Banlaw Resource Management

Fuel Management Systems – Liquid Resource Solutions

Meet Banlaw FuelTrack™ and Banlaw ResTrack™

Our resource management capabilities help you maintain, monitor, secure, store, and reconcile hydrocarbons or other liquid products effectively.

Banlaw ResTrack™ RMS software provides 'one version of the truth'. It ensures accurate delivery and consumption data, and allows effective benchmarking, reporting, and management control across sites or regions.
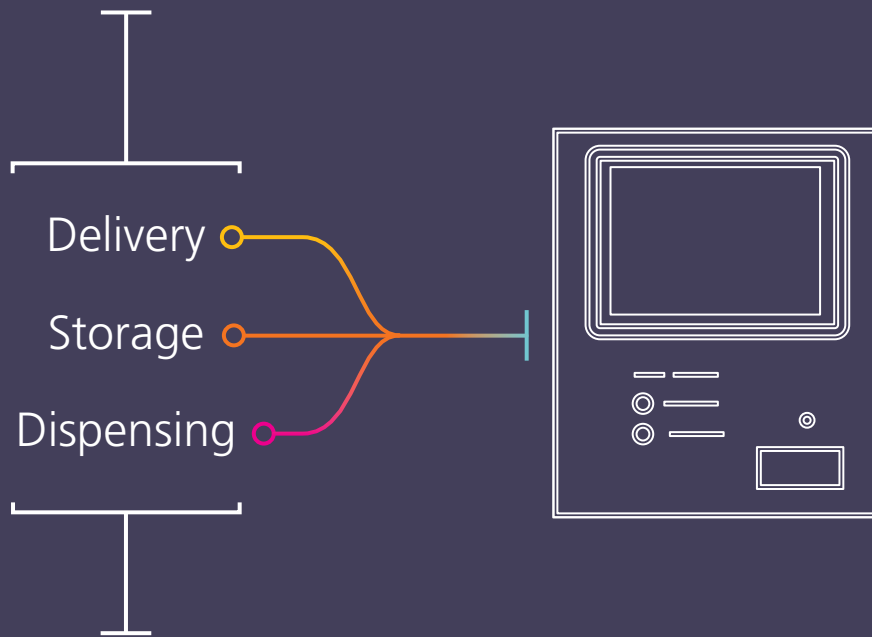
BANLAW
— UNIFIED FUEL MANAGEMENT —

Contents

Achieve safety, savings, and control of your resources to greater than 99.5%

FuelTrack and ResTrack manage these functions

to deliver productivity gains in these areas of your business

Delivery

Storage

Dispensing

Accounts

Purchasing

Management

Stock Control

Maintenance

Banlaw engineers integrated transfer, measurement, control equipment and systems to manage high value liquid resources.
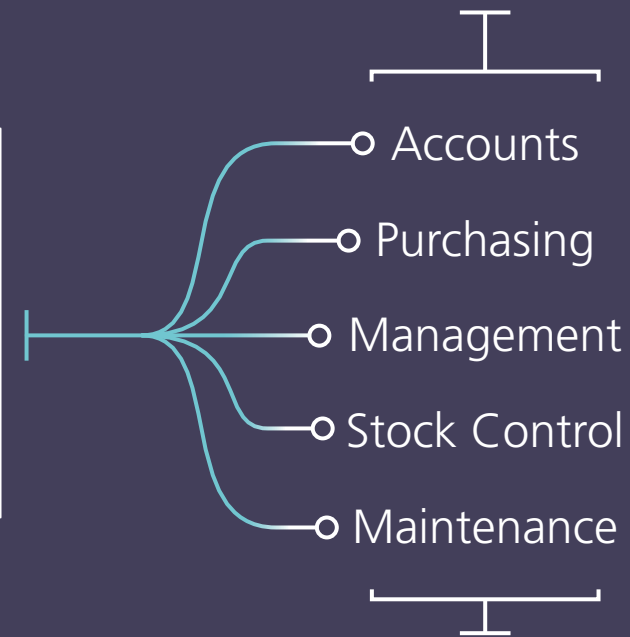
We help companies improve their productivity by reducing fluid loss, reducing fluid contamination and delivering more efficient and safer resource management processes.

We believe in delivering the best

End-to-end liquid resource management in the following categories:

- ▸ Resource Management Software (RMS)
- ▸ Fuel Management Systems (FMS)
- ▸ Tank Overfill Protection
- ▸ Fluid Transfer Couplings
- ▸ Refuelling Hardware
- ▸ Projects (for liquid management infrastructure)
- ▸ Engineered Solutions (delivery and dispensing systems, ready-to-deploy skids)
- ▸ Site Maintenance (and continuous improvement services)

Banlaw products and services have been trusted for four decades, and they've been proven to work in some of the world's harshest environments.

Our products are used every day by customers in 33 Countries around the globe.

Proudly designed, programmed, manufactured, and assembled by Banlaw. Our products help you manage hydrocarbons and more.
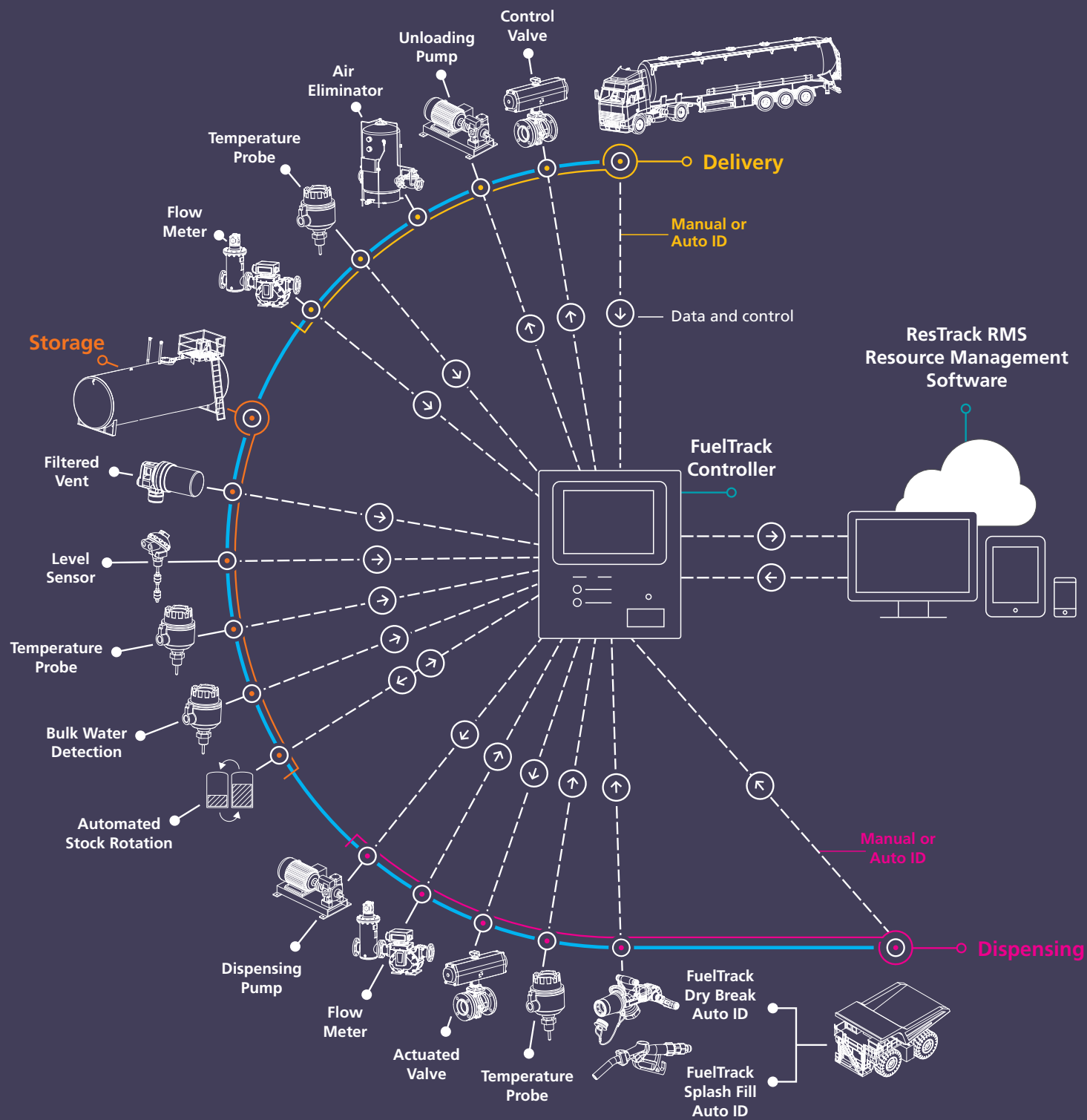
(liquid product, chemicals, alcohol, water, fuels, foods and industrial fluids)

Our Customers

Best-practice liquid resource management with capabilities targeted to your industry

