

Tokheim Quantum ML Dispenser Technology

OUR VALUES

Collaborative
entrepreneurial spirit

Winning
through customers

Engaging
in high ethical
standards, openness
and trust

Fostering
expectations for
results

Respecting
and valuing people

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.



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.

CULTIVATING EXCELLENCE

ALIGNED

ACCOUNTABLE

ENGAGED

PROBLEM SOLVERS

**CUSTOMER
CENTRIC**

**CELEBRATORY IN
SUCCESS**

**EXECUTION
CHAMPIONS**

Value Proposition

Safety First!



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
- Patented double-bump pipe connections minimizes faulty assembly for secure seal
- Better total cost of ownership from less maintenance with improved protection against leaks over lifetime





Engineered with a modular electronic head providing commonality as well as flexibility to configure functionality for more advanced user interaction

- Modular design with option for preset keyboard, dual displays and up to 5 individual unit price displays
- Engage the motorist with integrated high resolution media screen managed with our feature-rich content management solution
- Add convenience with secure outdoor payment technology

Exceptional Modularity



Engineered to offer you total flexibility to configure and customize your fuel dispenser, we offer more than 10,000 configurable combinations

- Modular design with wide range of options to address your every configuration need
- Future-proofed technology platform based on global components with easy upgrade path for dispenser media and outdoor payment
- A safe investment for years to come with modularity as an integral part of the design



Accurate Fueling Faster



Engineered 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
- Engineering excellence with exceptional stability with minimal drift of 0.04% over 8 million liters
- Better total cost of ownership from reliable performance and minimal drift requiring recalibration during lifetime

Fuel Operation Security

TOKHEIM
QUALITY

DOVER
FUELING SOLUTIONS

Engineered with field-proven electronics prepared for advanced functionality, our pump computer ensures accurate fuel delivery with strong security features to prevent tampering and fraud.

- Advanced security access and design features preventing tampering and fraud
- Future-proofed design prepared for advanced functionality like ATC, Media and Payment
- Better total cost of ownership from reliable field-proven electronics for staple operation with fewer maintenance interventions during lifetime





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

- Strong corrosion protection from high quality materials and industry-leading paint technology
- Superior nozzle availability with better uptime from long-lasting quality components and leading gear pump technology for reliable longevity
- Better total cost of ownership from less maintenance interventions required over lifetime

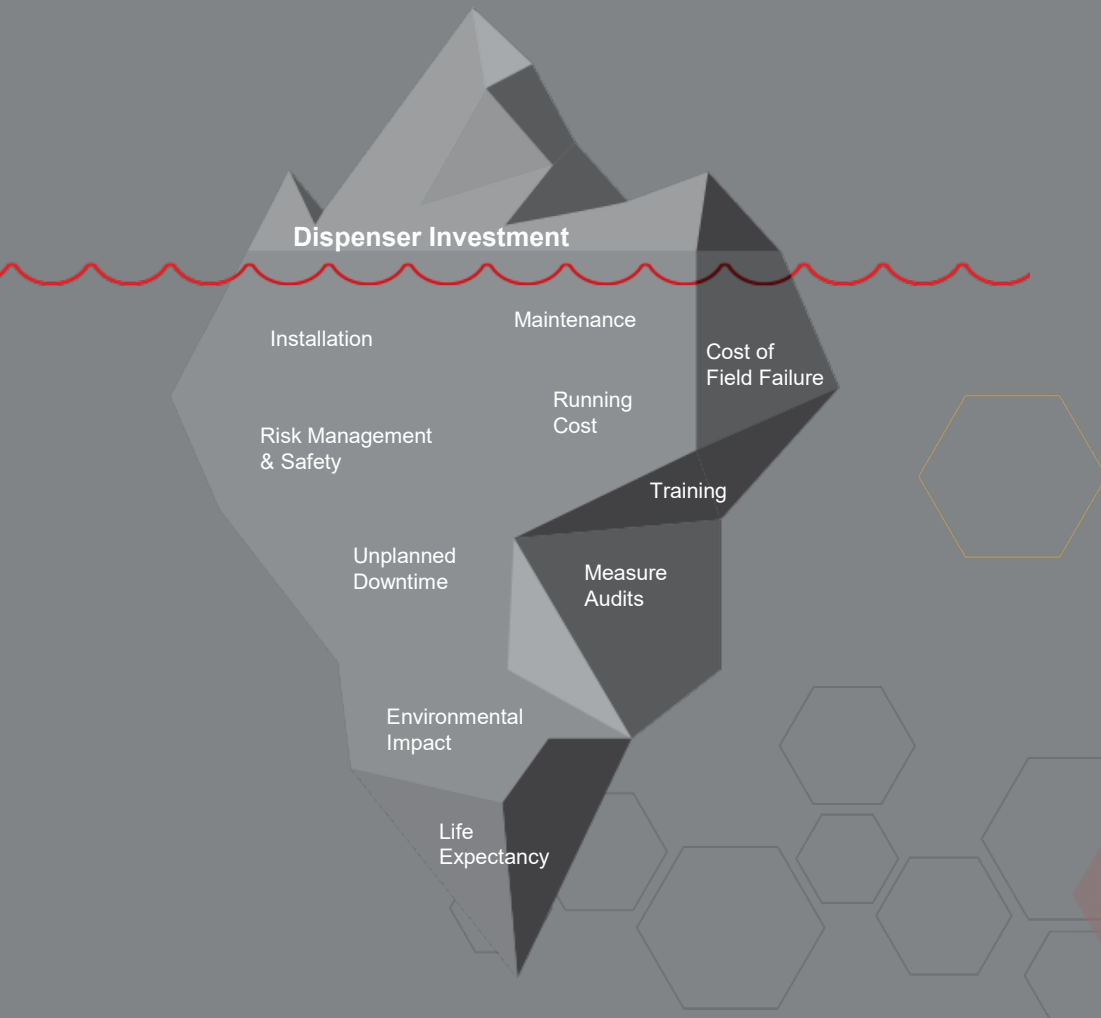
Superior Serviceability



Engineered to make maintenance efficient and safe, Tokheim fuel dispensers ensure short intervention time to minimize downtime for better Total Cost of Ownership

- Optimised for easy maintenance access and fast intervention time with quick hose connections and hydraulic stack approach
- Designed to avoid working at height for safe maintenance of nozzle switches and hanging hardware
- Better total cost of ownership from global components and shorter intervention time





