TankPulse

CHURRO TECH

Product Information Booklet

Stock accounting system for bulk liquid terminals

November 2026



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About this booklet

This booklet describes the functions of TankPulse as they stand in November 2026. It is intended for terminal managers, operations and accounts staff, and anyone assessing how the system handles stock records.

Conventions

- Screen names and field labels are given as they appear in the application.
- Quantities are held in kilolitres (KL) or metric tons (MT), according to the unit set for each product, and are stored to three decimal places.
- Dates and times are in Indian Standard Time.
- Illustrations come from a demonstration database. All client names, people and figures in them are fictitious.

1 Introduction

TankPulse is a web-based stock accounting system for terminals that store bulk liquids, for their own account or on behalf of clients.

It keeps a continuous record of the stock in each tank. Staff enter daily dip readings, vessel receipts, truck dispatches and internal transfers. From these entries the system calculates each tank's stock, compares the calculated figure with the quantity found by dipping, and produces daily, monthly and vessel reports.

1.1 Scope of the system

TankPulse is a tracking and accounting system. It does not measure tanks and is not connected to tank gauges or sensors. Dips are taken by terminal staff in the usual way and the readings are entered by hand. Stock figures are therefore as current as the latest entry.

The one automatic data source is an optional weighbridge connection, which can record truck dispatches directly (section 5.3).

1.2 Modules

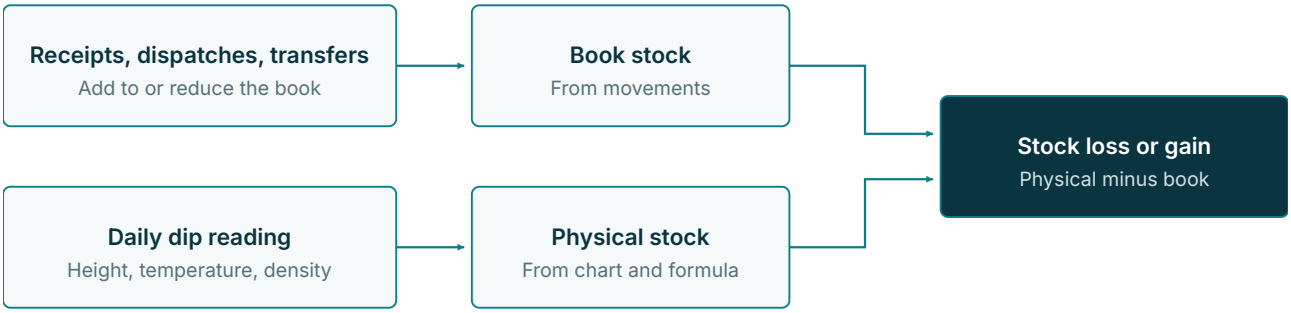
Module	Purpose	Section
Tank Overview	Current stock, occupancy and loss or gain for each tank	4
Recordings	Daily readings, product receipts, product dispatches and internal transfers	5
Reports	Daily Loss/Gain Performance, Monthly and Vessel reports, with Excel download	6
Audit Trail	Log of each creation, update and deletion, with the user and the values changed	8
Admin Console	Master data for clients, products, tanks and licences	9
Settings	Stock loss cut-off, edit window, user accounts and weighbridge details	10

1.3 Products handled

A product is set up for a client and given a unit of KL or MT. The calculation used for a dip depends on the product's unit, its name and the tank's class (section 2.4). Standard tanks and internal floating roof tanks are both supported, and a tank may be bonded or not bonded.

2 How stock is calculated

TankPulse keeps two independent figures for each tank, book stock and physical stock. The difference between them is the stock loss or gain.



2.1 Book stock

Book stock is the quantity that should be in the tank according to the record of movements. Receipts and incoming transfers add to it. Dispatches and outgoing transfers reduce it. A dip reading does not change it.

2.2 Physical stock

Physical stock is the quantity found by dipping. For each reading the system:

- converts the dipstick height to a gross volume using that tank's calibration chart;
- corrects the volume using the temperature and density entered, by the formula for that product and tank;
- adds any pipeline quantity entered with the reading.

2.3 Stock loss or gain

The cumulative loss or gain is physical stock minus book stock. A negative figure is a loss. The loss or gain for an individual dip is the change in that cumulative figure since the previous dip.

> **Worked example.** Tank T01, 12 November, quantities in KL. Opening book stock of 3,675.211 less deliveries of 77.448 gives a book stock of 3,597.763. The dip gives a physical stock of 3,597.485. The cumulative stock loss is 0.278, or 0.006% of the quantity received.

2.4 Calculation formulas

The system selects the formula. V is the gross volume in KL from the calibration chart, VCF is the volume correction factor, D15 is the density at 15°C, and WCF is D15 − 0.0011.

