

CONTROL
SYSTEMS TECHNOLOGY
THE BELT WEIGHING SPECIALISTS

TDMicronic

RAISING THE STANDARD

**Legal-for-Trade Belt Weighing
in North America**

ACCURACY GUARANTEED



INTRODUCTION

Since their invention in 1908, belt scales have become indispensable in bulk materials handling, evolving from mechanical devices to precision-engineered systems integrated with digital technologies. Today, with flowrates reaching thousands of tonnes per hour in high-value sectors like mining and ports, the demand for commercial certainty has made legal-for-trade belt weighing more important than ever.

TD Micronic, a trusted name in North America for trade-certified belt scale solutions, was acquired by Control Systems Technology (CST) in 2023. This strategic move combined TD Micronic's technical leadership with CST's global expertise and deep R&D capabilities, extending CST's footprint across North American ports and bulk terminals. CST remains the only belt scale manufacturer in the world to offer an accuracy guarantee, a game-changer in for-trade weighing applications where every tonne matters.

GLOBAL CERTIFICATION FOR COMMERCIAL INTEGRITY

In global trade, where bulk shipments can exceed tens of millions of dollars, even a 1% discrepancy can result in six-figure losses. While legal-for-trade certification is about compliance, it's also an important factor in protecting revenue, upholding commercial trust, and reducing risk.

There are two major authorities for trade-approved scales in North America:

- **NTEP** (United States)
- **Measurement Canada** (Canada)

The International Organization of Legal Metrology publishes model international technical recommendations and should be considered as they are intended to harmonize how countries specify, test, and approve instruments.

Static scales have long been certified to 0.1% accuracy; however, belt scales operate under more dynamic conditions. They are continuously in motion, simultaneously processing weight and belt travel while the material passes by at up to 6 m/sec, and are subject to a variety of external factors that scale manufacturers must endeavor to accommodate. Belt scales have historically faced challenges in meeting such stringent standards, but recent regulatory advancements have begun to close this gap.

RAISING THE BAR

North American regulators have significantly tightened belt scale certification protocols. In 2006, **Measurement Canada** approved 0.1% accuracy certification under Article R174 for high-value materials, and in 2014, adopted OIML-aligned testing across a broader range of flow rates (down to 30%). In parallel, **NTEP** introduced multi-point flow testing requirements, enhancing confidence in belt scale performance under real-world conditions.

Changes by the NTEP and Measurement Canada address four areas:



Accuracy



Flowrates for Certification



Long-Term Stability



Quantity of Test Material

These reforms are shaping belt weighing into a trusted method for regulated transactions in ports, terminals, and mineral operations where measurement disputes can have large-scale financial and operational consequences.





ACCURACY

Modern belt scale standards now support certified accuracy levels that were previously unachievable with dynamic systems. The OIML offers Classes 0.2, 0.5, 1.0 and 2.0, where each class represents double the verification error ($\pm 0.1\%$ for Class 0.2). NTEP standards in the U.S. have similarly advanced, enabling certification at 0.1%, a threshold that had been considered the upper limit of belt scale precision. In Canada, Measurement Canada allows legal-for-trade approval at either $\pm 0.5\%$ or $\pm 0.1\%$, depending on the material's value. Since 2006, scales trading in high-value bulk commodities must meet the stricter 0.1% requirement. This shift in standards represents a significant step toward commercial belt weighing systems achieving the same level of trust as static scales.

FLOWRATES FOR CERTIFICATION

Historically, belt scale certification tests were conducted at a single, controlled flowrate. While this simplified the process, it failed to reflect real-world variability and often resulted in discrepancies under normal conditions. Today, both NTEP and Measurement Canada require testing at multiple flowrates, typically low (20–30%), nominal (60%), and high (100%), to demonstrate consistent accuracy across operating conditions. This multi-point verification aligns with OIML standards and ensures that scales perform reliably, even when flowrates deviate from the norm. This is crucial in ensuring operational accuracy day-to-day and not just in test environments.