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

- Reliable operation from accurate metering and stable field-proven electronics
- Built to last with strong corrosion protection, quality material and durable design using field-proven components that require less maintenance interventions
- Better total cost of ownership from long-lasting quality delivering superior reliability with fewer parts wearing over the lifetime

Portfolio Overview

Portfolio Overview



Based on our global technology platform, Tokheim fuel dispensers are recognized for long-lasting quality, reliability and versatility, offering almost endless configuration possibilities to address your every need



Quantum ML
LHR



Quantum ML
FHR



Quantum ML
EHR



Quantum ML
AdBlue



Quantum ML
LPG



Quantum FS



Quantum FS
Screen wash



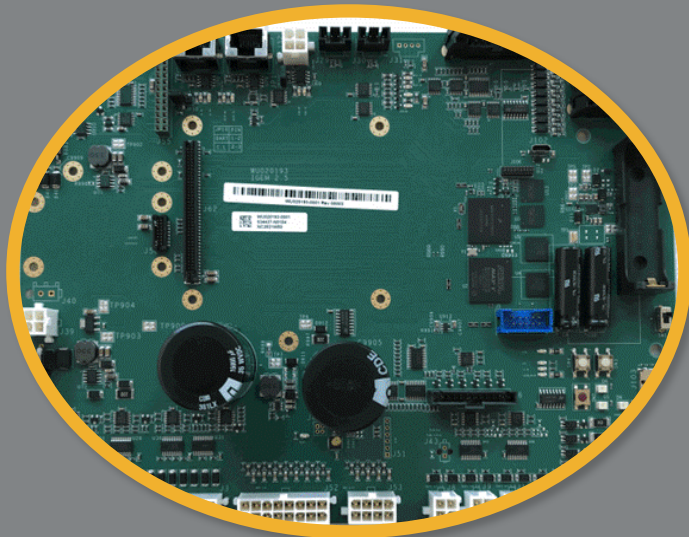
Quantum FS
AdBlue



Quantum FS
LPG

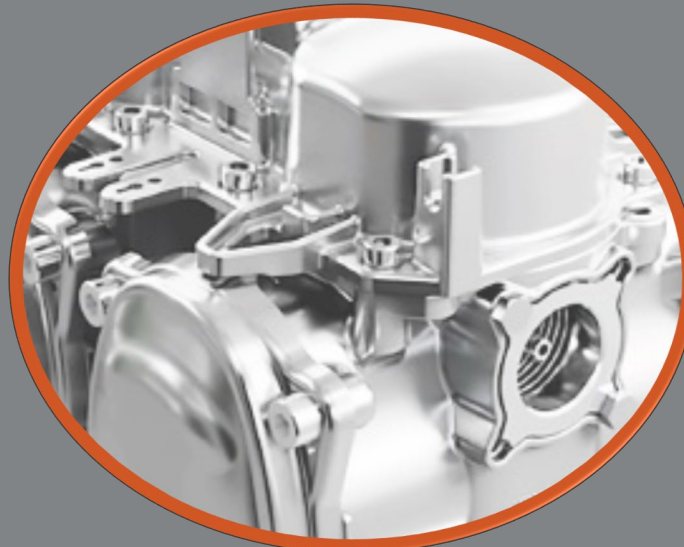
Technology Leadership

Our philosophy is to offer long-lasting reliable quality! A key factor of delivering reliable quality and low total cost of ownership is our industry leading component technology



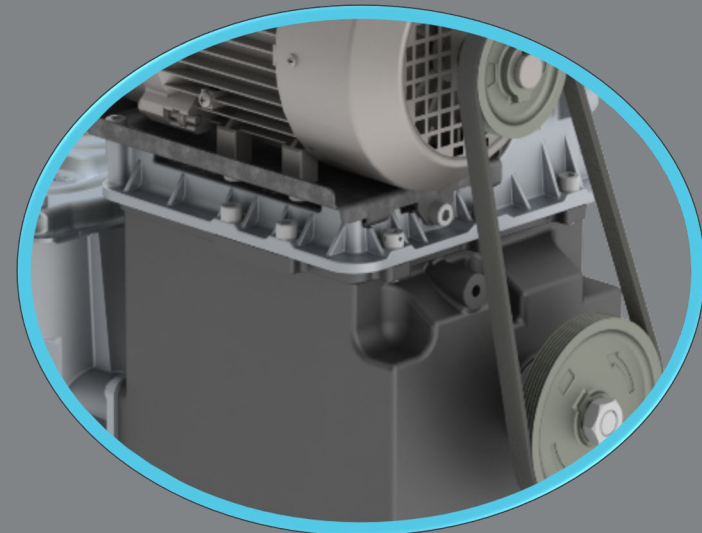
Field-Proven Electronics

- Optimal flow control
- Strong security features
- staple performance in field



Superior Meter Stability

- Minimal drift piston meter
- Accurate fueling faster
- Robust meter design



Reliable Hydraulic Systems

- Long-lasting performance
- Reliable pressure system or
- Robust gear-pump for suction

Engineered for low total cost of ownership from stable field performance, our advanced iGEM2.5 electronics is designed to a high specification using quality components to ensure reliability and operational performance as well as computing power for advanced functionalities.

