

Moisture measurement with bulk density compensation

Bulk density compensation: A better accuracy

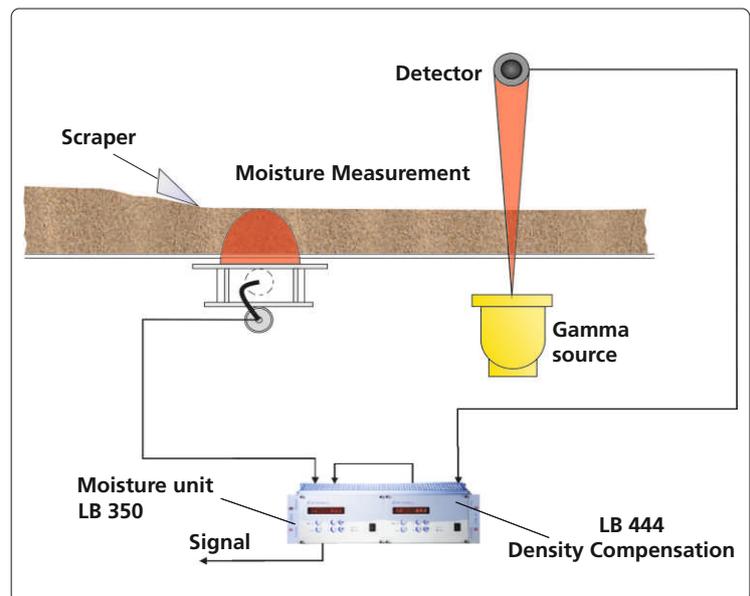
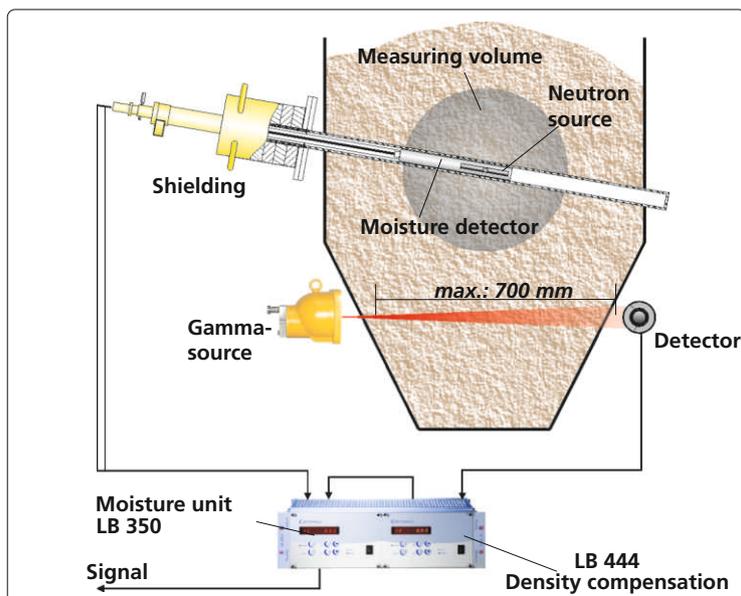
- Moisture evaluation units LB 350 is normally used without density compensation. For some products (Such as e.g. Sinter, Coke with big grain size etc), we can optimize the accuracy by using a bulk density compensation.
- A bulk density variation of $\pm 10\%$ leads to an error on moisture reading of $\pm 10\%$
Example: For a Moisture of 7% the reading will be in a range of 6.3% to 7.7%
- An additional bulk density measurement combined with the moisture measurement will compensate for this error.

Radiometric bulk density equipment

- If the bulk density varies strongly, a radiometric mass compensation must be incorporated into the measurement to compensate the differences.
- The bulk density compensation measurement consists of a scintillation detector, a small source in shielding and the evaluation unit LB 444.
- Depending on the process, (either on conveyor belt or on hopper) we suggest to install either:
 - Compensation of bulk density by Transmission
 - or
 - Compensation of bulk density by Backscattering.

