Система MultiBob BinMaster

SmartBob MultiBob System

Multiple Measurement Points in a Single Vessel To Improve Material Inventory Management
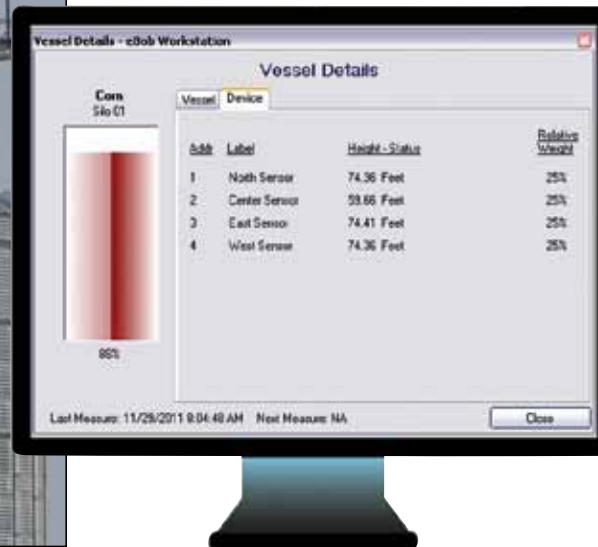
- • Two to 32 SmartBob sensors on a single vessel
- • Software averages level for selected sensors
- • View levels for one sensor or all sensors
- • Can indicate cone up or down conditions
- • Detects high and low spots
- • Strapping tables for custom vessel configuration
- • Takes measurements at user-defined intervals
- • Initiate measurements on demand
- • Automated alerts for various alarm conditions
- • No climbing, no tape measures!

BINMASTER

Multiple Sensors, One Average Level

The MultiBob system allows two or more SmartBob sensors to be mounted in a single bin. The measurement data from each sensor is averaged in the advanced eBob software based upon user-defined parameters to provide a single level measurement for the bin. By taking measurements in multiple locations, there is more detailed data available to users about the material in their bin. Depending on how many SmartBob sensors are mounted in the bin, the user can use the data to determine conditions such as cone up or cone down, whether there might be a high or low spot in the bin, and which filling or emptying points they want to target in multiple-fill, multiple-discharge point bins.

More Measurement Data, Better Decision Making

The MultiBob system has applications across many industries and material types. Unless it is a liquid, the material in a bin is likely to be uneven. Some industries, such as cement, power and food processing tend to deal with challenging materials like limestone, fly ash or flour that can be challenging to measure. Large diameter bins such as 105' wide, or million-bushel bins often found in the grain and ethanol industries can have high and low spots due to multiple filling and emptying sites. Even smaller diameter bins, such as those containing pellets, granules, or other free flowing ingredients might have material higher or lower in the center or on one side of the bin.

MultiBob System Applications

- **Any bin where the user wants more measuring points**
- **Bins containing material prone to accumulate in piles**
- **Large diameter bins where material tends to be uneven**
- **Grain bins such as 105' or 132' diameter or million bushel bins**
- **Bins with multiple filling and emptying points**
- **Operations where more data is desired to determine inventory levels**
- **Bins containing difficult to measure material**

Based upon their data needs, users can determine how many SmartBob sensors to install in the bin. The MultiBob system can be set up for two SmartBob2 sensors, or up to 32 sensors in a single bin, warehouse or storage facility. The software allows measurements to be scheduled at predetermined time intervals. Users can customize the timing of measurements to suit their operations. Plus, if a real-time measurement is needed, the eBob software can be used to initiate an on-demand measurement and immediately report the data.

Upon opening the eBob software, the user can view all of the bins in the network and choose how they want to view the data. The software provides the percentage full and average level or headroom and what material is contained in the bin. By clicking on a single bin, the user can view the detail screen for a particular bin that includes all of the SmartBob sensors associated with that bin. The MultiBob system reports the individual measurements for each SmartBob sensor used to create the average level (or headroom) and percentage full.
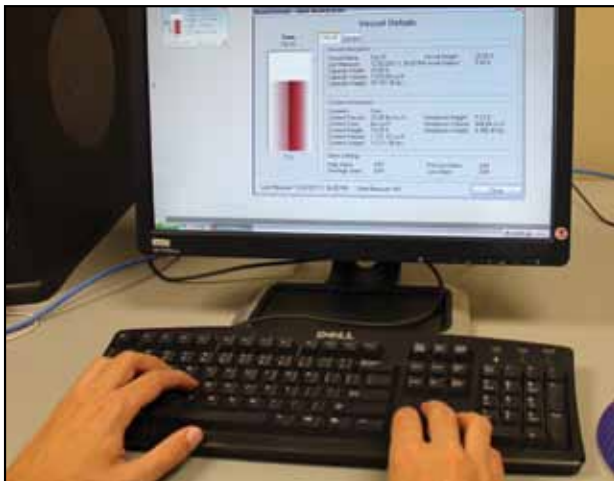
A percent value can be assigned to each sensor to prioritize the influence each sensor has on the average level. For example, the input from each sensor can be divided evenly so each sensor has an equal influence on the average level OR if the end user wants one or two sensors to have a greater influence on the average, a higher percentage of influence can be assigned. The total percentage for all sensors must always add up to 100 percent.