Industry	Capability
Mining	High speed refuelling; 99.5% fuel reconciliation
Telecoms	Precision ATG; Remote multi-site fuel level management
Chemical suppliers	Hazardous area and dangerous goods management; Environmental accountability
Distilleries	Metering and reconciliation accuracy for custody transfer; Hazardous area installations
Railways	Spillage control; Mechanical Overfill Protection; Dry Break refuelling
Liquid food producers	Multi-fluid single platform; Liquid inventory management
Construction	Fuel security; Manage contractor fuel utilisation
Haulage / Fleet	Fleet Management; Fuel Reconciliation
Ports	Fuel unloading; Electronic Overfill Protection - Safety Systems per API 2350
Marine	Hydrocarbon environmental controls; Equipment durability
Oil & Gas	Hazardous area deployment; Metering and temperature correction of crude oil to API 2540 tables 24A/54A
Refineries	Hazardous area certified deployment; NMI class 0.3 certified custody transfer equipment

FuelTrack and ResTrack manage the following fluids

	Fluid
✓	Diesel
✓	Chemicals
✓	Oils
✓	Alcohol
✓	Water
✓	Coolant
✓	Petroleum
✓	Liquid foods
✓	Palm oil
✓	Grease
✓	Crude oil
✓	DEF

Control Valve

Unloading Pump

Air Eliminator

Temperature Probe

Delivery

Flow Meter

Manual or Auto ID

Storage

Data and control

ResTrack RMS Resource Management Software

Filtered Vent

FuelTrack Controller

Level Sensor

Temperature Probe

Bulk Water Detection

Banlaw Resource Management

Automated Stock Rotation

Manual or Auto ID

Dispensing Pump

Dispensing

Flow Meter

Actuated Valve

Temperature Probe

FuelTrack Dry Break Auto ID

FuelTrack Splash Fill Auto ID

Delivery

Benefits

Consignment

For both supplier and client, open and transparent disclosure. Product received accurately matches delivery dockets.

Features

- ▶ Identify inwards transactions (Manual or Auto ID)
- ▶ Actuate ball valves to allow authorised deliveries
- ▶ Enable unloading pumps
- ▶ Receive temperature and flow inputs
- ▶ Calculate temperature-compensated measurements
- ▶ Store accurate transaction data
- ▶ Capture manifest details, such as volume delivered and docket number

Storage

Benefits

Overfill Protection

Eliminate spills and tank damage from inaccurate filling, while increasing site safety.

Tank Level Monitoring

Allow logistics and operations teams to evaluate levels in real time, order automatically on pre-set levels and schedule deliveries.

Fuel Loss

Quickly identify if you are losing fuel through unaccounted or unauthorised use, or from equipment malfunction.

Fluid Condition

Avoid fluid quality degradation with appropriate stock rotation processes

Features

▶ Real time tank level measurement and recording:

  • Temperature compensated measurements

  • Precision ATG (dual device) for industry-best accuracy

▶ Bulk water detection

▶ Tank side display for operators

▶ Bulk storage overfill protection (including SIL rated solutions)

▶ Automated stock rotation & MCC/PLC controls

▶ Track and manage fluid moves between bulk storages

▶ Tank side (local) 'high' or 'low' level alarms

▶ Software Alarms:

  • Vent / filter condition alarms

  • Bulk water alarms

  • Low / High level configurable alarms

  • Stock reorder notifications (for internal or external email recipients)

Dispensing

Benefits

Security

Dispense only to authorised machines and operators: 'No ID, No Fuel'.

Operational / Maintenance

Track fuel consumption and service fluids to every asset in your fleet.

Fixed or Mobile

FuelTrack Controllers on your service and refuelling trucks means dispensing is tracked to the machine which actually uses the fluid.

Contractor Refuelling

Facilitate refuelling for approved 3rd parties with a seamless process and automatic reporting.

Features

▶ Capture Auto ID inputs from wired or wireless hardware

▶ Banlaw are the only manufacturer of Auto ID technology integrated within Dry Break refuelling hardware. External ID technologies are more prone to damage and failure

▶ Auto ID receivers and rings assign a unique security ID chip to each piece of plant equipment

▶ Identify machines and operators by Pin / Swipe / Fob (Employee ID cards supported)

▶ Capture machine mileage or machine hours (keypad or wireless solutions)

▶ Control pumps automatically

▶ Actuate ball valves automatically

▶ Manage numerous fuels and fluids from a single FuelTrack Controller (of particular importance on mobile service vehicles)

▶ Capture accurate and temperature-corrected flow data

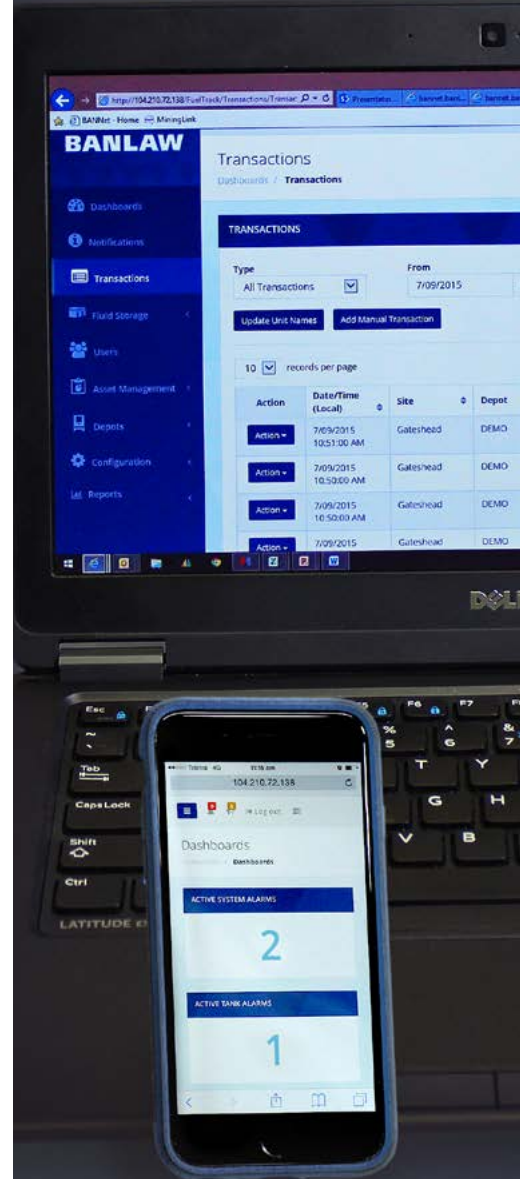# Banlaw ResTrack™ RMS
(Resource Management Software)

Benefits

Our best-in-class solution delivers unbeatable productivity, reconciliation and measurable cost reductions

Banlaw FMS / RMS customers can expect:

▶ Industry-best accuracy for tracking of fluid moves and levels (>99.5%)

▶ Accountability and full visibility 'from buy to burn'

▶ Security you can trust from the world's only OEM of Auto ID technology integrated into Dry Break refuelling hardware

▶ Productivity improvements in refuelling, fluid management, and fleet maintenance due to process automation and simplification of tasks

Features

▶ Labour savings

  • ResTrack automatically secures and reports fluids delivered to site, fluids dispensed, tank levels, plus vehicle IDs, all without human intervention. A Banlaw Resource Management System delivers a rapid payback on your investment

▶ Scalability

  • Designed to scale easily as various elements of the architecture are commissioned. Tank level monitoring, inwards metering, reconciliation, refuelling, multiple sites; Banlaw can make it feel easy

▶ Reconciliation

  • Accurately and efficiently record fluids delivered, transferred, dispensed and disposed-of in real time

▶ Tax Office Compliance

  • All fuel moves from inwards metering through to consumption can be automatically logged, and presented in segment-by-segment reconciliation reporting – this is of heightened value in countries where government Fuel Tax Credits (FTC) are available

▶ 24/7 helpdesk

  • Banlaw support teams are available to provide help whenever you need it. They provide configuration support, education, remote diagnostics, troubleshooting, as well as proactive health check reporting. They will help you ensure timeliness of availability, accuracy, and identification of fluid assets

▶ Flexibility

  • Transfer data from the Banlaw ResTrack™ RMS Software (FMS) to an ERP system, or leverage the robust native reporting suite

▶ Cloud deployment

  • The Software RMS can be deployed on your own database and accessed via a webpage. Externally hosted options are available for customers who prefer to outsource IT and FMS/RMS management

▶ Information when you need it

  • Receive notifications, view reports, and perform administrative tasks on your PC, tablet, or mobile phone

Banlaw FuelTrack™ and Banlaw ResTrack™ product family

Part of Banlaw's Resource Management offering

Hardware

FuelTrack Dry Break Auto ID

Controllers

532.77

FuelTrack Advanced Controller

Software

ResTrack RMS Software
Resource Management System

FuelTrack Splash Fill Auto ID

20206

TANK LEVEL

TANK LEVEL HIGH

FuelTrack Tank Side Controller

BANLAW

Reports
Dashboard / Reports

- Dashboard
- Notifications
- Transactions
- Fluid Storage
- Users
- Asset Management
- Depots
- Configuration
- Reports

