



Tokheim Quantum ML

Dispenser Technology

Apr-2022

DFS *Worldwide* Brands

Wayne FUELING SYSTEMS OPW FUEL MANAGEMENT SYSTEMS ClearView

TOKHEIM ProGauge fairbanks

WE
ARE

OUR VALUES

A Collaborative
Entrepreneurial Spirit

Winning
Through Customers

Engaging
in High Ethical
Standards, Openness
and Trust

Fostering
Expectations for
Results

Respecting
and Valuing People



WE
ARE

OUR VISION

Enabling the
evolution of
consumer
experience in
fueling and
convenience retail.



WE
ARE

OUR MISSION

A leading global
provider of
advanced
customer-
focused
technologies,
services and
solutions in the fuel
and convenience
retail industries.



WE
ARE

OUR CULTURE

A team committed to
doing great things,
collaborating to
deliver exceptional
business results for
our customers. We
are accountable,
results driven and
create value, through
innovation,
continuous
improvement and
execution excellence.



WE
ARE

**CULTIVATING
EXCELLENCE**

Aligned

Accountable

Engaged

Problem Solvers

**Customer-
Centric**

**Celebratory in
Success**

**Execution
Champions**





**Tokheim
Dispenser Technology**



Proven Reliability

Engineered with field-proven global components and corrosion resistant materials, Tokheim fuel dispensers offer exceptional reliability

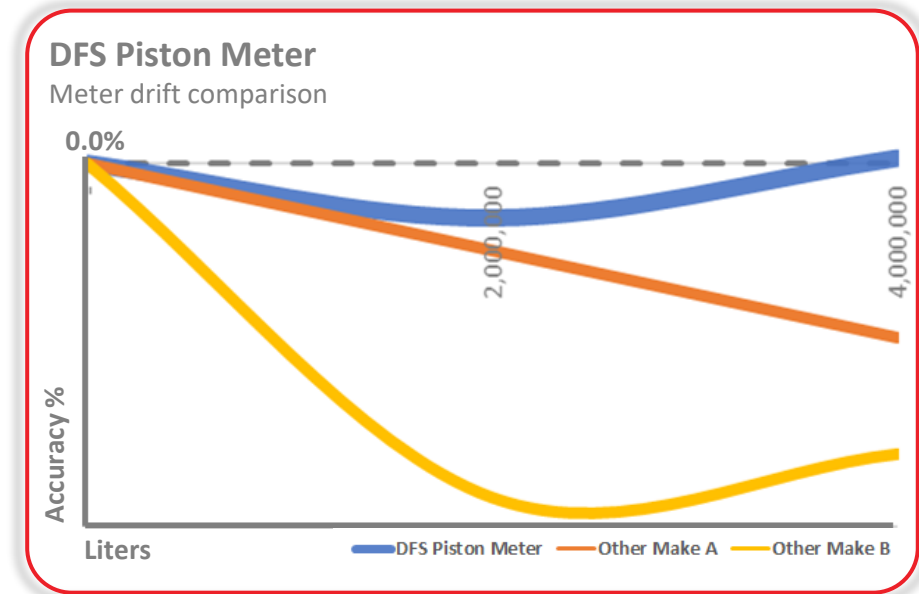
- Strong corrosion protection from high quality materials & industry leading paint technology
- Assembled to the highest standard with rigorous testing & quality control
- Engineered with leading pumping technology using gear pump for reliable longevity
- Superior uptime in field, with reliable operation from long-lasting components
- Better total cost of ownership from less maintenance required during lifetime



Accurate Fueling Faster

Designed for superior stability and accuracy over the lifetime of the dispenser, our fuel meter ensures accurate metering in all conditions

- Robust meter for optimal performance in all conditions
- Technology leadership with exceptional stability with minimal drift of 0.04% over 8 million liters
- Certified accuracy with meter performance verified by independent test lab
- Electronic calibration and industry-best resolution of 400 pulses per liter for accuracy across all flow rates
- Better total cost of ownership from minimal drift, reliable performance and minimal recalibration requirement





Engineered with safety in mind, from assembly to installation and daily operation, Tokheim fuel dispensers come with enhanced safety features as standard