No.	Applies to	Quantity
1	General products, the default	`V × VCF × WCF`
2	Phenol, CPL, Methanol	`V × calculated density`
3	Toluene, Acetone, Mixed Xylene	`V × (1 − (T − 15) × factor) × WCF`
4	Refined Glycerine	`V × D15`
5	Products measured in KL	`V × VCF`
6	Internal floating roof tanks	`(V − water − roof correction) × VCF × WCF`

In formula 6 the roof correction is roof weight ÷ (VCF × WCF). T is the temperature in °C. The factor in formula 3 and the density factor in formula 2 are entered with the reading.

2.5 Safe capacity

Each tank has a safe capacity, a fixed share of its full capacity, and a maximum of one percentage point above that.

Tank type	Safe capacity	Maximum
Standard tank	95% of full capacity	96%
Internal floating roof tank	92.5% of full capacity	93.5%

A receipt or transfer that would take a tank above its safe capacity produces a warning. Warehouse Operators cannot proceed past that point. Super Admins and Warehouse Admins can use the one-point buffer. Nobody can exceed the maximum.

2.6 Product cycles and empty-outs

A cycle runs from the first receipt of a product into a tank until the tank is emptied. A tank stays occupied at zero stock. It is released only by an empty-out, recorded by entering a dipstick height of −1.

An empty-out closes the cycle, records any remaining book stock as the closing loss or gain, and makes the tank available for a new product. A mistaken empty-out is reversed by deleting that reading.

2.7 Recalculation

Report rows are derived from the entries and are never edited directly. When an entry is created, corrected or deleted, the system recalculates the affected tank’s report rows from that point onward, so cumulative figures remain consistent.

3 Users and access

Each user has one of four roles. The role decides which screens appear and what the server will accept from that user.

Role	Typical user	Scope
Super Admin	Terminal head or system owner	All modules, including master data, settings, the audit trail and deletions
Warehouse Admin	Terminal manager	Tank Overview, Recordings and Reports
Warehouse Operator	Shift staff	Tank Overview and Recordings
Client	A storage client's representative	That client's own data only, read-only (section 7)

3.1 Access by screen

Screen	Super Admin	Warehouse Admin	Warehouse Operator	Client
Tank Overview	Yes	Yes	Yes	Own tanks
Recordings	Yes	Yes	Yes	Read-only
Reports	Yes	Yes	No	Own reports
Audit Trail	Yes	No	No	No
Admin Console	Yes	No	No	No
Settings	Yes	No	No	Password only

3.2 Permissions on entries

Action	Super Admin	Warehouse Admin	Warehouse Operator	Client
Create an entry	Yes	Yes	Yes	No
Edit an entry	Today or yesterday	Same day, once	Same day, once	No
Delete an entry	Today or yesterday	No	No	No
Use the capacity buffer	Yes	Yes	No	No

Same-day edits must also fall within the edit window set by the Super Admin (section 5.5).

3.3 Accounts

Super Admins create user accounts in Settings. A new user receives a welcome email with a temporary password. Team accounts are deactivated rather than deleted, so names on past entries stay intact.

4 Tank Overview

Tank Overview is the first screen after login. It shows the position of every tank the user is allowed to see.