LIST OF REPORTS

50 ▼ records per page

Action	Report Name
Action ▾	Alarm Report
Action ▾	Fluid Delivery Report
Action ▾	Fuel Accountability Report
Action ▾	Fuel Delivery VSManifest Report
Action ▾	Fuel Dispensed Reconciliation Report
Action ▾	Fuel Tax Report
Action ▾	Fuel Usage Exception Report
Action ▾	Group Summary Report

Hardware Features & Benefits

FuelTrack Dry Break Auto ID

▶ High speed Dry Break diesel refuelling (up to 1000lpm (264gpm))

▶ Security you can trust from the world's only OEM of Auto ID technology integrated into Dry Break refuelling hardware

▶ Highly reliable - suitable for fully automated robotic refuelling

▶ Auto ID technology eliminates manual process steps

▶ Suitable for all types of diesel fuel

▶ Direct electronic ID connection makes the system very secure. Eliminates fuel theft

▶ No operator intervention required for equipment identification

▶ Ideally suited to even the most extreme environmental conditions

▶ 'Arctic Range' product variants available

FuelTrack Splash Fill Auto ID

▶ Splash fill refuelling of equipment - supports Diesel, Gasoline, and ULP fluid types

▶ Proximity limit of Wireless Reader to Ring, ensures that only the tagged machine can receive fluids

▶ Retrofittable to your existing refuelling hardware

▶ Simple installation and reliable hose reel operation due to no wires in the hose

▶ Motion sensitive reader conserves battery power

▶ Hazardous Area Certified

▶ Rated for a very wide range of operating temperatures

Hardware Technical Specifications

FuelTrack Dry Break Auto ID

Functions

800lpm (211gpm) or 1000lpm (264gpm) nozzle options

Equipment Auto ID (physical connection identifies 'chip' integrated into on-machine refuelling hardware and is sent by wire to controller)

Hose Length

Up to 30 meters (98feet)

Environmental Conditions

-60°F (-51°C) to 131°F (55°C) - Standard and Arctic Range variants available

Compliance

MIL-STD-810G "Severe Cold (C3)" climatic design type rating

CAN/ULC-S620-07 in accordance with the TSSA latest regulations of the Liquid Fuels Handling Code

FuelTrack Splash Fill Auto ID

Functions

Up to 90lpm (23gpm) flow rate

Equipment Auto ID (close-proximity identification of on-machine 'ring' is sent via wireless gateway to controller)

Wireless Communication Range

Up to 30 meters (98feet)

Environmental Conditions
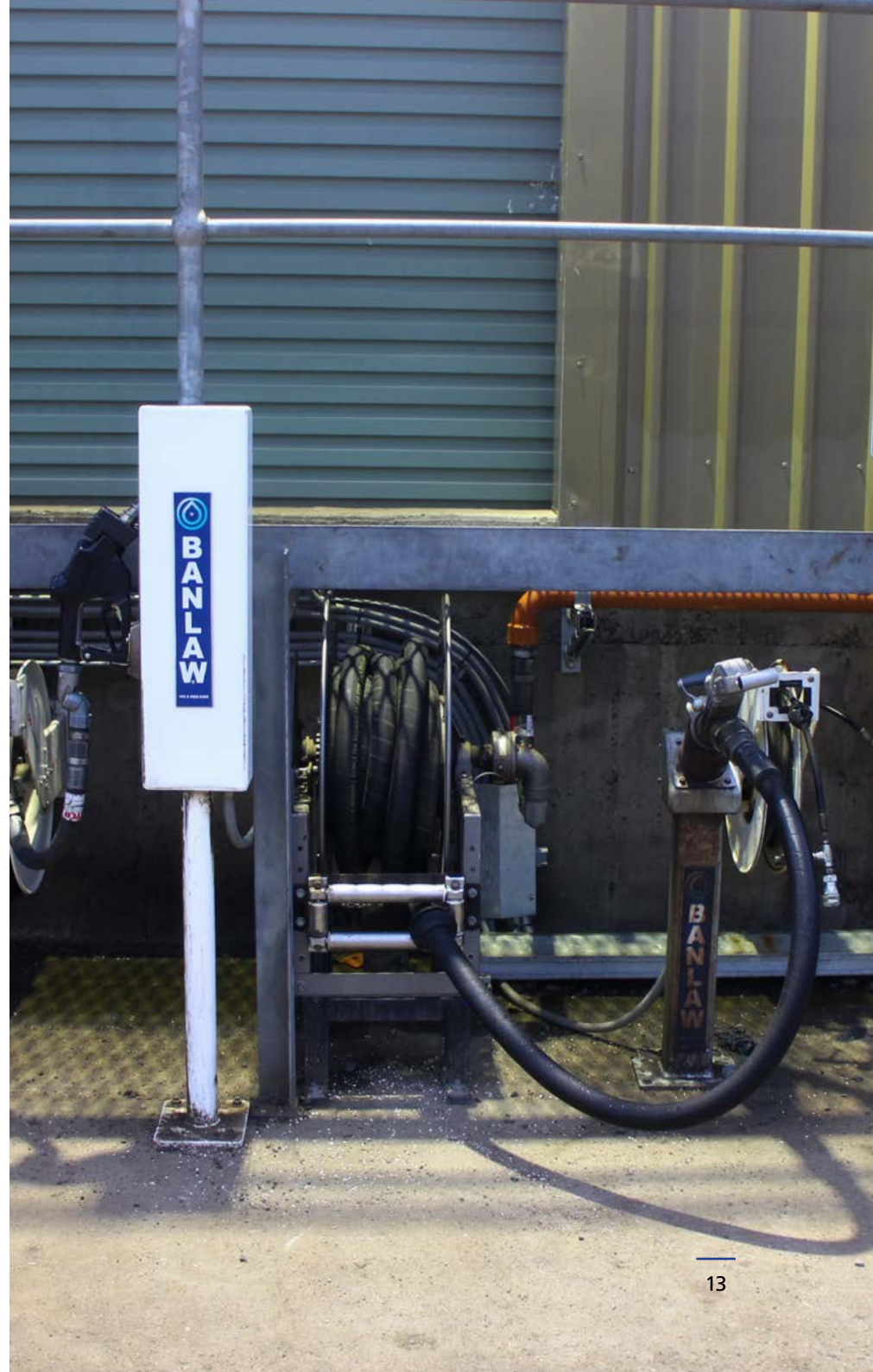
-40°C/°F to +60°C/140°F

Compliance

CAN/CSA-C22.2

UL 913

ATEX

EX IA IIB T3 Ga

Controllers Features & Benefits

FuelTrack Tank Side Controller

- Highly cost-effective Automatic Tank Gauging (ATG) solution

- Visual and audible high or low level alarms at tank side

- Bulk tank Overfill Protection, including SIL rated systems

- Precision, dual-device tank level data captured in real time (industry-best accuracy)

- Bulk water detection pre-empts costly contamination issues affecting machine performance

- Choose from single digital readout, displays for multiple tank levels, or no local readout

- Stand-alone ATG unit, or integrated with FMS / RMS

- Advanced functions such as Automated Stock Rotation can be deployed as part of a project

FuelTrack Advanced Controller

- Access control, security, and monitoring of fuels, lubes, liquid products, water and more

- Controls Delivery, Storage, and Dispensing functions

- Fixed and mobile refuelling applications (Service Trucks)

- Auto ID functionality on both the delivery and dispensing sides

- User access control via swipe card, fob, or keypad

- Manage risk with visual cues for the operator, like automated stop lights when refuelling is in progress

- Automatically collect odometer and engine hours data wirelessly

- Components chosen specifically for extreme cold, extreme humidity, extreme heat, dust, snow, wind… this is the Advanced Resource Management Controller after all

Controllers Technical Specifications

FuelTrack Tank Side Controller

Functions

Measurement of fluid storages (>99.5% accuracy)

Up to 8 bulk storage tanks

Water detection in bulk storage tanks (fuel contamination)

Optional bulk storage overfill protection system compliant with AS1940

Optional SIL (Safety Integrity System) bulk storage overfill protection system compliant with AS61511

Intrinsically safe or explosion-proof instrumentation available

Guided-wave radar with accuracy +/- 3mm

Offline data storage of tank levels (when not connected to a network)

Ethernet, Wi-Fi, Cellular, and Satellite communications available

Optional Electrical Distribution Panel (EDP) compliant with UL508A, AS3000, AS3007

User Interface

Optional tank level local display

Padlockable access control

Volume display in Gallons or Litres

Power

24V DC

Environmental Conditions

Ingress protection: IP65 or IP66 depending on option selected

Operating temperature -25°C/-13°F to 70°C/158°F

Dimensions

400mm (W) x 400mm (H) x 215mm (D) (15.7" x 15.7" x 8.5")

