



Handling: Consideration on bulk solid storages

Published on August 30, 2021



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As with any product, bulk solids such as granules, particles, powders need to be stored at some point. While size is the main consideration for liquids or gases, storage for bulk solids comes with additional considerations. In particular, because the solids do not flow like water and, instead, pile to create an angle of repose, the design of the storage bottom or specifically the discharge device, is crucial.

Before considering even the storage itself, it is important to factor the needs of the bulk solids that will be stored. Here is a guide of those considerations:

- **Residence time:** How long can you store the solids? In many cases, the residence time isn't important for non-degrading product such as cement, rocks and many chemical products. *First in first out* is a term that is often used in combination with storages. It just means that the product that goes first into the silo is also discharged first. *First in last out* is basically a silo, where the product that

point to consider.

- **Degradation:** Can the solids degrade over time? Food products, grains, oilseeds or other biosolids, for example, might require the storage to be emptied completely.
- **Emptying the storage:** This is important if you have products that are produced and stored in batches where traceability is necessary. In those cases, different batches aren't allowed to mix up, which requires one side the possibility full empty the storage and on the other side to provide the possibility of simple cleaning.
- **Cleanability:** Besides emptying, cleaning the storage containers can also be important. This is particularly the case if cleaning is often required (e.g. between batches).
- **Size:** The most important one is the size. It could be everything from a small buffer in a production line to daily, monthly or even seasonal storage. For large sizes, specifically, it will be necessary to consider multiple storages.
- **Multiple storages:** In many cases, multiple, smaller storages make a lot of sense as it makes handling easier. However, multiple storages may need more complicated connections to the upstream or downstream equipment. They might also be more expensive due to multiple discharge devices.

In summary, when considering storage, be aware that not only the size matters 😊

Next time, we'll discuss hopper angles.

As always, please do not hesitate to message me with questions/comments.

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Continuing after a few weeks summer break with a new article around bulk solid storages. Sounds like a very simple topic but in fact there are several things that need to be considered.

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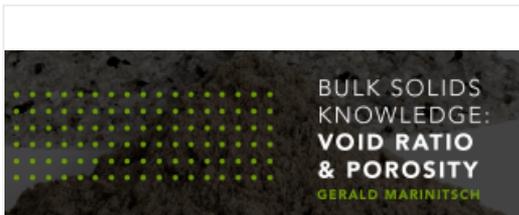


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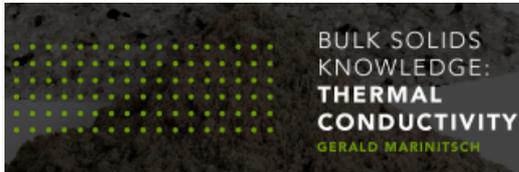
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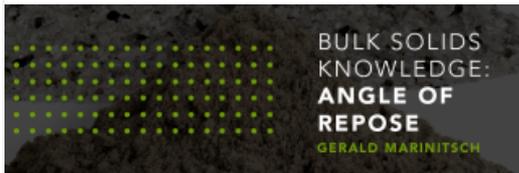
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