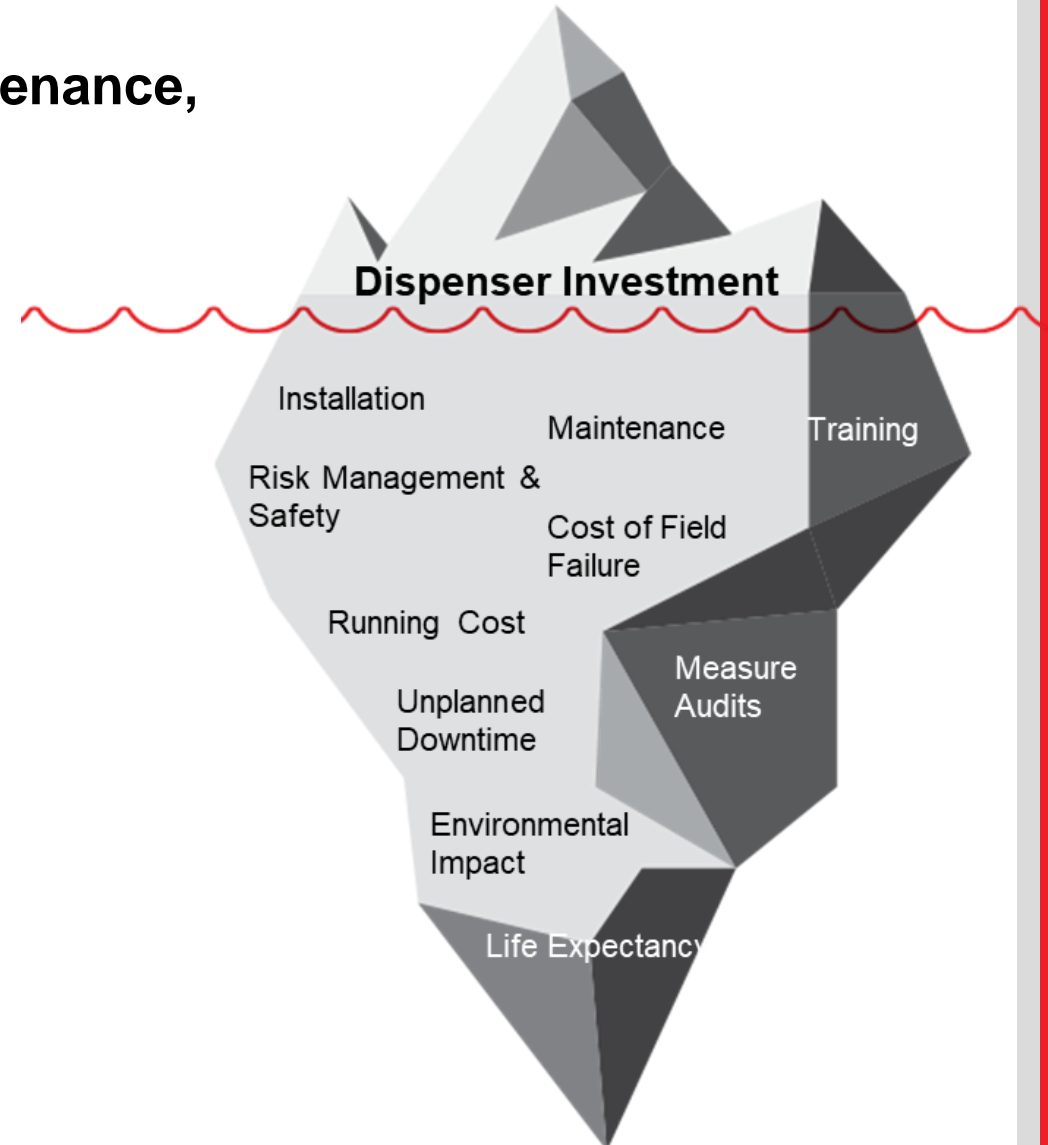
- Safety-focused details that avoids working at height for expected maintenance interventions like hose replacements due to natural wear
- High-quality materials used for gaskets & o-rings to prevent leaks over lifetime
- Patented double-bump pipe couplings minimize faulty assembly for secured seal
- Better total cost of ownership from less maintenance with improved protection against leaks over lifetime



Total Cost of Ownership

Engineered to maintain accuracy, require less maintenance, and last longer for low total cost of ownership. Engineering excellence in every detail

- Built to last with durable design using field-proven components that require less maintenance
- Strong corrosion protection outside and in to ensure a long lifetime of the dispenser
- Robust design with single bottom-frame & strong chassis for improved structural framework
- Reliable operation from minimal drift metering and stable field-proven electronics





Quantium ML

Dispenser Technology



Quality through Engineering Excellence

Tokheim fuel dispensers are recognized for quality in all core components.

Minimal Drift

Certified accuracy and superior stability for minimal drift over the meter's lifetime