Transmission

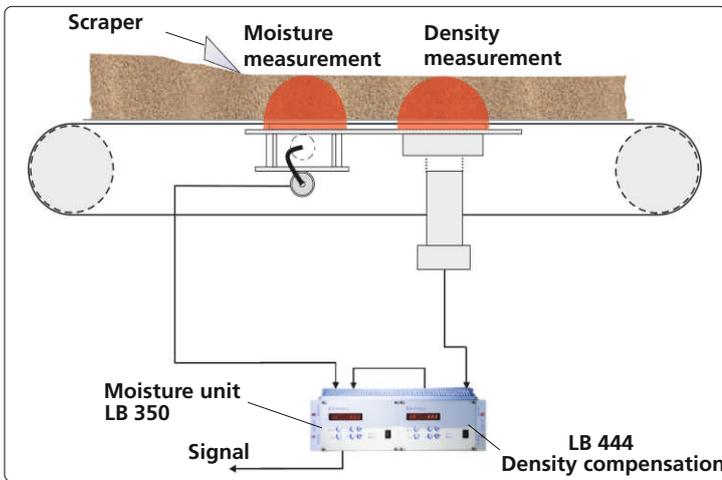
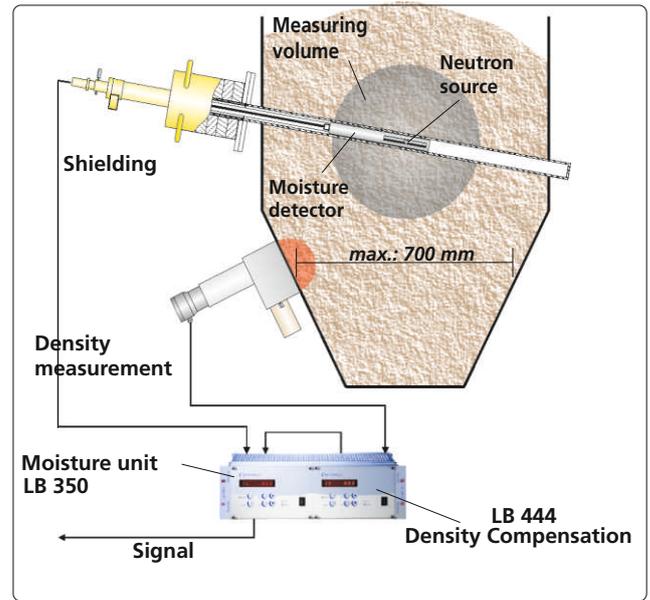
- The radiation emitted by a gamma source is attenuated as it passes through matter. This absorption is an exponential function of density. If, the measurement path is constant, the attenuation of radiation is an indication of the product density.
- A sensitive detector measures the residual radiation and supplies a signal sent to the moisture evaluation unit for compensation.



Product Information

Backscattering

- The radiation emitted by a gamma source is partially reflected by the product to be measured. The intensity of the backscattered radiation is a measure of the bulk density in the hopper or on the conveyor belt. Backscattering is usually recommended for the Sinter moisture measurement application.
- In case of no material on the belt the threshold contacts of the density measurement can be used to control the moisture output. The last moisture value will be stored as long as the load of product is not sufficient on the belt.



Moisture without bulk Density Compensation

Measuring Arrangement		Equipments designation		
Conveyor Not recommended	Hopper Yes	Evaluation Unit LB 350 for Moisture	Moisture Probe LB 6666 - 1/2 or LB 6669 - 1/2	Density Probe No

Moisture with Transmission bulk Density Compensation

Measuring Arrangement		Equipments designation		
Conveyor Yes	Hopper Yes	Evaluation Unit LB 350 for Moisture LB 444 for Density	Moisture Probe LB 6666 - 1/2	Density Probe CrystalSENS Pointdetector 50x50 NaI (TI)

Moisture with Backscattering bulk Density Compensation

Measuring Arrangement		Equipments designation		
Conveyor depending on application	Hopper Yes	Evaluation Unit LB 350 for Moisture LB 444 for Density	Moisture Probe LB 6669 - 1/2 with reflector	Density Probe CrystalSENS Pointdetector 50x50 NaI (TI) Backscattering chamber



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