MultiBob is Smart, Simple and Safe

- **SmartBob sensors are highly reliable, accurate and affordable**

- **No need to climb tanks to take measurements, saving time and increasing safety**

- **Takes frequent measurements from multiple locations within the bin**

- **Users can initiate an on-demand measurement from all sensors or a single sensor**

- **Multiple sensors detect high and low spots in the bin**

- **Placing a sensor in the center of the bin can indicate cone up or cone down conditions**

Two-Sensor Setup Can Indicate
Cone Up or Down Conditions

Installing two SmartBob sensors in a center fill, center discharge bin is a simple solution for operations that want to know if the material in the bin is in a cone up or cone down condition. It is recommended that one sensor is mounted one-sixth of the distance from the outer perimeter of the bin. This location is proven to deliver a high level of accuracy by accounting for the angle of repose in a center fill, center discharge bin containing free flowing material. The second SmartBob sensor should be mounted near the center of the bin, but away from the fill stream.

Sensor 1 is mounted one-sixth from the outer perimeter. Sensor 2 is mounted near the center away from the fill stream.

When measurements are taken, a higher level (or smaller headroom distance) from the SmartBob sensor near the center of the bin can indicate a cone up condition. Conversely, a lower level (or greater headroom distance) from the SmartBob center near the center of the bin can indicate the cone is down. When a two-sensor configuration is set up in this manner, it is recommended that the SmartBob sensor mounted one-sixth of the distance from the outer perimeter of the bin is assigned 100 percent of the value, as the location of this sensor will provide the most accurate volume estimate. Measurements can be scheduled any time while the bin is emptying or after a filling cycle is complete.
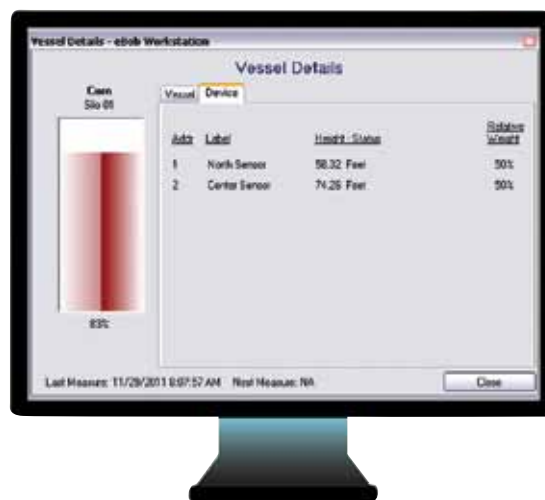
The higher measurement at the center indicates a cone up condition.

Operations with large active bins—such as fertilizer—will benefit from multiple sensors.

The two sensor configuration is ideal for any facility that would find knowing whether the bin is cone up or cone down is beneficial to operations. This configuration can be applied to all types of industries, materials and diameter bins. The additional data from the SmartBob sensor mounted near the center of the bin can be used to help notify personnel that a bin is nearly empty or full.

Multiple-Sensor Setup Detects High and Low Spots, plus Cone Up or Down
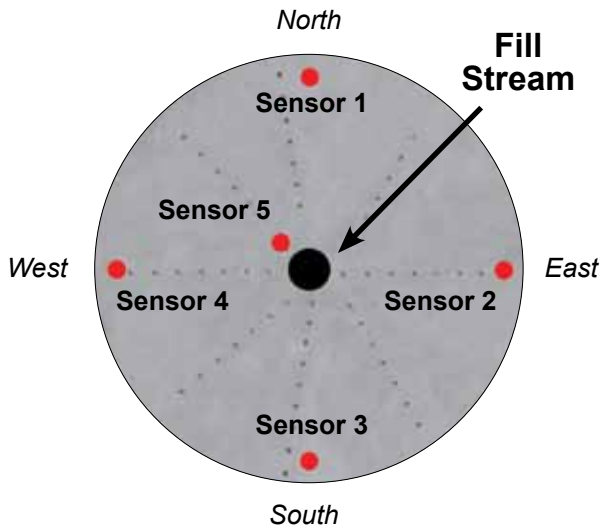
By installing multiple SmartBob sensors in the bin, it is also possible to detect if material is accumulating in one or more measurement points in the bin. In this example, there are four sensors mounted around the outer perimeter of the bin, each one-sixth the distance from the outer perimeter – with one sensor each on the north, south, east and west in equal distances from one another. The fifth SmartBob sensor is mounted near the center of the bin, but away from the fill stream.