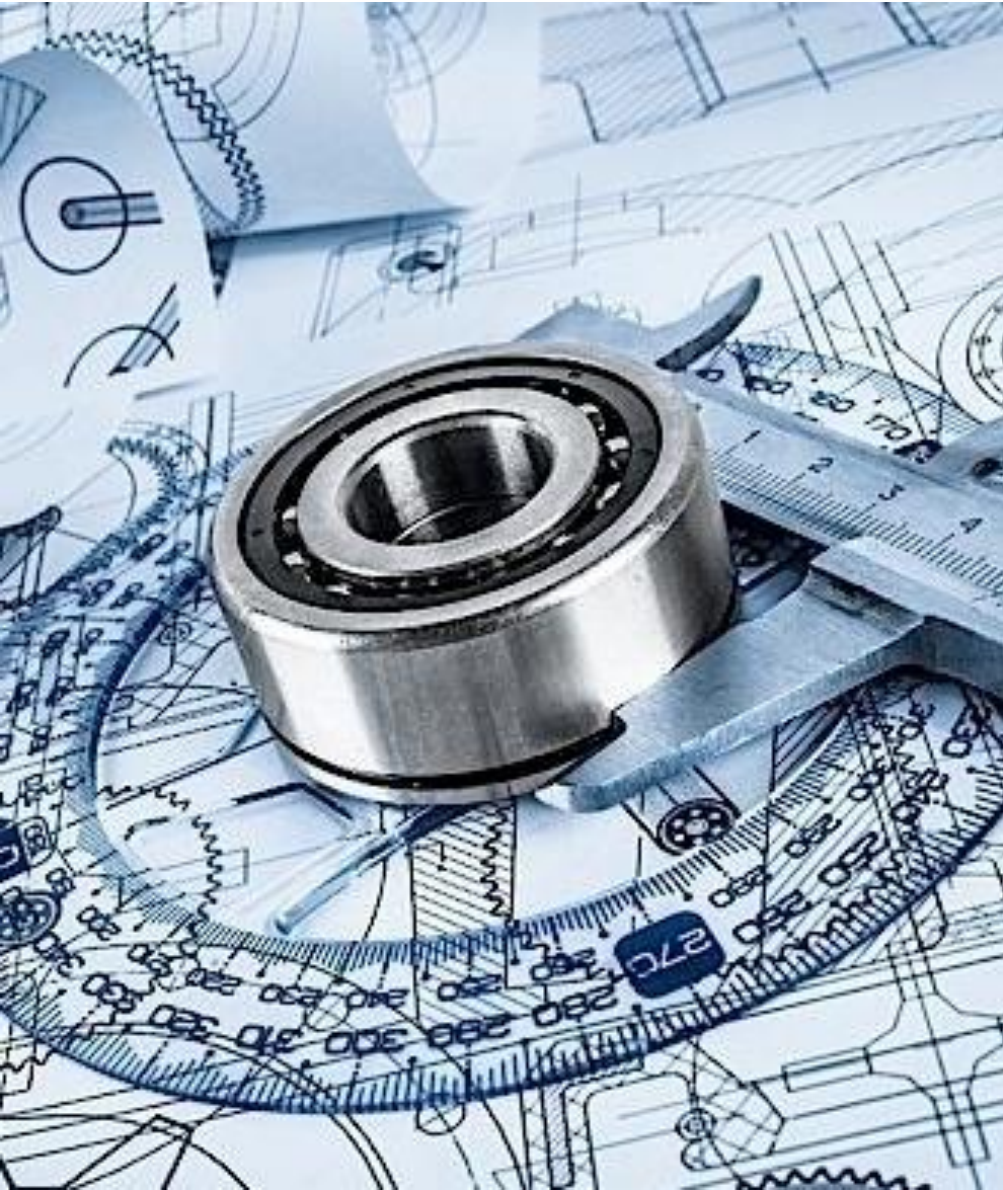
Reliable Quality

Built to last, using quality materials and field-proven components, as well as utilising strong corrosion protection, for a lifetime of reliability

Lowest Total Cost of Ownership

Engineered to maintain accuracy, requiring less maintenance and proven to last longer for low total cost of ownership.

Engineering excellence in every detail!





Say Hello to Tokheim Quantum ML

Reliable Quality through Engineering Excellence offering True Modularity and Configuration Flexibility

- Engineering excellence with field-proven best of the best components and industry leading corrosion protection providing our trusted long-lasting Tokheim quality
- Superior modularity with models for wide range of fluids, flow rates and options to suit any site or application
- Reliable quality that maintains accuracy, requires less maintenance and lasts longer for the lowest total cost of ownership





Our modularity, quality materials and best of the best components ensures superior nozzle availability and low TCO

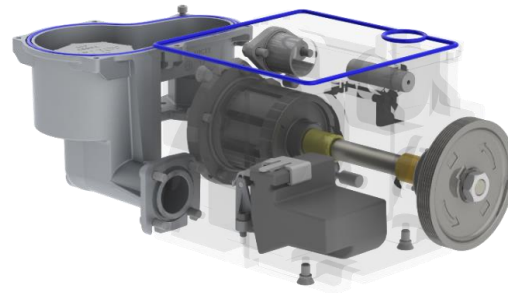
- Reliable electronics and certified metering accuracy from field-proven technology delivering exceptional stability for minimal drift
- Robust hydraulic system with field-proven gear pump technology and quality materials for excellent fluid compatibility delivering reliable quality for superior nozzle availability
- Optional IoT technology connecting the dispenser to the cloud and our powerful DX platform for monitoring and advanced remote management capabilities for low TCO
- A safe investment for years to come with future-proofing modularity and our durable quality that benefits from field-proven components and corrosion resistant materials for a lifetime of reliable operation

Improved hydraulic system based on field-proven best of the best gear-pump technology in new arrangement for reduced vibration & noise with same reliability & performance