- Stable field performance

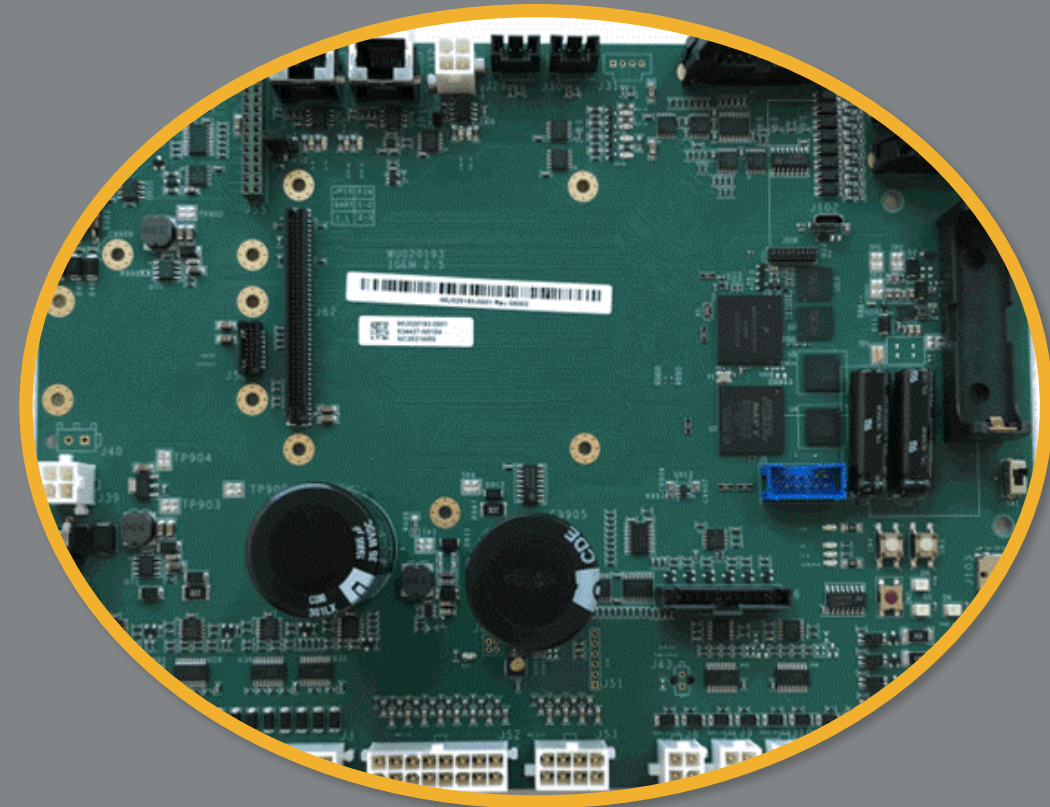
Reliable hardware platform with future-proofed computing power for new functionalities like our industry-leading RDM feature enabling connected dispenser features like remote access and remote management of our fuel dispensers.

- Strong security features

Advanced security access and strong security design features preventing tampering and fraud

- Advanced flow control

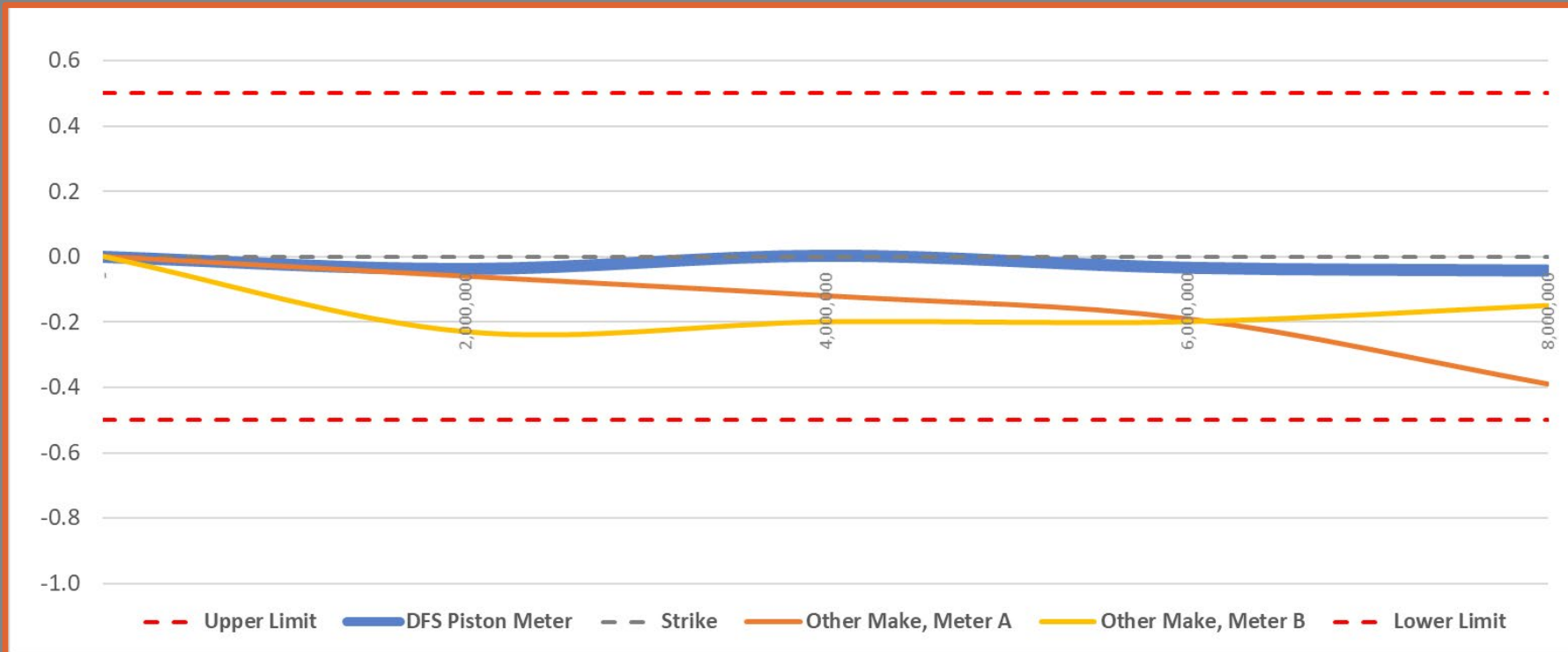
iGEM2.5 electronics also offers advanced valve control supporting accurate metering functionalities like preset & pay@pump as well as automatic temperature compensation



Superior Meter Stability

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

Our industry-leading piston meter technology has a robust design engineered to deliver reliable performance over the lifetime of the dispenser; our fuel meter maintains exceptional stability with minimal drift of 0.04% over 8 millions litres.



Minimal Drift Meter

- Positive drift well within legal tolerance of +/- 0.5%
- Less than 0.04% drift over 8 millions litres

Our industry-leading piston meter technology has a robust design engineered to deliver reliable performance over the lifetime of the dispenser maintaining exceptional stability with minimal drift for low total cost of ownership.



- **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 with an optimized fluid path, using industry-best data resolution of 400 pulses per liter for accurate measures across a wide range of flow rates.
- **Robust Meter Design**
Our meter is designed to prevent leakage with meter outlet check valve and internal crankshaft to resist pressure spikes and is engineered with a single piece casted crankshaft and optimized yoke guidance to minimize wear & tear.

Our dispensers benefit from our robust field-proven 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 $+60^{\circ}\text{C}$
- 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 O-rings which provide excellent fluid compatibility.

Our dispensers benefit 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 pulser inside the meter housing to prevent tampering.
- Intelligent data security to prevent fraud & theft
The pulser is engineered with removal detection as well as mutual authentication between the pulser & the pump computer, which communicates via an encrypted high-speed serial link.
- Electronic Calibration
Our patented two-step electronic calibration provides quick and easy verification.

