RADIATION-BASED WEIGH SYSTEMS FOR CONVEYORS

W4800
WITH GEN2000® ELECTRONICS
HIGH RELIABILITY AND LOW MAINTENANCE
The W4800 weigh scale is non-contacting with no moving parts. The lack of contact to the belt or screw eliminates problems due to dust, misalignment of the conveyor, high vibration environments, or changes in conveyor tension.

LOW TOTAL INSTALLATION COST
The W4800 frame simply reassembles around existing conveyor belts or screws. There is no requirement for intricate alignment of idlers or floor pad preparation. In addition, the belt does not need cutting to install the gauge.

MEASUREMENT OF BELTS, SCREWS, DRAG CHAIN, AND VIBRATING CONVEYORS
With the non-contacting radiation-based scale, virtually all conveying methods for bulk materials are accurately and effectively weighed.

INTEGRATED ELECTRONICS
Competitive radiation-based weigh scales require separate electronics. Ohmart/VEGA scales feature integrated electronics with flexible input options for a wide variety of configurations.

- Integrated 4–20 mA output signal with HART® configuration protocol
- Integrated reference absorber greatly simplifies regular calibration
- Optional remote electronics for dual output (i.e. mass rate + weight), or special equation units conversion

WHY USE W4800?
PRINCIPLES OF OPERATION

Ohmart/VEGA’s W4800 weigh scale consists of a sealed radioactive source in a source holder and a scintillation detector. The source is mounted above the conveyor (belt, screw, drag chain, or vibrating) with the detector below. A fan-shaped collimated beam of radiation is transmitted from the source through the process material and the conveyor to the detector. Changes in the mass of material result in changes in the amount of radiation at the detector.

Ohmart/VEGA’s integrated electronics take into account additional variables, such as belt or screw speed, and converts the measurement into a total weight or a weight-per-time period output. As the loading on the belt (or screw) changes, the amount of radiation reaching the detector changes. The greater the loading, the lower the radiation field at the detector; the lower the loading, the higher the radiation field at the detector. The amount of radiation seen is proportional to the amount of material on the conveyor and is translated into an output signal from the detector.
INDUSTRY APPLICATIONS

SCALE LOADING

Full-scale loading is a critical variable in choosing a weigh scale. Full-scale loading over 62 lb/ft² (305 kg/m²) will result in excessive measurement non-linearity and poor resolution on heavy loads. Full-scale loading less than 2.5 lb/ft² (12.3 kg/m²) will result in poor resolution throughout the measurement span. Radiation-based weigh scales are used reliably when full-scale loading falls between 2.5 lb/ft² and 62 lb/ft².

To calculate loading, obtain belt speed for maximum throughput in units of feet (or meters) per time. Next, convert maximum throughput into units of pounds (or kilograms) per the same unit of time. Divide maximum throughput by belt speed. Divide this result by belt width in feet (or meters). The final result is loading in pounds per square feet (or kilograms per square meter).

EXAMPLE:
36 tons per hour over a 4 foot wide belt at 60 feet per minute.

36 tons per hour = 72,000 lb/hr = 1,200 lb/min
Loading = 1,200 (lb/min) / 60 (ft/min) / 4 (ft) = 5 lb/ft²

This full-scale loading is within the capability of a radiation-based weigh scale.
Ohmart/VEGA is able to meet all of your radiation service and training needs. With state-of-the-art classroom facilities, service personnel located worldwide, and a full production and service facility, Ohmart/VEGA is always ready to provide the following:

- 24-hour emergency service phone support
- Radiation survey meter calibration
- Product training and system operation
- Radiation safety school certification
- Wipe test and wipe test analysis
- Service, maintenance, and disposal of source material
- Start-up and commissioning service

LICENSESING

For users within the United States, the W4800 is available under general license from the appropriate state or government agency. A general license allows for use when there may not be an established radiation program and provides the user with flexibility in installation, maintenance, and operation. For users with a site-specific license within the USA or abroad, the W4800 is an easy addition to existing radiation safety programs.
## TECHNOLOGY COMPARISONS

<table>
<thead>
<tr>
<th>W4800</th>
<th>Load Cell</th>
<th>Beam-Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conveyor Types</strong></td>
<td>Belt, Screw, Apron, Bucket, Vibrating, or Drag Chain</td>
<td>Belt or Cable Stringer</td>
</tr>
<tr>
<td><strong>Installation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Support Requirements</strong></td>
<td>May be bolted to conveyor frame</td>
<td>May be bolted to conveyor frame</td>
</tr>
<tr>
<td><strong>Space Required</strong></td>
<td>Approximately 14 in (356 mm)</td>
<td>1-2 ft (300-600 mm)</td>
</tr>
<tr>
<td><strong>Idler Alignment</strong></td>
<td>Not important</td>
<td>Not important</td>
</tr>
<tr>
<td><strong>Portability/Relocation</strong></td>
<td>Easily moved without removing conveyor</td>
<td>May be moved without removing conveyor</td>
</tr>
<tr>
<td><strong>Conveyor Condition Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Belt Tension</strong></td>
<td>No effect</td>
<td>Variations in belt tension affects accuracy</td>
</tr>
<tr>
<td><strong>Idler Lubrication</strong></td>
<td>No effect</td>
<td>No effect</td>
</tr>
<tr>
<td><strong>Process Material Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dusty Product</strong></td>
<td>No effect</td>
<td>Dust can affect load cell accuracy</td>
</tr>
<tr>
<td><strong>Corrosive Product</strong></td>
<td>No effect</td>
<td>Corrosion can affect load cell accuracy</td>
</tr>
<tr>
<td><strong>Material Spillage</strong></td>
<td>No effect - can be easily cleaned</td>
<td>Major source of error if product becomes caught in idler</td>
</tr>
<tr>
<td><strong>Environmental Effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Wind</strong></td>
<td>No effect</td>
<td>Belt movement can affect accuracy</td>
</tr>
</tbody>
</table>
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