Controllers Technical Specifications

FuelTrack Advanced Controller

Functions

Measurement of fluid moves and storages (>99.5% accuracy)	NMI-compliant deployment ready
Up to 8 Fluid Transfer Points. (1 to manage each incoming or dispensing fluid line)	Supports remote login, configuration, and troubleshooting
Up to 8 wireless Splash Fill Auto ID Nozzles	Temperature correction to API 2540, configurable for all standard fuels and oils; plus, crude oil, gasses, lube oil
Up to 8 Dry Break Auto ID Nozzles	
Up to 8 bulk storage tanks	Full pump and ball-valve control
Up to 8 alarm inputs for ResTrack reporting	Ball-valve feedback (open/close status) and power loss alarm for valve close out (fluid security)
Water detection in bulk storage tanks (fuel contamination)	
Optional receipt/docket printer	Uninterruptible Power Supply (UPS) ensures fluid security and no loss of transaction data
Offline download of transactions (when not connected to a network)	Ethernet, Wi-Fi, and Cellular communications available
Near-limitless data storage for fleet information, fluid transactions, and tank levels (>100 years of data capacity)	Controller compliant with UL508A, AS3000, AS3007, MDG15
Identification of users and equipment via keypad, Dry Break Auto ID Nozzle, wireless Splash Fill Auto ID Nozzle, and a variety of employee ID / swipe cards	Optional Electrical Distribution Panel (EDP) compliant with UL508A, AS3000, AS3007

Controllers Technical Specifications

FuelTrack Advanced Controller

User Interface	Power
Colour touch screen (projected capacitive), 10.4", suitable for use with gloved hands in heavy-industrial environments, 4mm chemically hardened glass	24V DC
Sunlight readable and UV-rated	**Environmental Conditions**
Volume display in Gallons or Litres	Humidity 10%-90%
Automatic and manual transaction menus	Resilient to vibration and shock
Fuel delivery menu	
Real-time tank level display of up to 8 tanks on the same screen	Ingress protection: IP65 (or IP66 for mobile deployments)
Keyfob (i-button)	Operating temperature -25°C/-13°F to 70°C/158°F
Swipe/Employee Card (Gallagher/Cardax or HID)	
Padlockable access control	**Dimensions**
Hazardous Area Tablet docked in service truck cab (optional - for mobile deployments)	450mm (W) x 620mm (H) x 215mm (D) (17.7" x 24.4" x 8.5")

Software Features & Benefits

ResTrack RMS Software

- Fuel Management and Resource Management Enterprise Software Suite
- Manages access, storage, and movement of fluid assets
- Accurate fuel delivery and consumption data allows effective benchmarking, reporting, and management control across fleets, sites, or regions

- Targeted information to enable preventative, condition-based, and predictive processes
- Integrated alarms can identify situations such as pressure change (leaks and blockages), fluid levels (highs and lows), filter life, and water in bulk storages

- Facilitate contractor fuel use in a controlled manner
- Fuel Usage Exception reporting monitors machines in a class, and targets abnormal performance to predict fleet maintenance issues

- Consignment - for both supplier and client, open and transparent data disclosure. Product received accurately matches delivery dockets
- Cloud and local server deployments, self-managed or completely outsourced
- Skilled helpdesk staff available 24/7
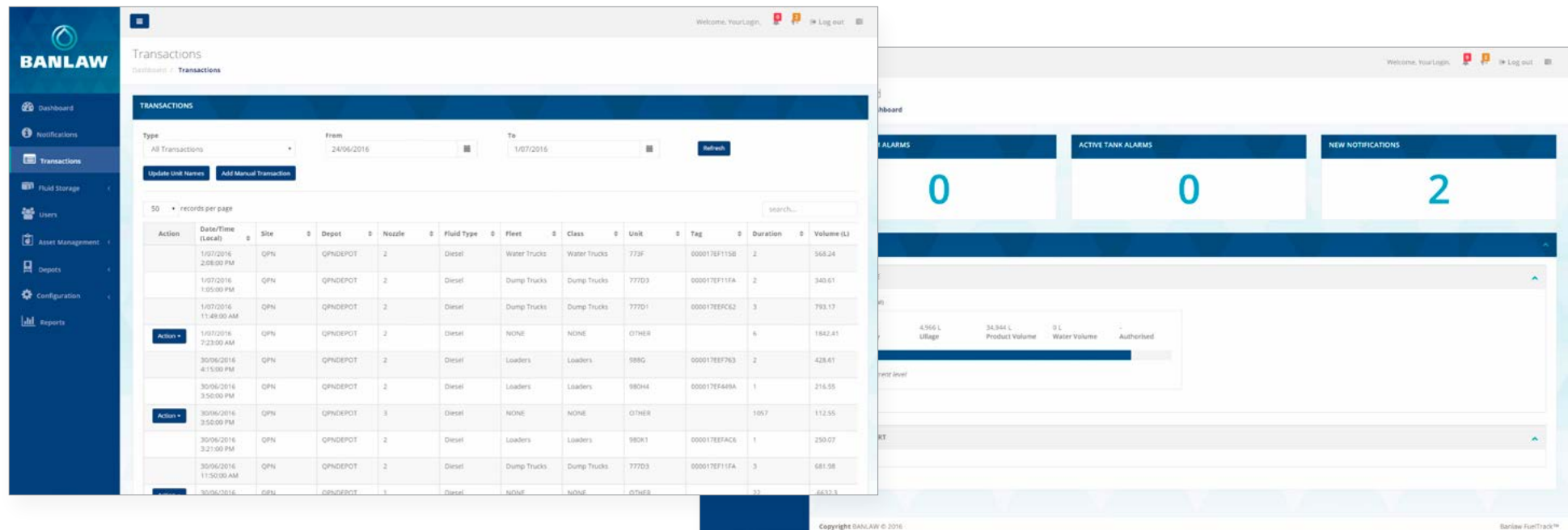
Banlaw ResTrack™ RMS means you only have 'one version of the truth'. It provides you with visibility and control, and it stands alone or easily exports for an ERP.

Software Technical Specifications

ResTrack RMS Software

Functions

Management and security

Overarching management dashboard for multi-site deployments

No limit to the number of FuelTrack Controllers being managed by a single software deployment

Up to 16 fluid types can be managed at the same time

Automated fuel supplier delivery scheduling (with internal and external email notifications)

Security management, delivery scheduling, cost-centre management

Dashboard view of critical functions such as levels and alarms is optimised for multiple user device types

Fluid access security for specific users and equipment can be configured down to individual FuelTrack Controllers within the network

A variety of user roles can be configured with differing security levels, fluid access levels, and system administrative privileges

Affordable software licensing framework scales based on the number of FuelTrack Controllers being managed

Can be installed on your own corporate network, or in a vendor-managed cloud environment

Measurement

Automatically accumulate fluid utilisation data from a delivery, storage, and dispensing perspective

Water detection (fluid contamination) in bulk storages

Automatically capture machine mileage and engine hours

Real-time tank level monitoring (TLM/ATG)

Fluids can be measured in gallons or litres

Reporting

Integrated reporting and visibility for multi-site deployments

Fluid reconciliation reporting (>99.5% accuracy)

Extensive native reporting suite provides insight on fleets, sites, tank levels, machine classes, business units, fluid reconciliation, and tax office requirements (Fuel Tax Credits)

Configurable email alerts for tank levels

Data export function (.csv, .xls, .xml, .pdf, etc) for ERP and BI suite integration (i.e. SAP, Dynamics, etc)

User Interface

Anytime, anywhere, any device access to the software from phones/tablets/computers with a web browser

Multiple languages supported

Compliance

Australian Tax Office (ATO) compliant means of Fuel Tax Credit reconciliation

System Architecture

Bulk Storage

Hardware

- Level probe x 1
- Temperature probe x 1
- Actuated Ball Valve x 1

Controllers

- FuelTrack Tank Side Controller x 1
- Network access via Ethernet, Wi-Fi, Cellular, or Satellite
- Electrical Distribution Panel (EDP)

Software

- ResTrack RMS Software
- FuelTrack Controller license x 1
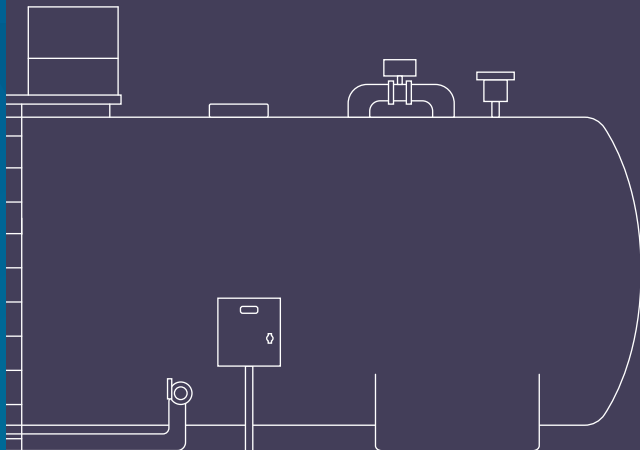
Refuelling Area

Hardware

Light Vehicles

- FuelTrack Splash Fill Auto ID Nozzle x 1
- FuelTrack Splash Fill Auto ID Rings x light vehicle fleet
- Flow meter x 1

