



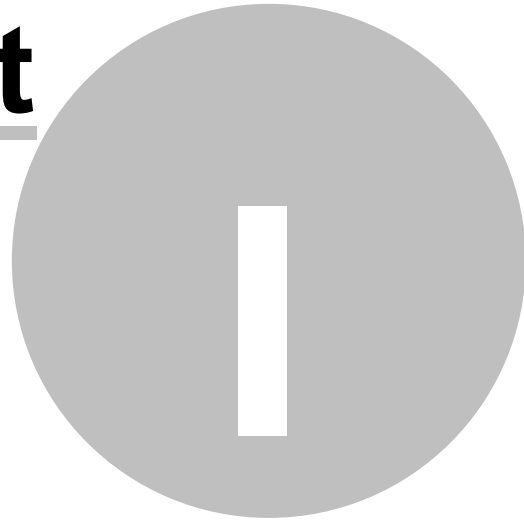
Air Vibration Predictor Training Manual

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Top Level Intro

This page is printed before a new
top-level chapter starts

Part

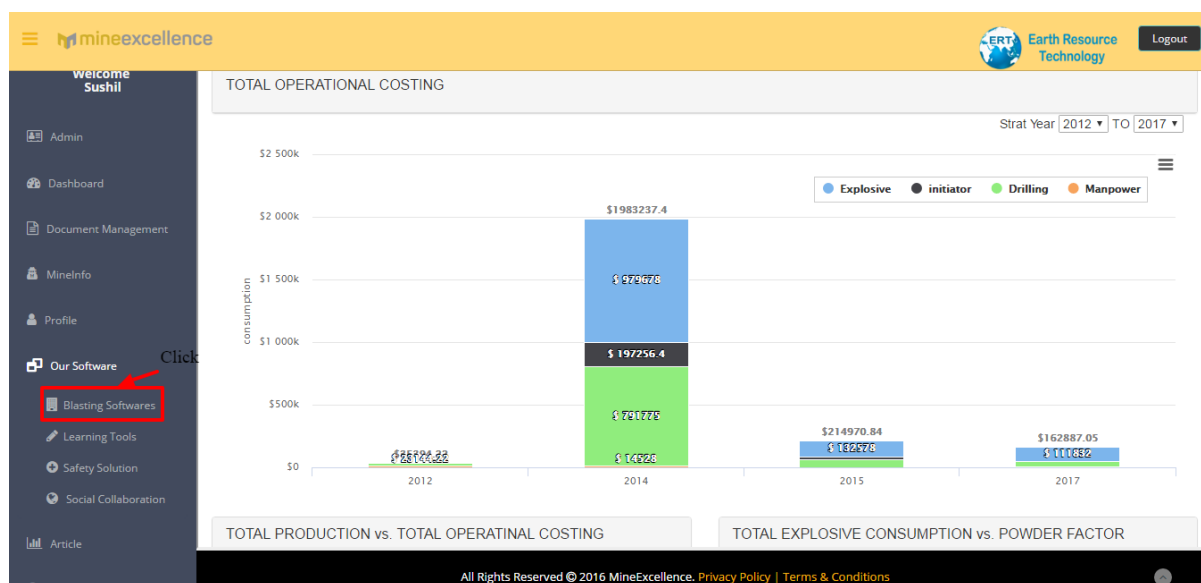


1 Start the Application

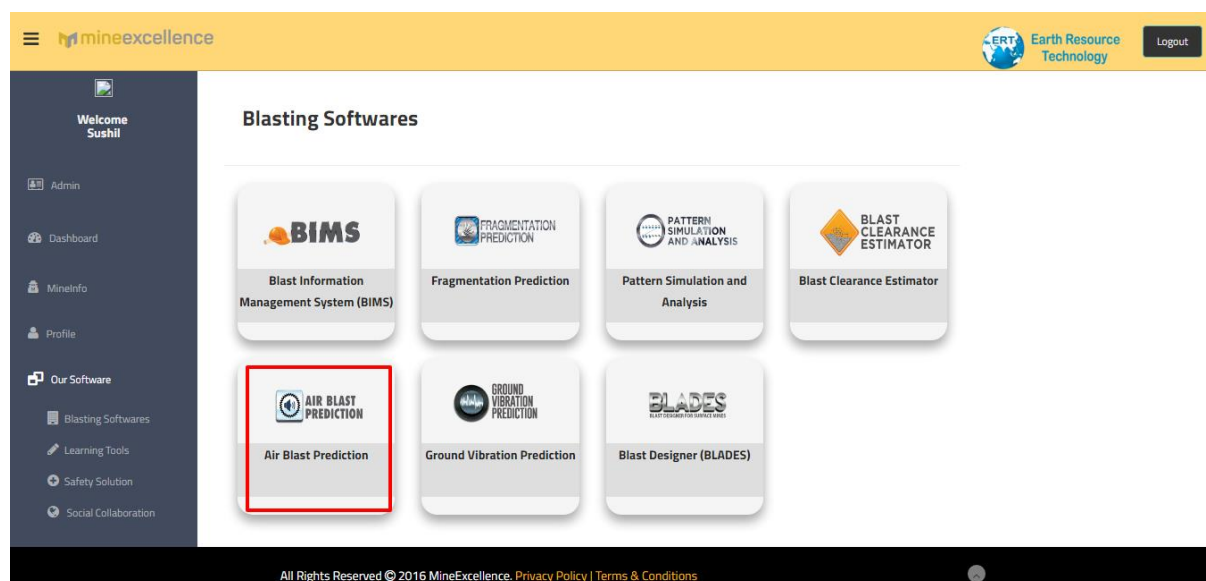
You can start the Air Vibration software by once logging in from the Mine Excellence Site.

1.1 Air Vibration Architecture

Once you login from the Mineexcellence site, a dashboard will be displayed as shown in figure below.



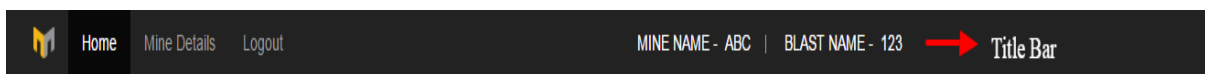
On Click of Blasting Software link available on the left side of the dashboard you will be redirected to the list of software available in the Mineexcellence as shown in fig.



On click of Air Vibration Prediction, you will be redirected to Air Vibration Prediction page as shown in figure below.

1.1.1 Menu Bar

This is top most part of the screen. This bar displays menu items defining the basic functionality of the software. Following are menu items are present in the menu bar:



1. Home - Redirect user to the Home Page of the website
2. Mine Detail - Here we can edit the Mine Name and the Blast location
3. Logout - User can logout by click of this button
4. Mine Name - Name of the mine
5. Blast Name - Name of the blast

Top Level Intro

This page is printed before a new
top-level chapter starts

Part



2. General Functions

Air Vibration incorporates several functions-

2.1 Mine Details

This function allow user to save mine details which include Mine Name and Blast Location. This information has to be filled as it is needed for generating report. To save mine details, click on Edit Mine details. Once Mine Details are saved, we can close this pop up by clicking simply on Close button.



