

GGL SUSTAINABLE BIOMASS DIALOGUE

FROM COMPLIANCE TO IMPACT: THE
FUTURE OF BIOMASS CERTIFICATION

19th February 2025
2:30pm - 5:20pm (GMT+8)
Sheraton Petaling Jaya Hotel



Topic Title

TECHNOLOGY IN INSPECTION

Presented by

KUNAVARUNNAN KRISHNAN

Organized by



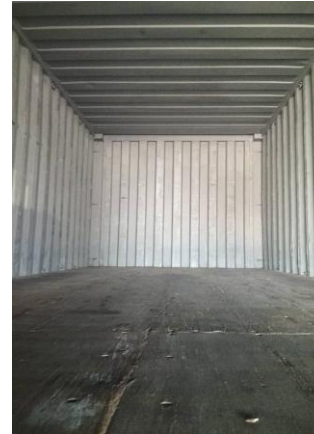
COMMODITY INSPECTIONS

Our vast expertise in inspection, supervision and sampling enables us to provide global support to our customers across the entire supply chain.

CONTAINER SERVICES

Control Union can monitor the quality, quantity and condition of your cargo during the loading and unloading process for you to have a piece of mind. Our services include :

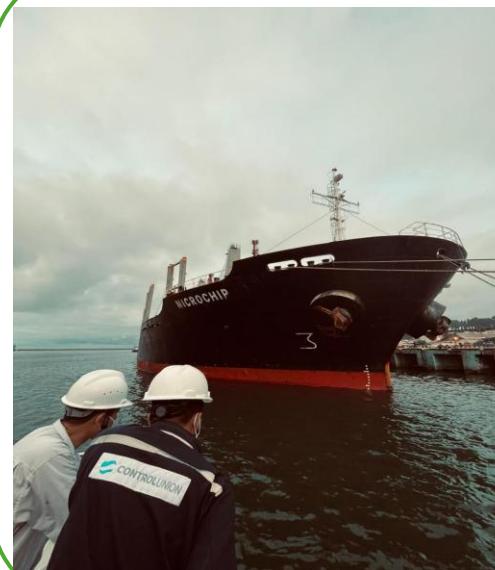
- Loading/stuffing supervision
- Discharge supervision
- Cargo condition monitoring
- Sampling and sealing
- Cargo, container and truck tallying
- Damage survey



VESSEL SERVICES

We ensure that vessels and barges with your precious cargo are thoroughly inspected and verified. We are your eyes and ears 24/7, while you can focus on your core business. Our services include :

- Pre-shipment Inspection
- Loading and discharge supervision
- Draught survey
- Cargo condition monitoring
- Sampling (GAFTA 124, FOSFA, NEN ISO 18135)
- Temperature & Moisture Monitoring
- Weight Bridge / Shore Scale Monitoring
- Laboratory Analysis



CONTROL UNION jointly with VERIDAPT bridges the physical to the digital across the commodities supply chain to manage operations, mitigate risk, facilitate financing and monitor ESG goals

Continuous Inventory Control for Bulk Storage Facilities

Solutions for Silos or Tanks

– grains, vegetable oil, feed and fertilizer, including weighbridge integration for inflows and outflows

Solutions for Flat Storage and Warehouses

– bulk storage continuous inventory monitoring including inflows and outflows

Condition and Spoilage Monitoring

– temperature, moisture content and CO₂ monitoring and alerting, including option for automatic aeration control

Key Benefits

Digitize and automate reconciliation of inventory, daily

Reduce risk of errors, improve accuracy of month end reporting

Ops efficiency: automatic document creation, reduce paperwork replication and transcribing

