveys Tab

Survey Selection: Cementing calculations will be run using plan or survey data entered in the **Survey Tab** on the main user interface.

- If there are well plan surveys and no actual surveys, the program will automatically use the well plan.
- If there are actual surveys and no well plan surveys, the program will automatically use the actual.
- If there are both well plan and actual surveys the program will use whatever is deeper.

Data is input as measured depth, inclination and azimuth in both the Actual Surveys and Well Plan sections, and the program will generate the rest of the numbers using whichever survey calculation method has been selected (Minimum Curvature Default). Cementing calculations **are not** run against surveys input in the RAW surveys table. The user can either enter the plan or surveys manually, import them or copy and paste the data directly into the cells.



The image shows a screenshot of a software interface. At the top, there is a label 'Survey Selection' above a dropdown menu. The dropdown menu is open, showing three options: 'Well Plan', 'Actual Surveys', and 'Raw Surveys'. The 'Well Plan' option is currently selected and highlighted in blue.

3.3 - Cementing Tab

Volumes

Capacities & Displacements					Ann. Cap. bbls/ft		
Description	Capacity bbls/ft	Tot Capacity bbls	Displacement bbls/ft	Tot Displacement bbls	Riser 18.750"	Casing 12.800"	Open Hole 12
1 9.625 Casing (47lb/ft)	0.0732	219.6000	0.0168	50.4000	0.2515	0.0692	0.0558
2 5 S-135 IEU(19.5lb/ft) Drill Pipe	0.0169	33.8000	0.0094	18.8000	0.3151	0.1328	0.1194
Totals		253.4000		69.2000			

Description	Capacity bbls/ft	Tot Capacity bbls	Annular Volume bbls	String Capacity bbls	Steel Displacement bbls
1 Riser 18.750"	0.3415	683.0000	630.2805	33.8675	18.8955
2 Casing 12.800"	0.1592	238.8000	103.7488	109.8112	25.1810
3 Open Hole 12.250"	0.1458	218.7000	83.6728	109.8112	25.1810
Totals		1140.5000	817.7022	253.4899	69.2574

String Depth (ft) Displacement Type Flow Rate (gpm) Pump Output (bb/stk) Stroke Rate (SPM) Hydraulics Model

	Time (min)	Strokes
Top down	212.93	2510.46
Bottoms Up	686.87	8098.20
Full Circulation	899.80	10608.66

Cement Volumes

Description	Top (ft)	Bottom (ft)	Excess (%)	Volume (bbls)
1 Spacer	3000	2000	0	13.83
2 Lead Cement	2000	4800	0	93.27
3 Tail Cement	4800	5000	0	11.16
4				

Pumping Schedule

Description	Vol. (bbls)	Strokes	Time (min)	Wt. (gpm)	Pump Rate (bbls/min)	600	300	200	100	6	3	PS
1 Spacer	13.83	136	1	8.000	10.000							15.000
2 Lead Cement	93.27	923	9	16.500	10.000							30.000
3 Tail Cement	11.69	114	1	16.000	10.000							30.000
4 Displacement Fluid	248.91	2464	24	9.5	10.000							20.000

Cement Job Calculation

Description	OD (in)	ID (in)	Length (ft)	Cap. (bbls/ft)	Total Cap. (bbls)
1 3 1/2" Stringer	3.5	2.5	1180	0.006715	81.3078

Shoe -> Float Dist (ft) Shoe Track Capacity (bbls) ☐ Cementing with inner string

3.3.1 - Volumes

This section displays the various volumes, capacities and displacements of the drill string and the annulus.

The top of this section details the different capacities of the drill string components. These components are taken directly from the drill string entered in the drill string tab, and the capacities are automatically calculated based on the dimensions (OD & ID) associated with these components. The annular capacities are detailed for the components, based on each of the lines entered in the Well Geometry section of the drill string tab. **NOTE:** A String Depth **MUST** be entered for this section to display correctly.

Volumes

Capacities & Displacements					Ann. Cap. bbls/ft		
Description	Capacity bbls/ft	Tot Capacity bbls	Displacement bbls/ft	Tot Displacement bbls	Riser 18.750"	Casing 12.800"	Open Hole 12
1 9.625 Casing (47lb/ft)	0.0732	219.6000	0.0168	50.4000	0.2515	0.0692	0.0558
2 5 S-135 IEU(19.5lb/ft) Drill Pipe	0.0169	33.8000	0.0094	18.8000	0.3151	0.1328	0.1194
Totals		253.4000		69.2000			

Description	Capacity bbls/ft	Tot Capacity bbls	Annular Volume bbls	String Capacity bbls	Steel Displacement bbls
1 Riser 18.750"	0.3415	683.0000	630.2805	33.8675	18.8955
2 Casing 12.800"	0.1592	238.8000	103.7488	109.8112	25.1810
3 Open Hole 12.250"	0.1458	218.7000	83.6728	109.8112	25.1810
Totals		1140.5000	817.7022	253.4899	69.2574

String Depth (ft) Displacement Type Flow Rate (gpm) Pump Output (bb/stk) Stroke Rate (SPM) Hydraulics Model

	Time (min)	Strokes
Top down	212.93	2510.46
Bottoms Up	686.87	8098.20
Full Circulation	899.80	10608.66

The middle part of this section shows the various capacities, volumes and displacements for the well. **NOTE:** A String Depth **MUST** be entered for this section to display correctly.