The screenshot shows a light blue dialog box with a white background. It contains two input fields: 'Mine name' with the value 'ABC' and 'Blast location' with the value '123'. Below the input fields are two buttons: 'Edit Mine Details' and 'Close'.

2.2 Design Parameters

Following parameters are required to predict the Air Vibration These includes:

- a. Sonic Law Generation- This module is to use the air vibration measurement to generate Sonic Laws for a particular site and to produce graphs for predictions especially for the limiting the blasting nuisances. Inputs are:

- Charge
- Distance From Blast
- Sound Intensity(DBL)
- Plot symbol
- Suppress
- Date
- Monitor

Whenever user click on Sonic Law Generation a page will be displayed as shown below:

The screenshot shows the 'Sonic Law Generation' interface. At the top, there are navigation links: Home, Mine Details, and Logout. The page title is 'MINE NAME - ABC | BLAST NAME - PIT1'. Below the navigation, there are tabs: 'Sonic Law Generation | Sonic Vibration Table | Sonic Vibration Plot | Vibration Limit Table | Contour'. The main content area is divided into two panels. The left panel contains a table with the following columns: Sno, Charge (Kg), Distance From Blast (m), Sound Intensity (dBL), Plot Symbol, Supress, Date, and Monitor. The table has one row with the following values: 1, [input field], [input field], [input field], [input field], [input field], mm/dd/yyyy, and [input field]. Below the table, there are buttons for 'Add Rows' and 'Set Default'. There are also checkboxes for 'Regression Analysis', 'Coefficient Values', 'Forced Exponent', and 'Confidence Interval'. The 'Confidence Interval' has two radio buttons: '95%' (selected) and '99%'. There is a 'Refresh Chart' button at the bottom of the left panel. The right panel is a large light blue area with the text: 'For generation, fill data in table and Refresh Chart.' At the bottom of the page, there is a footer: 'Blasting Predictors & Control Tools 3.3.0 Developed by Continuous Excellence'.

