BELT SCALE MAINTENANCE

By Bill Ripka

BELT CONVEYOR SCALES have become an important part of most bulk material handling facilities. However, being relatively unobtrusive in most conveyor systems, they are often overlooked or ignored after their initial installation. Lack of simple maintenance will potentially cause significant reduction in the accuracy capabilities of these instruments. Most belt conveyor scales are capable of providing reliable results within ± ½% of their full-scale rating. Belt conveyor scales that have been certified via the National Type Evaluation Program (NTEP) are capable of providing results that meet the criteria of the National Institute of Standards and Technology (NIST) Handbook-44, which is ¼%. This is defined as being within ¼% of actual material load and repeatable within a ¼% bandwidth.

Regardless of the accuracy capability of the scale design, it is unlikely that these devices will perform as promised if simple maintenance procedures are not strictly adhered to. Every scale installation will develop its own set of operating characteristics; therefore it is absolutely necessary to monitor the scale's performance and provide routine maintenance as required. It is generally advised, throughout the belt scale industry, that calibration checks be made frequently during the weeks after initial installation, then to increase the time frame between calibrations as statistical results are obtained. While this is a simple suggestion to follow, all too frequently the increase in time between calibration verifications defaults to only whenever a problem is suspected. By then it is too late, incorrect weighments have been made, processes have been interrupted and inventory levels need other means of verification.

Establishment of a routine inspection procedure, including not only the belt conveyor scale, but the entire material handling system, will result in an increased confidence in the scale and ultimately greater control of the accuracy it is providing. It is important to remember that the entire conveyor that the belt scale is installed in becomes part of the "weighing system," and that any changes that occur or are performed within this conveyor can and probably will affect the performance of the scale. Therefore, in addition to a routine scale maintenance procedure it becomes imperative that any and all maintenance performed on the conveyor be reported to the individual or department responsible for the scales performance.

Please see recommended Maintenance Check List chart. Note that verification of the basic mechanics of the conveyor system itself is an integral part of the scale maintenance procedure.

If you have questions regarding your Thermo Scientific branded (formerly sold under the Ramsey brand name) belt conveyor scale, please do not hesitate to contact our office for factory service assistance at 1-800-227-8891.

BELT CONVEYOR SCALE MAINTENANCE CHECK LIST

Applicable to Thermo Scientific Ramsey Model 10-14, 10-17, 10-20, 10-30 and Idea Belt Conveyor Scales

ITEM	VERIFICATION INTERVAL					NOTES
	DAILY	WEEKLY	MONTHLY	QUARTERLY	ANNUALLY	
scale area - debris	***XXX***					Clean scale area. Determine cause of debris and take steps to remedy.
zero cal	***XXX***					Perform Auto Zero procedure. Accept and record any changes. If change is > .25%, identify cause and correct. Record results
idler rolls condition		***XXX***				Inspect idlers for wear / damage. Replace rolls or bearings as needed.
span cal		***XXX***				Perform Auto SPAN simulated load tests. Check repeatability. Record results. Refer the HB-44 section UR.3.2 for actions if error exceeds .25%.
belt scraper		***XXX***				Check operation, adjust or replace blades if worn.
belt condition		***XXX***				Visual inspection for cuts, tears or worn edges.
take-up			***XXX***			Inspect for free travel (bearings, sheaves, etc.)
speed pulley			***XXX***			Inspect for wear, material build-up, belt wrap. Check bearings.
speed sensor coupling			***XXX***			Inspect for tightness, wobble and corrosion.
load cell offset				***XXX***		No load output must be within 1% of rated maximum (typical "S" cell is +/- .3 mV)
load cell balance				***XXX***		Multiple load cell scales must be balanced to within 1 mV
static weight condition				***XXX***		Check for corrosion, location and clearances
revolution time				***XXX***		Verify time for 1 belt rev at maximum speed.
zero reference number				***XXX***		Compare ZERO # with Reference #. Maximum change is 2% / year
audit trail				***XXX***		Review scale history
line voltage				***XXX***		Measure Hot to Neutral, Hot to Ground, Neutral to Ground. Correct as needed.
alignment					***XXX***	Complete per instruction manual
excitation					***XXX***	Verify value and stability
belt length					***XXX***	Measure and verify. Perform acquire test duration if changes noted.
check rods					***XXX***	Inspect check rods. Rods must be straight, spherical washers w/o corrosion.
I/O integrity					***XXX***	Check and verify performance of all I/O being used.
dead band					***XXX***	Confirm settings and adjust if necessary
auto zero track limit					***XXX***	Record Data
auto zero track correction					***XXX***	Record Data
passwords					***XXX***	Confirm and revise if required
wire terminations					***XXX***	Inspect for corrosion and tightness
cable integrity					***XXX***	Visual and ohm check. (corrosion, moisture, deterioration)
spherical washers					***XXX***	Inspect for corrosion, pitting, etc. Replace if necessary.
material factors					***XXX***	Verify with weighed load test.

*** After performing ANY tests or maintenance as part of weekly, monthly, quarterly or annual schedule, ALWAYS repeat zero and span tests !**

**** For technical support regarding any maintenance tests or to schedule factory service for assistance, please call 1-800-227-8891**