



Application note: Power

KROHNE

▶ measure the facts

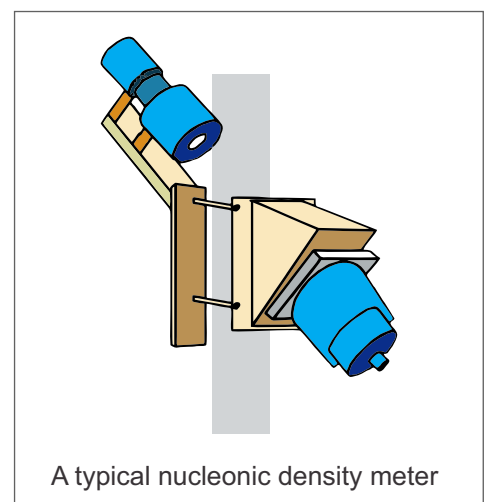
▶ Density Measurement of Ash Slurry

Coal based thermal power plants generate power efficiently, but in the process leave behind a substantial amount of burnt ash. Disposal of this ash requires a high capacity ash disposal system. The ash is mixed with water, and this slurry is pumped into an ash pond with the help of large pumping skids. In order for the pumps to operate efficiently, it is important that the ratio of ash and water be accurately maintained. Excess water not only leads to wastage, but also higher power consumption to pump out the same amount of ash. If less water is added, the ash slurry will be coarse, increasing the chance of damage to the pumps.

To ensure that the ash slurry is the ideal density for efficient and safe operations of the pumps, various measurement methods are deployed, the most common being the nucleonic density method.

However nucleonic density devices come with their own set of limitations:

1. The equipment is expensive, and installation has to be done only by specialised persons.
2. The nuclear isotope has to be registered and all formal procedures have to be strictly completed before use. Post degradation of the isotope, it has to be sent to the statutory authorities for discharge. This resubmission procedure is time consuming, detailed and lengthy.
3. The installation site can be a potential hazardous working area and has to be isolated from the general working area.



A typical nucleonic density meter

4. Servicing is expensive and complicated.

Overall, the nucleonic density method is an expensive proposition for measurement of a single parameter.

Traditionally, there was no alternative to the nucleonic density method. However, advanced Coriolis meters based on the principles of motion mechanics are now available, and gradually replacing traditional nucleonic density devices.

The Ideal Solution: Coriolis Mass Flow Meter from KROHNE

Coriolis Mass Flow Meters from KROHNE in the right configuration, assure a long, stable and maintenance-free measurement solution for ash slurry.

The straight tube design ensures minimum pressure drop across the meter. Choking is completely eliminated even in case of changing compositions and contents of the ash slurry. These meters are self-draining and self-cleaning, requiring absolutely no maintenance, and hence zero downtime.

Since the density parameter is independent of flow, the meter can be installed in a by-pass line to directly measure density. Density can also be displayed directly on the meter display next to the measurement pipe; and no separate isolated display is required.

Since the principle of measurement is not isotope based, no statutory approvals are mandated during procurement. Fast and efficient data transfer protocols like MODBUS, FF can be offered, in addition to the conventional HART.

The meter installation is safe and does not require additional safeguards like isolation of site that is mandatory for a nucleonic density device. The savings potential with these meters is very high since

- The cost of these meters is relatively very low when compared to the cost of procuring and installing a nucleonic density device
- Pumping and operating costs of such systems are lower than nucleonic density devices
- There is no need of specially trained engineers for installation and maintenance

Typical application data: Density is directly measured by the coriolis meter and the value of density for ash slurry generally varies between 1.2 to 1.9 kg/l.

Why do customers prefer KROHNE?

- Straight tube design of the meters ensure lowest pressure drops.
- Self-cleaning and Self draining. Zero maintenance.
- Meters have small installation lengths and fit into the pipeline directly.

So why not use the most advanced meters in the market for all your density measurement needs?

KROHNE – Straight and Simple.



Example of ash slurry pumping systems