The user can use the default parameters by clicking on Set Default button and edit these parameters as per their operational requirement.

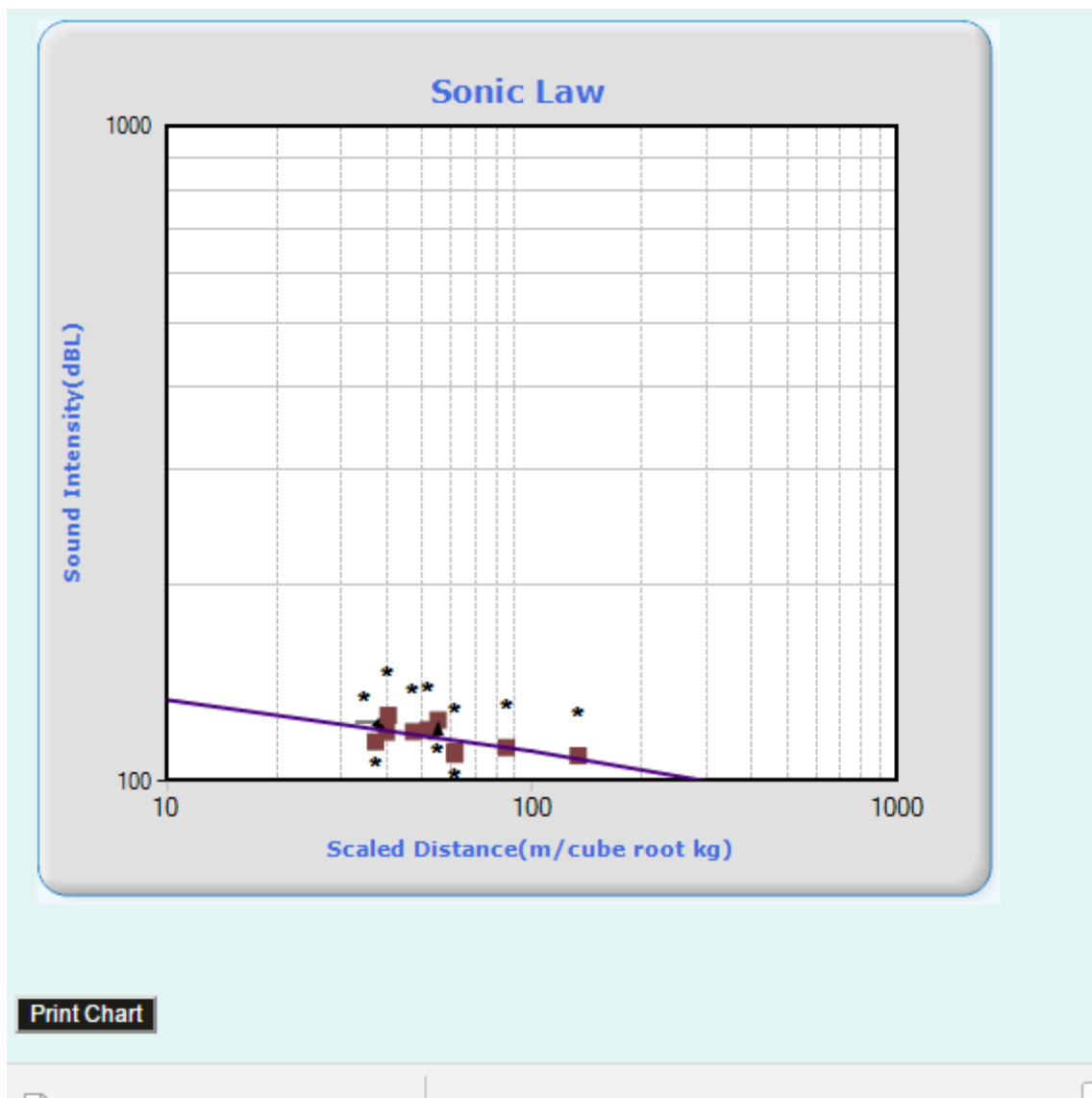
The screenshot shows the 'Sonic Law Generation' interface with three rows in the table. The table has the following columns: Sno, Charge (Kg), Distance From Blast (m), Sound Intensity (dBL), Plot Symbol, Supress, Date, and Monitor. The table has three rows with the following values: 1, 24.01, 150, 120, *, [input field], mm/dd/yyyy, [input field]; 2, 43.00, 215, 111.2, *, [input field], mm/dd/yyyy, [input field]; 3, 43.00, 215, 110.2, *, [input field], mm/dd/yyyy, [input field]. Below the table, there are buttons for 'Add Rows' and 'Set Default'. There are also checkboxes for 'Regression Analysis', 'Coefficient Values', 'Forced Exponent', and 'Confidence Interval'. The 'Confidence Interval' has two radio buttons: '95%' (selected) and '99%'. There is a 'Refresh Chart' button at the bottom of the left panel. The right panel is a large light blue area with the text: 'For generation, fill data in table and Refresh Chart.' At the bottom of the page, there is a footer: 'Blasting Predictors & Control Tools 3.3.0 Developed by Continuous Excellence'.

