

Introducing MineSight Torque Compositing

Last year Mintec, Inc. introduced MineSight Torque (MSTorque), our new drillhole and blasthole database management program (see [“Welcome to the Revolution: Introducing MineSight Torque.”](#) August 2010 newsletter). MSTorque allows users on a personal computer, or on a Local Area Network, to connect to a project and accomplish a variety of tasks: import new drillhole and blasthole data, browse existing data, run reports, validate data, overlay geology information onto assay records, and much more. Drillhole data in MSTorque can be used directly by some programs, such as MineSight 3D (MS3D), and quickly exported to other programs, such as MineSight Data Analyst (MSDA). In the near future, all relevant MineSight programs will access MSTorque data directly.

The latest addition to the MSTorque line-up is **MSTorque Compositing**. This is brand new functionality written from the ground up. It is entirely integrated with MSTorque, and replaces the venerable MSBasis compositing programs. MSTorque Compositing will be released with MSTorque 2.0 during the second quarter. In this first release, we will be introducing bench compositing and fixed length compositing; in subsequent releases we will be expanding to cover seam compositing, and a new “smart compositor,” which will determine optimum composite intervals based on user specified rules regarding cutoff grades, mining widths, waste inclusions and so on.

The main interface, the **MSTorque Compositor** tool, is normally run from MSTorque Manager. Once you connect to a project, you can start it immediately. The user interface (Figure 1) is designed to be powerful and convenient. All of the options are grouped into several pages, (tabs) which can be accessed via a Table of Contents in the left margin. A summary of the current parameter set is also shown within the Table of Contents pane.

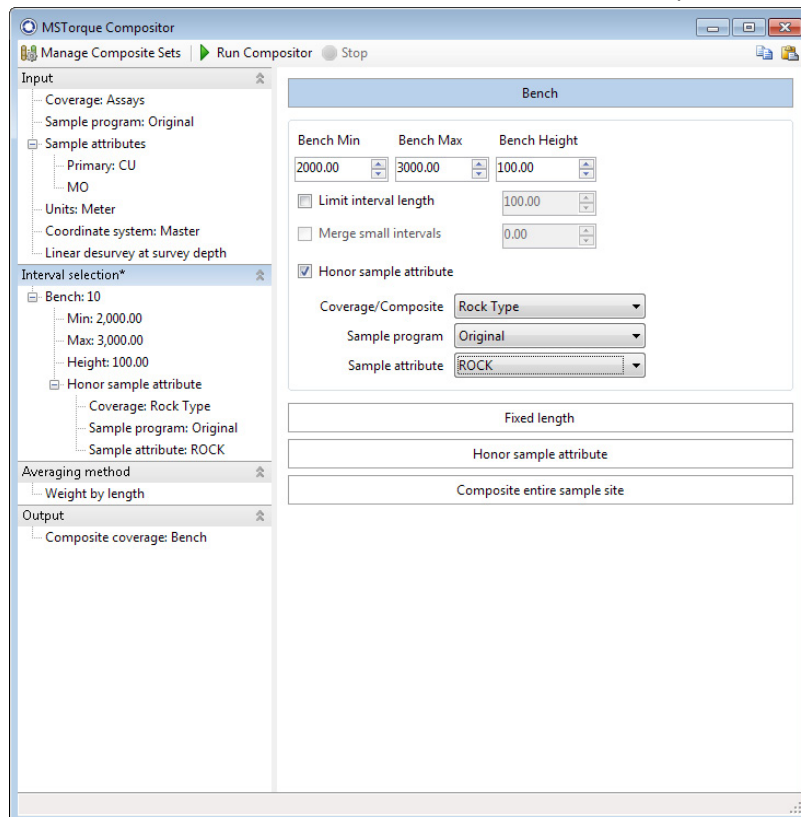


Figure 1: MSTorque Compositor user interface.

MSTorque Compositing reads the necessary survey, assay and geology data from an MSTorque project. Choose either bench or fixed length compositing to determine composites intervals. In the former case, the benches may be either fixed height or variable height; in the latter case, enter a specific fixed composite length, which is applied equally along the drillhole.

MSTorque Compositing also includes an important option to honor geology (or other coverage), which means that composites will be split to ensure that no single composite includes more than one geology type. Two options are available when the drillhole enters a new geology type with fixed length compositing: (i) measure lengths relative to the beginning of the geology boundary, or (ii) continue to measure lengths relative to the top of the drillhole.

Figure 2 shows an MS3D view of some drillholes in section, showing color coded bench composites, alongside the copper samples and geology (rock type) data. The composites on the far left were generated with the honoring geology option, and those on the near left without honoring geology.

