

NovoBPT

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About



NovoBPT

This software is designed for correction, conversion and correlation of Becker Penetration Test (BPT) to Standard Penetration Test (SPT).

Although all efforts have been undertaken to ensure that this software is of the highest possible quality and that the results obtained are correct, the authors do not warrant the functions contained in the program will meet your requirements or that the operation of the program will be uninterrupted or error-free. The authors are not responsible and assume no liability for any results or any use made thereof, nor for any damages or litigation that may result from the use of the software for any purpose. All results to be verified independently by user.

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Vancouver, Canada

License Agreement

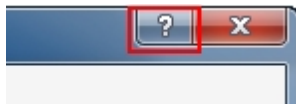
View our online [End User License Agreement](#)

Licensing Help

View our online [Licensing Help](#)

Using Help

Help button is placed at the top-right corner of all pages, as shown on this screenshot. In order to load the help content associated with the page please click on the question mark button.



Units System

This version of NovoBPT supports the following unit systems:

- Metric units (kg, m, cm)
- US CUstomary units (lb, ft, in)

You can set the unit system on the [preferences](#) page.

References

- 1- Energy Measurements and Correlations of the Standard Penetration Test (SPT) and the Becker Penetration Test (BPT), 1993, Alexander Sy, R.G. Campanella (UBC)
- 2- Becker and Standard Penetration Tests (BPT-SPT) Correlations with Consideration of Casing Friction, Canadian Geotechnical Journal 1994, Alexander Sy, R.G. Campanella (UBC)
- 3- BPT-SPT Correlations for Evaluation of Liquefaction Resistance in Gravelly Soils, ASCE National Convention 1995, Alexander Sy, R.G. Campanella, R.A. Stewart

Getting Started ...

Follow these steps when starting a new analysis with NovoBPT:

- Step 1:** Choose correlation method and casing friction settings. If friction data is available, enter weight of casing, etc.
- Step 2:** Enter BPT blow counts in the table or [import](#) data from text file.
- Step 3:** As you enter data, friction along the casing and pressure-corrected BPT blow counts are calculated and shown on the table.
- Step 4:** Check the graphs for variation of results with depth of the testhole.
- Step 5:** [Print](#) or [export](#) the results as needed.

menubar

click for help

toolbar

Click to see correlated N60 chart

Correction and correlation charts

Depth (m)	BPT	Bounce Chamber Pressure (kPa)	Pull Out Reading (kN)	Net Friction Rs (kN)	Nb30	N60
1.83	5	89.6		22.2	5*	9
2.13	8	89.6		25.9	7	12
2.44				29		
2.74				33.4	5	8
3.05	15	68.9		37.3	7	10
3.35	21	137.9		41	21	35
3.66	24	117.2		44.8	17	27
3.96	19	110.3	52	48.5	14	19
4.27	18	103.4		49.3	12	16
4.57	15	103.4		50	11	14
4.88	14	110.3		50.8	12	14
5.18	12	103.4		51.5	10	12
5.49	11	96.5		52.3	9	10
5.79	10	89.6		53	7	9
6.1	10	68.9		53.8	6	7
6.4	9	68.9		54.5	5	6
6.71	8	68.9		55.3	5	6
7.01	10	68.9		56	6	7
7.32	6	68.9		56.8	5	5
7.62	6	68.9		57.6	5	5