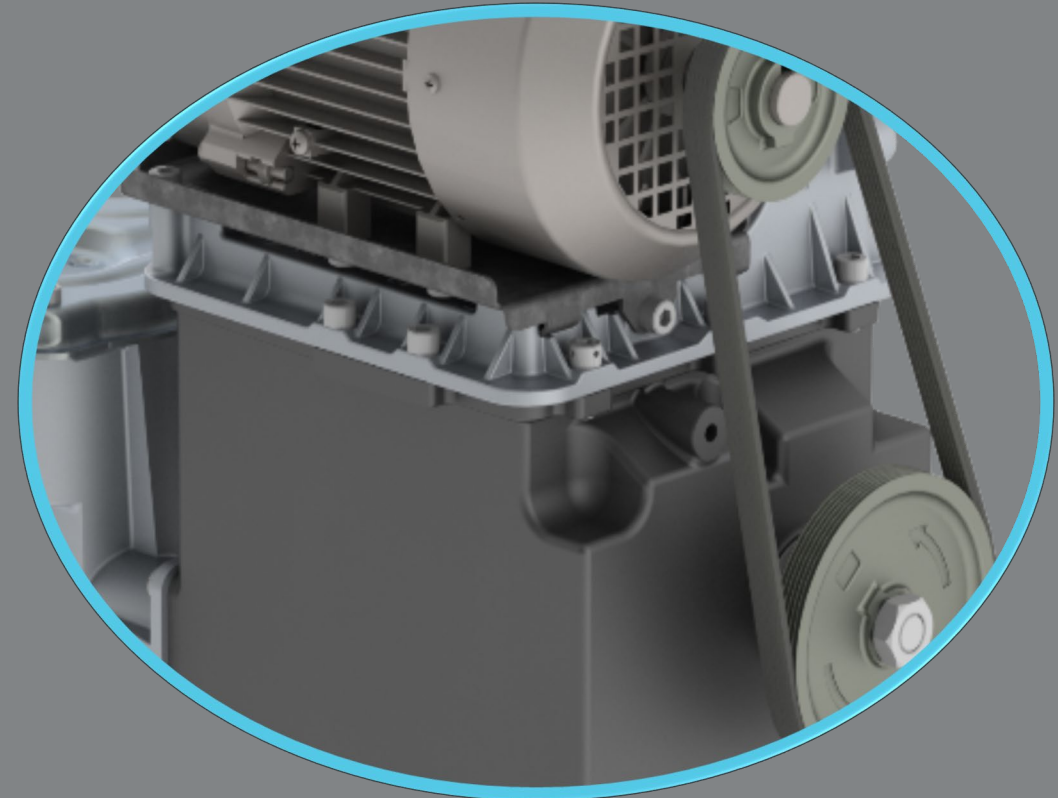
DFS is leveraging decades of expertise in hydraulic innovation utilizing our field-proven best of the best core components to ensure retailers benefit from reliable performance and low TCO.

- Remote Pressure

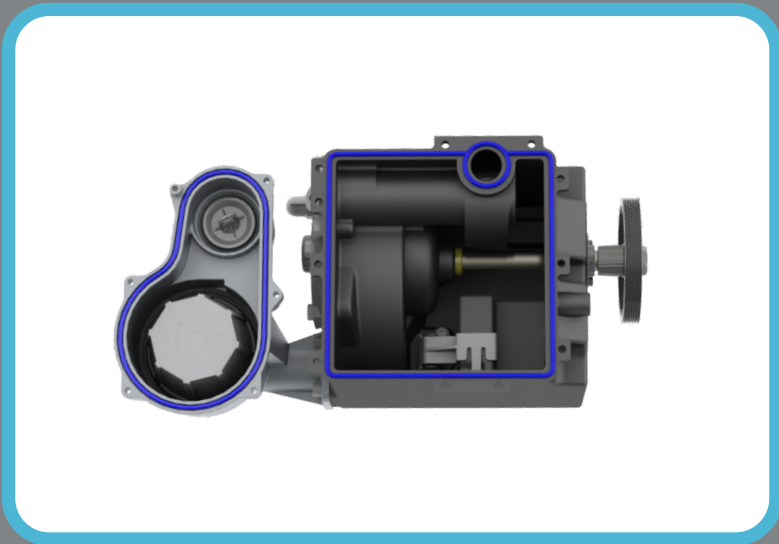
Designed to minimize potential leaks and deliver optimal flow control for an excellent fluid path, our field-proven remote pressure hydraulic system operate on some of the world's most busy forecourts.

- Suction

Designed with leading gear-pump technology our suction hydraulic system offer strong leak protection and reliable operational performance from our robust field-proven pumping units mounted with lowest center of gravity for minimal vibration and lower suction depth.

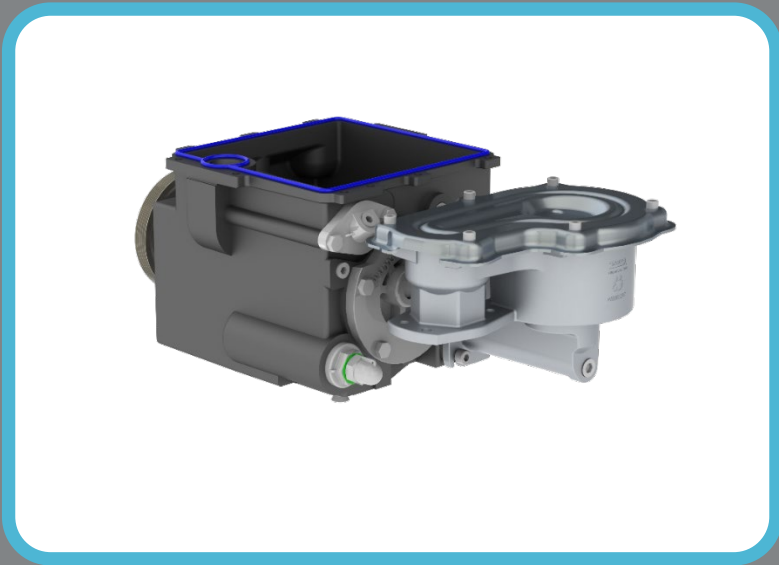


Our field-proven best of the best gear pump technology offer more efficient fueling with less noise and reduced risk of leaks compared with competitive designs.