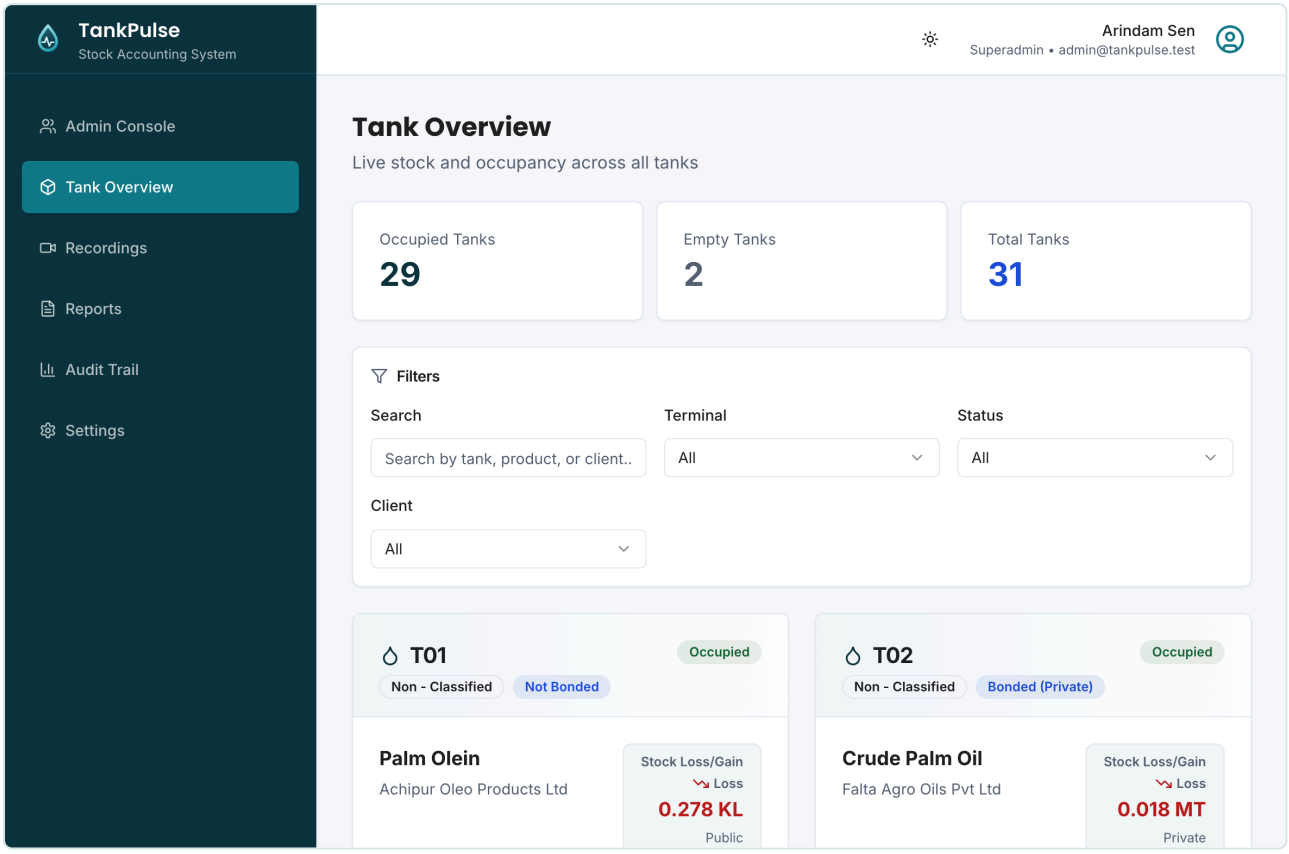


Figure 1. Tank Overview as seen by a Super Admin.

4.1 Contents of a tank card

Item	Meaning
Status	Occupied, Empty or Maintenance
Class and bonding	Hazard class, internal floating roof marker, and bonded or not bonded
Product and client	What the tank holds and for whom
Stock Loss/Gain	Current loss or gain, in the product's unit
Book Stock	Calculated from movements (section 2.1)
Physical Stock	From the latest dip, with percentage full and capacity
Last reading	Date and time of the latest dip

The summary row counts occupied, empty and total tanks. Users can search by tank, product or client, and filter by terminal, status or client. An empty tank shows its capacity, last client and product, and empty-out date.

5 Recordings

Recordings holds the four types of entry that make up the stock record. Each has its own tab, with search, date range and tank or product filters.

5.1 Daily Readings

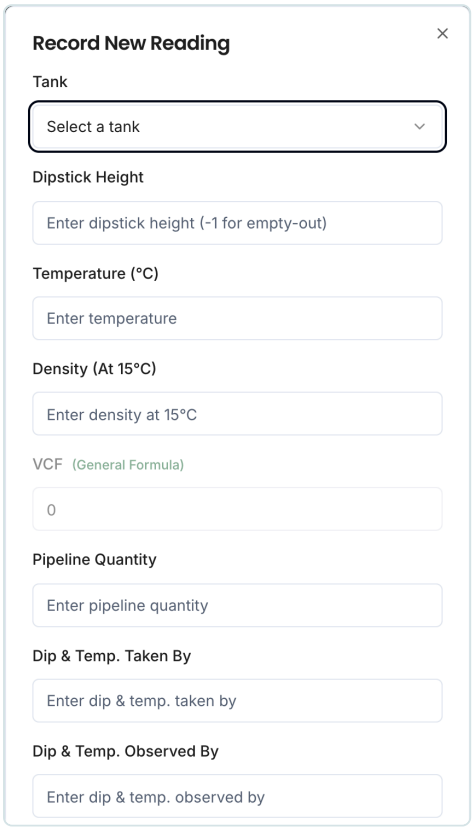


Figure 2. Record New Reading form.

Field	Description
Tank	The tank that was dipped
Dipstick Height	Measured height, or −1 for an empty-out
Temperature	Product temperature in °C
Density	Density at 15°C
VCF	Calculated by the system and shown on the form
Pipeline Quantity	Product held in the line, added to physical stock
Taken By	Person who took the dip and temperature
Observed By	Person who witnessed them
Remarks	Free text; required past the cut-off

Extra fields appear when the tank or product needs them: water volume for internal floating roof tanks, and density temperature, density factor or factor for formulas 2 and 3.