* No pressure correction is carried out if the point falls below curve A-A

C:\my programming files\Source Codes\VB.Net\NovoBPT\bin\Example1.bpt

Metric Licensed To: Novo Tech

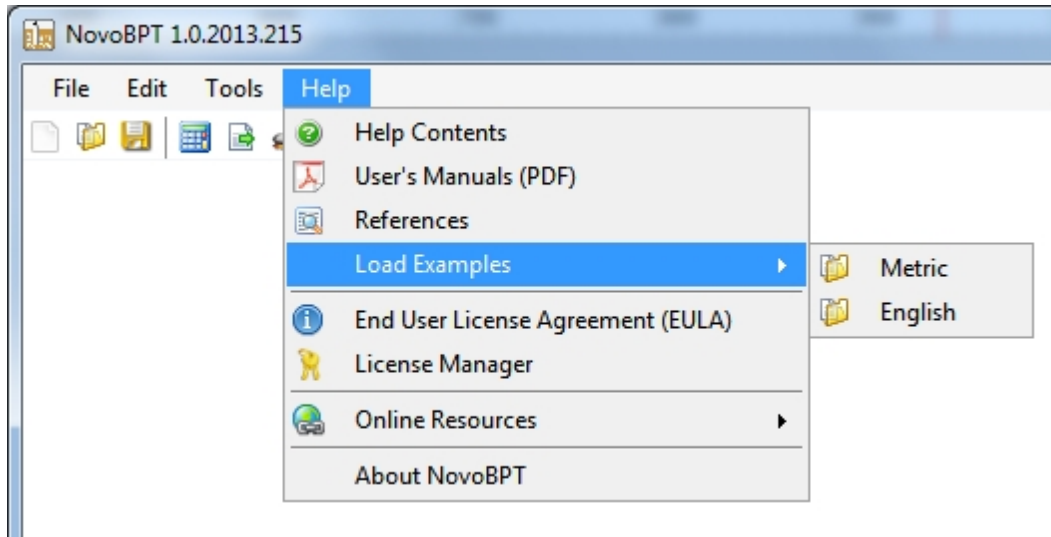
please note that:

- by [clicking on any chart](#) you will have access to several options for printing and exporting the chart.
- ? sign at the [top-right corner](#) of each page, opens up the corresponding help page.

- analysis files are saved with *.BPT extension and the complete file path is shown at the bottom of the page.

Loading Example Projects

NovoBPT comes with two example file in Metric and English unit systems. In order to load the example projects choose **File**→**Load Examples** menu and select your desired units system from the sub-menus.



Changing Units System

NovoBPT supports both Metric and US Customary units. To switch between units system, please use **Tools**→**Options** menu. You should restart the program for the new units system to take effect.

Starting a New Project

In order to start a new project, choose **File**→**New** menu or click on New icon from the top toolbar.

How to Input Data

In order to enter data required for Becker penetration test processing, you need to enter the following sections:

Correlation Method: Choose from the following methods from the following list:

- Alex Sy and Campanella, 1993b (takes casing friction in to account)
- Harder and Seed, 1986 (does not take casing friction in to account)

See [references](#) for detailed description of each method.

Casing Friction: The following options are available:

- In-situ Measurements: You need to enter casing friction measurements. NovoBPT will apply linear interpolation between readings. If this options is selected, user must enter weight of drill bit and weight of casing per unit length.
- No Friction: This option is only applicable to Harder and Seed, 1986method.
- Sandy Material (Alex Sy, 1997): Friction is estimated based on Alex Sy, 1997 proposed

equation $R_s = 9.7 * Z$ where Z is depth in metres and R_s is friction is in kPa.

- Gravelly Material (Alex Sy, 1997): Friction is estimated based on Alex Sy, 1997 proposed equation $R_s = Z + 25 * \sqrt{Z}$ where Z is depth in metres and R_s is friction is in kPa.