Take human errors out of the system



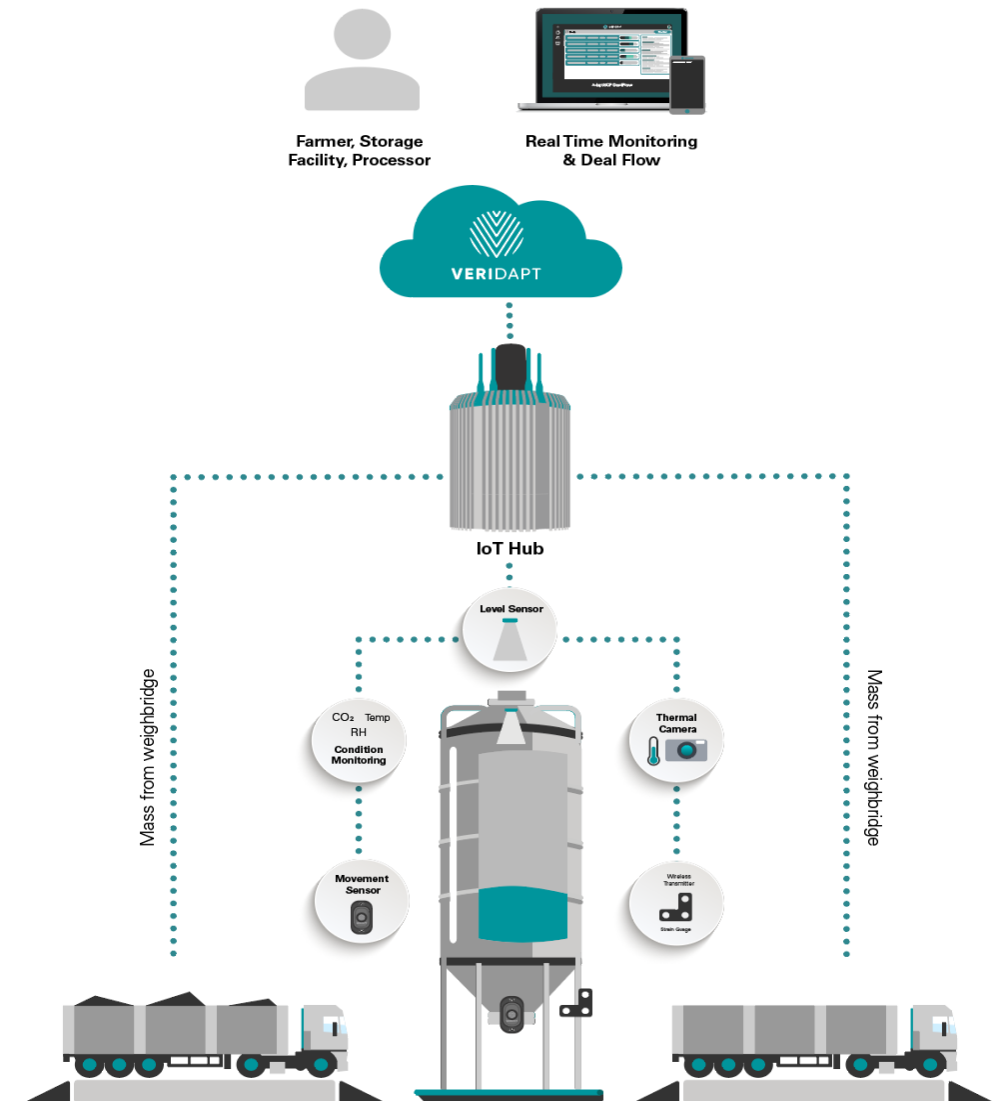
Dry bulk Cargo Silo Monitoring

Monitor the site

- Monitor inflows/outflows via weighbridges
- Capture the delivery receipt using **VERIDAPT**'s mobile application
- Monitor the silos and tanks inventory levels
- Monitor silo hatches/valves open/shut events
- Reconcile the delivered quantity of grain against delivered quantities on weighbridges, and against delivery receipts

Fast Installation

- Rapid installation in hours, no cutting or fastening required
- Solar powered and wireless solutions available



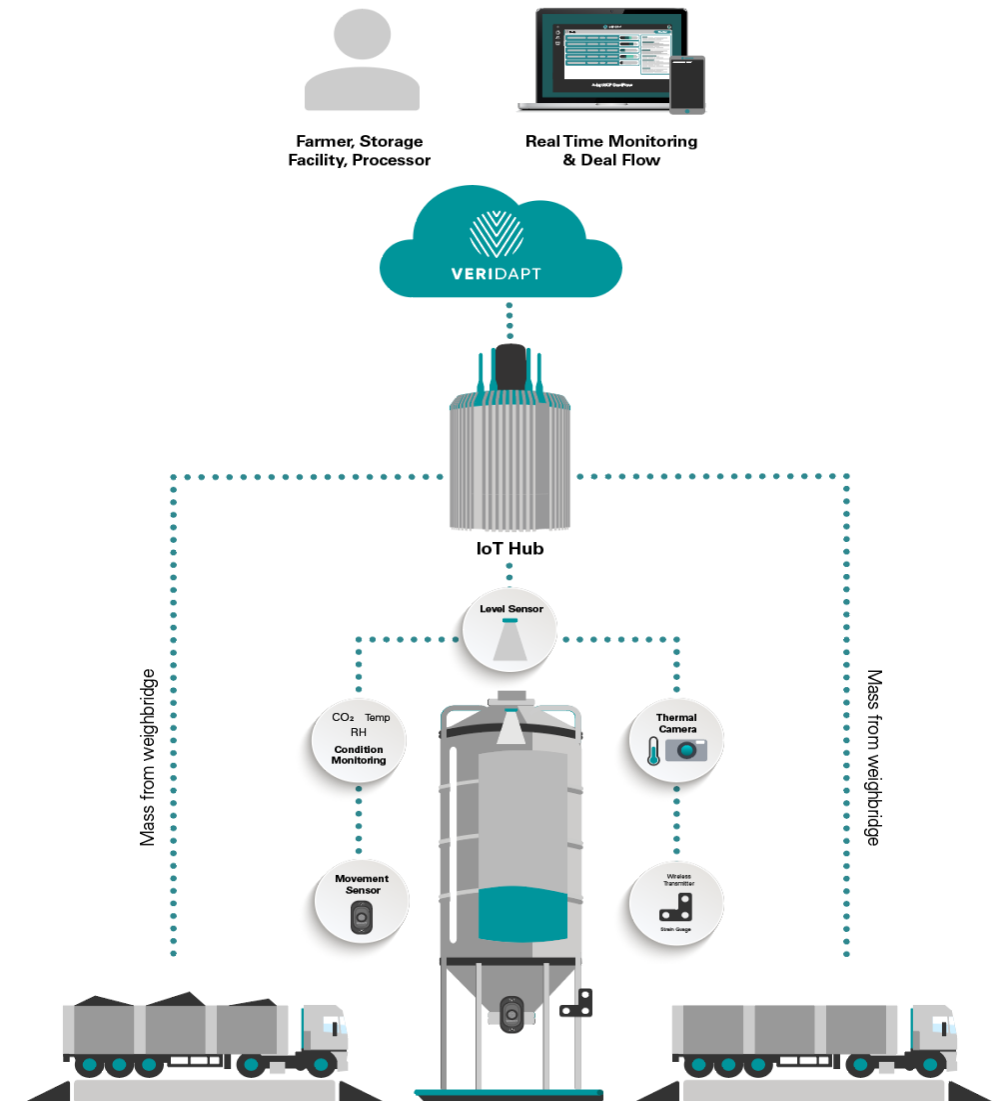
Dry bulk Cargo Silo Monitoring

Alerts and alarms notifications

- Anomalies in reconciliation of product
- Delivery receipts fail to match weighbridge volumes
- Silo hatch/tank valves opened unexpectedly