A tank can be dipped more than once a day. Each dip is kept separately and gets its own line in the reports.

Loss and gain check. If a reading's loss or gain reaches the Stock Loss CutOff Value (section 10.1), it cannot be saved without a note in Remarks. The same check applies to gains and to empty-outs.

5.2 Product Receipts

A receipt records product arriving by vessel. It adds to the tank's book stock and, for an empty tank, assigns the product and client to that tank.

Field	Description
Vessel Name, Voyage Number, ROT Number	Identifies the shipment
Client, Product, Recipient Tank	Ownership and destination
BL Quantity	Quantity on the bill of lading
Arrival Quantity	Quantity on board at arrival
Temperature, density fields	As needed for the product's formula
Jetty Number	Where the vessel discharged
Duty Officer, Workmen on Duty	People responsible for the receipt
Remarks	Free text

5.3 Product Dispatches

A dispatch records product leaving by truck and reduces book stock. A dispatch cannot exceed the stock available in the tank.

Field	Description
Source Tank	The tank the product came from; sets the product and client
Truck Number, Transporter	Vehicle and carrier
Tare, Gross, Net Weight	Truck weights. Net weight is calculated as gross minus tare
Recorded By, Remarks	Person making the entry, and free text

Weighbridge connection. Where a weighbridge is connected, each ticket creates a dispatch without manual entry. The vendor's machine sends the ticket serial number, vehicle, weights and tank. Weights arrive in kilograms and are converted to MT. The serial number prevents the same ticket from being booked twice. Each ticket received is logged with its outcome, including any that are refused, such as a ticket for a tank with no product assigned. Weighbridge dispatches show their ticket number in the dispatch list.

5.4 Internal Transfers

A transfer moves product from one tank to another. It reduces book stock in the source tank and adds to it in the target tank. The target must be able to take the quantity within its safe capacity (section 2.5).

Field	Description
Source Tank, Target Tank	Where the product moves from and to
Quantity	Quantity moved, in the product's unit
Temperature, density fields	As needed for the product's formula
Duty Officer, Remarks	Person responsible, and free text

5.5 Rules for correcting entries

Stock figures depend on the order and accuracy of entries, so corrections are limited. The same rules apply to all four entry types.

Rule	Effect
Edit window	Warehouse Admins and Operators can edit an entry only within the set number of hours after recording. The default is 10 hours and the maximum is 24.
Same day	Those users can edit an entry only on the day it was recorded.
One edit	Those users can edit an entry once. It cannot be edited again by them.
Super Admin	Can edit or delete entries dated today or yesterday, without the hours limit or the one-edit limit.
Older entries	Entries older than yesterday cannot be edited or deleted by anyone.
Tank and date	An entry's tank and date cannot be changed by any user. A wrong entry is deleted and entered again.
Protected master data	Tanks and products with recorded operations cannot be deleted. A tank holding stock cannot be reclassified.

Every edit and deletion is recorded in the Audit Trail (section 8), and reports are recalculated (section 2.7).

6 Reports

TankPulse produces three reports. Each is shown on screen first and can be downloaded as a formatted Excel file.

Report	Period and selection	Available to
Daily Loss/Gain Performance	One date; optional client and tank	Super Admin, Warehouse Admin, Client (own data)
Monthly Report	From and To dates, up to 366 days; one tank; optional client	Super Admin, Warehouse Admin, Client (own data)
Vessel Report	From and To dates, up to 366 days; optional client and tank	Super Admin, Warehouse Admin, Client (own data)

6.1 Daily Loss/Gain Performance

One line per dip, for each tank. This is the terminal's daily stock statement.

Column group	Columns
Tank	Storage tank number, capacity, safe capacity, type of tank
Product	Product, name of consignee, unit
Movements	Tank lorries delivered or received, day's delivery quantity, receipt quantity for the last working day and the report day
Book position	Opening book stock, closing or opening book stock, cumulative receipt, cumulative delivery, book stock
Physical position	Present and previous day's physical quantity, including pipeline
Loss or gain	Cumulative loss or gain as a quantity and a percentage, present and previous day's loss or gain
Responsibility	Dip and temperature taken by, observed by, remarks

6.2 Data source

All three reports are drawn from the entries in Recordings. When a client's report is requested by a client login, the server limits the result to that client's data, whatever filters are sent.

6.3 Monthly Report

The history of one tank over the chosen dates, one line per dip, with cumulative totals at the bottom. The full report also includes truck counts and tank displacement figures.