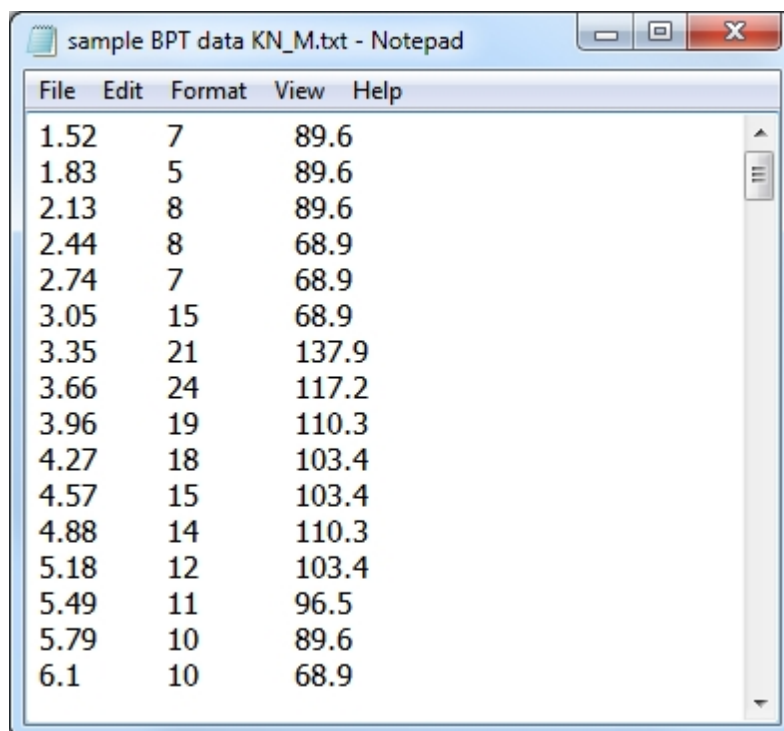
BPT Data: Enter Becker penetration test data in the table. This comprise depth, BPT blow counts and pressure readings. If friction is measured at specific depths, enter the friction in corresponding cells and leave the rest of cells in friction column empty. NovoBPT will automatically interpolate frictions in other depths. Then at each depth, net friction is calculated as below:

$$\text{'Net Friction'} = \text{'Measured Friction'} - (\text{'Weight of Bit'} + \text{'Weight of Scale Coupler'} + \text{'Weight of Casing Per Unit Length'} * Z)$$

Importing Data From Text File

In case there are large number of Becker penetration test records, you may import data from Text files (*.txt) by pressing the folder button located above the table. The Text file should have the following format:

one record per line and three numbers on each line separated by space, comma or tab. For instance, if your BPT data is stored in a Text file, it looks like the following:



File	Edit	Format	View	Help
1.52	7	89.6		
1.83	5	89.6		
2.13	8	89.6		
2.44	8	68.9		
2.74	7	68.9		
3.05	15	68.9		
3.35	21	137.9		
3.66	24	117.2		
3.96	19	110.3		
4.27	18	103.4		
4.57	15	103.4		
4.88	14	110.3		
5.18	12	103.4		
5.49	11	96.5		
5.79	10	89.6		
6.1	10	68.9		

The first column carries depth (m / ft), second column carries BPT and third column being bounce chamber pressure reading (kPa / psf). Text files can be easily generated and edited by Windows **Notepad** or by exporting your data from spreadsheet applications such as Microsoft Excel into text format. Two sample text files can be found in NovoBPT installation folder (*sample BPT data KN_M.txt* and *sample BPT data LB_FT.txt*).

Project Information

In order to edit project information, choose **Edit** → **Project Info.** menu.

Company Information

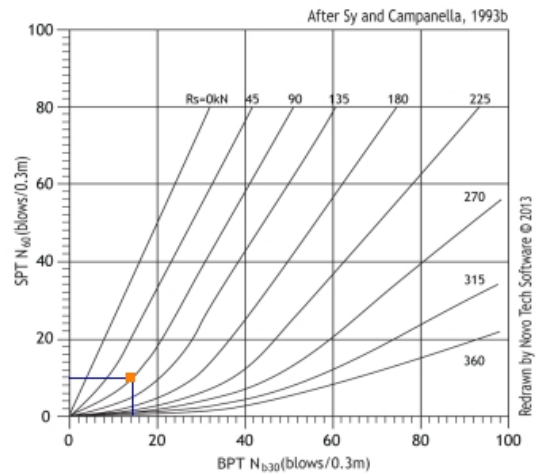
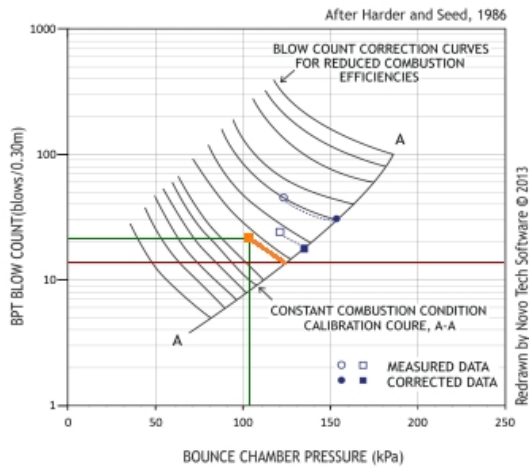
In order to edit company information, choose [Edit](#)→[Company Info](#). menu. This includes choosing company name, logo, etc which will be shown in the reports.