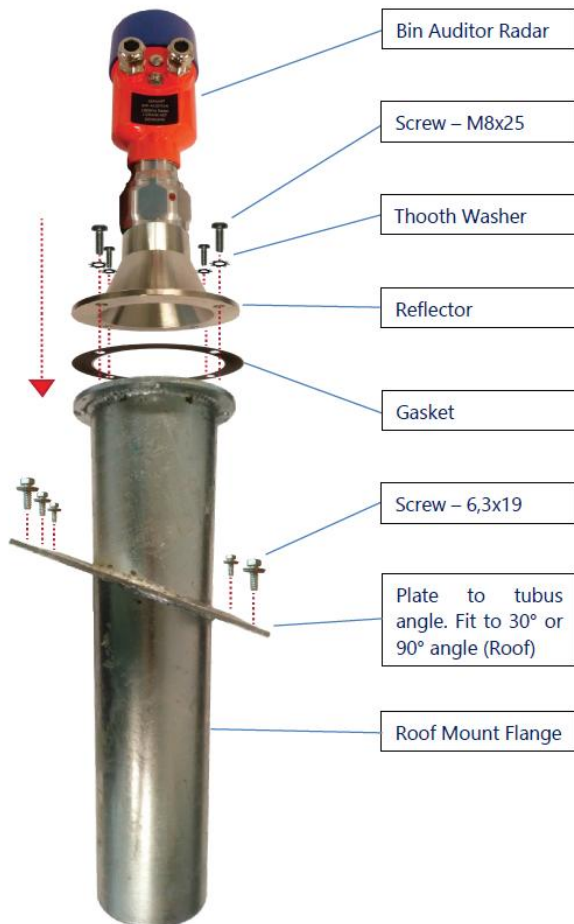
Reporting

- Generate scheduled or ad hoc reports
- Inventory on hand reports
- Movements reporting



Radar Level Sensor

Mechanical installation:
Assembling & Parts



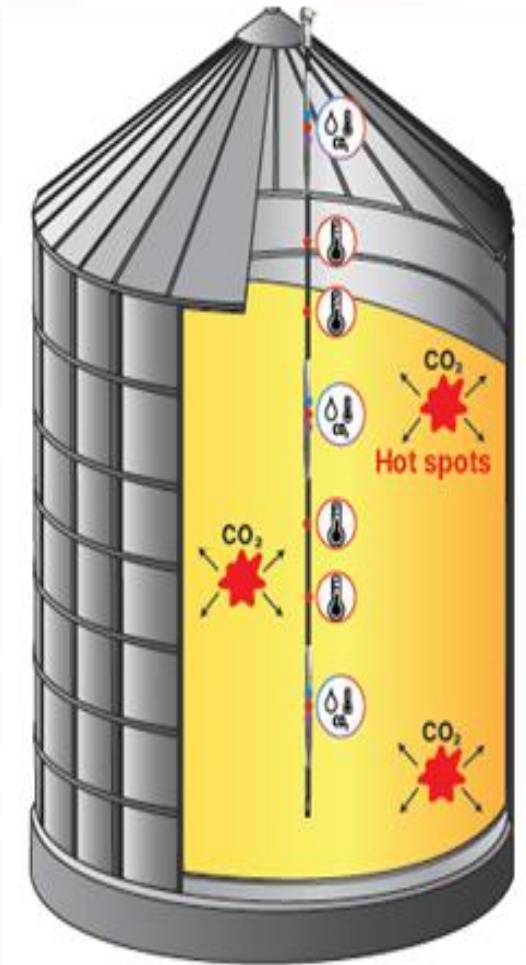
Optional Safety Feature Proposal:

A cable sensor close to center of each silo, with 3 sensors:

- 2 sensors (at 1/3 and 2/3 height in the silo) to monitor the condition in the pellets
- 1 sensor in the head-space to monitor the safety of the stored pellet:

Safety features:

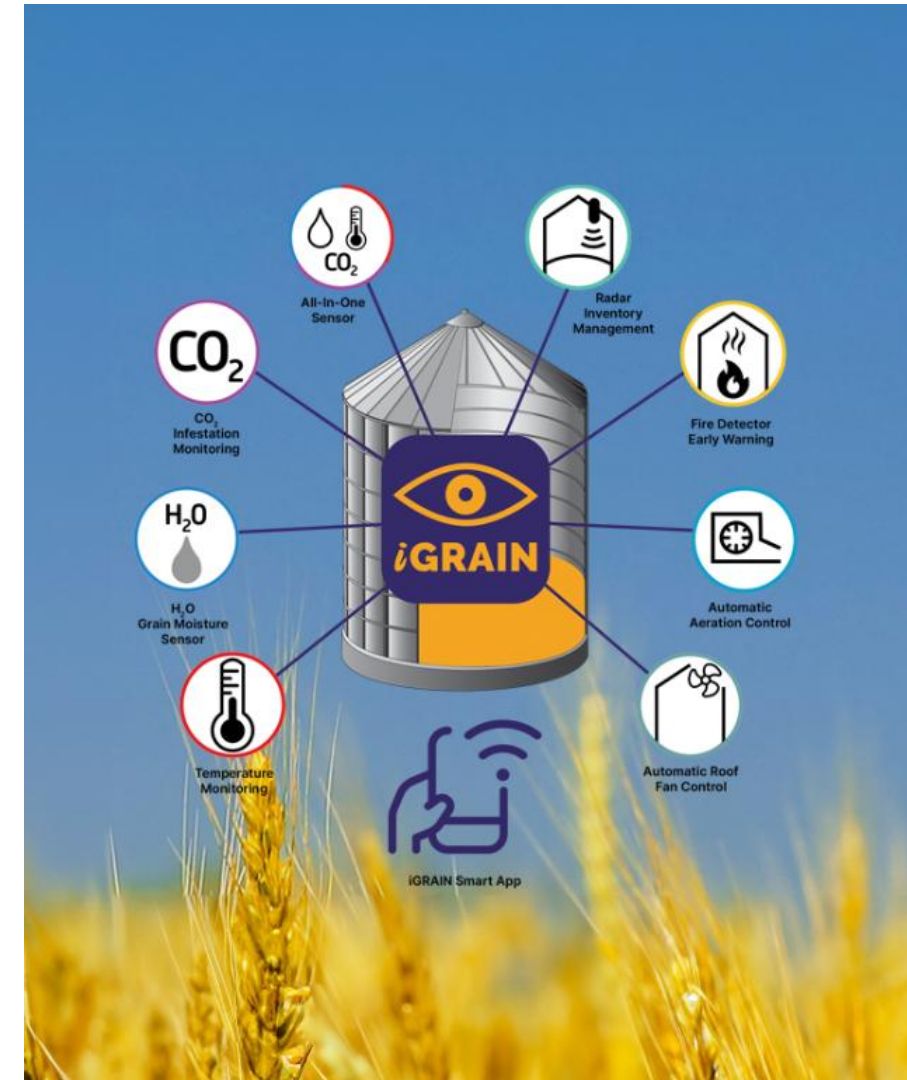
- Monitoring CnHm (hydrocarbon gasses) since they are flammable
- Monitoring CO₂ because this gas will alert if a charring process is ongoing (the process in an organic material starting self-ignition)



Condition Monitoring

VERIDAPT, in partnership with **iGRAIN®**, offers the best-in-class crop protection technology with the monitoring of temperature, moisture, CO₂ (infestation) and VOC, including automated aeration control.

Track your data in **VERIDAPT** platform or via the iGRAIN Smart App.



LIDAR Measurement Stockpile Monitoring

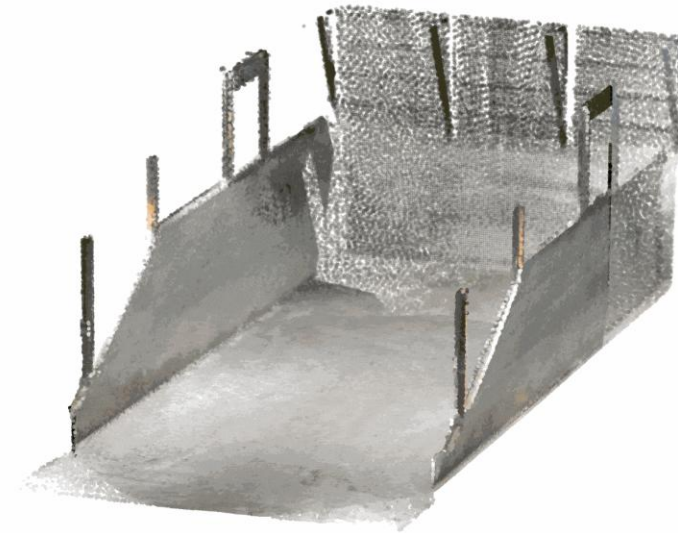
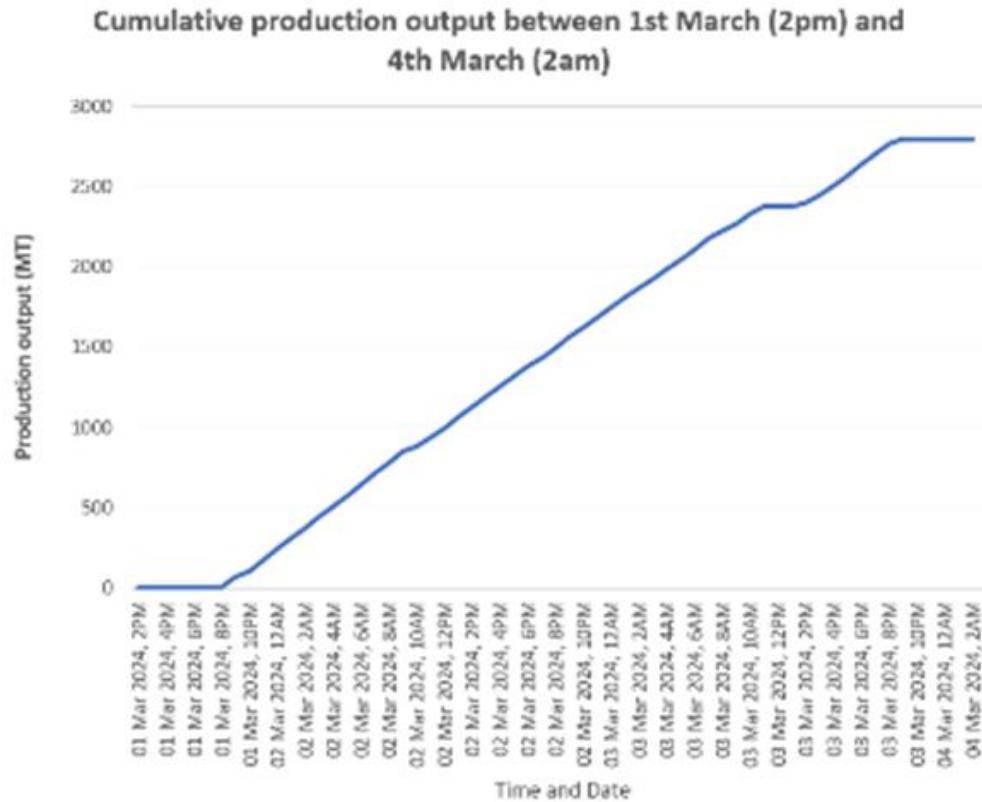
Cost-effective 3D scanning
technology