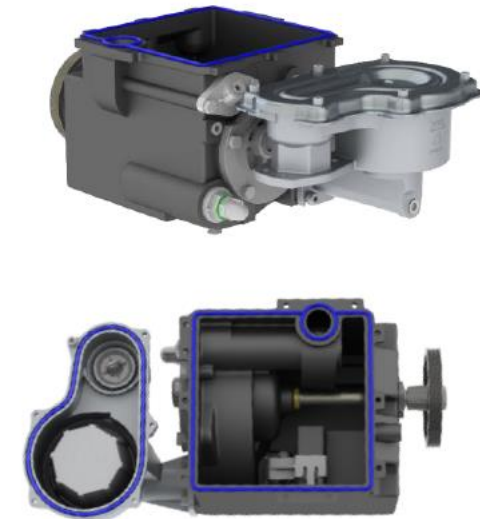
■ New stack arrangement



■ New cast-iron pulley & self-tensioning belt system



■ New sealed connection



■ Improved TCO with reliable performance and reduced wear & tear

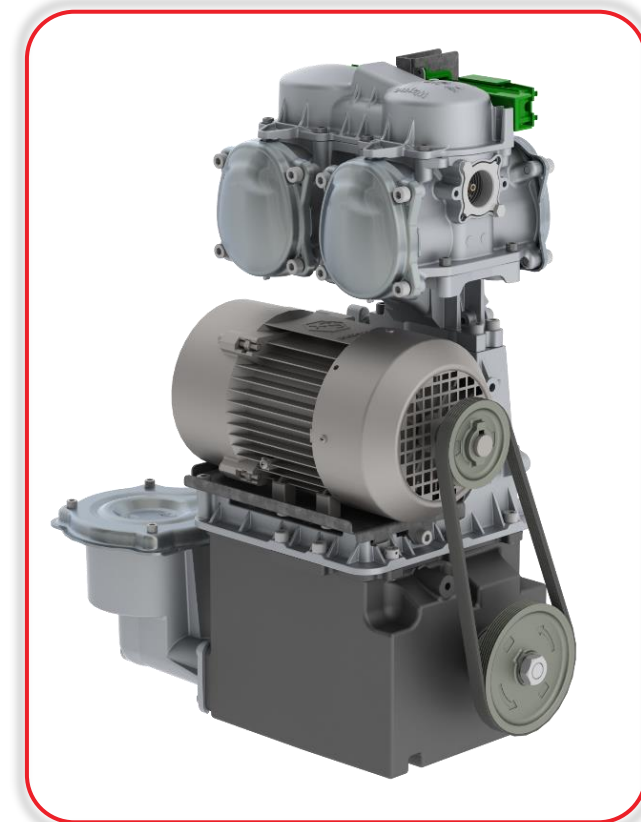
DFS is standardizing on gear pump technology for both retail and high flow capacity dispensers, as gear pump technology offers better durability and reliability than vane-style pumps, offering superior performance and low TCO

Maintenance free design

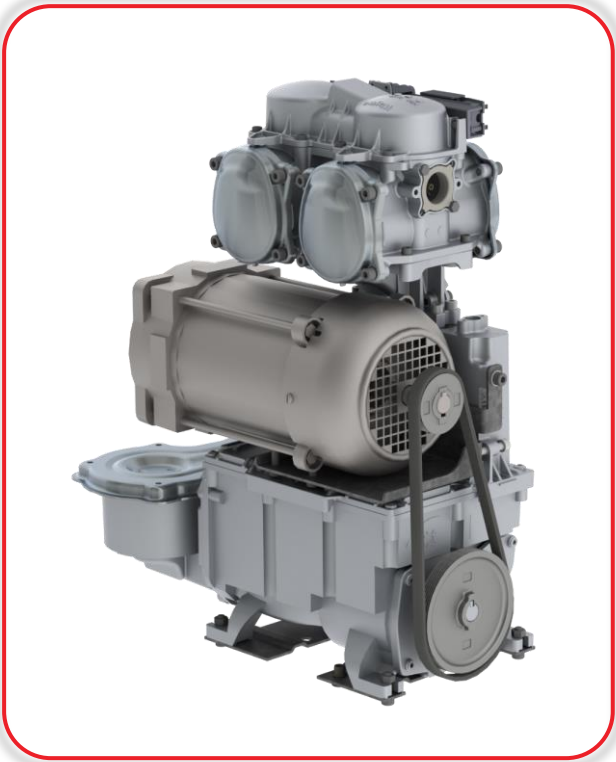
- Our maintenance free self-lubricating gear pump has guided path for moving parts to prevent breakdown and repairs. No blade to replace from wear as gear pumps avoids the friction between the housing and the blade seen with vane-style pumps.

Self-tensioning belt

- Engineering excellence with less operational vibration with cast-iron pulley and self-tensioning belt that reduces heat from belt friction for minimal wear to ensure durability.



Designed for high-capacity flow using positive displacement gear pump technology for reliability and lowest TCO



Designed for reliability in all conditions

- Robust versatile design with superior lifetime performance from durable materials and high-quality componentry including fuel resistant seals compatible with a broad range of fuels for reliable performance in a wide temperature range

Optimal performance from maintenance free design

- Compact self-lubricating design with guided path for moving parts to avoid wear for enduring operation. Engineering excellence with less operational vibration from aluminum housing, cast-iron pulley and self-tensioning belt technology for minimal wear and easy maintainability.