If a User wants to add rows he can add the same by clicking simply on ADD ROWS button, as shown:

For deleting any row, click on delete button.

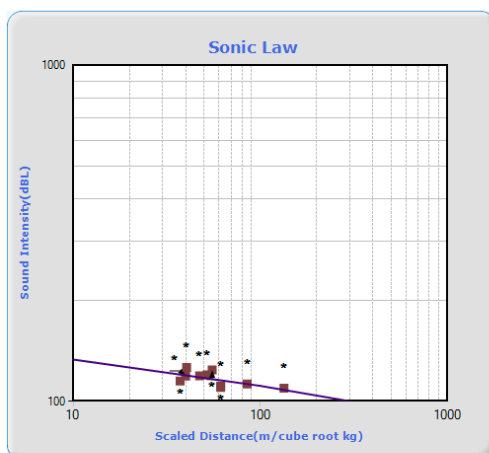
The screenshot displays the 'Sonic Law Generation' interface. At the top, there are navigation links: Home, Mine Details, and Logout. The page title is 'MINE NAME - ABC | BLAST NAME - PIT1'. Below the navigation, there are tabs for 'Sonic Law Generation', 'Sonic Vibration Table', 'Sonic Vibration Plot', 'Vibration Limit Table', and 'Contour'. The main content area is divided into two sections. On the left, there is a table with the following columns: Sno, Charge (Kg), Distance From Blast (m), Sound Intensity (dBL), Plot Symbol, Supress, Date, and Monitor. The table contains three rows of data, with the third row (Sno 11) highlighted by a red arrow. Below the table, there are buttons for 'Add Rows' and 'Set Default'. There are also checkboxes for 'Regression Analysis', 'Coefficient Values', 'Forced Exponent', and 'Confidence Interval' (with radio buttons for 95% and 99%). A 'Refresh Chart' button is located at the bottom of this section. On the right, there is a large empty graph area with a red text prompt: 'For generation, fill data in table and Refresh Chart.'

After clicking on Refresh Chart button, the result will be displayed in the graph format. In which x-axis defines the Scaled Distance (m/square root kg) and y axis will show the Velocity (mm/s).



On clicking print chart button, chart will be display.

Mine Name : ABC
 Exponent : -1.101
 Constant : 1.179



Air Vibration Predictor © Earth Resource Technology
 Designed By: <http://earthresourcetechology.com/>

2.2.1 Regression Analysis

Regression Analysis check box is provided. When user check the regression analysis check box and click on refresh chart button, chart will be displayed.

In the graph, x-axis defines the Scaled Distance (in m/cube root kg) and y axis will show the Velocity (in dBL).

Home Mine Details Logout
MINE NAME - ABC | BLAST NAME - PIT1

Sonic Law Generation | Sonic Vibration Table | Sonic Vibration Plot | Vibration Limit Table | Contour

Sno	Charge (Kg)	Distance From Blast (m)	Sound Intensity (dBL)	Plot Symbol	Supress	Date	Monitor
1	24.01	150	120	*	<input type="checkbox"/>	mm/dd/yyyy	Delete
2	43.00	215	111.2	*	<input type="checkbox"/>	mm/dd/yyyy	Delete
3	43.00	215	110.2	*	<input type="checkbox"/>	mm/dd/yyyy	Delete

Regression Analysis

Coefficient Values

Forced Exponent

Confidence Interval 95% 99%

Sonic Law

Print Chart

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2.2.2 Coefficient Values

Coefficient values check box is provided. When user check the Coefficient values check box and click on refresh chart button, chart will be displayed.