Heavy Vehicles

- FuelTrack Dry Break Auto ID Nozzle x 1
- FuelTrack Dry Break Auto ID Receivers x heavy vehicle fleet
- Flow meter x 1
- Auto ID cable, Break Away Valve, Swivel

Controllers

- FuelTrack Advanced Controller x 1
- Fluid Transfer Points x 2
- Network access via Ethernet, Wi-Fi, or Cellular
- ID methodology for equipment or user (pin, swipe, fob)
- Wireless Gateway x 1
- Electrical Distribution Panel (EDP)

Software

- ResTrack RMS Software
- FuelTrack Controller license x 1

Service Truck

Hardware

▶ Actuated Ball Valves x number of fluids

Light Vehicles

▶ FuelTrack Splash Fill Auto ID Nozzle x 1

▶ FuelTrack Splash Fill Auto ID Rings x light vehicle fleet

Heavy Vehicles

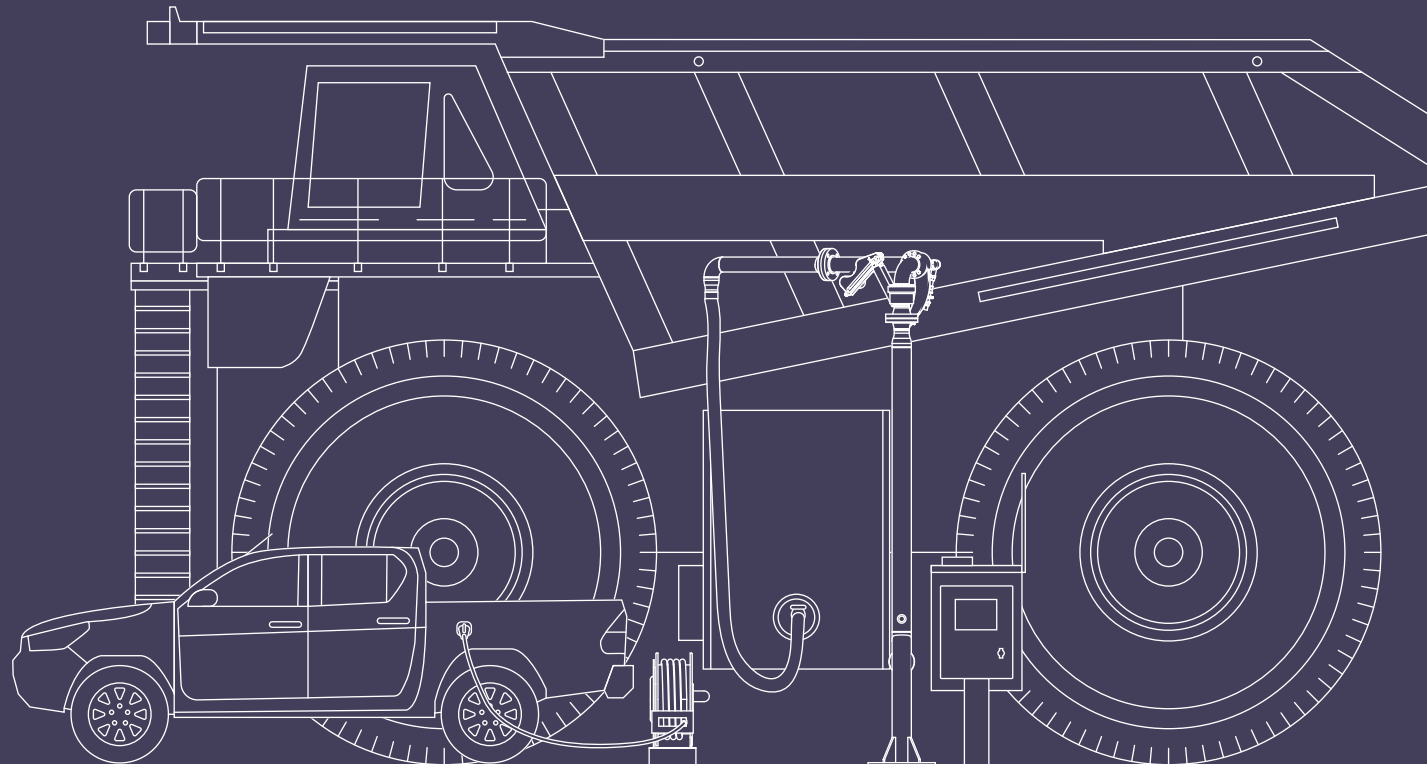▶ FuelTrack Dry Break Auto ID Nozzle x 1

▶ FuelTrack Dry Break Auto ID Receivers x heavy vehicle fleet

▶ Auto ID cable, Break Away Valve, Swivel

Controllers

▶ FuelTrack Advanced Controller x 1

▶ Fluid Transfer Points x number of fluids

▶ Network access via Wi-Fi, or Cellular

▶ ID methodology for equipment or user (pin, swipe, fob)

▶ IP66-rated enclosure

▶ Touch screen tablet user interface - docked or carried - Hazardous Area certified

▶ Wireless Gateway x 1

Software

▶ ResTrack RMS Software

▶ FuelTrack Controller license x 1

Maintenance Area

Hardware

▶ Actuated Ball Valves x 8

▶ Flow meters x 8

Controllers

▶ FuelTrack Advanced Controller x 1

▶ Fluid Transfer Points x 8

▶ Secondary Cabinet for FTPs 5-8

▶ Network access via Ethernet, Wi-Fi, or Cellular

▶ ID methodology for equipment or user (pin, swipe, fob)

▶ Electrical Distribution Panel (EDP)

Software

▶ ResTrack RMS Software

▶ FuelTrack Controller license x 1

Software

ResTrack RMS

ResTrack RMS Software deployed in a vendor-managed cloud environment, or on your own company networt

Manager

▶ Device with web browser

▶ Network access via Wi-Fi or Cellular
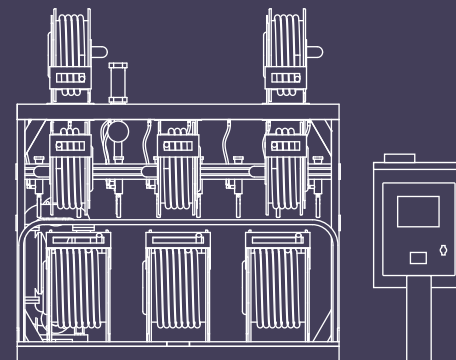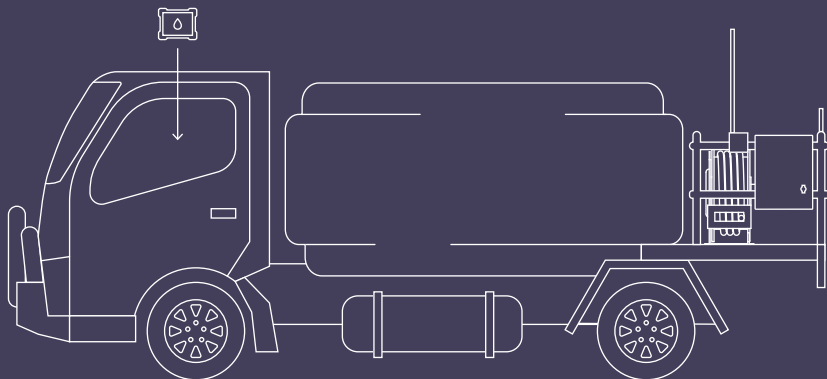
Banlaw are the pioneers in Unified Fuel Management

UFM = Your Savings Multiplied

SAFE REFUELLING

FUEL TAX CREDITS

FUEL SECURITY

ERP ACCOUNTABILITY

UNIFIED FUEL MANAGEMENT

HIGH SPEED REFUELLING

ONGOING SPECIALISED SUPPORT

CONTAMINATION CONTROL

ONSITE ASSET MAINTENANCE

FUEL RECONCILIATION

ENVIRONMENTAL ACCOUNTABILITY

How our FuelTrack and ResTrack offerings enable your UFM

Safe Refuelling
▶ Break away valves

▶ Maximum transaction size settings for each vehicle class

▶ No spills (Dry Break nozzles and receivers)

▶ Primary and secondary on-machine overfill protection

▶ Drive-away prevention (lights/alarms)

Fuel Security
▶ Eliminate shrinkage with reports that pinpoint hardware issues or site behaviour

▶ Define fuel usage limits by user or machine

▶ Control access (no ID, no fuel)

High Speed Refuelling
▶ Streamlined processes resolve vehicle queues

▶ Highest flow rate Dry Break refuelling hardware

▶ Auto ID technology eliminates manual process steps

Contamination Control
▶ Integrated alarms can target situations such as pressure change (leaks and blockages), fluid levels (highs and lows), filter life, and water in bulk storages