Date	Opening book	Delivered	Closing book	Physical closing	Day's loss/gain	Cumulative	Cum. %
01/11	4,262.870	0.000	4,262.870	4,263.310	+0.068	+0.440	+0.010%
02/11	4,262.870	53.665	4,209.205	4,208.818	-0.827	-0.387	-0.008%
03/11	4,209.205	76.620	4,132.585	4,132.252	+0.054	-0.333	-0.007%
04/11	4,132.585	76.542	4,056.043	4,055.666	-0.044	-0.377	-0.008%
05/11	4,056.043	75.118	3,980.925	3,981.308	+0.760	+0.383	+0.008%
06/11	3,980.925	47.179	3,933.746	3,934.190	+0.061	+0.444	+0.010%
07/11	3,933.746	74.493	3,859.253	3,859.190	-0.507	-0.063	-0.001%
08/11	3,859.253	0.000	3,859.253	3,859.834	+0.644	+0.581	+0.013%
09/11	3,859.253	47.052	3,812.201	3,811.949	-0.833	-0.252	-0.006%
10/11	3,812.201	88.794	3,723.407	3,723.802	+0.647	+0.395	+0.009%
11/11	3,723.407	48.196	3,675.211	3,675.217	-0.389	+0.006	0.000%
12/11	3,675.211	77.448	3,597.763	3,597.485	-0.284	-0.278	-0.006%
Total	**4,262.870**	**665.107**	**3,597.763**	**3,597.485**	**-0.650**	**-0.278**	**-0.006%**

Table 1. Monthly Report for tank T01, Palm Olein, in KL, 1 to 12 November. Selected columns from demonstration data.

6.4 Vessel Report

One line per receipt, in ledger order, comparing what was shipped with what reached the tank.

Column group	Columns
Shipment	Serial number, date of receipt, vessel name, voyage number, rotation number
Cargo	Product, party, storage tank number
Quantities	B/L quantity, on-board quantity, OTR quantity
Loss or gain	Against the B/L, as a quantity and a percentage
Responsibility	Jetty number, officer on duty, workmen on duty, T/D line, remarks

Date	Vessel	Product	Tank	B/L qty	On board	OTR qty	Loss/gain	%
01/11	MT Ganga Mitra	HSD	T19	5,317.332	5,312.313	5,299.620	-17.712	-0.33%
01/11	MT Hooghly Star	Furnace Oil	T12	4,147.200	4,142.867	4,138.637	-8.563	-0.21%

Table 2. Vessel Report, selected columns, in MT. Demonstration data.

7 Client access

A storage client can be given a login to view their own stock and reports. The login is read-only.