Correction & Correlation Charts

As user enters BPT data or clicks on a row of the table, data is shown on the pressure correction and N_{60} correlation charts. The following illustrates the charts:

Enter BPT data including pull-out test measurements (if available):

Depth (m)	BPT	Bounce Chamber Pressure (kPa)	Pull Out Reading (kN)	Net Friction R_s (kN)	Nb30	N60
16.76	12	103.4		83.9	10	7
17.07	18	117.2		84.5	15	12
17.37	22	103.4		85.2	14	10
17.68	19	103.4		85.8	12	9

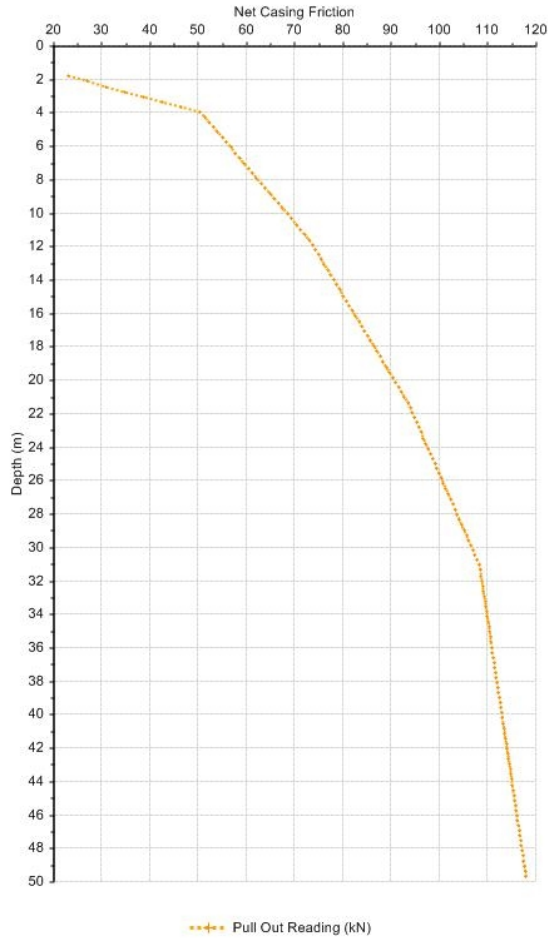


At a depth of 17.37 m, BPT=22 and bounce chamber pressure $P = 103.4$ kPa. This point (BPT,P) is shown on the left chart by an orange square and two green lines. An orange line parallel to the closest contour shows the intersection with line A-A. The horizontal red line is drawn from this point to find the corrected BPT on vertical axis.

This corrected BPT is then used along with the net friction on the right chart to correlate BPT to N_{60} .

Effect of Casing Friction

If friction is measured at specific depths, enter the friction in corresponding cells of the table and leave the rest of cells in friction column empty. NovoBPT will automatically interpolate frictions in other depths. Then at each depth, net friction is calculated as below:

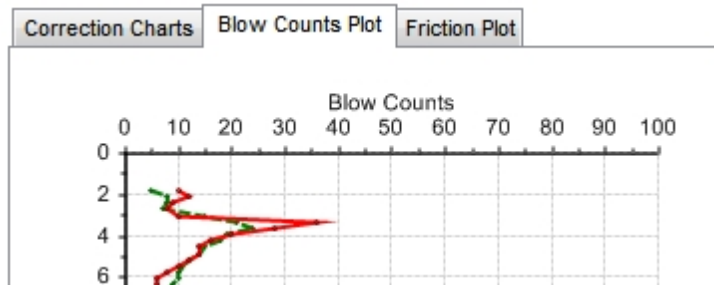


'Net Friction' = 'Measured Friction - ('Weight of Bit' + 'Weight of Scale Coupler' + 'Weight of Casing Per Unit Length' * Z)

To view the plot of net casing friction versus depth, click on the 'Friction Plot' tab at the right side of the page.