Solution under field trials:

- Combination of LIDARs and RGB cameras to monitor fixed and variable sides of a stockpile
- Stockpiles up to 260 meters scanned
- Multipoint and single point scanning options
- Portable fixed position solar power LIDAR solutions available



Filling event captured



Manage Inventory by Reconciling Continuously

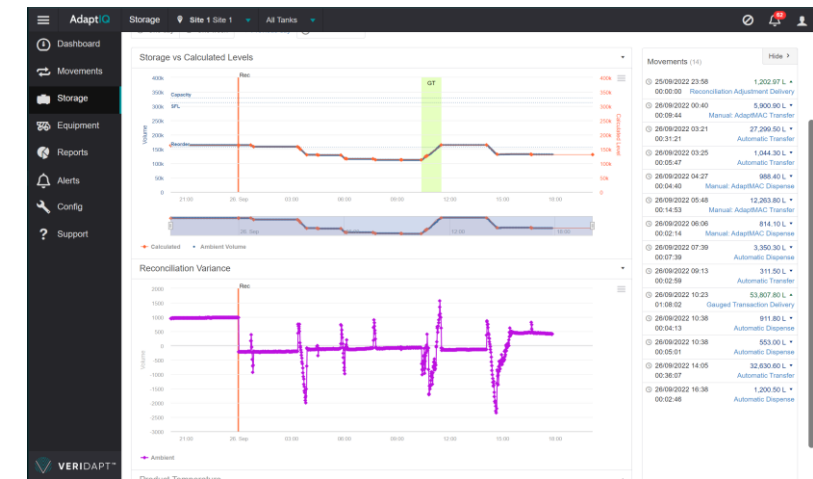
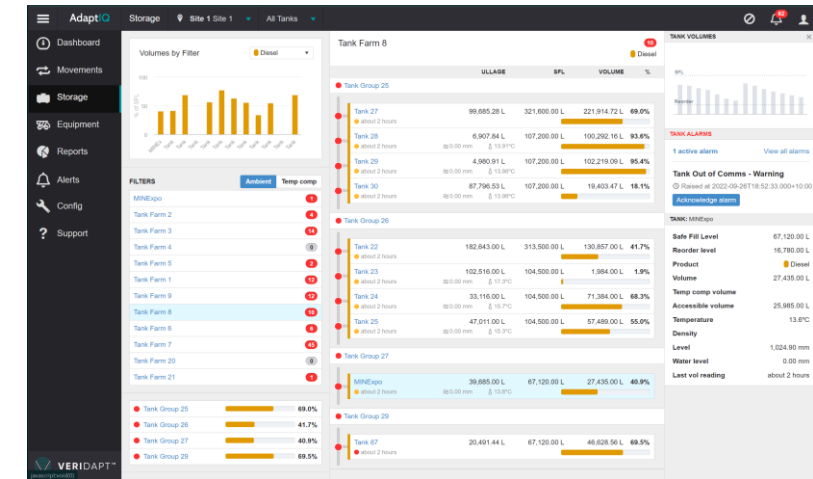
AdaptIQ Software Solution

AdaptIQ delivers a summary view of all assets, recent movements and system health status:

- Detailed views of inventory levels with sensors measuring data every second
- Reconciliation of actuals against calculated inventory levels
- Calculated levels can be based on delivery receipts or other sensors, such as weighbridges measuring product in and out of silos