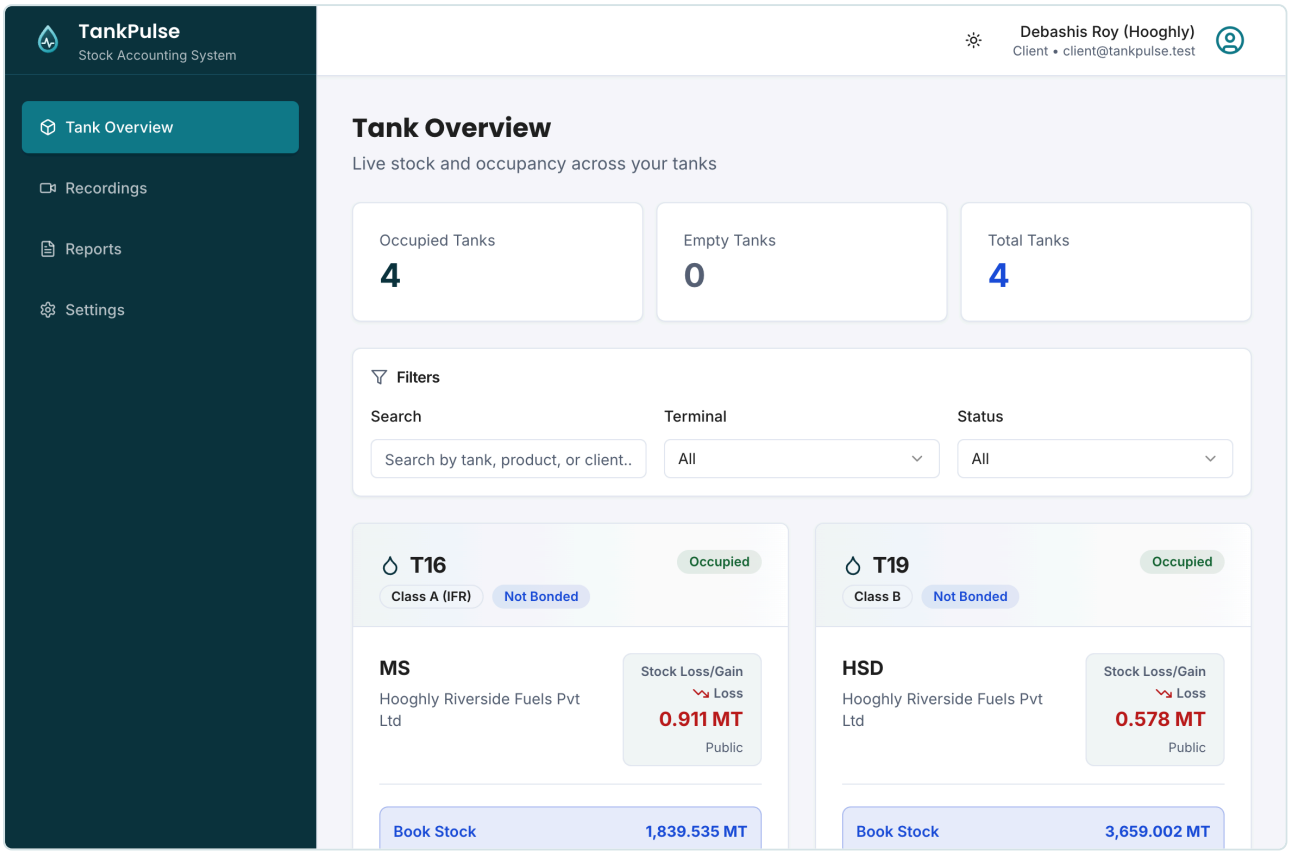


Figure 3. Tank Overview for a client login. The menu is reduced and only that client's four tanks are shown.

7.1 What a client can see

Screen	Access
Tank Overview	The client's own tanks, with book stock, physical stock and last reading
Recordings	The client's own readings, receipts, dispatches and transfers, read-only
Reports	The three reports for the client's own data, with Excel download
Settings	Change of own password only

7.2 Separation of client data

The restriction is applied on the server as well as in the screens. Each request from a client login is limited to that client, so one client cannot view another's data by altering a request. Clients have no access to the Audit Trail, Admin Console or user management.

7.3 Setting up a client login

A Super Admin creates the login in Settings, gives it the Client role and links it to a client record from the Admin Console.

8 Audit Trail

The Audit Trail records each creation, update and deletion of a record: who made it, when, and which values changed. It is visible to Super Admins only.

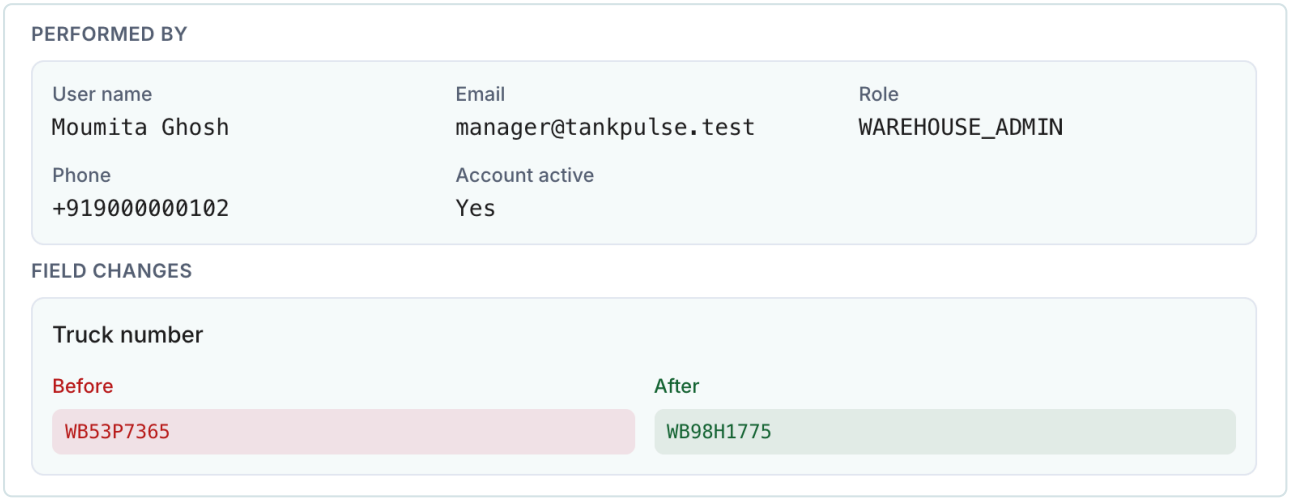


Figure 4. Part of an audit record: a truck number corrected on a dispatch, showing the user and the value before and after.