Sensors 1 to 4 are mounted one-sixth for the outer perimeter. Sensor 5 is mounted near the center, away from the fill stream.

When measurements are taken, the eBob software allows the user to view the percentage full and average distance, or headroom if preferred based on user-defined values for each sensor. Additionally, the level data for each SmartBob sensor can be viewed to allow the user to check for high spots in the bin. For example, a higher level on the west wall of the bin may indicate that material is accumulating in that area. As with the two-sensor configuration, a higher measurement (or smaller headroom distance) from the center SmartBob sensor can indicate a cone up condition, while a lower measurement (or a greater headroom distance) from the center sensor can indicate the cone is down. For the most reliable volume estimate, it is recommended that the four sensors at the outer perimeter each be given a value of 25 percent and the center sensor is valued at zero, using the fifth measurement for cone up or down indication.

These measurements indicate cone down and a higher level on the South sensor.

Safety first at this high efficiency cement plant.

The multi-sensor configuration is also helpful in bins where there are multiple filling and emptying points. By viewing the level data from each sensor, decisions can be made regarding the most optimal location to fill the bin to optimize storage capacity or which emptying point is best to pull material. This configuration is very well suited to large diameter bins where material is likely to accumulate due to filling and emptying sites. Multiple measurements will indicate where the high and low spots exist. Any operation that wants better data about the material in their bin will benefit from the multi-sensor configuration.

MultiBob is a Better Bin Management Tool

The BinMaster MultiBob System is a tool to better manage the contents of a bin, tank or silo by providing data from more than one SmartBob sensor. The display screen for each bin supplies a wealth of information that can be used for better decision making and to streamline operations by eliminating the need to climb and manage bins one at a time. Simply log in to eBob to view the levels of all bins in the network at a glance. The bin network can include bins with just one sensor or bins with multiple sensors.

MultiBob Application Examples

Wide Diameter Bins

In the grain industry, the MultiBob system is ideal for large diameter bins such as 105' or 132' diameter bins. The eBob software can indicate cone up or down and if material is accumulating on one or more sides of the bin.

Million Bushel Bins

Grain bins with capacity of a million bushels or more are ideal candidates for a MultiBob system. SmartBob sensors can be installed in key locations where having measurement data is most critical, such as for detecting high and low spots to optimize filling and emptying points in the bin.

Flat Storage Warehouses

The MultiBob system can also be used in long warehouses to measure the height of piles in up to 32 different locations and provide an average pile height. MultiBob systems can be installed in flat grain storage warehouses along trusses or conveyors.

Sensors are mounted from roof structure, conveyors or trusses at desired locations.

Multiple Bins on Site

Locations with multiple bins of all sizes, such as cement, chemical, and plastics plants or food processing facilities and feed mills will find a SmartBob system of great value. By installing a MultiBob system in the large and variable bins and a single SmartBob sensor on smaller or less challenging bins, a facility can view the levels of all of its bins from the eBob software from the comfort of an office.

Optimize Vessel Management

Each vessel can be set up to take scheduled measurements at predetermined time intervals.

Vessel history and tabular measurement data are stored in a SQL database.

Customize Data with Strapping Tables

The advanced eBob software allows the user to add a strapping table to the bin parameters to further personalize the data for a particular bin. Strapping tables are helpful when the material in the bin tends to compact and the bulk density of the material is higher at the bottom of the bin than the top. In a non-linear vessel, the addition of a strapping table will improve the estimated volume of material in the tank.

Entering a custom strapping table is helpful in a non-linear vessel or in material that tends to compact.

The strapping table information is entered by the user into the eBob software. The user simply inserts the number of pounds, bushels, tons or other units of measurement based upon a specific distance or range of distances. There is no limit to the number of values that can be entered into the strapping table, so the data can be as detailed as needed if the material density is highly variable from the bottom to the top, or the bin is very tall.

По вопросам продаж и поддержки обращайтесь:

Архангельск (8182)63-90-72
Астана (7172)727-132
Белгород (4722)40-23-64
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Волгоград (844)278-03-48
Вологда (8172)26-41-59
Воронеж (473)204-51-73
Екатеринбург (343)384-55-89
Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04

Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Липецк (4742)52-20-81
Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Новосибирск (383)227-86-73
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15

Рязань (4912)46-61-64
Самара (846)206-03-16
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Тверь (4822)63-31-35
Томск (3822)98-41-53
Тула (4872)74-02-29
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Уфа (347)229-48-12
Челябинск (351)202-03-61
Череповец (8202)49-02-64
Ярославль (4852)69-52-93

Единый адрес: bta@nt-rt.ru   **Веб-сайт:** www.binmaster.nt-rt.ru