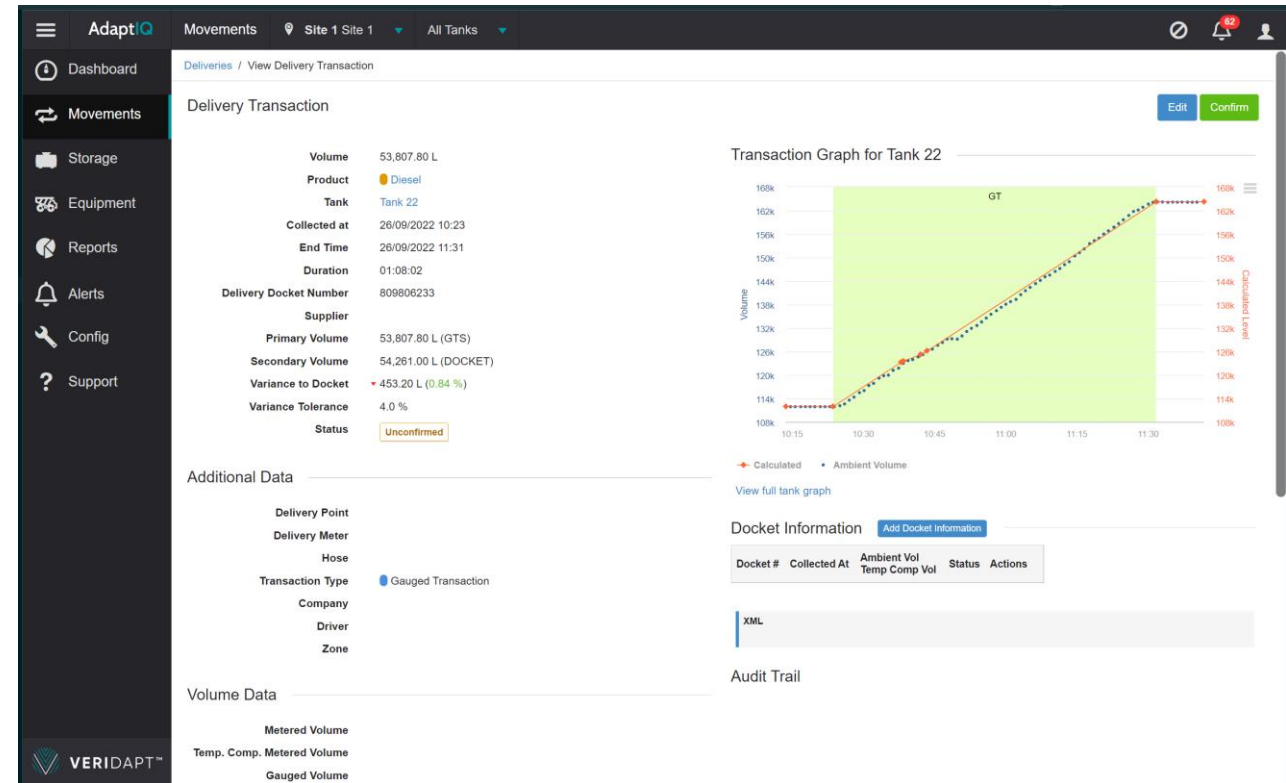
Visibility of all inflows, outflows and transfers between inventories:

- Filter and view inventories in groups (eg. tank farms) or individually
- Export to Excel/PDF for further analysis
- Full API connectivity to your other systems available



