Marketing Bulletin:

Measuring Fly Ash Levels

A global chemical company with an on-site power plant contacted ***K-TEK*** for a "continuous" measuring device to monitor fly ash level. It was identified early on that a yo-yo mechanical devices had been the only form of level measurement and that a more reliable source of level detection was badly needed. Other continuous measurement devices were evaluated such as through-air radar and ultrasonic; however, due to false echoes and the very low dielectric constant of fly ash (1.9) these two options were quickly eliminated.

The ***K-TEK*** MT2000 Guided-Wave Radar was a real solution in providing overfill-protection for a 35-foot fly ash silo. Due to the very low dielectric of the fly ash, the ultra low dielectric (ULD) method of measurement was configured to ensure the low dielectric and accurate product level was detected. In addition, the MT2000 was top mounted through an 8" nozzle and utilized the use of a 33' flexible cable and a 6" centering disk/weight assembly that was fully suspended into the silo.

K-TEK's MT2000 Ultra Low Dielectric (ULD) Method:
In the case of extremely low dielectric mediums, a different methodology is needed due to the poor reflection of the pulse on the surface of the product. This reflection is not strong enough to make a reliable level measurement. To achieve reliable and precise measurements, the ***K-TEK*** MT2000 uses the Ultra Low Dielectric (ULD) measurement method. The MT2000 flexible cable utilizes a centering disk/weight assembly at the bottom end with a precisely known length. The microwave pulse travels through the air at a known velocity and then passes through the product at a reduced velocity depending on the product's dielectric constant.

The MT2000 then measures using the time between emission and reception from the centering disk. Since the round trip travel time is known for air when no product is in the tank, one can calculate the difference in travel time through the two mediums which is proportional to the product level in the tank. For products like fly ash (also plastic powders and flakes where the material is primarily dry), where the dielectric is between 1.3 and about 2, the ***K-TEK*** MT2000 ULD method provides an optimum solution.

Customer benefits from the *K-TEK* MT2000 Guided-Wave Radar:

- **Continuous measurement (4-20mA) of very low dielectric product**
- **Simple setup and installation**
- **No maintenance**

Level measurements are not impacted by:

- **High dust environments**
- **Internal tank obstructions**
- **Pressure**
- **Temperature**
- **Specific gravity**

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