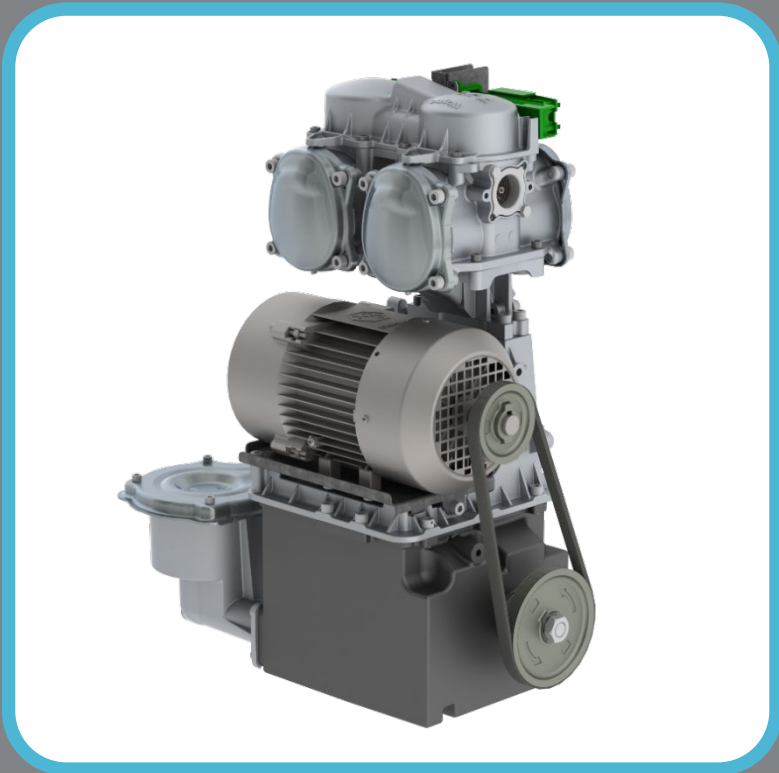
- Less vibration & noise
Positive displacement gear pump cause less vibration than vane-style pumps resulting in less noise and less vibration, reducing the risk of leaks caused by vibration strain on fuel tube assemblies and bracketry. Our design offer additional stability from the positioning of the pumping unit below the motor for a lower center of gravity.
- Compatibility for all fuel types
Designed with fewer leak paths our pumping unit is designed with quality materials and 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.

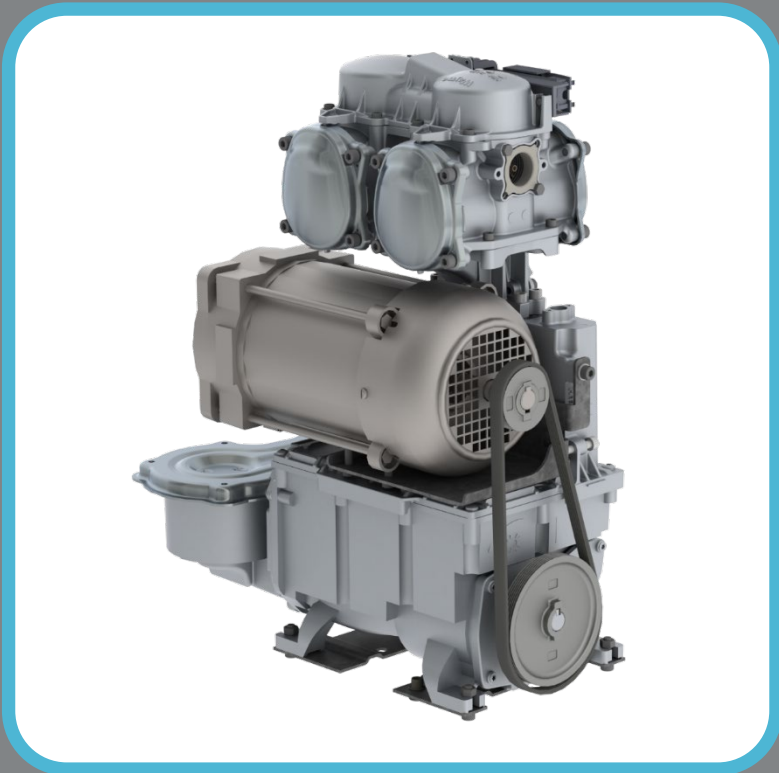
DFS has standardized only on gear pump technology for both retail and high flow capacity dispensers, as gear pump technology offers better durability and reliability than vane-style pumps, offering superior performance and low TCO.



- 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.

High-Capacity Pumping Unit

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.

Stage II vapour recovery (VR2) system with direct coupling eliminating the pulley 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.

Patented Double-Bump Connections

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 compression connections. Our design utilizes fuel resilient O-rings to reduce risk of leakage over the dispenser's life-time.
- Excellent serviceability
Our double-bump system reduces intervention time compared with compression tube connections. Quick tube removal and insertion, then simply snap in place and secure with lock pin.

Tokheim Quantum ML

Tokheim Quantum ML Dispenser Technology



Field-proven best of the best of the best components and industry leading corrosion protection ensures long-lasting quality and reliable performance for lowest Total Cost of Ownership

- Superior modularity with models for wide range of fluids, flow rates and options to suit any site or application.
- Reliable electronics and certified metering accuracy from field-proven technology delivering exceptional stability with 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.

Conventional & Alternative Fuel Models



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



Conventional Fuels

- Suction or Remote Pressure
- Up to 5 grades
- Up to 10 nozzles
- Multiple flow rates



AdBlue

- Remote Pressure
- 1 Grade or Back-2-Back
- Up to 4 nozzles (10 as B2B)



LPG

- 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



Light Hose Retraction (LHR)

- Hose Reach 3.5 meters
- Free Reach 2.5 meters



Full Hose Retraction (FHR)

- Hose Reach 4.0 meters
- Free Reach 2.2 meters



Extended Hose Retraction (EHR)

- Hose Reach 4.7 meters
- Free Reach 2.9 meters

- **LHR:** Hose reach with minimal pulling
Our innovative hose guidance system use a bungee-cord system to retract the hose back into the hose cabinet, offering hose reach at lowest TCO by eliminating the need for a mechanical hose retraction system that can wear over time
- **FHR:** Long hose reach with ease of use
Improved design to offer long hose reach to enable motorists to use less pull force to reach from every filling position even when parked with tank inlet on opposite side of their car.
- **EHR:** Extended hose reach
Industry-leading hose reach and exceptional free reach for maximum flexibility and ease of use for the motorist.