The lower part of this section is the most important as the inputs here affect the entire cementing calculations.

- **String Depth:** Depth of the string when performing the cement job. The calculation will not run without a value entered here.
- **Displacement Type:** Select **Open Ended** or **Close Ended**. This affects the Displacement and Total Displacement calculated values.
- **Flow Rate:** Flow rate of cement job. This is used to calculate the **Top Down, Bottoms Up** and **Full Circulation** values. This input is not required to run the cementing calculation, as the pump rate for this is entered in the pumping schedule section.
- **Pump Output:** Volume pumped per stroke. Pump efficiency should be factored into this input i.e. if the book output is 0.1bbl/stroke and the pump is 95% efficient, then output should be entered as 0.095bbl/stroke. This input is essential as it is required for calculating the number of strokes in the Pumping Schedule section.
- **Stroke Rate:** This cell auto calculates based on the values entered for flow rate and pump output.
- **Hydraulics Model:** Select from **Bingham, Power Law, Herschel Bulkley** or **Robertson Stiff**. This affects the calculated Annular Pressure, Pump Pressure and ECD values in the Cementing Results dialog.

3.3.2 - Cement Volumes

This section allows the user to quickly calculate the volumes required for the cementing operation.

Row 1 should contain the first fluid to be pumped and the user can enter the required top, and the bottom will be automatically populated. The top and bottom depths of the fluid represent where they will be in the Annulus at the end of the cementing operations. The user can then enter as many additional lines as required. It should be noted that the bottom depth of the fluid in the last row will always be equal to the **String Depth** value input in the Volumes section.

	Description	Top (ft)	Bottom (ft)	Excess (%)	Volume (bbls)
1	Spacer	3000	3200	0	13.83
2	Lead Cement	3200	4800	0	93.27
3	Tail Cement	4800	5000	0	11.16
4					

The user can also enter the desired excess and the volume column will update automatically to reflect this excess percentage.

3.3.3 - Pumping Schedule

Once the Cement Volumes and Cement Job Calculation sections have been input, the user can select **Create**, which will populate the Pumping Schedule table, with the description and calculated volumes from the Cement Volumes section. Note that this also considers the data input in the **Cement Job Calculation** section. It is also possible to complete this section manually. In order for the schematic to be represented correctly in the results dialog, excess volume should not be included in this section.

If the **Include Spacer** box is checked and then **Create** is selected, row one of the table will be created for a spacer, but the volume cell will need to be populated manually by the user. If the user has included a spacer in the cement volumes section, then the include spacer box should not be checked.

The **Use Rheometer Readings** check box toggles the Pumping Schedule table between PV, YP and 600 – 3 rpm dial reading inputs.

The user should fill in the Description, Volume, Wt, Pump Rate, and rheology values for each row. These inputs affect the calculated Annular Pressure, Pump Pressure and ECD values in the Cementing Results dialog.

Pumping Schedule

	Description	Vol. (bbls)	Strokes	Time (min)	Wt. (ppg)	Pump Rate (bbls/min)	600	300	200	100	6	3	PV
1	Spacer	13.83	136	1	8.000	10.000							15.000
2	Lead Cement	93.27	923	9	16.500	10.000							30.000
3	Tail Cement	15.65	154	1	16.000	10.000							30.000
4	Displacement Fluid	248.91	2464	24	9.5	10.000							20.000

☐ Include Spacer ☒ Use Rheometer Readings

3.3.4 - Cement Job Calculation

For conventional cement jobs the user should enter the **Shoe – Float Distance**. The shoe track capacity will be automatically calculated.

If cementing with a stinger, the user should check the **Cementing with inner string** box and enter the **Description, OD, ID and Length** of the stinger string. The capacity and total capacity of the inner string will be automatically calculated.

Cement Job Calculation

	Description	OD (in)	ID (in)	Length (ft)	Cap. (bbls/ft)	Total Cap. (bbls)
1	3 1/2" Stinger	3.5	2.5	3180	0.0060715	19.30736

Shoe -> Float Dist (ft) Shoe Track Capacity (bbls) ☐ Cementing with inner string

Once the cementing tab has been completed, selecting Calculate, opens the **Cementing Results** Dialog.