The screenshot displays the 'Sonic Law Generation' interface. On the left, a table lists three rows of data:

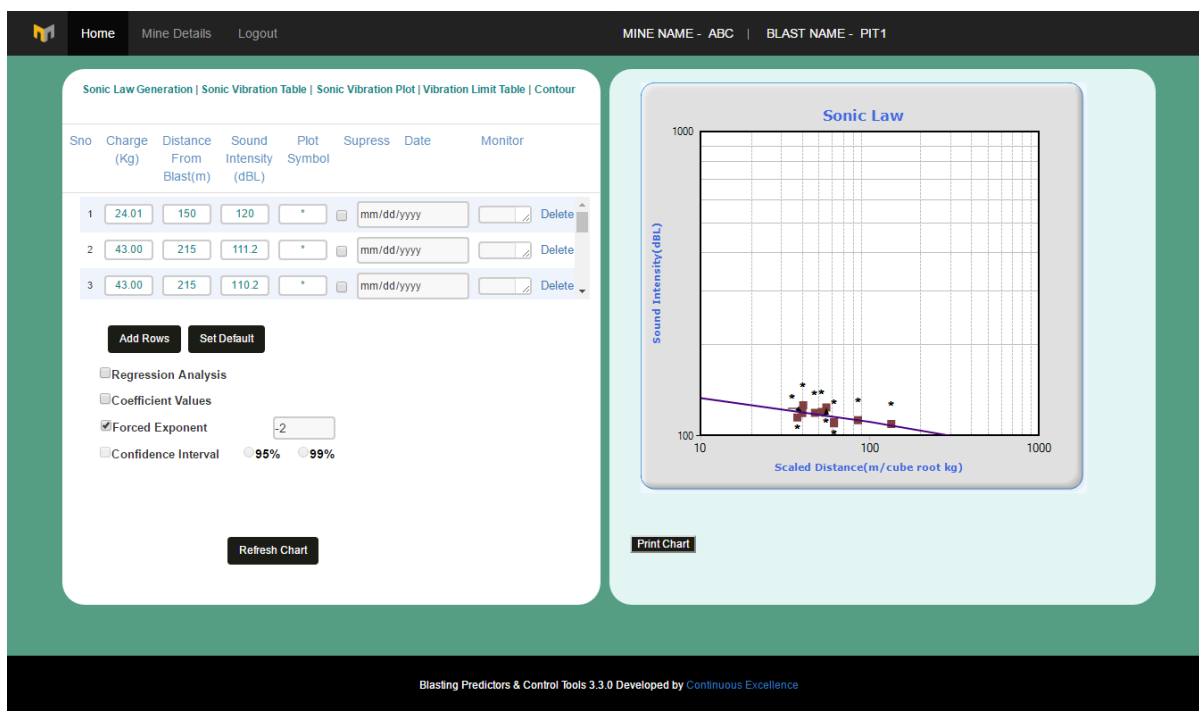
Sno	Charge (Kg)	Distance From Blast(m)	Sound Intensity (dBL)	Plot Symbol	Supress	Date	Monitor
1	24.01	150	120	*	<input type="checkbox"/>	mm/dd/yyyy	Delete
2	43.00	215	111.2	*	<input type="checkbox"/>	mm/dd/yyyy	Delete
3	43.00	215	110.2	*	<input type="checkbox"/>	mm/dd/yyyy	Delete

Below the table, there are controls for 'Add Rows', 'Set Default', and checkboxes for 'Regression Analysis', 'Coefficient Values' (checked), 'Forced Exponent', and 'Confidence Interval' (95% selected). A 'Refresh Chart' button is located at the bottom of this section.

On the right, a log-log plot shows 'Sound Intensity(dBL)' on the y-axis (ranging from 100 to 1000) and 'Scaled Distance(m/cube root kg)' on the x-axis (ranging from 10 to 1000). The plot contains several data points (black asterisks) and a purple regression line. Above the plot, the following statistics are displayed: EXPONENT: -1.101, CONSTANT: 1.179, CORRELATION COEFFICIENT: -0.63. A 'Print Chart' button is located below the plot.