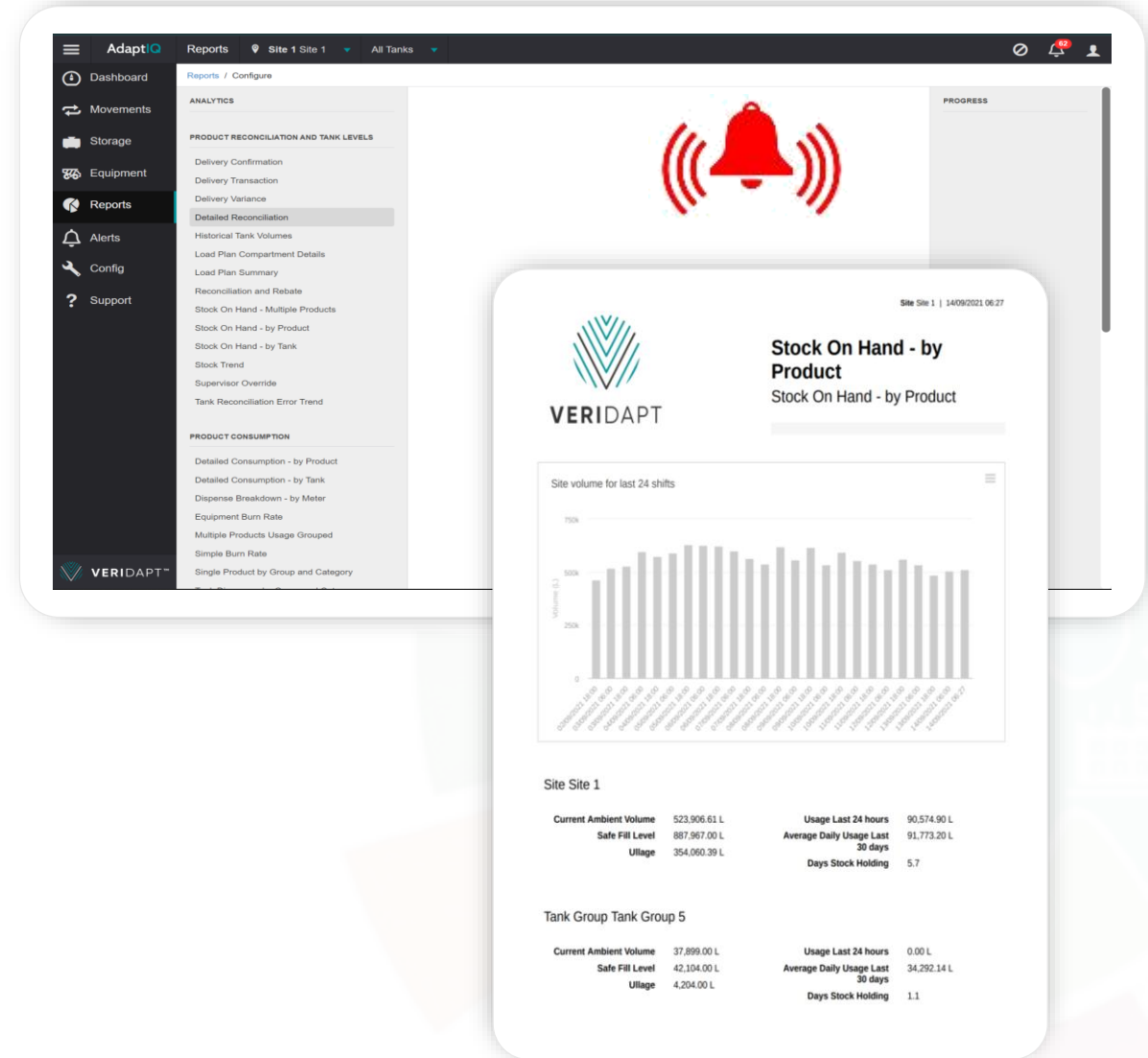
Detailed View of Transactions

- Accurate data showing transaction time and volumes
- Solution automatically reconciles against delivery dockets (receipts) when within configured tolerance or confirmation is requested by the user
- Documents associated with transactions can be uploaded to solution either via mobile app or directly in Veridapt platform, ensuring all information is secure in a single place



Automated Reporting

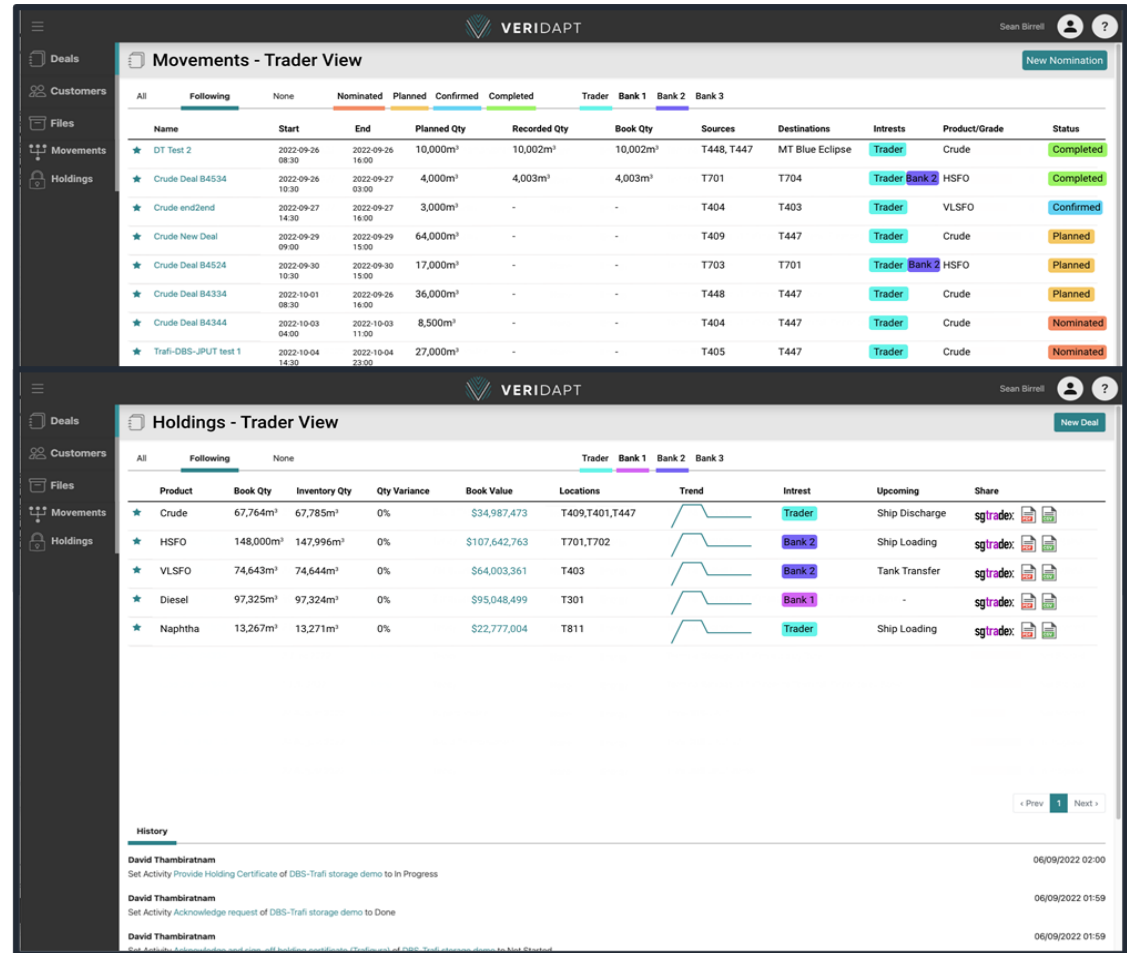
- Powerful reporting engine comes with useful pre-configured reports
- Automatically schedule delivery of reports to meet your requirements (daily reconciliation report, month-end stock on hand, etc.)
- **VERIDAPT Platform, AdaptIQ**, continually monitors inventories and system health and will alert you if an issue is detected. Our system detects events such as:
 - Unusual changes to inventory that do not correlate with other sensors
 - Long term reconciliation error trends
 - Inventories below a minimum threshold
 - And a lot more!