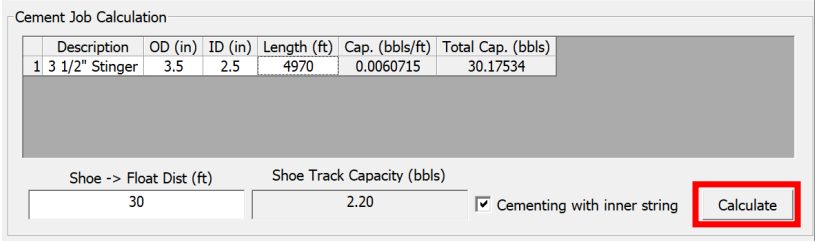
4.0 – Cementing Data Input Sequence

It is suggested that data is input in the following order to increase input efficiency. This is, however, just a guide and the user can enter the data in whatever sequence they wish.

1. Ensure units are correctly selected, including the cementing flow units in the Options menu.
2. Input data in the Drill String table. Input the component, description, OD, ID, length and TJ OD / ID if applicable (Drill String, Well Geometry & Fluids Tab).
3. Input any relevant TFA details in the Component details table (Drill String, Well Geometry & Fluids Tab).
4. Input the Well Geometry (Drill String, Well Geometry & Fluids Tab).
5. Input the drilling Fluid Properties (Drill String, Well Geometry & Fluids Tab).
6. Input the survey data into the Well Plan or Actual Surveys table (Surveys Tab).
7. Input the String Depth (Cementing Tab).
8. Select the Displacement Type (Cementing Tab).
9. Input the Flow Rate (optional) (Cementing Tab).
10. Input the Pump Output (Cementing Tab).
11. Select the Hydraulics Model (Cementing Tab).
12. Input the Description, Top and Excess % for each fluid in the Cement Volumes table (Cementing Tab).
13. Input the Shoe – Float Distance (Cementing Tab).
14. Add cementing inner string Description, OD, ID and Length if applicable (Cementing Tab).
15. If a spacer is being included and was not added in the cement volumes section check the Include Spacer checkbox (Cementing Tab).
16. Select the Create button in the Pumping Schedule section (Cementing Tab).
17. Input the Weight (Wt), Pump Rate, fluid rheology and spacer volume (if applicable) data (Cementing Tab).
18. Select the Calculate button to run the cementing calculation and open the Cementing Results dialog (Cementing Tab).

5.0 – Running the Calculation

Once the user has entered all the required inputs, the user selects **Calculate** from the Cement Job Calculation section. This runs the cementing calculation and opens the cementing results dialog.



Cement Job Calculation

	Description	OD (in)	ID (in)	Length (ft)	Cap. (bbls/ft)	Total Cap. (bbls)
1	3 1/2" Stinger	3.5	2.5	4970	0.0060715	30.17534

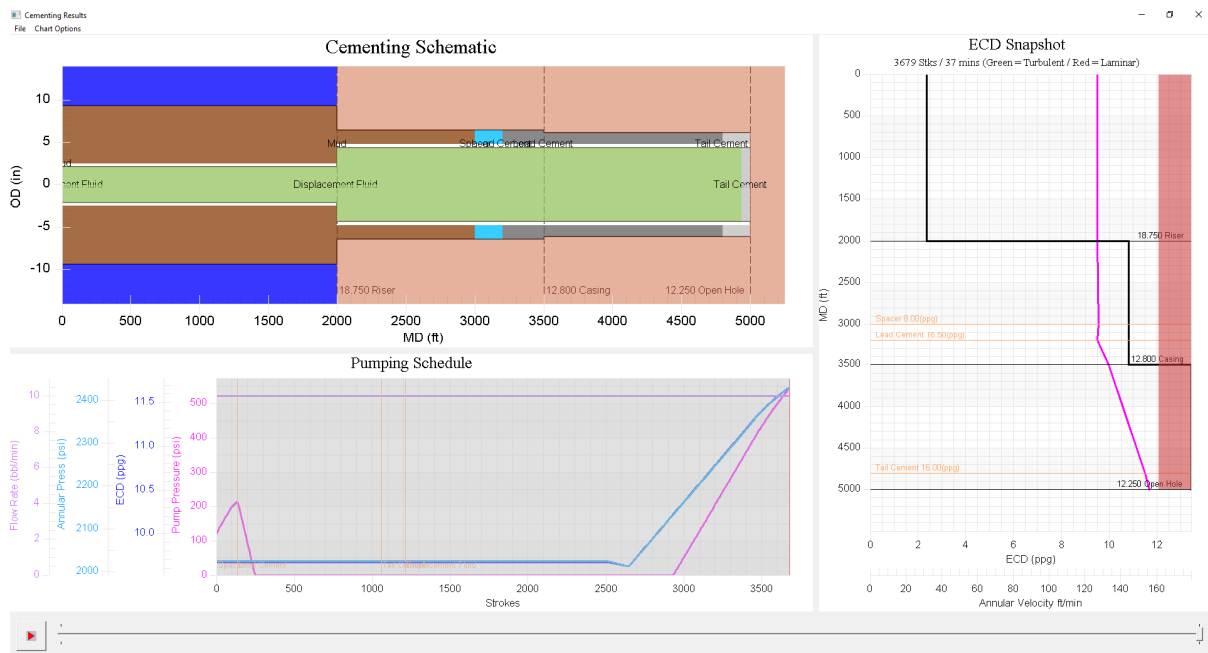
Shoe -> Float Dist (ft)