8.1 What is logged

Thirteen kinds of record are covered:

Group	Records
Stock entries	Daily readings, product receipts, product dispatches, product transfers
Master data	Tanks, tank-to-product assignments, calibration data, products, clients, points of contact, licences
Administration	Users, settings

Report rows are not logged separately because they are derived from the entries above.

8.2 Contents of an audit record

Part	Contents
Event	Action (Create, Update or Delete), entity, event time, record and event IDs
Performed By	User name, email, role, phone and whether the account is active
Record Snapshot	Values of the record at that event
Field Changes	Each changed field, before and after

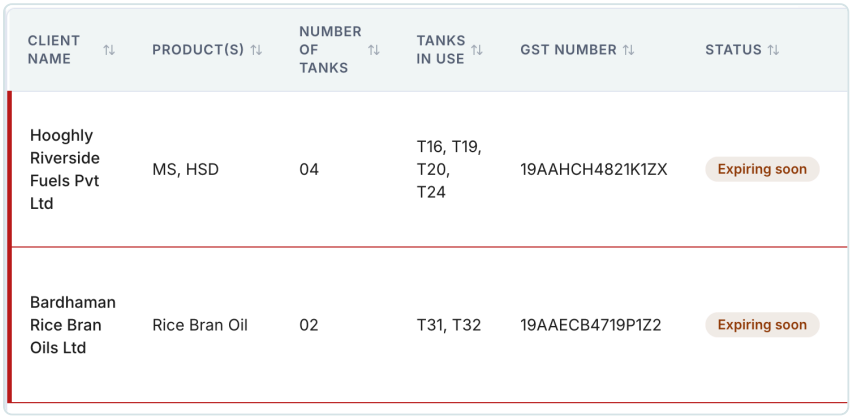
The list can be searched and filtered by entity, action and date range.

9 Admin Console

The Admin Console holds the master data that the rest of the system depends on. It is available to Super Admins and has four tabs.

9.1 Clients

Client name, office address, GST number, contract start and end dates, and any number of points of contact, each with name, email, phone and office address. The list shows each client's products, tanks in use and status. Clients nearing their contract end are marked Expiring soon.



CLIENT NAME	PRODUCT(S)	NUMBER OF TANKS	TANKS IN USE	GST NUMBER	STATUS
Hooghly Riverside Fuels Pvt Ltd	MS, HSD	04	T16, T19, T20, T24	19AAHCH4821K1ZX	Expiring soon
Bardhaman Rice Bran Oils Ltd	Rice Bran Oil	02	T31, T32	19AAECB4719P1Z2	Expiring soon

Figure 5. Client list in the Admin Console.

9.2 Products

Product name, associated client and unit of measurement, KL or MT. A product belongs to one client. The product's name and unit decide which formula is used (section 2.4).

9.3 Tanks

Field	Description
Tank name, Terminal	Identifies the tank and its terminal
Class	Class A, B, C or D, or the internal floating roof variants IFR-A and IFR-B. Class D is displayed as Non-Classified
Bonding Status	Bonded (Private), Bonded (Public) or Not Bonded
Quantity	Full capacity of the tank
Roof Weight	Required for internal floating roof tanks
Last Calibration Date, Valid Through	Calibration dates for the tank
Calibration data	The tank's chart, uploaded as an Excel sheet

An uploaded chart is checked before it is accepted. If a sheet fails, the upload is rejected with a message naming the problem, and the existing chart stays in use.

9.4 Licenses

Licence name, valid from and valid to dates. Each licence shows as Active, Expiring Soon or Expired, and reminders are sent as set out in section 10.3.