Customer Portal

Share inventory details, inspection and lab reports **between farm, storage facility, bank, inspector or processor**

- Enable viewing access to 3rd parties
- Secure document exchange with validated source
- Update in real time, lodge requests or approvals
- Chat on the platform as needed
- Templated workflows to ensure consistency
- Robust audit trail
- Eliminate emails and lost or missed communications



The screenshot displays the VERIDAPT Customer Portal interface, which is divided into two main sections: 'Movements - Trader View' and 'Holdings - Trader View'.

Movements - Trader View: This section shows a table of transactions. The table has columns for Name, Start, End, Planned Qty, Recorded Qty, Book Qty, Sources, Destinations, Intrants, Product/Grade, and Status. The status column uses color-coded labels: 'Completed' (green), 'Confirmed' (blue), 'Planned' (orange), and 'Nominated' (red).

Name	Start	End	Planned Qty	Recorded Qty	Book Qty	Sources	Destinations	Intrants	Product/Grade	Status
DT Test 2	2022-09-26 08:30	2022-09-26 16:00	10,000m³	10,002m³	10,002m³	T448, T447	MT Blue Eclipse	Trader	Crude	Completed
Crude Deal B4534	2022-09-26 10:30	2022-09-27 03:00	4,000m³	4,003m³	4,003m³	T701	T704	Trader Bank 2	HSFO	Completed
Crude end2end	2022-09-27 14:30	2022-09-27 16:00	3,000m³	-	-	T404	T403	Trader	VLSFO	Confirmed
Crude New Deal	2022-09-29 09:00	2022-09-29 15:00	64,000m³	-	-	T409	T447	Trader	Crude	Planned
Crude Deal B4524	2022-09-30 10:30	2022-09-30 15:00	17,000m³	-	-	T703	T701	Trader Bank 2	HSFO	Planned
Crude Deal B4334	2022-10-01 08:30	2022-09-26 16:00	36,000m³	-	-	T448	T447	Trader	Crude	Planned
Crude Deal B4344	2022-10-03 04:00	2022-10-03 11:00	8,500m³	-	-	T404	T447	Trader	Crude	Nominated
Trali-DBS-JPUT test 1	2022-10-04 14:30	2022-10-04 23:00	27,000m³	-	-	T405	T447	Trader	Crude	Nominated

Holdings - Trader View: This section shows a table of inventory holdings. The table has columns for Product, Book Qty, Inventory Qty, Qty Variance, Book Value, Locations, Trend, Intrant, Upcoming, and Share. The status column uses color-coded labels: 'Trader' (green), 'Bank 2' (blue), and 'Bank 1' (red).

Product	Book Qty	Inventory Qty	Qty Variance	Book Value	Locations	Trend	Intrant	Upcoming	Share
Crude	67,764m³	67,785m³	0%	\$34,987,473	T409,T401,T447		Trader	Ship Discharge	sgtrader
HSFO	148,000m³	147,996m³	0%	\$107,642,763	T701,T702		Bank 2	Ship Loading	sgtrader
VLSFO	74,643m³	74,644m³	0%	\$64,003,361	T403		Bank 2	Tank Transfer	sgtrader
Diesel	97,325m³	97,324m³	0%	\$95,048,499	T301		Bank 1	-	sgtrader
Naphtha	13,267m³	13,271m³	0%	\$22,777,004	T811		Trader	Ship Loading	sgtrader

History: This section shows a log of activities. The table has columns for User, Activity, and Date.

User	Activity	Date
David Thambiratnam	Set Activity Provide Holding Certificate of DBS-Trali storage demo to In Progress	06/09/2022 02:00
David Thambiratnam	Set Activity Acknowledge request of DBS-Trali storage demo to Done	06/09/2022 01:59
David Thambiratnam	Set Activity Acknowledge request of DBS-Trali storage demo to Done	06/09/2022 01:59

SMART SEALS



- ✓ Tracking: locking and unlocking in real time;
- ✓ Theft: Tamper proof;
- ✓ Alerting: real time reporting/alarms;
- ✓ Logging: Keeps activity logs of seals and users





TEMO

- ✓ Tracking humidity, temperature & movement in real time
- ✓ Alarms settings to detect anomalies and take actions
- ✓ In Warehouses and Barges
- ✓ Gas detection: CO, CO₂, H₂, CH₄





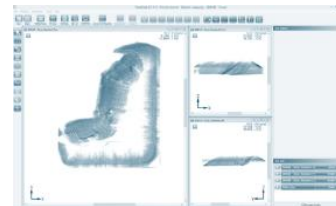
- ✓ Data on Volume, Timing & GPS location
- ✓ Time efficient
- ✓ Reduce the human intervention as much as possible
- ✓ Accurate (Deviation < 3cm in 120 mt)



PERFORMANCE



DATA IMPORT



**VOLUME
CALCULATION**



**REPORTING
RESULTS**

VOLTECH

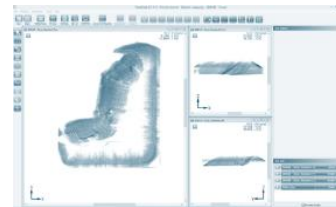
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PERFORMANCE



DATA IMPORT



VOLUME
CALCULATION



REPORTING
RESULTS

CMS SOFTWARE

- ✓ One platform for all PCU CMS activities.
- ✓ Centralized data base.
- ✓ Dashboards.
- ✓ Traceability.
- ✓ Mobile app.
- ✓ Digital reporting.
- ✓ API to Blockchain.



Currently under
implementation.