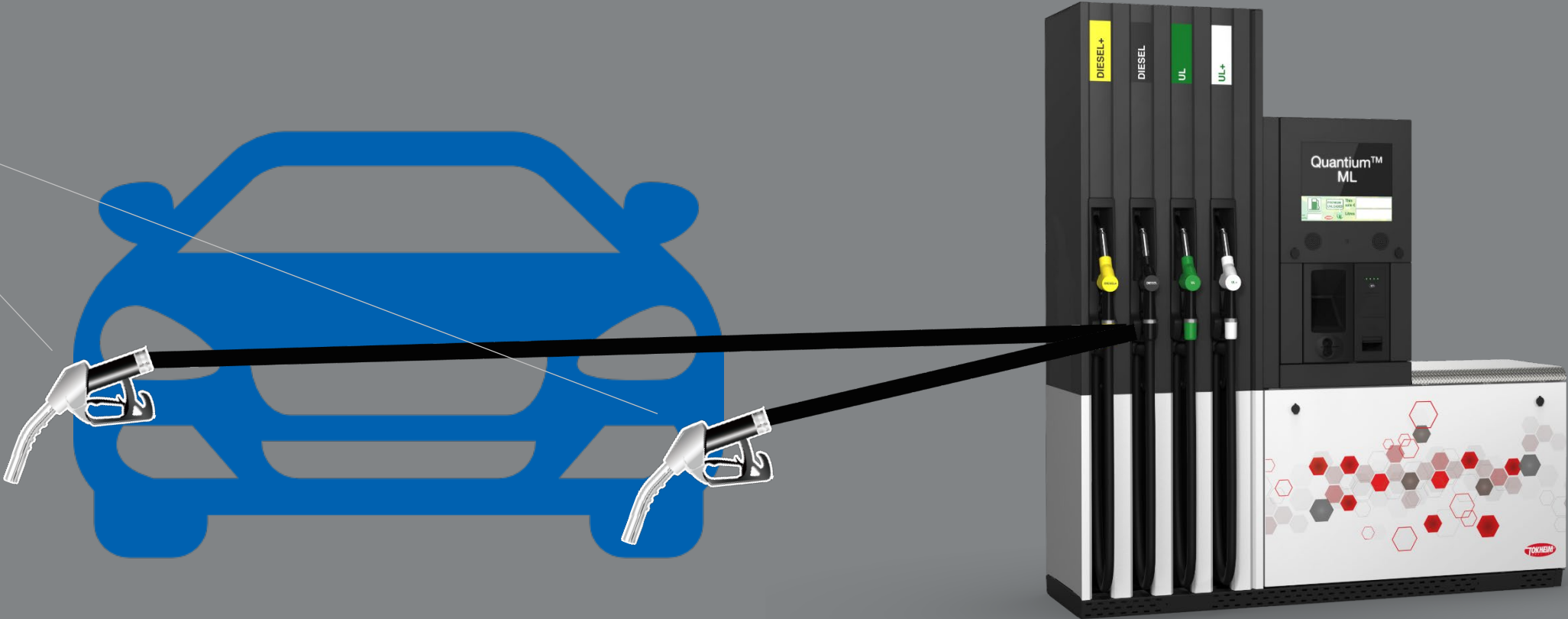
Full Hose Retraction



Field-proven hose retraction design with minimal pull force required. Users benefit from long hose reach of 2.2m (free reach) without any need for pull force and total reach of 4.0m to enable filling up even if inlet is on opposite side of the car.