2.2.3 Forced Exponent

When user check the forced exponent check box, a text box will appear in front of it and that should have negative value. After clicking on refresh chart button, chart will be displayed as shown.



In the graph, x-axis defines the Scaled Distance (in m/cube root kg) and y axis will show the Sound Intensity (in dBL).

2.2 Sonic Vibration Table

- Sonic Law Exponent
- Sonic Law Constant
- Range

On click of Display button, result will be displayed in the Table format. A user can use the default parameters by clicking on Set Default button and edit these parameters as per their operational requirement. User can select either high range or low range. If user select low range and click on display button result will be displayed for that of Low Range.

Home Mine Details Logout MINE NAME - ABC | BLAST NAME - PIT1

Sonic Law Generation | Sonic Vibration Table | Sonic Vibration Plot | Vibration Limit Table | Contour

Sonic Law Exponent:

Sonic Law Constant:

High Range Low Range

Determination of Sound Intensity(dBL) based on Charge and Distance

Charge (kg)	Distance(m)										
	5	10	20	50	100	200	500	1000	2000	5000	10000
0.25	135.6	128.97	122.35	113.58	106.95	100.33	91.56	84.93	78.31	69.54	62.91
0.5	137.81	131.18	124.55	115.79	109.16	102.53	93.77	87.14	80.51	71.75	65.12
0.75	139.1	132.47	125.84	117.08	110.45	103.82	95.06	88.43	81.8	73.04	66.41
1	140.02	133.39	126.76	118	111.37	104.74	95.98	89.35	82.72	73.96	67.33
1.5	141.31	134.68	128.05	119.29	112.66	106.03	97.27	90.64	84.01	75.25	68.62
2.5	142.94	136.31	129.68	120.92	114.29	107.66	98.9	92.27	85.64	76.88	70.25
5	145.14	138.51	131.89	123.12	116.49	109.87	101.1	94.47	87.85	79.08	72.45
7.5	146.43	139.81	133.18	124.41	117.79	111.16	102.39	95.77	89.14	80.37	73.75
10	147.35	140.72	134.09	125.33	118.7	112.07	103.31	96.68	90.05	81.29	74.66
15	148.64	142.01	135.38	126.62	119.99	113.36	104.6	97.97	91.34	82.58	75.95

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Home Mine Details Logout MINE NAME - ABC | BLAST NAME - PIT1

Sonic Law Generation | Sonic Vibration Table | Sonic Vibration Plot | Vibration Limit Table | Contour

Sonic Law Exponent:

Sonic Law Constant:

High Range Low Range

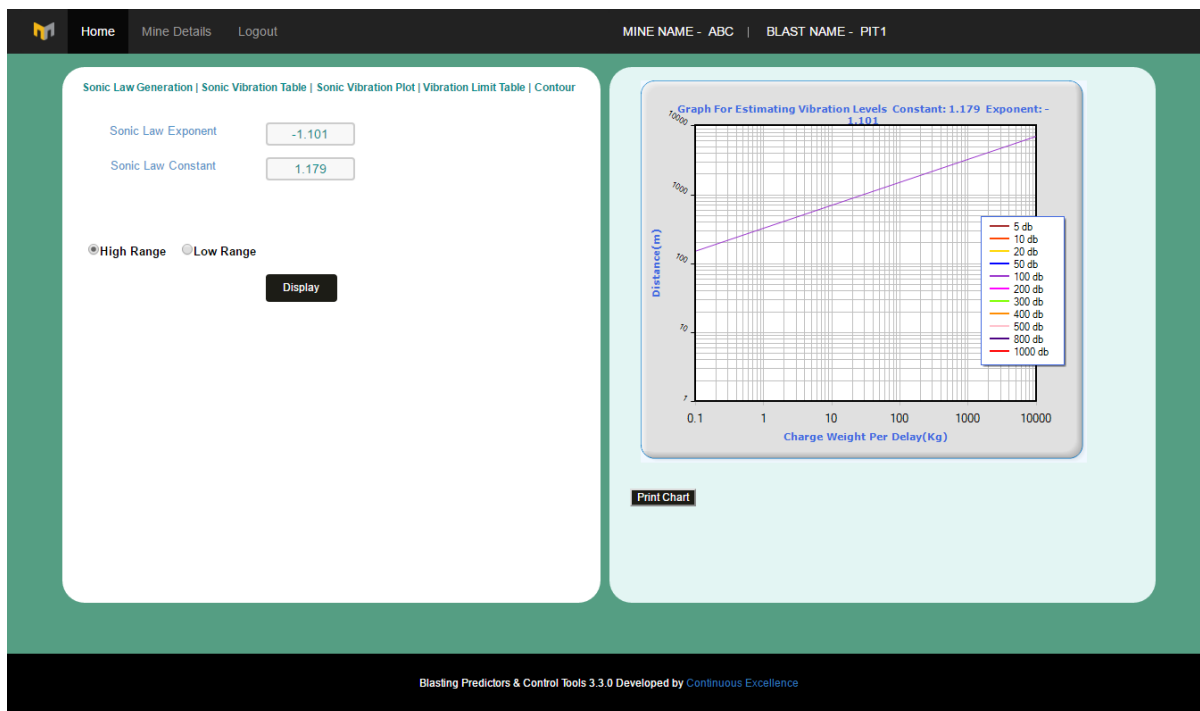
Determination of Sound Intensity(dBL) based on Charge and Distance