▶ Visual, audible and email alarm notifications available

Fuel Reconcilliation
▶ Facilitate contractor fluid use in a controlled manner

▶ Fuel utilisation reporting down to every fluid consuming asset

Environmental Accountability
▶ Simplified carbon reporting

▶ Accurately measure waste fluids

▶ Dry Break refuelling hardware

▶ Dry Break fluid transfer and evacuation couplings

Onsite Asset Maintenance
▶ Administer changes to the fuel management estate simply and quickly

▶ Power up preventative, condition-based and predictive processes

▶ Fuel usage exception reporting identifies machines outside of efficiency targets

Ongoing Specialised Support
▶ Access specialist expertise – design, helpdesk, health check, site audits, software integration, gap analysis

▶ Full service onsite maintenance capabilities (predictive/condition-based/preventative)

ERP Accountability
▶ Reporting to integrate with business intelligence processes

▶ Drive continuous improvement

▶ Hydrocarbon inputs for predictive maintenance

▶ Manage liquid products, water, and lubes with the same level of rigor

Fuel Tax Credits
▶ Satisfy Tax Office requirements for proof of where all fluids have been consumed 'at the press of a button'

▶ Maximise Fuel Tax Credits in Countries where back-end rebates apply

Resource Management Life Cycle ROI

Money Spent

Time Gone

FMS Commissioned

UFM realisation

Fuel Tax Credits maximised

Fleet optimisation

Process efficiencies

Before Banlaw ResTrack

Resource Management System Deployment

Acceptance

Control

Insights

Optimisation

— Fuel Costs
— Maintenance Costs
— Productivity & Efficiency Gains
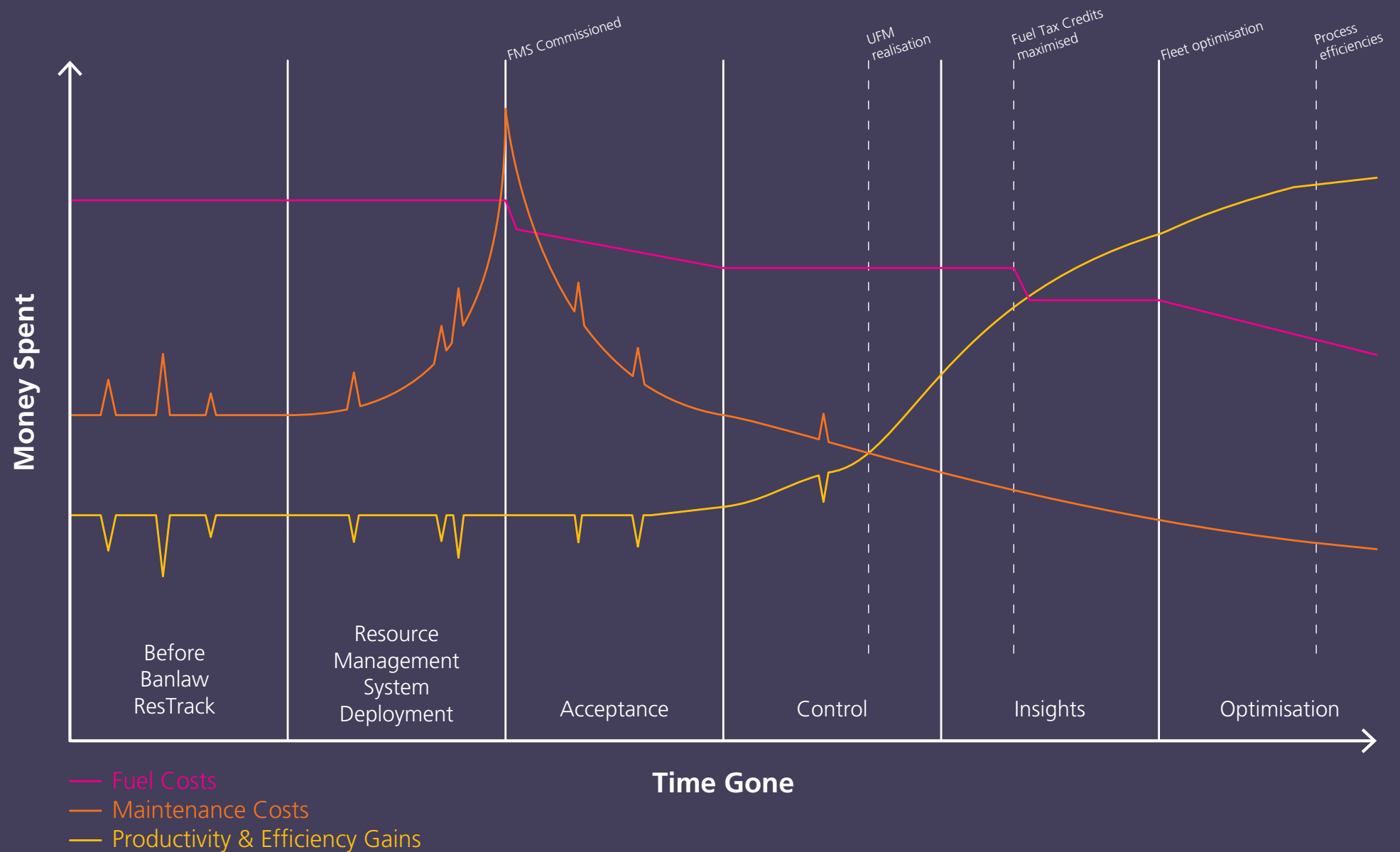
Before Banlaw ResTrack

- Lack of accurate baseline data
- Lack of focus and team members
- Lack of accountability
- Lack of systems / tools
- Lack of process
- Lack of fuel management culture
- Lack of fluid security
- Lack of control regarding maintenance costs

Resource Management System Deployment

- Examine business goals
- Assess current capabilities
- Communicate and ready the organisation
- Develop action plans
- Deliver onsite project works
- Commission

Acceptance

Operations

- Encourage consistent use of Hardware and Controllers on site
- Educate equipment operators

Business Intelligence

- Establish baseline performance metrics
- Drive metrics which zero-in on behaviour and adoption

Control

Operations

- Establish fuel management culture
- Celebrate Wins (improvements)
- Educate system administrators
- Drive reliability and accuracy by maintaining the system

Business Intelligence

- Maximise Fuel Tax Credits
- Increase profit by managing contractor fuel use
- Report to proactively identify trends

Insights

Operations

- Eliminate spills and environmental issues

Business Intelligence

- Enable savings from optimisation of fleet size
- Increase productivity by ensuring stock outs of fuel can't occur
- Enable savings from predictive maintenance on 'outlier' machines

Optimisation

Operations

- Achieve World Class Performance
- Reduce fuelling times
- Reduce servicing times
- Engineer inefficiencies out of the process
- Improve ergonomics, and resolve safety issues
- Enable environmental, emissions and carbon reporting
- Self-manage hydrocarbons onsite

Financial Business Case

Banlaw's Unified Management delivers multiplying productivity gains by implementing optimal fuel management systems and services throughout mine sites. Each element magnifies the effects of the others.

Saving Time

Number of Haul Trucks	1	20
Average fuel tank size [1]	7,005	7,005
Proportion required to top up	70%	70%
Amount required to top up [2]	4,904	4,904
Old fuelling speed	400	400
New fuelling speed	800	800
Old minutes to fill	12	245
Old process/paperwork time	4	80
Old total refuelling time	**16**	**325**
New minutes to fill	6	123
New process/paperwork time	1	20
New total refuelling time	**7**	**143**
Fuelling time saving / day	6	123
Automation time saving / day	3	60
Total minutes saved / day	9	183
Machine idle hours saved per year	56	1,111
Machine idle days saved per year [3]	2	46

Saving Money

Number of Haul Trucks	1	20
Machine running cost / hr [4]	$2,111	$2,111
Reduction in cost of idle machinery / yr	$117,239	$2,344,773
Fuel used by machines per year [5]	1,471,050	29,421,000
Proportion of fuel use reconciled before Banlaw engagement	80%	80%
Proportion of fuel use reconciled after Banlaw engagement	95%	95%
Reduced leakage from identified equipment and security issues	1.00%	1.00%
Fuel tax credit rebate value / litre	$0.39	$0.39
Assumed site wholesale cost / litre	$1.05	$1.05
Total Machine Idle Cost saved / yr	$117,239	$2,344,773
Additional Fuel Tax Credit claims enabled / yr	$86,498	$1,729,955
Value of fuel where leakage or theft is mitigated / yr	$15,446	$308,921
Monetary benefit from Banlaw upgrade / yr	**$219,182**	**$4,383,649**

ROI

Number of Haul Trucks	1	20
Refuelling locations upgraded	1	3
COSTS - Hardware + FMS Upgrade Costs	$65,000	$195,000
BENEFITS - productivity, rebates, leakage reduction	$219,182	$4,383,649

Payback

	1	20
Days to payback	108	16
Weeks to payback	15	2
Months to payback	4	1

Note: All numbers are litres and australian dollars.
Fuel cost inclusive of excise, freight and charges

[1] Cat 797 s or c model, komatsu 860 and 890
[2] Model assumes machines are filled just one time per day
[3] Would you like a free haul truck running 24/7 for over a month?
[4] Machine running cost is operator + fuel and maintenance costs. It excludes the productivity gain from having this machine in the pit rather than waiting around. Smaller trucks can be valued closer to 1000 p/h
[5] Assuming 300 operational days / year / machine

Planning and Deployment

For over three decades Banlaw have been planning, designing, manufacturing, and deploying high-performance solutions for industrial fluid management.