Free Reach 2.2m

Total Reach 4.0m



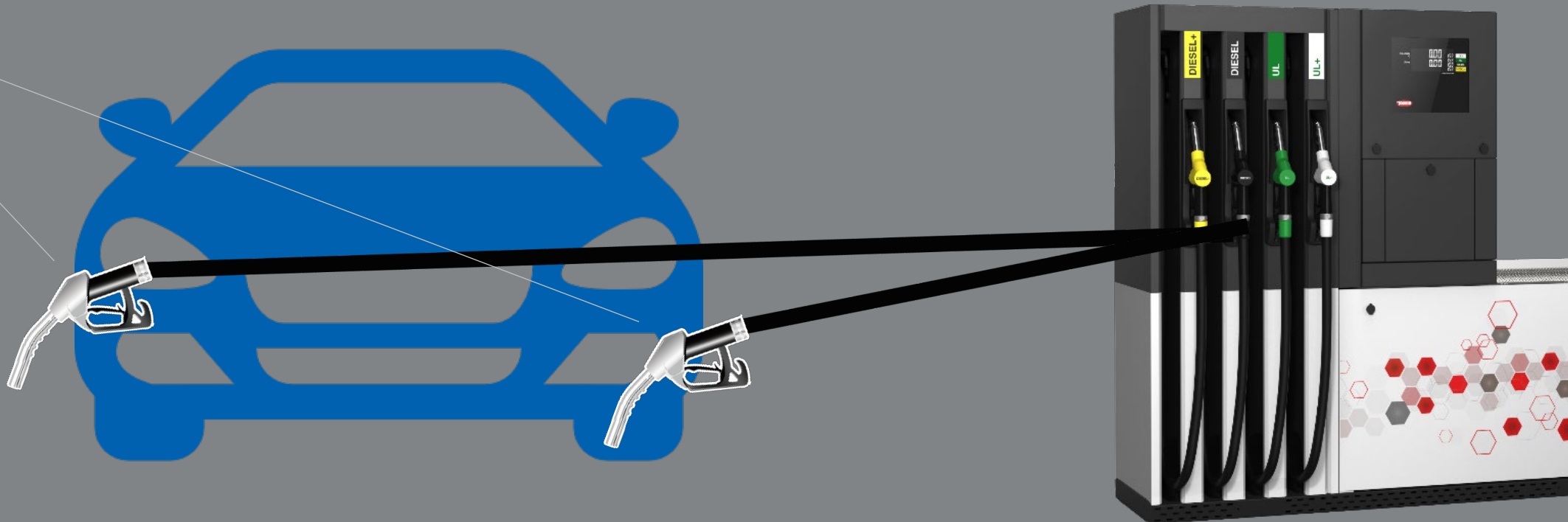
Extended Hose Retraction



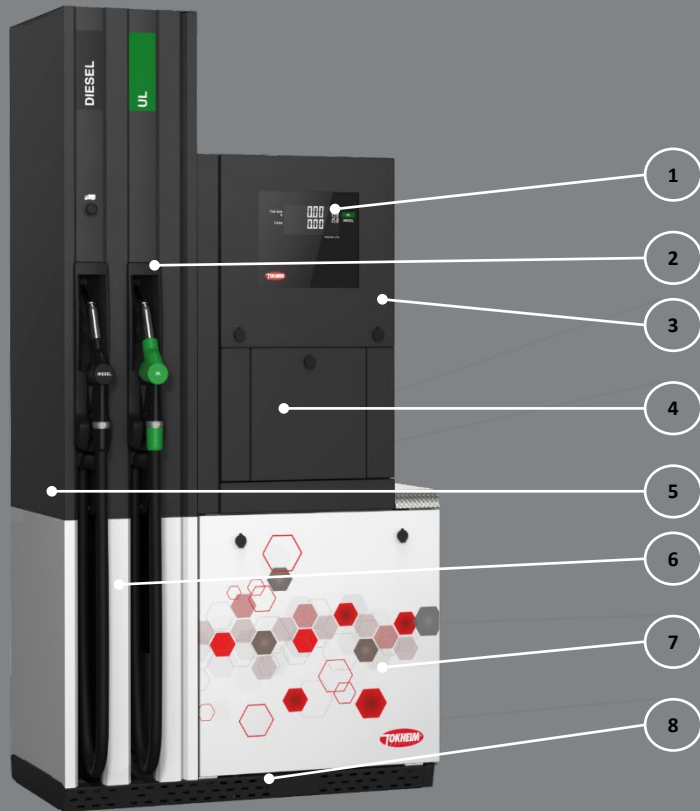
Industry-leading hose retraction design with minimal pull force required. Users benefit from long hose reach of 2.9m (free reach) without any need for pull force and total reach of 4.7m to enable filling up even if inlet is on opposite side of the car.

Free Reach 2.9m

Total Reach 4.7m

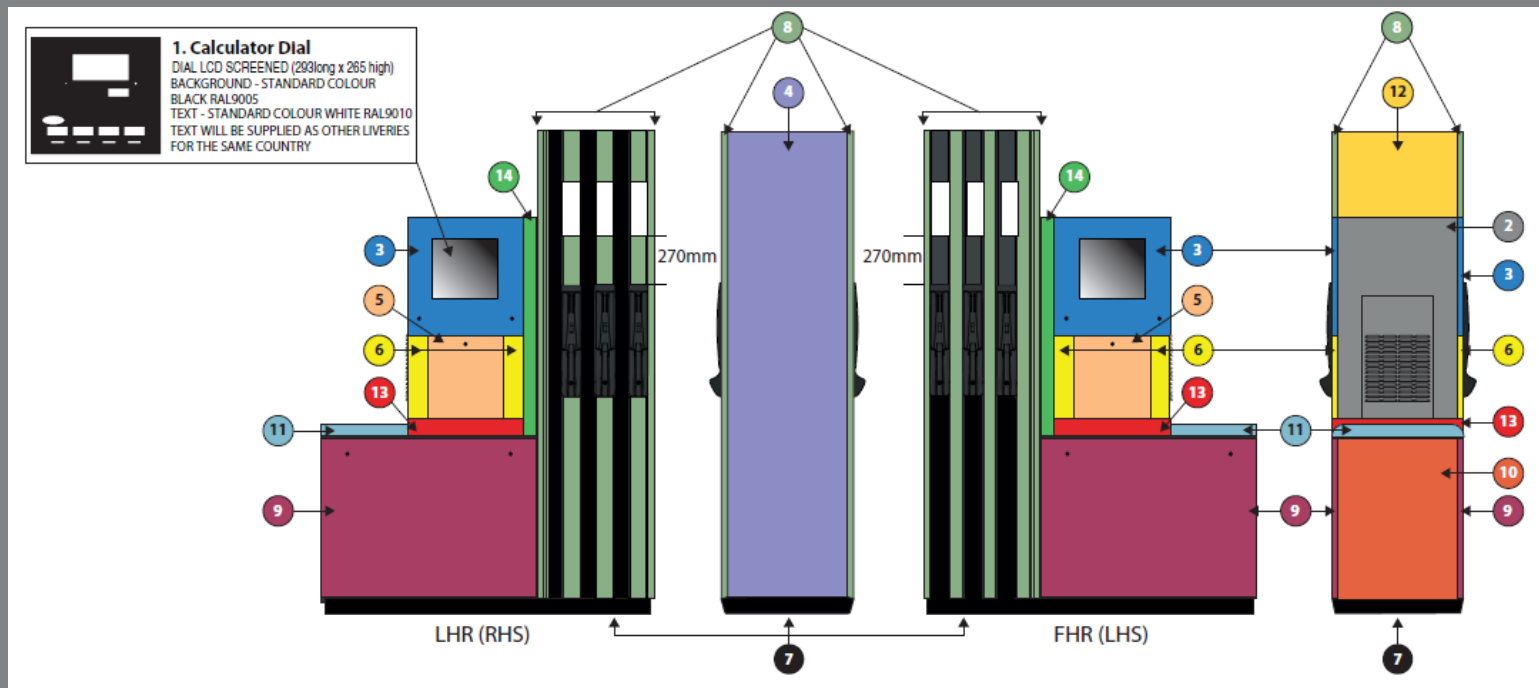


Superior flexibility for customer branding with our trusted corrosion protection from our leading paint technology



Number	Material	Details
1	Hardened glass	No risk of yellowing and hardened to withstand accidental nozzle impact
2	Coloured injected moulded plastic	Nozzle boot plastic specified for continuous expose to fuel and chemical vapours and liquids without significant fading. Plastic is coloured through to maintain colour despite scratches
3	Powder painted hot dipped galvanized steel	Bent sheet metal without any welding, protected with high quality paint for protection to C4 standard
4	Powder painted Aluminum	Aluminum protected with high quality paint for protection to C4 standard
5	Powder painted hot dipped galvanized steel	Bent sheet metal without any welding, protected with high quality paint for protection to C4 standard
6	Powder painted hot dipped galvanized steel	Bent sheet metal without any welding, protected with high quality paint for protection to C4 standard
7	Powder painted hot dipped galvanized steel with Vinyl Wrap	Bent sheet metal without any welding, protected with high quality paint for protection to C4 standard. Logo and design provided through vinyl wrapping
8	Powder painted hot dipped galvanized steel	Bent sheet metal without any welding, protected with high quality paint for protection to C4 standard