Shoe Track Capacity (bbls)

☒ Cementing with inner string

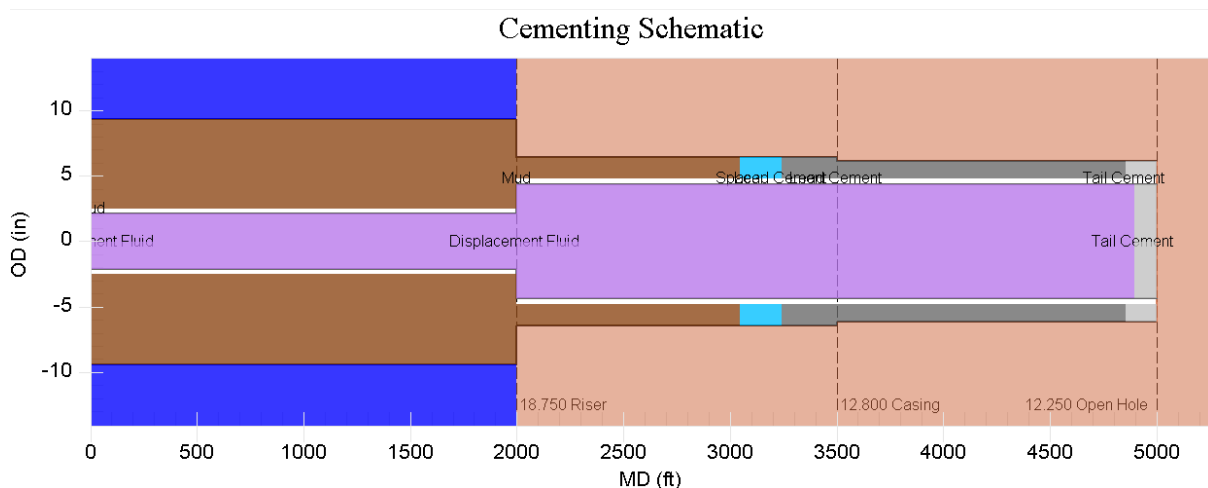
Calculate

6.0 – Cementing Results Dialog



The Cementing Results dialog displays all the information and results relevant to the cementing module. By utilising the scroll bar at the bottom of the dialog the user can view the three charts at different stages of the cement job.

6.1 – Cementing Schematic

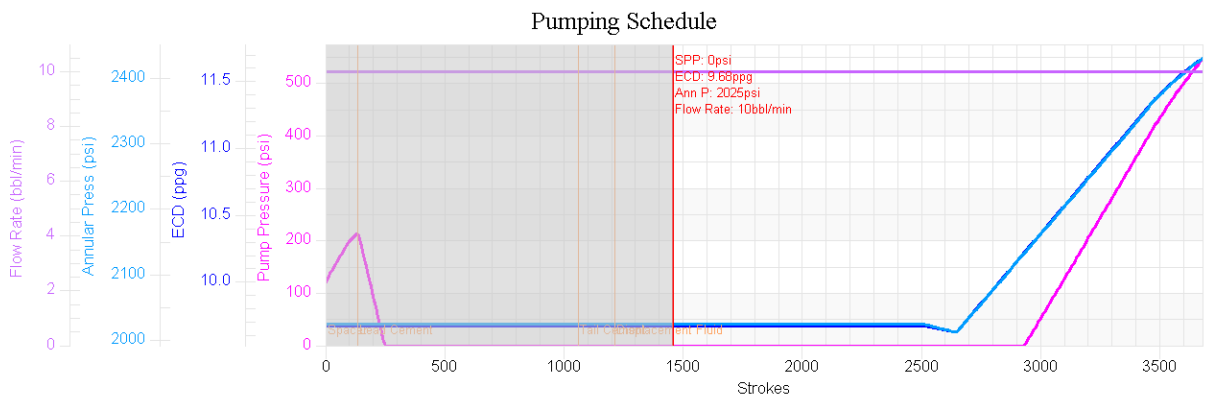


This is a visual representation of the well geometry, string and fluids at a given stage in the cement job, dictated by the position selected on the scroll bar. The values used to generate this schematic (MD, component OD & ID's and well geometry OD & ID's) are taken from the values entered in the **Drill String, Well Geometry and Fluids Tab**. The fluid labels can be toggled on or off by selecting **Chart Options** and checking or unchecking **Show Schematic Fluid Labels**.