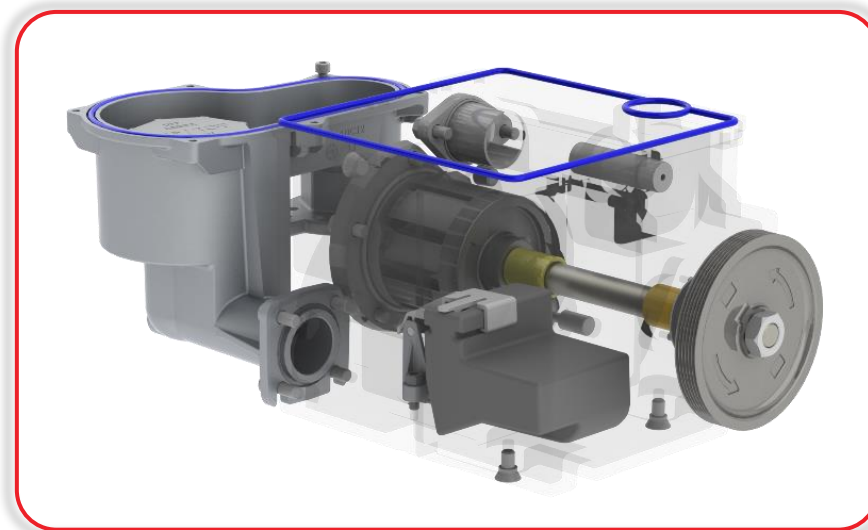
Our field-proven best of the best gear pump technology offer more efficient fueling with less noise and reduced risk of leaks compared with competitive designs

Less vibration & noise

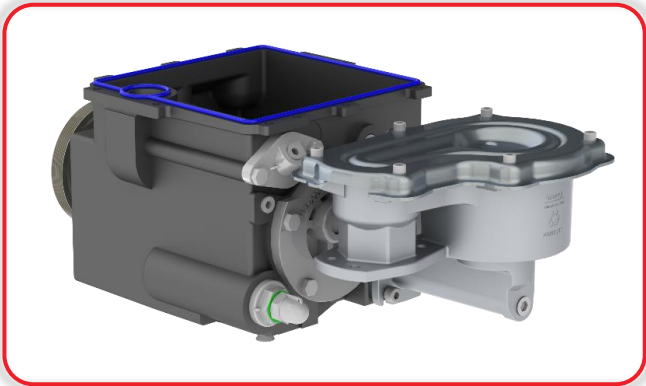
- Gear pump cause less vibration than vane-style pumps resulting in less noise and less vibration, reducing the risk of leaks caused by vibration strain on tube assemblies and bracketry. Our design offer additional stability from the positioning of the pumping unit below the motor for a lower point of gravity.

Versatility for all fuel types

- Our hydraulic system is designed with quality materials incl flour silicone seals for excellent fluid resilience for durability with all fuel types in a broad range of temperatures.



DFS dispensers features our field-proven positive displacement gear pump technology for a lifetime of reliable performance for low total cost of ownership

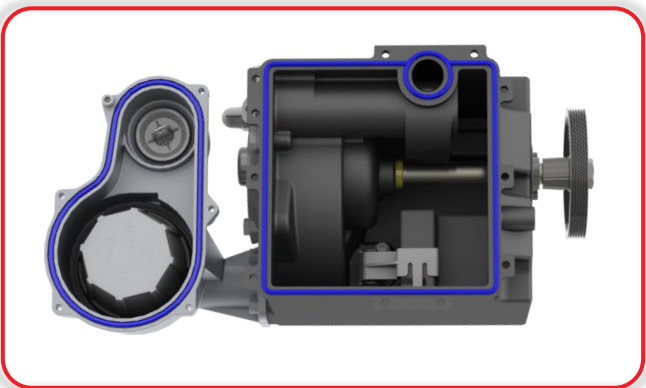


Optimal flow

- Field-proven design for optimal flow with minimal efficiency loss from static air separation from continuous recirculation of the fluid without any wear for low TCO.

Robust design

- Gear pumps are more robust and less sensitive to dirt and particles in the fuel than vane-style pump, significantly reducing the risk of breakdown and severe repairs.



External filter pot

- Additional protection with external filter pot and optional re-useable filter for easy intervention for filter cleaning.

DFS dispensers features our patented double-bump technology for tube assembly, which eliminate risk of leakage and enable efficient service

Reduced risk of leakage

- Intelligent poka-yoke design which prevents wrong assembly to eliminate human error and the potential risk of leakage otherwise possible with flared connections. Our design utilizes fuel resilient fluor silicone O-rings to reduce risk of leakage over the dispenser's life-time.

Excellent serviceability

- Our double-bump system reduces intervention time compared with flared tube connections. Quick tube removal and insertion, then simply snap in place and secure with lock pin.



Improved stage II vapour recovery (VR2) system with direct drive form combined motor and pump unit, eliminating belt used on alternative system, avoiding wear & tear for low TCO



Electronic Vapour Recovery (EVR)

- Robust field-proven electronic VR2 system to ensure environmental compliance from reliable vapour recovery performance.



Self-Calibrating Electronic Vapour Recovery (SC-EVR)

- Field-proven VFM technology providing an automatic vapour recovery monitoring system that continuously checks the recovery performance and proactively regulates the vapour flow in a closed loop system to ensure compliance with environmental codes.



Hydraulic System

DFS is leveraging decades of expertise in hydraulic innovation in our dispensers where we utilize our field-proven best of the best core components to ensure retailers benefit from reliable performance and low TCO

Better cavitation resilience

- Our hydraulic stack design benefits from a low point of gravity, which offers more resilient performance in cavitation situations.