Engineered with field-proven quality components and corrosion resistant materials for a lifetime of reliability and low total cost of ownership



No.	Name	Customisable	Code
2	Calculator Box (louvre)	Yes	RAL
3	Calculator Door	Yes	RAL
4	Column	Yes	RAL
5	DIT Door	Yes	RAL
6	DIT Option Panel	Yes	RAL
7	Drip Tray	2 OPTIONS	RAL 9005 / SHELL
8	Hose Outlet	Yes	RAL
9	Hydraulic Door	Yes	RAL
10	Hydraulic End Panel	Yes	RAL
11	Hydraulic Top Panel	Yes	RAL
12	Top Tech Column??	Yes	RAL
13	Horizontal Spacer (calc box)	Yes	RAL
14	Vertical Spacer (calc box)	Yes	RAL

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

Portfolio & Model Overview

Tokheim Quantum ML – Model Overview



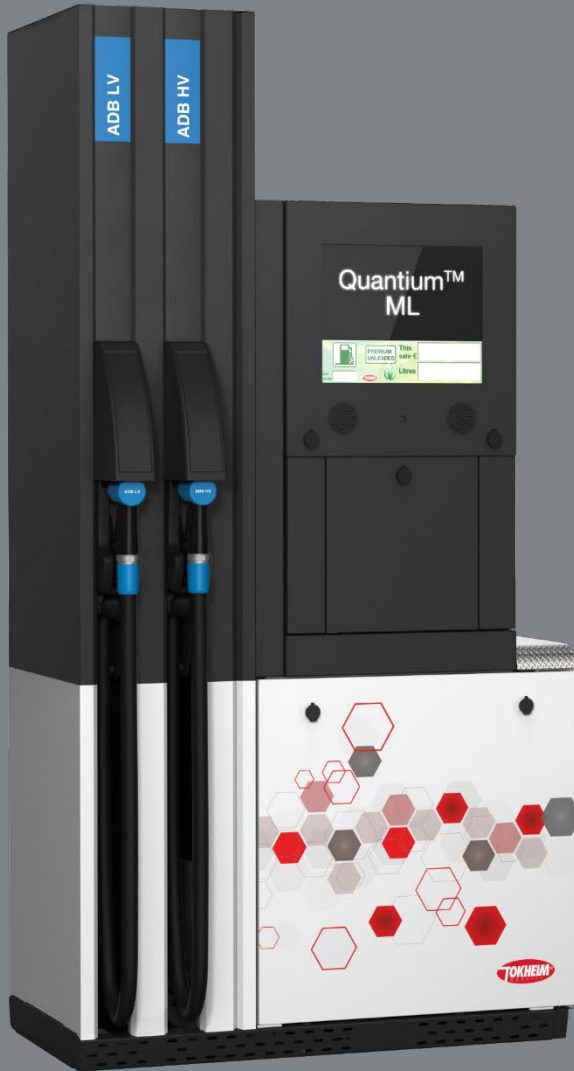
Tokheim quality with extensive modularity for up to five grades in shared hose cabinet and choice of hose retraction

Tokheim Quantum ML

- Orientation: Lane (Dual-sided or Single-sided)
- Hydraulic System: Suction or Remote Pressure
- Grades available: 1 to 5
- Nozzles available: 1 to 10
- Flow Rates available: 40, 40-70, 70, or 120 LPM
- Hose Reach: 4.0m with FHR, 3.5m with LHR
- Electronics: iGEM pump computer
- Metering: Piston Meter. Optional ATC
- Vapour Recovery: EVR or SC-EVR options
- Options: Extensive range of optional extras available
- Pump Media: 17" Digital screen for T-Media available
- Payment: Integrated payment options available

Model	Length	Width	Height
QML 1-X-1	920	600	2050
QML 2-X-2	1060	600	2050
QML 3-X-3	1440	600	2050
QML 4-X-4	1820	600	2050
QML 5-X-5	2200	600	2050

Tokheim Quantum ML AdBlue – Model Overview



Tokheim quality for AdBlue with true modularity for up to four nozzles in shared hose cabinet and choice of heating. Available as standalone or back-2-back



Available also as back-to-back

Tokheim Quantum ML AdBlue

- Orientation: Lane (Dual-sided or Single-sided)
- Hydraulic System: Remote Pressure (Suction not available)
- Grades available: 1
- Nozzles available: 1, 2 or 4
- Flow Rates available: LV 10 or HV 20 LPM
- Hose Reach: 4.0m with FHR (LHR not available)
- Electronics: iGEM pump computer
- Metering: Piston Meter
- Heating: ATEX heating (non-ATEX heating not available)
- Options: Extensive range of optional extras available
- Pump Media: 17" Digital screen for T-Media available
- Payment: Integrated payment options available

Model	Length	Width	Height
QML 1-X-1	920	600	2050
QML 2-X-2	1060	600	2050

Tokheim Quantum ML LPG – Model Overview



Tokheim quality for LPG with true modularity available as standalone or back-2-back



Available also as back-to-back

Tokheim Quantum ML LPG

Orientation: Lane (Dual-sided or Single-sided)

Hydraulic System: Remote Pressure

Grades available: 1

Nozzles available: 1 or 2

Flow Rates available: 50 LPM (max 25 bar)

Hose Reach: 3.9m with hose retraction

Electronics: iGEM pump computer

Metering: GPL700 meter

LPG options: Extensive range of optional extras available

Options: Extensive range of optional extras available

Pump Media: 17" Digital screen for T-Media available

Payment: Integrated payment options available

Model	Length	Width	Height
QML 1-X-1	1060	600	2050

A Safe Investment for Years to Come



Trusted Tokheim quality delivered from a robust design using quality materials and best of the best components to ensure reliable performance for superior nozzle availability and low TCO

- Reliable electronics, exceptional metering stability for minimal drift and robust hydraulic system with field-proven gear pump technology and quality materials for excellent fluid compatibility delivering reliable performance for superior nozzle availability.
- A safe investment for years to come with future-proofing modularity and our durable design that benefits from field-proven components and corrosion resistant materials for a lifetime of reliable performance. Engineering excellence in every detail!



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Tokheim fuel dispensers are known for quality in all core components, and are industry recognized for reliability, quality & low total cost of ownership

- **Minimal Meter Drift**

Certified accuracy and superior stability for minimal meter drift over the lifetime of the dispenser.

- **Reliable Quality**

Built to last, using quality materials and field-proven components, as well as utilizing 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.