- Changes in well geometry are marked by a label and dashed line.
- Areas out with the fluid flow path are white.

- Sea water is dark blue
- Drilling mud is brown.
- Spacer is light blue.
- Lead cement is dark grey.
- Tail cement is light grey.
- Displacement fluid is a variable colour.

6.2 – Pumping Schedule



The Pumping Schedule chart depicts:

- The annular pressure at the string depth entered in the volumes section
- The equivalent circulating density (ECD) at the string depth entered in the volumes section
- The pump pressure at surface at a given stage in the cement job
- The Flow Rate

All the above outputs are dictated by the position selected on the scroll bar.

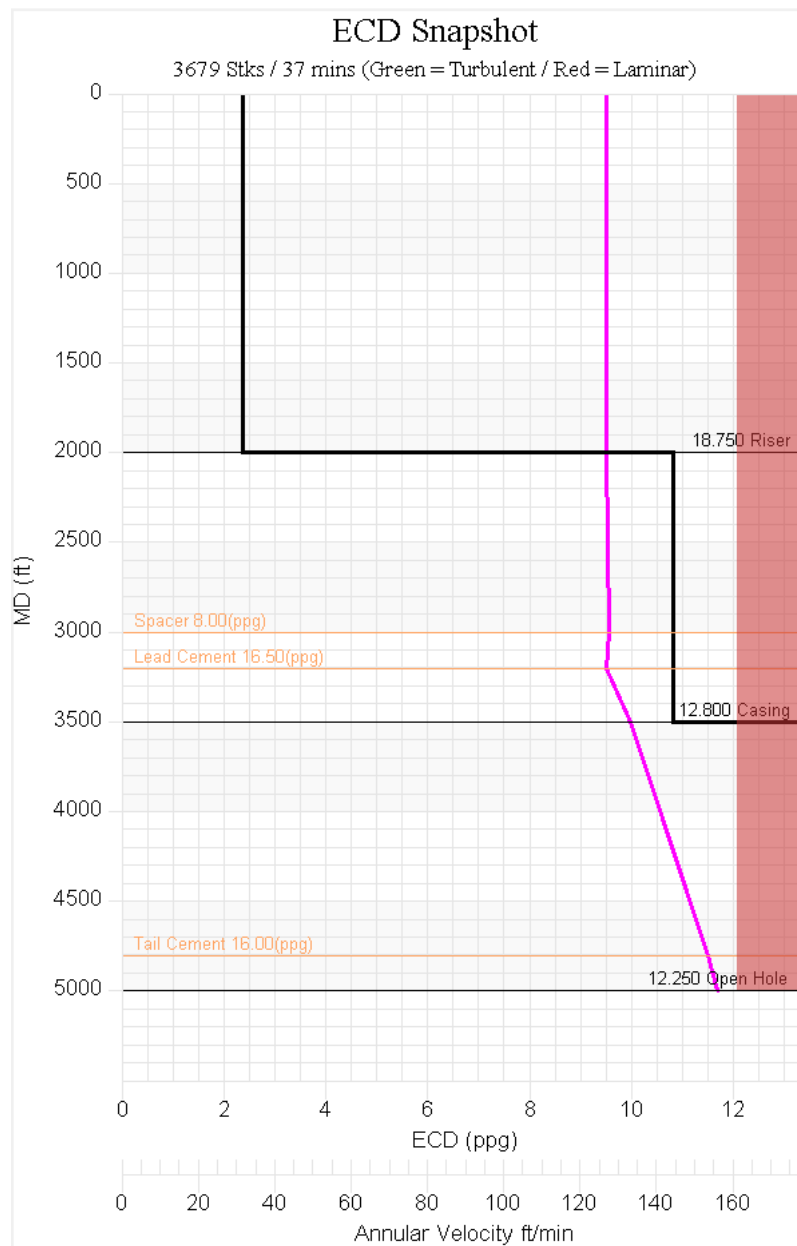
The X-axis can be toggled to display either Elapsed Time or Strokes by selecting **Chart Options** and checking or unchecking **X Axis – Strokes**.

6.3 – Cementing Results Dialog Scroll Bar



The position of the slider on the scroll bar dictates the stage of the cement job depicted on the Cementing Schematic, Pumping Schedule and ECD Snapshot. The user can click the play button for the slider to commence movement at a specific speed. This speed can be adjusted using the + and – keys to speed up and slow down the slider progression respectively. The user can then select the pause button to stop the slider at any point. The slider can also be manually dragged to any point in the scroll bar by the user.