Proportional valve

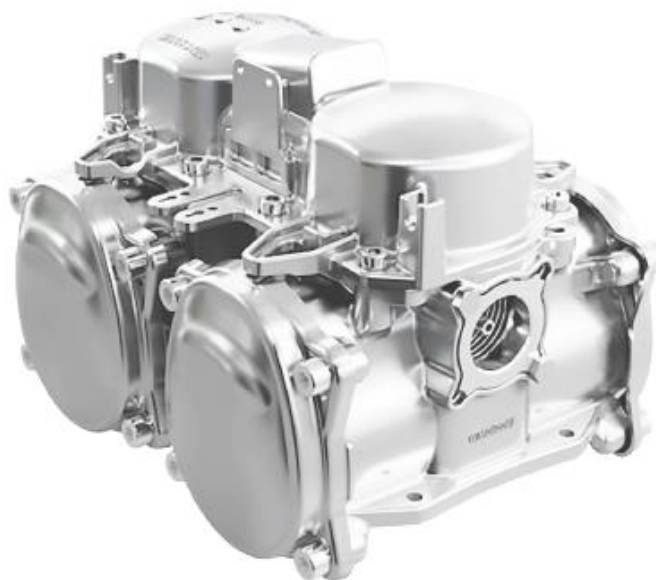
- Our design offer our field-proven proportional valve as an optional configuration feature for superior flow control.

Durability for low TCO

- Leveraging hydraulic innovation our gear pump benefits from less operational vibration with cast-iron pulley and self-tensioning belt that reduces heat from belt friction for minimal wear to ensure durability and low TCO.



It's the most critical component in any fuel dispenser, yet not all meters are created equal...



Minimal Drift Meter

- Designed for reliable performance over the lifetime of the dispenser, our fuel meter maintains exceptional stability with minimal drift of 0.04% over 8 millions liters.

Accurate Fueling Faster

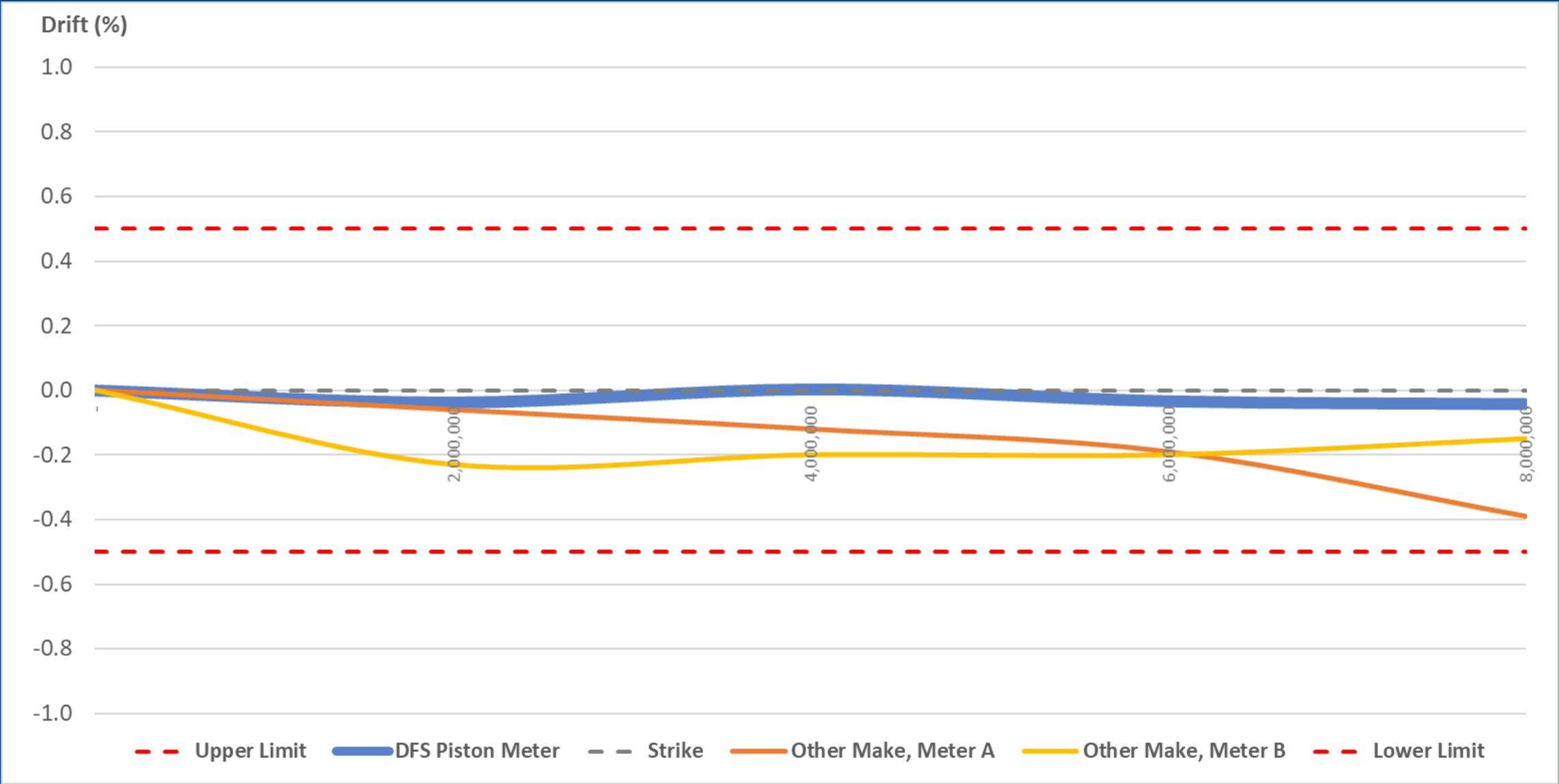
- Designed to minimize pressure drop from an optimized fluid path, using industry-best data resolution of 400 pulses per liter to provide accurate measures across a wide range of flow-rates.