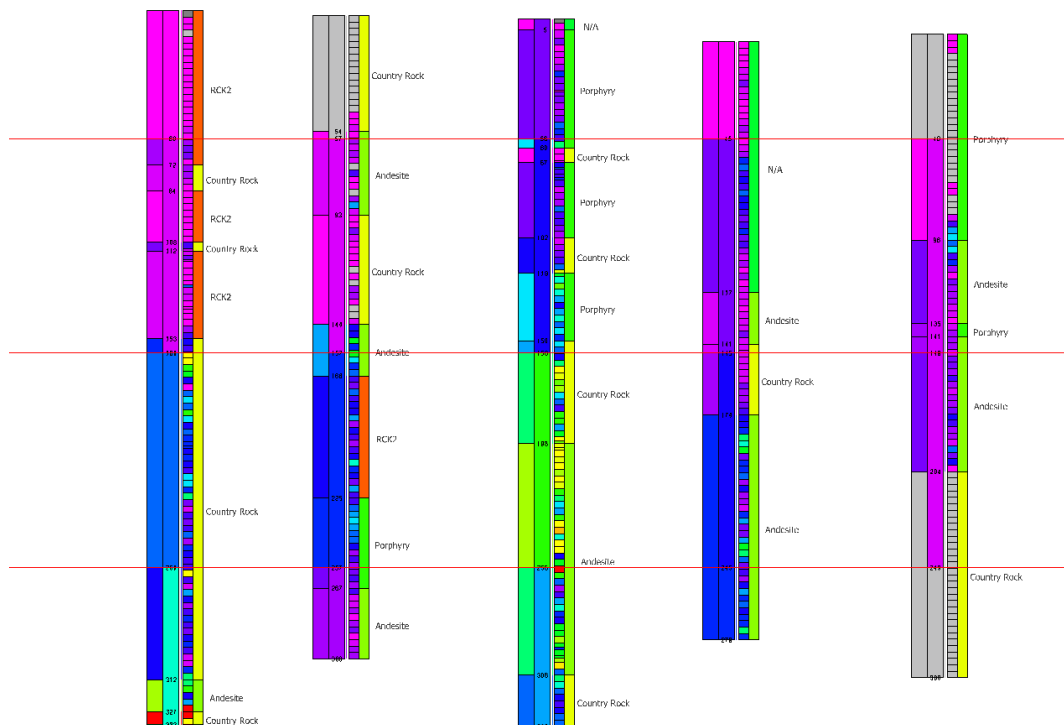


Figure 2: Drillholes showing color coded composites, copper samples, and geology.

Any number of grades and category data can be composited in one run, based on either a weighted average of the samples in the composite interval, or the dominant value within the composite interval. For instance, you may choose to composite CU, AU, PB, and ZN grades, and RQD, using a weighted average value of the samples within that composite interval. Weights may be based on length, or a combination of other items within the sample data, such as Specific Gravity. Alternatively, you may compute the dominant value of category data such as Mineralization Type.

In addition to determining the weighted average grades and dominant types for each composite, MSTorque Compositing also determines the location of the composite (top, mid, bottom), and total length and weight information. Of course, all of this information is stored and made available to interpolation and other programs.

MSTorque composite data is stored in specially designed tables in the MSTorque project database, where they may subsequently be browsed in MSTorque Manager, displayed in drillhole views with MS3D, or used as input to interpolation programs. Work with composites in MSTorque Manager and other tools, and you will notice that they are much like drillhole sample data. The familiar MSTorque tools used for drillhole sample data, such as coverage overlay, coordinate system conversion, and “export to text,” work in a similar way with composites. Figure 3 shows some composites in MSTorque Manager.