We offer a range of engineered solutions to suit the most commonly called-for specifications, and have distilled these capabilities into compact, pre-assembled, and ready-to-deploy skids. We also project manage fully customised resource management and FMS deployments to your specific scope. This means Banlaw can provide solutions of premium design, targeted to the budget and physical scale of a very wide range of facilities.

Engineered Solutions:

Unloading and pumping skids

▶ Bulk air elimination

▶ Inbound metering and temperature compensation

▶ Fuel filtration

▶ Pump control

▶ Overfill Protection

Dispensing skids

▶ Single or dual Dry Break (heavy vehicle)

▶ Splash Fill diesel fuelling (standard light vehicle)

▶ Combined heavy vehicle and light vehicle fuelling skids

▶ With or without Auto ID and other data collection functions

Fuel Management skids

▶ Integrated with other functions, or stand-alone

▶ Fuel skids

▶ Lube skids

Automatic Tank Gauging skids

▶ Precision Tank Level Monitoring without the cost of a full FMS / RMS hardware and software deployment

Wherever in the world you are, Banlaw creates best-practice liquid resource management solutions.

Project Expertise:

Tank management

▶ Bulk water management processesv

▶ Automated stock rotation

▶ Tank Level Monitoring (precision dual-device TLM / ATG)

▶ Ventilation and bulk tank pressure/vacuum breathers

▶ Tank overfill protection: mechanical and electrical

Pipeline Leak Detection

▶ Custom solution design, commissioning, and testing in line with AS 2885.5 Hydrostatic Testing Methodology

Fuel Management Systems & Liquid Resource Solutions

▶ Projects to plan, design, engineer, install, commission, and educate the users of resource management hardware and software deployments

▶ Multi-fluid facility process design

▶ Delivery, storage, dispensing, and management systems for many fluid types

▶ Pumping and pipework design for Fuel Farms and hydrocarbon facilities of all sizes

▶ MCC/PLC (advanced process engineering for remote and automated fluid management capabilities)

▶ Experience in 33 Countries, often in very remote site locations

Maintenance and On-Site Services

Banlaw's services organisation includes specialist team members in the fields of mechanical, electrical, software, automation, hazardous areas, as well as machine and facilities maintenance. This means we are uniquely skilled, and capable of supporting new customer deployments, existing customer improvements, as well as enabling the local skills within our global distributor network.

Banlaw Services Menu:

▶ Planning and installation for Refuelling, Fluid Transfer, and Overfill Protection upgrade projects (equipment or infrastructure)

▶ Meter calibration (using NMI certified master meters)

▶ Site audits targeting new installation planning, problem resolution and safety checks

▶ Routine and preventative maintenance to drive savings and productivity

▶ Nozzle repairs (certified distributors around the globe)

▶ Remote services such as proactive FMS / RMS health check reporting and configuration support

▶ Staff training via telephone, online, classroom, and on-the-job

▶ 24/7 helpdesk

Banlaw offers a variety of service arrangements to ensure that customers maximise the effectiveness of their Banlaw Resource Management Solution.

Maintenance Management Systems

Different customers, require differing levels of ongoing maintenance support from Banlaw. The arrangements are highly flexible, and usually relate to the physical location of the work site. The following are three examples from highly-effective Banlaw client sites.

Preventative

▶ Site works with a local Banlaw Distributor for break fix and critical spares

▶ Banlaw provides remote troubleshooting, monthly reports, and half-yearly site visits

Predictive & Condition-Based

▶ Site invests in locally-responsible hydrocarbon teams

▶ Site works work with a highly-skilled Banlaw Technology Partner

▶ Banlaw support with reporting to drive continuous improvement, as well as quarterly visits and meter calibrations

Reliability Centred

▶ Site leverages permanent Banlaw onsite staff to ensure fleet reliability, fluid availability, and drive productivity enhancements for the hydrocarbon estate. Machine availability and reduced service times are also a key focus

Reliability Centred Maintenance
Requires a comprehensive maintenance infrastructure

Predictive Maintenance
Profiles and diagnostics to predict impeding failures

Condition Based Maintenance
Condition monitoring drives maintenance activity

Preventative Maintenance
Planned based on timer or usage statistics

Reactive Maintenance
Run until failure

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Capabilities Comparison Matrix

The breadth of Banlaw's Resource Management capability cannot be replicated by any other organisation

Subject Area	Deliverable	Competitors				Banlaw
		ATG	FMS	Fluid Transfer	Project	
Identifying operators and machines	Auto ID functionality available on both the delivery and dispensing sides	✖	✖	✖	✖	✔
	Long range RFID technology	✖	✔	✖	✖	✔
	Wireless Auto ID technology (close proximity, enhanced security)	✖	not like for like	✖	✖	✔
	Heavy Vehicle Auto ID technology integrated into nozzles/receivers (less prone to damage)	✖	✖	✖	✖	✔
	Auto ID receivers and rings assign a unique security ID chip to each piece of plant equipment	✖	✔	✖	✖	✔
	Fluid access control via fob, swipe, or keypad (employee ID cards supported)	✖	✔	✖	✖	✔
Refuelling Equipment	Light Vehicle - Splash Fill dispensing equipment	✖	✖	✔	✖	✔
	Highest flow rate Dry Break refuelling hardware resolves vehicle queues (up to 1000LPM / 264GPM)	✖	✖	not like for like	✖	✔
	'Arctic Range' enables extreme cold as well as extreme heat installations (Laboratory Tested and Certified - MIL-STD-810)	✖	✖	✖	✖	✔
	Filtered and unfiltered tank vents specifically designed for high speed refuelling (down to 3µm absolute)	✖	✖	not like for like	✖	✔
	Break Away Valves limit spills if drive-away occurs	✖	✖	not like for like	✖	✔
	Automatic shut-off when refuelling is complete	✖	✖	✔	✖	✔

Subject Area	Deliverable	Competitors				Banlaw
		ATG	FMS	Fluid Transfer	Project	
Fluid Transfer & Evacuation	Transfer of oils, coolants, grease	✘	not like for like	✔	✘	✔
	Dispensing via a bank of hose reels, one for each fluid type	✘	✔	✘	✘	✔
	Couplings are dry-break and flush faced, also available in classic industry standard sizes	✘	✘	✔	✘	✔
	Eliminate break-downs from fluid cross-contamination and particulate contamination	✘	✘	✘	✘	✔
	Common Evacuation Couplings for safe, fast, and clean waste fluid removal	✘	✘	✔	✘	✔
Overfill Protection Systems	Primary and secondary on-machine overfill protection (redundancy)	✘	✘	✘	✘	✔
	Electronic OFP system suitable for a wide range of fluid types (allows fire-safe valves, multiple ullage)	✘	✘	✘	✘	✔
	Hydraulically Powered OFP which requires no power to operate (patent pending technology)	✘	✘	✔	✘	✔
	Transportable Tank overfill protection systems	✘	✘	✘	✘	✔
	On-Vehicle overfill protection for mines and railways	✘	✘	✔	✘	✔
	Bulk Storage overfill protection (mechanical and electrical including SIL rated solutions)	✘	✘	✘	✘	✔
	OFP solutions for over 1000LPM / 264GPM	✘	✘	✘	✘	✔
FMS Controllers / Depots	Distributed architecture minimises costs and allows flexible deployments including hazardous areas	✔	not like for like	✘	✘	✔
	Local control of delivery, storage, and dispensing functions	✘	✔	✘	✘	✔
	'No ID, No Fuel' (only authorised machines and operators can dispense)	✘	not like for like	✘	✘	✔

Subject Area	Deliverable	Competitors				Banlaw
		ATG	FMS	Fluid Transfer	Project	
FMS Controllers / Depots	Auto ID technology with process automation eliminates manual steps (pump control, ball valves)	✘	✘	✘	✘	✔
	Local tank side levels displayed for operators	✔	not like for like	✘	✘	✔
	Modern touch screen or push button controller interfaces	✔	✔	✘	✘	✔
	Rugged, IP65 rated controller assemblies	✘	✔	✘	✘	✔
	Dispensing cannot continue if machine ID signal is lost (attempted fuel theft)	✘	✘	✘	✘	✔
	NMI compliant options available	✘	✔	✘	✘	✔
	Drive-away prevention, such as automated stop lights, strobes, and audible alarms	✘	not like for like	✘	✘	✔
	Audible or visual queues for operators, such as high and low level tank alarms	✔	✔	✘	✘	✔
	Mileage and engine hours can be captured	✘	✔	✘	✘	✔
	Capture delivery manifest details such as volume delivered and docket number	✘	✔	✘	✘	✔
	Dispense only the correct fluid, in the correct amount, to the correct machine	✘	not like for like	✘	✘	✔
	Industry-best reconciliation accuracy	✘	✘	✘	✘	✔
	Retains transactions if power is lost	✘	✔	✘	✘	✔
	Service Truck Deployment ready	✘	✔	✘	✘	✔
	Manage up to 8 fluids or fuels with a single controller (efficiently scales for larger deployments)	✘	not like for like	✘	✘	✔