Lowest TCO

- Technology leadership from accuracy and optimal performance in all conditions providing industry leading TCO with minimal drift proven to perform well within legal tolerance of +/- 0.5



Meter Drift Comparison



Our dispensers benefit from our robust field-proven DFS piston meter delivering reliable performance with all fuel types

Versatility for superior reliability

- The DFS Piston meter has a robust design assembled with a single piece casted crankshaft and optimized yoke guidance to minimize wear & tear and work reliably and accurately with a variety of fuel types in even the harshest of conditions. The meter offers excellent fluid compatibility and extreme temperature range for operations from -40°C to +60°C

Robust design to prevent meter leakage

- Designed with check valve located on the meter outlet for strong resistance to leaks caused from pressure spikes from hoses being driven over, and to dramatically reduce the risk of leaks with internal crankshaft, ring-fenced meter covers and use of resilient fluor silicone O-rings which provide excellent fluid compatibility



Our dispensers benefits from intelligent design for strong protection against tampering

Strong design safeguarding the integrity of the meter

- Engineered without gears & with both the crankshaft and the pulsar inside the meter housing to prevent tampering

Intelligent data security to prevent fraud & theft

- The pulsar is engineered with removal detection as well as mutual authentication between the pulsar & the calculator, which communicates via an encrypted high-speed serial link

Our patented two-step electronic calibration provides quick and easy verification

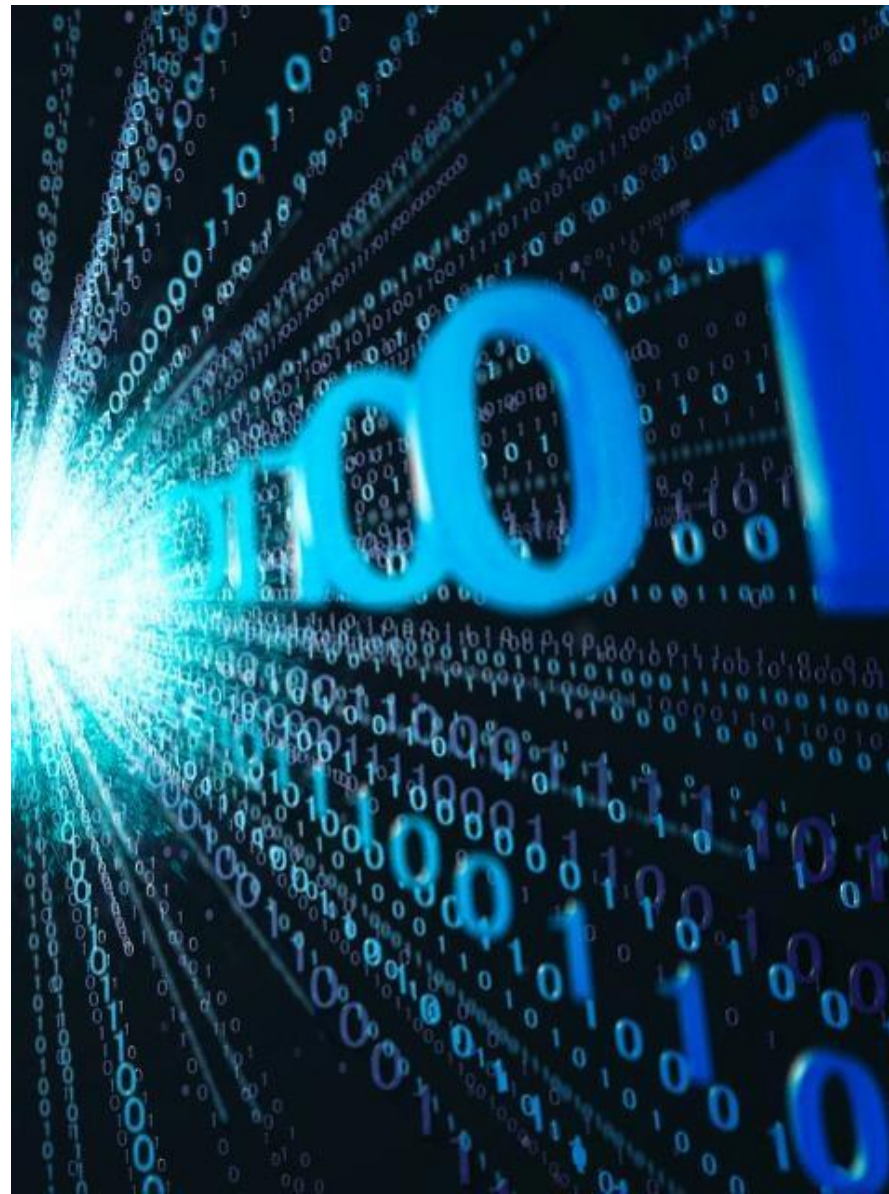




Advanced Pump Calculator

Engineered with advanced field-proven electronics with advanced functionalities ensuring strong anti-tampering protection and optimal flow control for precise metering