LONG-TERM STABILITY

Conveyor belts experience wear, stretch, and environmental exposure that can shift calibration over time. Unlike static scales, these changes are more complex and harder to detect without regular testing. NTEP addresses this with a mandatory permanence test conducted 6 to 12 months post-certification to confirm performance has not drifted. Additionally, annual recertification is required for all legal-for-trade belt scales under NTEP. In Canada, a 2017 policy change now mandates biennial testing for mining-related belt scales. These regular intervals provide critical assurance that the systems remain within tolerance and that measurement accuracy can be relied upon.

QUANTITY OF TEST MATERIAL

Field certification of conveyor belt scales requires the use of actual product, often demanding significant site resources. For high-capacity belts (e.g. 6,000 tph), certification may require 5,000 tonnes of material, weighed using calibrated reference systems like rail test cars or track scales. This includes multiple test runs, each requiring precise coordination of equipment, personnel, and weather conditions. Recognizing this burden, recent changes by Measurement Canada and NTEP have adopted OIML provisions allowing for reduced test loads as little as 2% of the scale's one-hour capacity. These revisions significantly reduce the time, cost, and logistical complexity of recertification, helping operators maintain compliance with less operational disruption.

PROVEN PERFORMANCE IN ACTION

A standout case involves Canpotex, one of the world's largest potash exporters. At their Portland terminal, a CST belt scale (via TD Micronic) installed in 2014 achieved a maximum deviation of just +0.08% at low, medium, and high flowrates during initial certification and permanence testing. A 2018 recertification confirmed a deviation of +0.10%, with no calibration adjustments made over three years. This level of stability under real operating conditions highlights the reliability now possible with modern legal-for-trade belt scales.

ACCURACY GUARANTEED

While conveyor belt scales have existed for over a century, their recent certification under modern North American standards has elevated them to deliver accuracy once limited to static scales, far surpassing older methods like ship's draft surveys. Modern legal-for-trade belt scales now provide a level of accuracy and efficiency far superior to legacy methods, ensuring equitable valuation in bulk trade.

CST continues to lead this evolution through sustained investment in R&D, remote diagnostics, and advanced calibration technologies. Solutions like the MaVIS-ARM-IC3 integrator and IntelliRoll® deliver real-time monitoring, enhanced data visibility, and proven accuracy in the harshest environments. Most importantly, **CST remains the only belt scale manufacturer to offer an accuracy guarantee on their belt scales, up to 0.1%**. This commitment gives customers confidence in every transaction, helping them maximize value, reduce risk, and meet the world's most rigorous certification standards. It's why CST are recognized as The Belt Scale Specialists and the trusted weighing partner in for-trade applications across the globe.



THE BELT WEIGHING SPECIALISTS

Control Systems Technology (CST) is a leading global engineering company that specializes in in-motion belt weighing for mining, ports and materials handling industries. Originating in Australia, CST delivers high-accuracy belt weighing systems for bulk material handling to projects and partners around the world. Backed by over 40 years of experience, CST is trusted across the industry for reliable, application-engineered solutions. TD Micronic is now a wholly-owned subsidiary of CST.

HONOURING A LEGACY

This article was originally authored by the late **Lorne Danielson**, a respected leader in belt weighing and major contributor to TD Micronic's success. CST is proud to carry forward his legacy as we serve customers across North America and globally.

**LEARN MORE ABOUT CST'S ACCURACY
GUARANTEE BY VISITING OUR WEBSITE**

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SERVICES WORLDWIDE

Control Systems Technology service all brands of belt weighers at sites all over Australia and globally.

Service Bases:

- **Australia** (Perth, Mackay, Hunter Valley)
- **Chile**
- **Peru**
- **Canada** (Vancouver)

Well trained technicians provide thorough recalibrations, trade verifications, audits and repairs to ensure equipment is performing as it should and to confirm the results are accurate.