Analysis Results

NovoBPT automatically carries out the BPT corrections and correlations as you enter data. The main output (i.e. correlated SPT blow counts N60) is shown on the 'Blow Count Plots' tab.



If you change the 'Casing Friction' data, please click on the blue 'Apply' link to re-calculate the results.

Working with Graphs

Please click on [this link](#) to view the online help for this item.

Exporting the Results

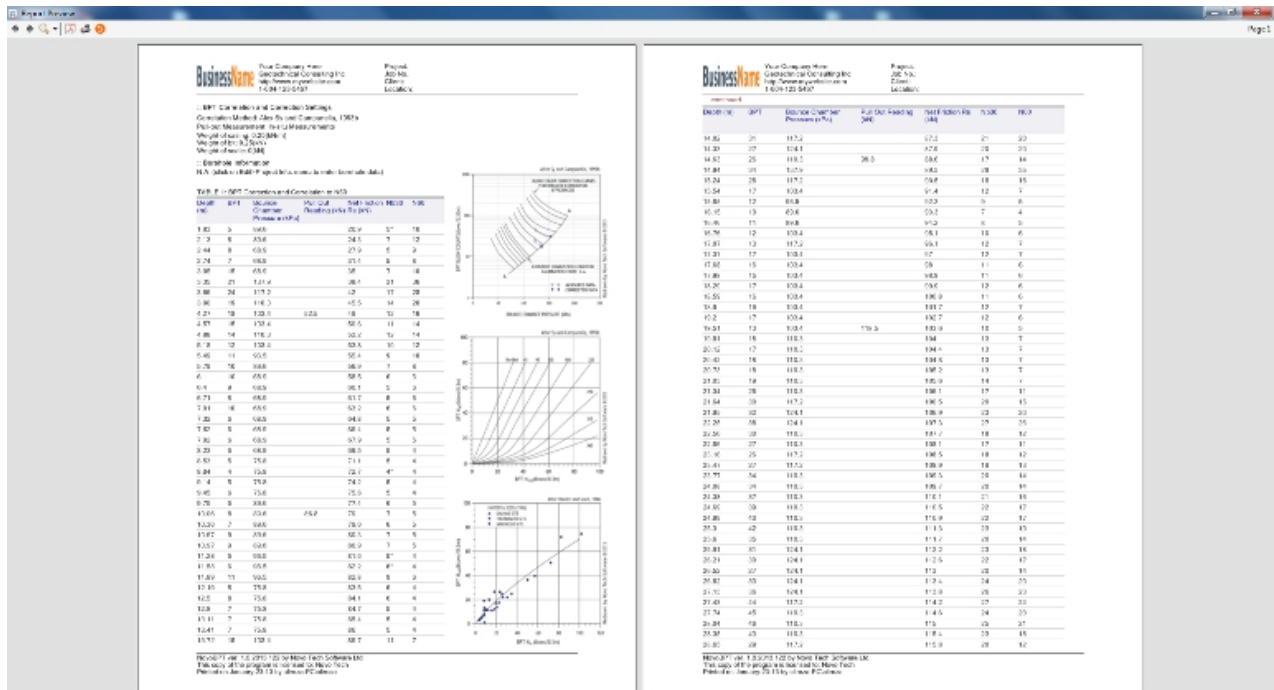
Please click on [this link](#) to view the online help for this item.

Reporting

After performing the calculations if a report is needed, you can use of the following two options:

1. Exporting the table to Microsoft Excel file and graphs to image file. See how you can do this by reading [this article](#).
2. Use **File**→**Report Preview** menu to generate the report. This report includes input data and correlated N60 values plus graphs.