6.4 – ECD Snapshot



The ECD Snapshot chart depicts the equivalent circulating density and the annular velocity, across all depths from surface to the string depth, at a given stage in the cement job, dictated by the position selected on the scroll bar.

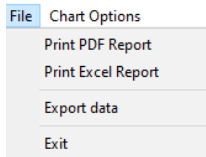
The right-hand side of the chart shows the flow regime across all depths from surface to the string depth, at a given stage in the cement job, dictated by the position selected on the scroll bar. Red is Laminar Flow and Green is Turbulent.

Additionally, markers display the respective depths of the top of the various fluids in the annulus and any changes in the well geometry.

7.0 – Outputs

Within the Cementing Results dialog, the user can output the following via the **file** menu:

- PDF Cementing Report
- Excel Cementing Report
- Export Data



7.1 – Print PDF Report

The user selects **File > Print PDF Report**. This generates a report which can be saved to pdf format.

Cementing Report

Innova Engineering - Cementing Report													
Project: Innova Cementing Riser					Description: 13 3/8" Casing Run								
Casing String													
#	Description	OD (in)	ID (in)	TJ OD (in)	TJ ID (in)	Weight (lb/ft)	Length (ft)	Total Length (ft)					
1	9.625 Casing (470Wt)	9.625	8.861	9.625	8.861	47	3000.000	3000.00					
2	8.5-106 (50)(16.5Wt) Drill Pipe	8.5	4.376	8.625	3.5	22.81	2000.000	8000.00					
Casing String Volumes													
Description	Capacity	Capacities & Displacements		Displacement		Tot. Displacement		Ann. Cap. bbls/ft					
		(bbl/ft)	(bbl)	(bbl/ft)	(bbl)	Riser 18.750"	Casing 12.800"	Open Hole 12.250"					
1	9.625 Casing (470Wt)	0.0712	219.6000	0.0148	91.4000	0.2616	0.0002	0.0590					
2	8.5-106 (50)(16.5Wt) Drill Pipe	0.0109	33.0000	0.0034	12.0000	0.3151	0.1320	0.1194					
Totals			253.4000		99.2000								
Well Geometry													
#	Type	MD (ft)	TVD (ft)	OD (in)	ID (in)								
1	Riser	3000.00	1923.840	26.000	18.750								
2	Casing	3500.00	2154.336	13.376	12.800								
3	Open Hole	5000.00	4009.118	12.25	12.250								
Well Volumes													
#	Description	Capacity bbls/ft	Tot Capacity bbls	Annular Volume bbls	String Capacity bbls	Steel Displacement bbls							
1	Riser 18.750"	0.3415	983.0000	630.2806	33.9075	16.3995							
2	Casing 12.800"	0.1902	256.8000	103.7488	108.8112	28.1816							
3	Open Hole 12.250"	0.1480	219.7000	85.4728	108.8112	28.1816							
Totals			1460.5000	819.5022	251.4000	69.2574							
Cementing Parameters													
Csg. Depth (ft)	Displacement (bbl)	Circ Flow Rate (gpm)	Pump Output (bbls/min)	Circ Stk Rate (Stk/min)	Hyd. Model	Flood Depth (ft)	Show Track Cap.	Inner String					
8000	Open Ended	50	0.121	11.79	Bingham	4875.00	2.30	Yes					
Circulation Times													
Time (min)		Strokes											
Trip down		210.30	2510.48										
Bottoms Up		696.07	8096.20										
Full Circulation		899.80	10608.68										
Cementing Volumes													
Description	Top (ft)	Bottom (ft)	Excess (%)	Volume (bbls)									
1	Spacer	3000	3200	0	13.83								
2	Lead Cement	3200	4800	0	93.27								
3	Tail Cement	4800	5000	0	11.16								
4													
Pumping Schedule													
Description	Vol. (bbls)	Strokes	Time (min)	WT. (ppg)	Pump Rate (bbls/min)	900	300	200	100	50	PV	YP	
1	Spacer	13.83	136	1	8.300	10.000					15.000	15.000	
2	Lead Cement	93.27	920	9	16.500	10.000					30.000	15.000	
3	Tail Cement	11.16	112	1	16.500	10.000					30.000	15.000	
4	Displacement Fluid	30.16	296	3	9.5	10.000					30.000	15.000	
Inner String													
Description	OD (in)	ID (in)	Length (ft)	Cap. (bbls/ft)	Total Cap. (bbls)								
1	3 1/2" Stringer	3.5	3.5	4875.00	0.0000715	30.17534							
Well Geometry													
Cementing Schematic													
110													
80													
50													
20													
-10													
-40													
-70													
-100													
0	9000	10000	11000	12000	13000	14000	15000	16000	17000	18000	19000	20000	
Cementing Schematic													

The report includes all the relevant data used in the cementing calculation and the charts displayed within the Cementing Results dialog, **as they appeared when the report was created**.