Charge (kg)	Distance(m)										
	0.5	1	2	5	10	20	50	100	200	500	1000
0.025	150.29	143.66	137.03	128.27	121.64	115.01	106.25	99.62	92.99	84.23	77.6
0.05	152.5	145.87	139.24	130.48	123.85	117.22	108.46	101.83	95.2	86.44	79.81
0.075	153.79	147.16	140.53	131.77	125.14	118.51	109.75	103.12	96.49	87.73	81.1
0.1	154.71	148.08	141.45	132.69	126.06	119.43	110.67	104.04	97.41	88.65	82.02
0.15	156	149.37	142.74	133.98	127.35	120.72	111.96	105.33	98.7	89.94	83.31
0.25	157.62	150.99	144.37	135.6	128.97	122.35	113.58	106.95	100.33	91.56	84.93
0.5	159.83	153.2	146.57	137.81	131.18	124.55	115.79	109.16	102.53	93.77	87.14
0.75	161.12	154.49	147.86	139.1	132.47	125.84	117.08	110.45	103.82	95.06	88.43
1	162.04	155.41	148.78	140.02	133.39	126.76	118	111.37	104.74	95.98	89.35
1.5	163.33	156.7	150.07	141.31	134.68	128.05	119.29	112.66	106.03	97.27	90.64

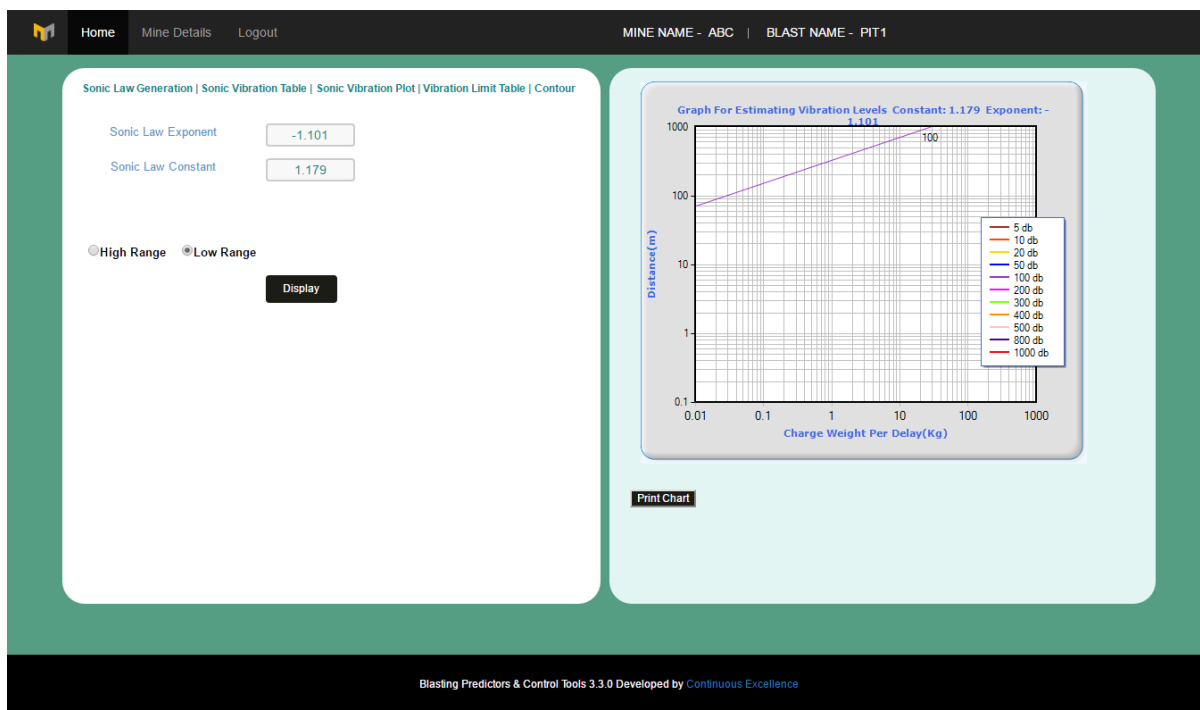
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2.3 Sonic Vibration Plot

