

## Are Weight Measurements Possible?

Well...yes and no. Any roof mounted look-down type silo level monitor (e.g. laser, radar, sonic, or weight & cable type) simply measures distance. This measurement represent the distance the 'probe' travels before touching a specific spot on the the material surface. The SiloPatrol SMUSe and Flexar GWR types are no exceptions to this fact. Weight values are obtained indirectly through a series of calculations.

Details required to make weight and/or volume calculations are as follows:

- **Vessel Dimensions;** to allow calculation of the internal volume. See fig 1 for details regarding the math. Dimensions will be site specific and must be provided by the end user or their designate. It is best to get silo dimensions directly from silo manufacturer's drawing. It cannot be overstressed, accurate volume calculations require accurate dimensional data.
- **Material Bulk Density;** to allow calculation of the weight from previously calculated volume. The material density will be site specific. Unfortunately tricky to nail down as material density varies. Density can vary from batch to batch and over time as a result of de-aeration or settling. Best to use an average density.

Also of importance is the location of the fill inlet and the discharge outlet. Inlet and outlet location will effect the surface profile of the material. A center fill and center discharge arrangement will realize a predictable surface profile. Careful placement of the level monitor can take advantage of this to realize a measurement reference point which neutralizes the uneven surface caused by repose angle. This neutral point is located by measuring measuring inward from the outer edge of the silo a distance equal to 1/6 the vessel diameter. So on a 12ft dia silo the neutral point is 2ft inward from the outer edge. See fig 2 for visual depiction.

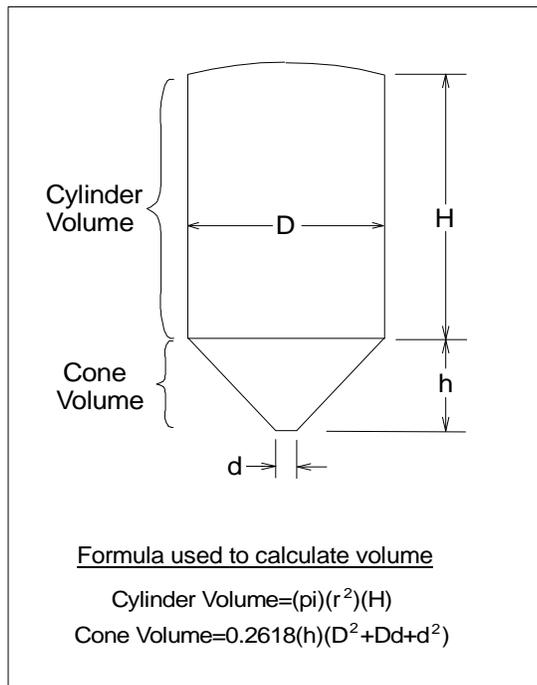


Figure 1

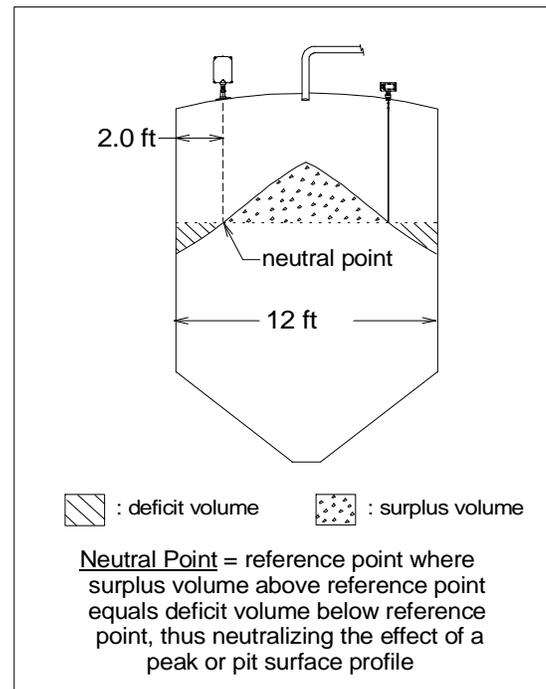


Figure 2