7.2 – Print Excel Report

The user selects **File > Print Excel Report**. This generates a report which can be saved to excel format.

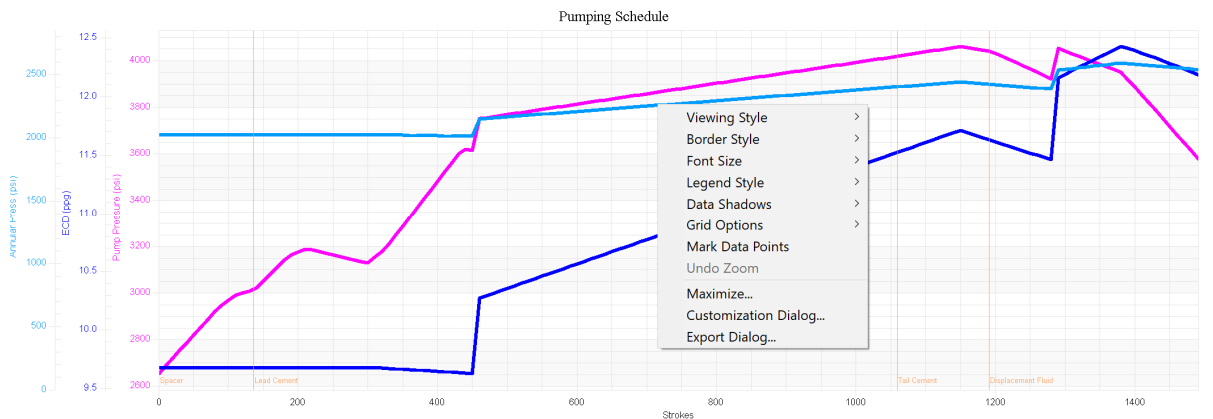
Project Innova Cementing Riser														
Description 13 3/8" Casing Run														
Casing String														
#	Description	OD (in)	ID (in)	TJ OD (in)	TJ ID (in)	Weight (lb/ft)	Length (ft)	Total Length (ft)						
1	9.625 Casing (47lb/ft)	9.625	8.661	9.625	8.661	47	3000	3000						
2	5.5-135 IEU(19.5lb/ft) Drill Pipe	5	4.276	6.625	3.5	22.61	2000	5000						
Casing String Volumes														
Description	Capacity (bbl/ft)	Tot. Capacity (bbl)	Displacement (bbl/ft)	Tot. Displacement (bbl)	Ann. Cap. bbls/ft Riser 18.750"	Casing 12.800"	Open Hole 12.250"							
1	9.625 Casing (47lb/ft)	0.0732	219.6	0.0188	56.4	0.2515	0.0558							
2	5.5-135 IEU(19.5lb/ft) Drill Pipe	0.0109	33.8	0.0094	18.8	0.1151	0.1194							
Totals			253.4		69.2									
Well Geometry														
#	Type	MD (ft)	TVD (ft)	OD (in)	ID (in)									
1	Riser	2000	1923.643	20	18.75									
2	Casing	3000	3194.939	13.375	12.8									
3	Open Hole	5000	4099.118	12.25	12.25									
Well Volumes														
#	Description	Capacity bbls/ft	Tot Capacity bbls	Annular Volume bbls	String Capacity bbls	Steel Displacement bbls								
1	Riser 18.750"	0.3415	683	630.2805	31.8675	18.8955								
2	Casing 12.800"	0.1592	238.8	103.7488	109.8112	25.181								
3	Open Hole 12.250"	0.1458	218.7	83.6728	109.8112	25.181								
Totals			1140.5	817.7022	253.4899	69.2574								
Cementing Parameters														
Csg. Depth (ft)	Displacement	Circ Flow Rate (gpm)	Pump Output (bbl/stk)	Circ Stk Rate (Stks/Min)	Hyd. Model	Float Depth (ft)	Shoe Track Cap. (bbl)	Inner String						
5000	Open Ended	50	0.101	11.79	Bingham	4970	2.2	Yes						
Circulation Times														
Time (min)		Strokes												
Top down		212.93												
Bottoms Up		8098.2												
Full Circulation		899.8												
		10608.66												
Cementing Volumes														
#	Description	Top (ft)	Bottom (ft)	Excess (%)	Volume (bbls)									
1	Spacer	3000	3200	0	33.83									
2	Lead Cement	3200	4800	0	93.27									
3	Tail Cement	4800	5000	0	11.16									
4														
Pumping Schedule														
#	Description	Vol. (bbls)	Strokes	Time (min)	Wt. (ppg)	Pump Rate (bbls/min)	600	300	200	100	6	3	PV	YP
1	Spacer	33.83	136	1	8	10							15	15
2	Lead Cement	93.27	923	9	16.5	10							30	15
3	Tail Cement	11.16	112	1	16	10							30	15
4	Displacement Fluid	30.18	298	3	9.5	10							20	10
Inner String														
#	Description	OD (in)	ID (in)	Length (ft)	Cap. (bbls/ft)	Total Cap. (bbls)								
1	3 1/2" Stinger	3.5	2.5	4970	0.0060715	30.17534								
Cementing Report Well Schematic Pumping Schedule ECD Snapshot														