- Sonic Law Exponent
- Sonic Law Constant
- Range



On click of Display button, the results will be displayed in the graph format, in which x-axis define the Charge Weight per Delay (in kg) and y axis will shows the Distance (in meters). The user can use the default parameters and edit these parameters as per their operational requirement. User can select either high range or low range.



2.4 Vibration Limit Table

- Sonic Law Exponent
- Sonic Law Constant
- Sound Intensity Level
- Sound Intensity Units

The screenshot displays the 'Vibration Limit Table' interface. On the left, there are input fields for 'Sonic Law Exponent' (value: -1.101), 'Sonic Law Constant' (value: 1.179), and 'Sound Intensity Level' (value: 2 Pa). Below these is a section for 'Sound Intensity Units' with radio buttons for 'Pa' (selected) and 'dBL', and a 'Display' button. On the right, a table titled 'Vibration Limit Table' shows the relationship between Distance(m) and Charge(kg). The table has two columns: 'Distance(m)' and 'Charge(kg)'. The data rows are as follows:

Distance(m)	Charge(kg)
10	0
15	0
20	0
30	0
50	0
70	0.01
100	0.03
150	0.1
200	0.23
300	0.76

Below the table is a 'Print Table' button. At the bottom of the interface, there is a footer: 'Blasting Predictors & Control Tools 3.3.0 Developed by Continuous Excellence'.

The user can use the default parameters and edit these parameters as per their operational requirement. User can select Pa(unit in Pascal) or dBL as per there operational requirement.

The screenshot displays a web application interface for Sonic Law Generation. The top navigation bar includes 'Home', 'Mine Details', and 'Logout', along with 'MINE NAME - ABC' and 'BLAST NAME - PIT1'. The main content area is divided into two panels. The left panel contains input fields for 'Sonic Law Exponent' (value: -1.101), 'Sonic Law Constant' (value: 1.179), and 'Sound Intensity Level' (value: 2) with a unit selector set to 'DBL'. Below these is a 'Sound Intensity Units' section with radio buttons for 'Pa' and 'dBL' (selected), and a 'Display' button. The right panel features a 'Vibration Limit Table' with columns 'Distance(m)' and 'Charge(kg)'. The table lists distances from 10 to 300 meters, all with a charge of 0 kg. A 'Print Table' button is located below the table. The footer text reads 'Blasting Predictors & Control Tools 3.3.0 Developed by Continuous Excellence'.

Distance(m)	Charge(kg)
10	0
15	0
20	0
30	0
50	0
70	0
100	0
150	0
200	0
300	0
1 2	

2.5 CONTOUR

- Exponent
- Constant
- No. of Contour
- dBI Minimum
- dBI Increment
- Charge(kg)
- Reduction in dB
- +dB Front
- +dB Rear

The user can use the default parameters as per their operational requirement and have the facility to edit the same.

Home Mine Details Logout MINE NAME - ABC | BLAST NAME - PIT1

Sonic Law Generation | Sonic Vibration Table | Sonic Vibration Plot | Vibration Limit Table | Contour

Exponent: -1.101
Constant: 1.179
No Of Contour: 3
dBI Minimum: 100
dBI Increment: 10
Charge(Kg): 80
Reduction in dBI: 10
+dBI Front: 12
+dBI Rear: -4

Set Default Draw Contour

Show Map | J K Cement Works, Nimbahe Air Vibration Angle: 45

Map Satellite

JK CEMENT WORKS
JK COLONY
ATAL NAGAR
Kartiana
Kalash Vidya Vihar
Nakoda Pump
Chitorgarh Rd

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