- Field-proven TQC electronics for reliable performance, future-proofed with IP-communication capability
- Engineered with strong fraud protection using digital component tagging & encrypted communication to prevent tampering & theft
- Advanced consumer engagement with seamless integration of dispenser media & outdoor payment
- Better total cost of ownership from less maintenance required during lifetime



Engineering excellence, offering versatility with our modular design and core platform of quality components. True versatility to address your every need

Conventional Fuel



Quantum FS



Quantum ML (LHR)



Quantum ML (FHR)



Quantum ML (EHR)

AdBlue



QFS AdB



QML AdB (FHR)



QML B2B AdB (FHR)



QML AdB (EHR)



QML B2B AdB (EHR)

LPG



QFS LPG






QML LPG



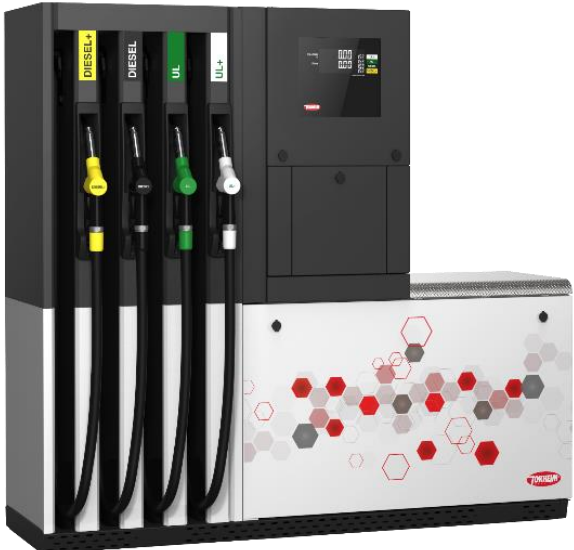


QML B2B LPG

Designed for both conventional and alternative fuels, Quantum ML offer you total flexibility to configure and customize your dispenser to your every need

Conventional Fuels	AdBlue	LPG
<ul style="list-style-type: none"> ▪ Suction or Remote Pressure ▪ Up to 5 grades ▪ Up to 10 nozzles ▪ Multiple flow rates 	<ul style="list-style-type: none"> ▪ Remote Pressure ▪ 1 Grade or Back-2-Back ▪ Up to 4 nozzles (10 as B2B) 	<ul style="list-style-type: none"> ▪ Remote Pressure ▪ 1 Grade or Back-2-Back ▪ Up to 2 nozzles (10 as B2B) 

We offer almost endless configuration possibilities including choice of hose management

LHR	FHR	EHR
<p>Light Hose Retraction (LHR)</p> <ul style="list-style-type: none"> ▪ Hose Reach 3.5 meters ▪ Free Reach 2.5 meters 	<p>Full Hose Retraction (FHR)</p> <ul style="list-style-type: none"> ▪ Hose Reach 4.0 meters ▪ Free Reach 2.2 meters 	<p>Extended Hose Retraction (EHR)</p> <ul style="list-style-type: none"> ▪ Hose Reach 4.7 meters ▪ Free Reach 2.9 meters 

Our dispensers features a bonded glass solution protecting the electronics and sales & volume display.

Strong protection from water ingress

- Our design eliminates the risk of damaging the electronics from water ingress that could otherwise happen with other makes using plexi-glass fastened only with tape.
- Our design offers a new optional premium 7-6-5 sales & volume display for optimal user experience and up to 5 individual unit price displays.



We offer a complete solution for digital media with T-Media and integrated digital media screens that turns your fuel dispensers into a promotional powerhouse

Enhanced Customer Engagement

- Media content interacts with the customer based on dispenser activity for enhanced engagement compared to simple loop play

Proven Effectiveness

- Event-driven media has proven effectiveness compared to other forecourt signage as the media content is synced to the customer's interaction with the fuel dispenser to ensure play to a captive audience

Boost Sales & Profit Margins with Digital Media integrated in your dispenser



Improved maintenance with our innovative hydraulic stack design that reduces time of field interventions for low TCO

Better service access

- Our design features a hydraulic stack with easy access for service as the stack can be removed more easily than designs where all components are fitted on bracketry and individual tube assemblies.

Stage II vapour recovery in stack arrangement

- Similarly, our VR2 system is featuring a stack arrangement to optimize service interventions for low TCO.

Reduced risk of leakage

- The stack approach reduces the risk of leaks with fewer tube assemblies and seamless integration of the pumping unit and the fuel meter, as well as the use of high-quality fluor silicone seals, which offer better fuel resilience than cork used in alternative designs.





A Sound Investment for Years to Come



Trusted Tokheim Quality from Engineering Excellence providing Reliable Operation and the lowest TCO

- Built to last with true durability using field-proven components that require less maintenance and strong corrosion protection outside and in to ensure a long lifetime of the dispenser
- Engineered to maintain accuracy, require less maintenance and last longer for low total cost of ownership.
Engineering Excellence in Every Detail!