The report includes all the relevant data used in the cementing calculation and the charts displayed within the Cementing Results dialog, as they appeared when the report was created. These charts are allocated their own sheet within the excel document.

7.3 – Export Data

This option allows the user to export the data used to generate the Pumping Schedule and ECD Snapshot Charts.

Appendix A – Context Menu



The context menu is available in every plot by right clicking anywhere on the plot. This allows the user to change certain aspects of the plot based on their requirements.

Viewing Style – Allows the user to select the desired Chart style.

Border Style – Allows the user to select the desired Border style of the chart.

Font Size – Allows the user to select the desired font size, which will affect all fonts on the chart including title and axis labels. Large, Medium or Small.

Plotting Method – Allows the user to select the way the line is plotted: Point, Line, Bar, Points + Line, Spline Area.

Data Shadows – Allows the user to select between off, shadow and 3D.

Grid Options – Allows the user to change the grid options in the chart.

Mark Data Points – Adds the data points relating to the data labels

Undo Zoom – Resets the zoom on the chart. Pressing the Z button has the same effect.

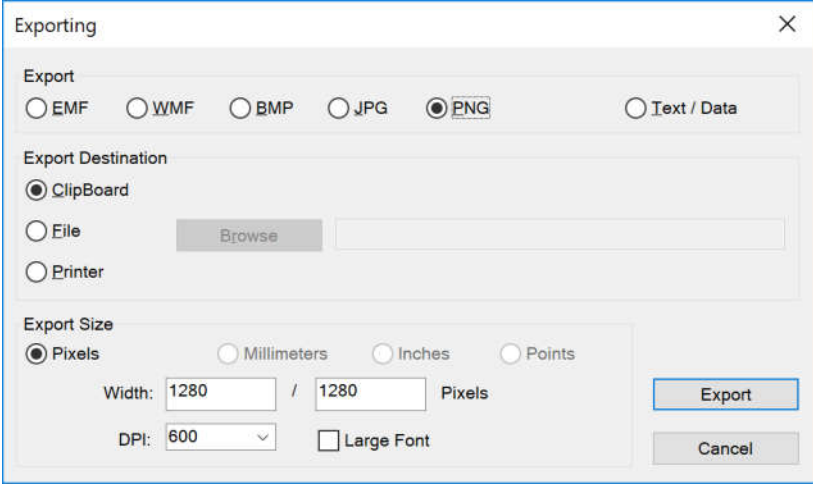
Maximise – Maximises the chart to fill the screen. Escape button exits this view.

Customization Dialog – Opens a dialog with more user definable chart options.

Export Dialogue – Allows the user to Export the chart using multiple image formats: EMF, WMF, BMP, JPG and PNG. The user has 3 options:

- **Clipboard:** exports directly to clipboard, allowing images to be quickly added to word, excel & PowerPoint documents
- **File:** Creates an image file of the chart which can be used on its own or imported into any suitable document
- **Printer:** Sends the chart to the printer

The user can also choose the relevant Width, Pixels and DPI to use for the export. For Clipboard and File options, Pixels is the only available selection. When Printer is selected, the Millimetres, Inches and Points options become available to select.



The image shows a software dialog box titled "Exporting" with a close button (X) in the top right corner. The dialog is organized into three main sections: "Export", "Export Destination", and "Export Size".

- Export:** This section contains five radio buttons for file formats: EMF, WMF, BMP, JPG, and PNG. The PNG option is selected, indicated by a filled circle. There is also a radio button for "Text / Data".
- Export Destination:** This section contains three radio buttons: "Clipboard", "File", and "Printer". The "Clipboard" option is selected. Next to the "File" option is a "Browse" button and an empty text input field. The "Printer" option is currently disabled.
- Export Size:** This section contains four radio buttons for units: "Pixels", "Millimeters", "Inches", and "Points". The "Pixels" option is selected. Below these are two input fields for "Width", both containing the value "1280", separated by a forward slash. To the right of these fields is the label "Pixels". Below the width fields is a "DPI" label followed by a dropdown menu showing "600" and a "Large Font" checkbox which is currently unchecked.

At the bottom right of the dialog are two buttons: "Export" and "Cancel".