



# Barite hoppers lower weight-up time, reduce safety issues and save Canadian operator thousands of dollars

Hoppers eliminate the need for hand-mixing, eliminating dust exposure for derrick hands, reducing footprint on site, and can be easily moved.

CHALLENGE	SOLUTION	RESULT
<ul style="list-style-type: none"> <li>Weighting up systems in a timely manner when pressures were encountered while drilling</li> <li>Reduce or eliminate the safety hazards and time constraints of hand mixing</li> <li>Reduce the number of personnel required for mixing, thereby saving the operator unnecessary costs</li> </ul>	<ul style="list-style-type: none"> <li>Newpark Barite Hoppers were used for the handling of bulk bags</li> <li>Hoppers handled the equivalent of 36 sacks of barite all at once</li> </ul>	<ul style="list-style-type: none"> <li>Faster weight-up times and less manual labor resulted in operator saving thousands of dollars</li> <li>Safety hazards of hand mixing were virtually eliminated</li> <li>Use of the hoppers meant operator resumed drilling faster and safer</li> </ul>

## OVERVIEW

Bulk barite systems generally have a large footprint and create their own safety issues. The blowers to transfer are a safety risk due to their unusually loud noise. In addition, the transfer lines on the tank grating create a tripping hazard, and dust exposure to workers is increased. The use of a Newpark Barite Hopper virtually eliminates all the above hazards, as well as saving time and money for the operator.



*Figure 1: A Newpark Barite Hopper has a small footprint and can be easily moved simply by utilizing a front-end loader*



### CHALLENGE

Drilling with 1400-2100 kg/m<sup>3</sup> Invert in areas due to high formation pressures, the operator at times observed unexpected pressures, most likely created by natural fractures or previously drilled/fracked wells on the pads. When these pressures were encountered, weighting-up systems were required in a timely manner to control costs and minimize losses while drilling the upper section of the wells at a lower density.

The rigs using standard sacks and hand-mixing barite required two derrick hands mixing 40 kg bags at a time. This resulted in numerous safety concerns due to the required repetitive movements, and the derrick hands only mixing barite and subsequently not looking after their other duties. The time undertaken to increase the density while circulating created longer times circulating through choke, which increased the risk and the time to operations.

The density increase on a 120m<sup>3</sup> system from 1250-1400 kg/m<sup>3</sup> requires the use of 1,125 sacks mixing at one minute per sack, resulting in a total of 18.75 hours, 1250-1800 kg/m<sup>3</sup> requires the use of 2,888 sacks mixing at one minute per sack, resulting in a total of 48.13 hours. 1250-2000 kg/m<sup>3</sup> requires 4,295 sacks mixing at one minute per sack, resulting in a total of 71.08 hrs.

In addition to the above time constraints, there are several potential safety issues. Bulk barite systems have a large footprint, the blowers to transfer the barite pose an HSE risk due to their high decibel level. Also, the transfer lines on the tank grating are a tripping hazard.

Other issues and challenges include the possibility of bulk barite not being readily available due to the location being drilled. The rig-in/rig-out of bulk silos and blowers also requires heavy lifts and multiple loads, which in itself can be a safety hazard.

### SOLUTION

Newpark's professionals recommended and provided barite hoppers for the mixing bulk bags, each of which is the equivalent of 36 regular barite sacks (1,500 kg).

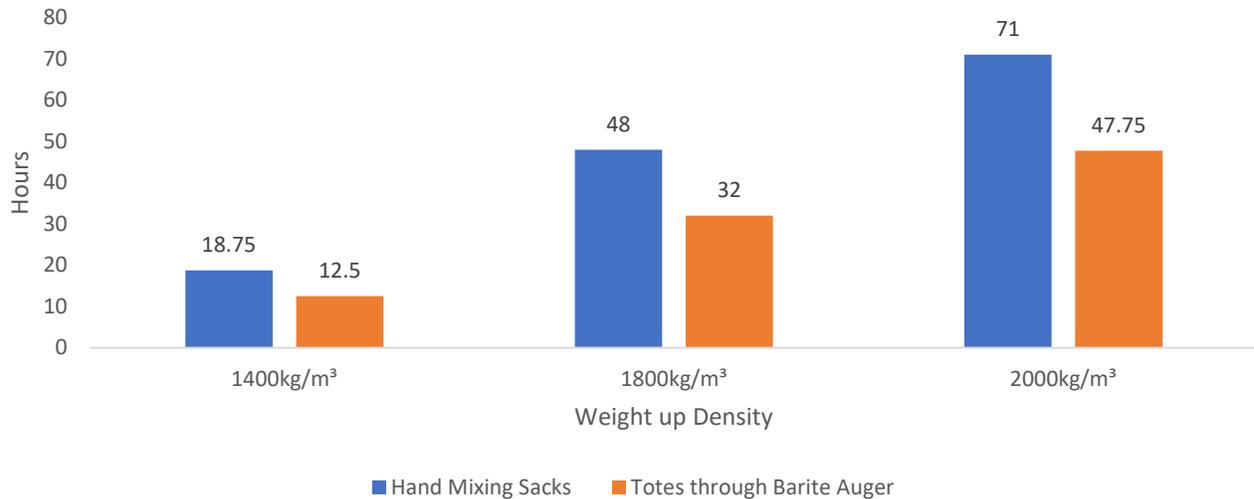
The hoppers have a very small footprint (*see Figure 1*) and can be easily moved with a front-end loader or backhoe.

### RESULTS

When the hoppers were put into service, the results were immediate. The operator realized faster weight-up times, less manual labor, and less fatigue on the workers. In addition, all of the potential safety issues covered above were avoided.



## Barite Augers offer a significant time savings to weight up a 1250kg/m<sup>3</sup> Mud



Based on an operating cost of \$1500/hour when in a well control situation and performing the required weight-up to get back drilling, the savings run between \$9,375 and \$35,040 depending on the required density.

Additional results included not requiring a second derrick hand just for mixing barite, and the additional safety benefit of not having workers exposed to dust when mixing through the hopper.

Hoppers can also be used for product additions over tours as well for product additions such as seepage loss material when not required for weight-up. An adjustable rheostat on the auger control provides for constant additions of product and more efficient mixing.