From (m)	To (m)	Length (m)	From Location	To Location	Mid Span Location	Total Length (primary)	Total Weight (primary)	AVGCUMO (%)	CU (%) primary	MO (%)	ROCK honored
0.00	54.00	54.00	2527.3, 5042.9, 2657.4	2527.3, 5042.9, 2603.4	2527.3, 5042.9, 2630.4	54.00	54.00	0.06	0.08	0.029	Country Rock
54.00	57.40	3.40	2527.3, 5042.9, 2603.4	2527.3, 5042.9, 2600	2527.3, 5042.9, 2601.7	3.40	3.40	0.14	0.24	0.043	Andesite
57.40	93.00	35.60	2527.3, 5042.9, 2600	2527.3, 5042.9, 2564.4	2527.3, 5042.9, 2582.2	35.60	35.60	0.23	0.39	0.066	Andesite
93.00	144.00	51.00	2527.3, 5042.9, 2564.4	2527.3, 5042.9, 2513.4	2527.3, 5042.9, 2538.9	51.00	51.00	0.14	0.22	0.058	Country Rock
144.00	157.40	13.40	2527.3, 5042.9, 2513.4	2527.3, 5042.9, 2500	2527.3, 5042.9, 2506.7	13.40	13.40	0.56	1.02	0.091	Andesite
157.40	168.00	10.60	2527.3, 5042.9, 2500	2527.3, 5042.9, 2489.4	2527.3, 5042.9, 2494.7	10.60	10.60	0.56	1.07	0.046	Andesite
168.00	225.00	57.00	2527.3, 5042.9, 2489.4	2527.3, 5042.9, 2432.4	2527.3, 5042.9, 2460.9	57.00	57.00	0.41	0.74	0.077	RCK2
225.00	257.40	32.40	2527.3, 5042.9, 2432.4	2527.3, 5042.9, 2400	2527.3, 5042.9, 2416.2	32.40	32.40	0.45	0.82	0.080	Porphyry
257.40	267.00	9.60	2527.3, 5042.9, 2400	2527.3, 5042.9, 2390.4	2527.3, 5042.9, 2395.2	9.60	9.60	0.31	0.55	0.066	Porphyry
267.00	300.00	33.00	2527.3, 5042.9, 2390.4	2527.3, 5042.9, 2357.4	2527.3, 5042.9, 2373.9	33.00	33.00	0.22	0.41	0.038	Andesite

Figure 3: Composites in MSTorque Manager.

MSTorque users may run compositing any number of times in the course of a project, with different data and parameters. Each such composite run is given a name by the user, e.g. “North Pit Composites with Summer Drilling”. MSTorque Manager includes a utility (Figure 4) to browse the different composite runs, or sets, showing User and Date Created. When you use MSTorque Manager or another tool, such as MS3D or interpolation programs, specify the name of the composite set that you wish to use.

Name	Created	Created by	Updated	Updated by	Params	Comments
Bench	2011-03-10 6:22:51 PM	rpakdel			<input checked="" type="checkbox"/>	Simple bench Delete
BenchROCK	2011-03-09 8:31:42 AM	rpakdel			<input checked="" type="checkbox"/>	Bench + Honor Rock Delete
BenchROCK2	2011-03-10 5:41:58 PM	rpakdel			<input checked="" type="checkbox"/>	Bench + Honor Rock Delete
BenchROCK3	2011-03-10 5:50:28 PM	rpakdel			<input checked="" type="checkbox"/>	Bench + Honor Rock Delete
BenchROCK4	2011-03-10 6:26:00 PM	rpakdel			<input checked="" type="checkbox"/>	Bench + Honor Rock Delete
First Try	2011-03-10 6:24:04 PM	rpakdel			<input checked="" type="checkbox"/>	Testing CLI Delete
First, make new	2011-03-10 6:26:20 PM	rpakdel			<input checked="" type="checkbox"/>	Testing CLI Delete
Another Bench	2011-03-10 6:27:34 PM	rpakdel			<input checked="" type="checkbox"/>	Testing CLI Delete
Bench50	2011-03-11 8:46:29 AM	rpakdel			<input checked="" type="checkbox"/>	Using bench height 50 instead ... Delete

Figure 4: Composites Sets dialog.

Although most users will run MSTorque Compositing from the MSTorque Compositor within MSTorque Manager, other options are available. For instance, it may be run as a standalone Windows program, or via our Command Line Interface (CLI). In CLI mode, MSTorque Compositing runs in a Command Window (“DOS”), either directly, or as part of a batch job. On a technical note, MSTorque Compositing also provides an Application Program Interface (API) that lets developers create their own custom compositing applications. This option will be used internally by staff, such as the Mintec Implementation & Solutions Group, to customize applications for specific clients.

Client demand has never been greater, according to Mintec Implementation & Solutions Group member, Andy Obregon.

“For our clients, there is a growing effort to evaluate data in ways that have not been possible before,” says Obregon.

“With the ability to composite directly from MSTorque, they can easily create different models for various scenarios and analysis.”

Obregon credits an additional Mintec solution, MSAxis and its potent suite of tools used in Grade Control and Drill and Blast, for enhancing the attribution process.

“The new core tools - MSAxis-Importer and MSAxis-Calculate&Attribute - have made the process of attribution to MSTorque simple and efficient.”

“The addition of compositing and loading values directly from MSTorque, eases the entire process of getting valuable data seamlessly loaded into MS3D for a greater level of detail and evaluation.”

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