Please note that company information will be shown on the reports and can be edited from **Edit**→**Company Info.** menu.



On report preview page, you can directly print the report or save it as PDF file.

Saving Project

In order to save your project data, choose **File**→**Save** menu or click on the disk icon from the top toolbar. If this is the first time you save this project, you will need to specify the location on your hard drive or network where the file is to be saved.

To save the file under a different name, choose **File**→**Save As ...** menu.

Opening Projects

In order to load a previously saved project, choose **File**→**Open** menu or click on the folder

icon from the top toolbar. You can also access to the most recent files loaded in NovoBPT by using **File**→**Open recent files ...** menu.

Options

The following options are currently available:

Decimal Digits: Specifies number of decimals shown when calculating net friction.

Units System: Select units system used in NovoBPT for data entry and output results.

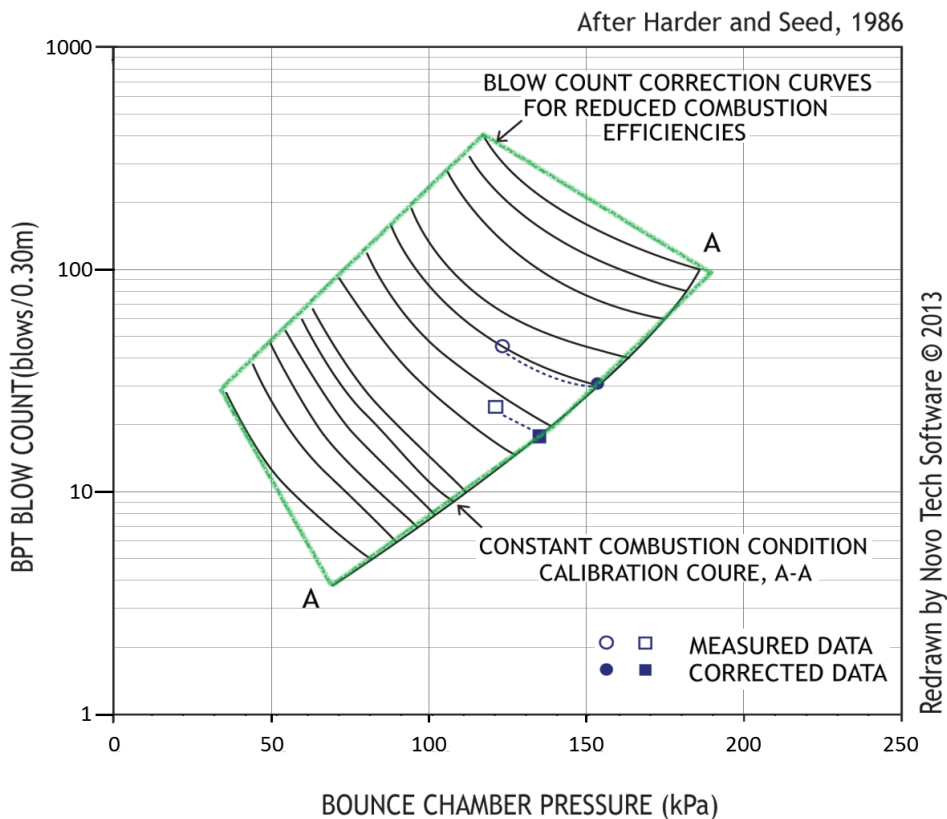
Round corrected BPT and correlated N60: If selected, all corrected and correlated N60 values are rounded to nearest integer value, otherwise one decimal is used.

Sources of Invalid Results

Some limitations apply to the use of bounce chamber pressure correction chart in NovoSPT. For example:

- If the point representing the field BPT and pressure falls under line A-A (constant combustion line), NovoBPT will not correct the field BPT and will return same field BPT number with an * sign beside it in the table.
- If the point is located outside the contours on the chart, no correction is applied on the field BPT and NovoBPT will return same number with # sign (e.g. 5#).

Points outside the green polygon shown below is where no pressure correction is carried out by NovoBPT.



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