Subject Area	Deliverable	Competitors				Banlaw
		ATG	FMS	Fluid Transfer	Project	
FMS Controllers / Depots	No limit to the number of vehicles/machines or dispensing locations	✗	not like for like	✗	✗	✓
	Real-time Automatic Tank Guaging (ATG with dips every minute)	✓	✗	✗	✗	✓
	Precision ATG (dual device)	✗	✗	✗	✗	✓
	ATG platform which readily scales from a single tank to many storages	✓	✓	✗	✗	✓
	ATG can be deployed stand-alone, with remote comms, or integrated locally with the FMS / RMS	✓	not like for like	✗	✗	✓
	Ethernet, Wifi, Satellite, and 3G communications supported	not like for like	✓	✗	✗	✓
	Controllers can operate fully-offline, allowing fluid control in very remote locations	✓	✓	✗	✗	✓
	Inwards Metering / Pulse Devices	✗	✓	✗	✗	✓
	Calculated fluid deliveries using ATG for installs where precision fluid measurement is not required	✗	✓	✗	✗	✓
	Temperature-corrected fluid data (delivery, storage, and dispensing)	not like for like	✗	✗	✗	✓
Resource Management Software (more than an FMS)	>99.5% of transactions reconciled	✗	✗	✗	✗	✓
	ULP, diesel and lubes; but also water, chemicals, energy, and liquid product are accurately managed	✗	✗	✗	✓	✓
	Hydrocarbon access security	✗	✓	✗	✗	✓
	Eliminate shrinkage with reports that pinpoint hardware issues or site behaviour	✗	✓	✗	✗	✓
	Integrated alarms target high/low fluid levels, filter life, bulk water, leaks/blockages and more	✓	not like for like	✗	✗	✓

Subject Area	Deliverable	Competitors				Banlaw
		ATG	FMS	Fluid Transfer	Project	
Resource Management Software (more than an FMS)	Enterprise-wide view (machines, fleets, transactions, tank levels, operators, cost centres, multi-site)	✖	not like for like	✖	✖	✔
	Visual, audible, and email notifications available	✔	✔	✖	✖	✔
	Remotely manage hydrocarbon access (near-immediate enablement of functions remotely)	✖	✔	✖	✖	✔
	Facilitate contractor fluid use in a controlled manner	✖	✔	✖	✖	✔
	Track and manage fluid moves between bulk storages	✖	✖	✖	✖	✔
	Pipeline monitoring	✖	✖	✖	✖	✔
	Bulk Water detection and alerts	✖	✖	✖	✖	✔
	Accurately measure waste fluids	✖	not like for like	✖	✖	✔
	Local or cloud hosted deployment options, self-managed or outsourced	✔	✔	✖	✖	✔
	Data backup and restore facility	✔	✔	✖	✖	✔
	Define fuel usage limits by user or machine	✖	not like for like	✖	✖	✔
	Fuel utilisation reporting down to every fluid consuming asset	✖	not like for like	✖	✖	✔
	Modern web style interface designed to streamline admin processes and save users time	✔	✔	✖	✖	✔
	Smart Phone and Tablet interface automatically presents just the info a mobile user requires	✖	not like for like	✖	✖	✔
	Fuel usage exception reporting identifies machines outside of efficiency targets	✖	not like for like	✖	✖	✔

Subject Area	Deliverable	Competitors				Banlaw
		ATG	FMS	Fluid Transfer	Project	
Resource Management Software (more than an FMS)	Satisfy Tax Office requirements 'at the press of a button'	✗	not like for like	✗	✗	✓
	Fuel Tax credits reporting (Maximise Fuel Tax Credits in Countries where rebates apply)	✗	✗	✗	✗	✓
	User defined security roles - head office sees multi-site, site mgr. sees local view	✗	✗	✗	✗	✓
	Multilanguage support	✓	✓	✗	✗	✓
	Reconcile fluids delivered, transferred, in-storage, dispensed, or disposed of in real time	✗	✓	✗	✗	✓
	Transfer data to an ERP system	✓	✓	✗	✗	✓
	Robust native reporting suite (21 most critical reporting functions have been standardised)	✗	not like for like	✗	✗	✓
	Automatic stock reorder notifications (for internal or external email recipients)	✗	not like for like	✗	✗	✓
Fuel farms and infrastructure	Product and projects deployed in 33 Countries	✗	✗	✗	✗	✓
	Fuel Farm planning, design, procurement, installation, commissioning and project management	✗	not like for like	✗	✓	✓
	Over 30 years delivering infrastructure in some of the world's harshest environments	✗	✗	✗	not like for like	✓
	Fuel Bowsers	✗	✓	✗	✓	✓
	Fixed and Mobile Refuelling applications catered for	✗	not like for like	✗	✓	✓
	Bulk Air Elimination	✗	✗	✗	✓	✓
	Fuel Filtration to manage water and particulates	✗	✗	✗	✓	✓

Subject Area	Deliverable	Competitors				Banlaw
		ATG	FMS	Fluid Transfer	Project	
Fuel farms and infrastructure	Unloading & Pumping Skids	✗	✗	✗	not like for like	✓
	Pipework design, manufacturer, and installation	✗	✗	✗	not like for like	✓
	Electrical distribution, Uninterruptable Power Supplies, Solar	✗	✗	✗	✓	✓
	Surge and lightning protection	✗	✗	✗	✓	✓
	Instrumentation (flow meters, temp probes, level sensors, filter condition indicators)	✗	not like for like	✗	not like for like	✓
	Loading Arms, hose reels, and equipment designed for user ergonomics, safety, and long life	✗	✗	✗	not like for like	✓
	Ventilation, vacuum, and bulk tank breathers	✗	✗	✗	✓	✓
	Simple fluid management functions up to full turn-key facilities	✗	✓	✗	✓	✓
PLC / MCC / Automation	Remote control systems (control room)	✗	✗	✗	✓	✓
	Automatic tank gauging for large or complex hydrocarbon facilities	✓	not like for like	✗	✓	✓
	Automated fuel stock rotation and MCC/PLC controls	✗	✗	✗	not like for like	✓
	Leak detection	✓	✗	✗	✓	✓
	SIL rated safety systems	✗	✗	✗	✓	✓
Services	OEM with a permanent R&D in house team and patented solutions	✓	✓	✓	✗	✓
	Routine on-site maintenance	✗	✗	✓	✗	✓

Subject Area	Deliverable	Competitors				Banlaw
		ATG	FMS	Fluid Transfer	Project	
Services	Preventative and predictive maintenance to drive savings and productivity	✘	✘	✘	✘	✔
	Breakdown maintenance (with triage process to mobilise technicians 7 days a week for Priority 1 issues)	✘	✘	✘	✘	✔
	Condition monitoring	✘	✘	✘	✘	✔
	24/7 helpdesk	✘	✘	✘	✘	✔
	Critical spares planning	✘	✘	✘	✘	✔
	Flow Meter Calibration	✘	✘	✘	✘	✔
	Kidney Loop Filtration	✘	✘	✘	✘	✔
	Refuelling Nozzle Repairs (certified distributors around the globe)	✘	✘	✘	✘	✔
	Site Audits to plan new installations, or for targeted problem resolution	✘	not like for like	✘	not like for like	✔
	Hydrocarbon gap-analysis informed by >100 global standards (delivered by subject matter experts)	✘	✘	✘	✘	✔
	Maintenance process improvements, and site-specific predictive tools	✘	✘	✘	✘	✔
	FMS / RMS Health Check Reporting	✘	✘	✘	✘	✔
	Highly trained technicians, specialised in mechanical, electrical, software or hydrocarbon safety	✘	not like for like	✘	not like for like	✔
	Tank inspection and cleaning	✘	✘	✘	✘	✔
	Remote configuration support and diagnostics	✘	✘	✘	✘	✔

Subject Area	Deliverable	Competitors				Banlaw
		ATG	FMS	Fluid Transfer	Project	
Services	Installation of mechanical and electrical solutions	✘	not like for like	✘	not like for like	✔
	Hazardous Areas inspection, installation, commissioning and maintenance	✘	✘	✘	✔	✔
	Implementation of safety systems compliant with AS 61511	✘	✘	✘	✔	✔
	Failure mode, effect and criticality Analysis (FMECA) of refuelling systems	✘	✘	✘	✔	✔
	User education for equipment operators and administrative roles (remote and on-site)	✘	not like for like	✘	✘	✔

Contact Banlaw today if you need increased Accuracy, Accountability, Security, or Productivity for your fluid assets.

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