10 Settings and notifications

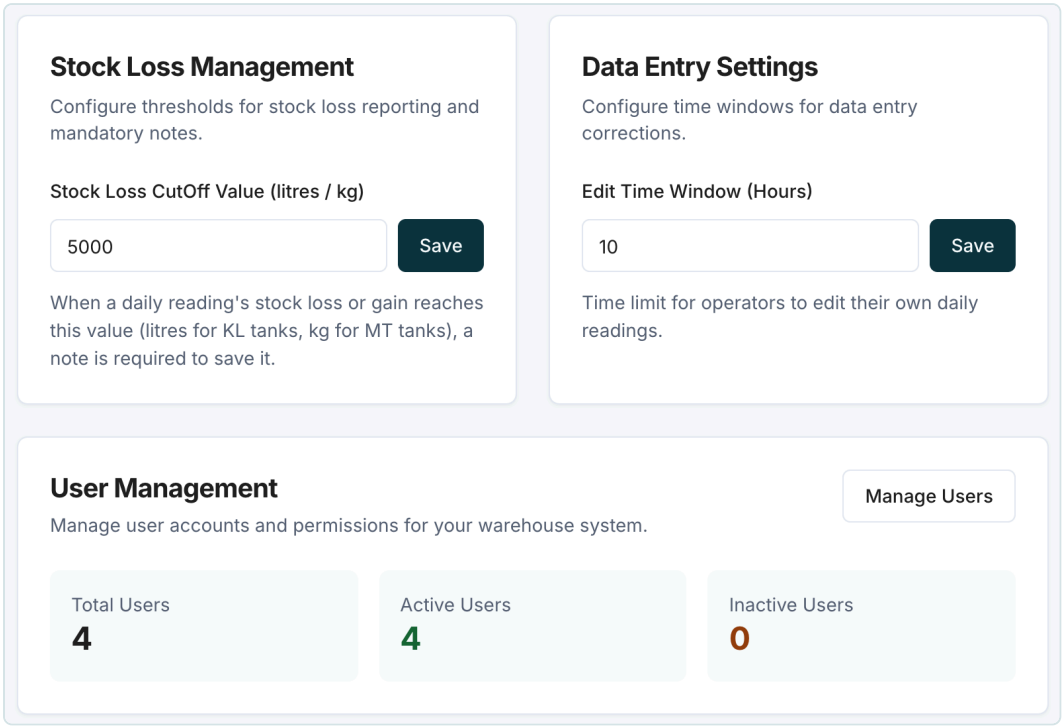


Figure 6. Stock loss, data entry and user management settings.

10.1 Stock Loss CutOff Value

The quantity at which a reading's loss or gain requires a note. It is set in litres for KL products and kilograms for MT products.

10.2 Edit Time Window, users and weighbridge

The Edit Time Window sets the hours allowed for edits (section 5.5). User Management shows total, active and inactive users and opens Manage Users, where accounts are added and roles assigned. The weighbridge panel shows the details of the integration.

10.3 Email notifications

Email	Sent to	When
Welcome to TankPulse	New user	When the account is created
Password Reset Request	User	When a reset is requested
Password Changed Successfully	User	After a change or reset
Licenses Approaching Expiry	Active Super Admins	6, 3 and 1 months, and 15, 7 and 1 days before expiry
Client Contracts Approaching Renewal	Active Super Admins	6, 3 and 1 months, and 15, 7 and 1 days before contract end

Expiry dates are checked daily at 08:00.

11 Data protection

This section summarises how access to the system and the integrity of its records are protected.

11.1 Accounts and passwords

- Passwords are stored as bcrypt hashes and have a minimum length of eight characters.
- Password reset uses a code sent by email. The code is stored as a fingerprint, not as issued.
- A confirmation email is sent after each password change.
- Temporary passwords are generated by a secure generator and are kept out of server logs.

11.2 Access control

- Each request is authenticated, and the user’s role is checked on the server.
- Client logins are limited to their own client’s data on the server (section 7.2).
- The weighbridge route accepts only requests carrying the configured key. Each accepted request is logged.

11.3 Integrity of records

- Corrections are limited by the rules in section 5.5.
- Report rows are always derived from entries and cannot be edited directly.
- Creations, updates and deletions are logged in the Audit Trail with the before and after values.
- Tanks and products with recorded operations cannot be deleted.
- Team accounts are deactivated rather than deleted, so their names stay on past entries.
- Quantities use a single half-up rounding rule, to three decimal places, in both the server and the screens.

12 Setup requirements

Before a terminal starts using TankPulse, its master data and opening position must be loaded. ChurroTech carries out this setup with information supplied by the terminal.

Information	Details required
Tanks	Name, terminal, full capacity, class, bonding status and, for internal floating roof tanks, roof weight
Calibration charts	Current chart for each tank in Excel, with the last calibration date and validity date
Clients	Name, office address, GST number, contract dates and points of contact
Products	Name, owning client and unit of measurement
Opening balances	Stock in each occupied tank on the start date, with its cumulative receipts and dispatches
Users	Name, email, phone and role for each person, including any client logins
Licences	Name and validity dates of each licence to be tracked
Settings	Stock loss cut-off and edit window
Weighbridge	Vendor and machine details, if a connection is required

Access

TankPulse runs in a web browser. No software is installed on users’ computers.

13 Glossary

Term	Meaning
B/L	Bill of lading, the shipping document stating the quantity loaded
Book stock	Quantity in a tank according to recorded movements
Calibration chart	Table converting a tank's dip height to volume
Cut-off	Loss or gain at which a note becomes compulsory
Cycle	The period a product occupies a tank, from first receipt to empty-out
D15	Density of a product at the reference temperature of 15°C
Dip	Manual measurement of the liquid height in a tank
Empty-out	Entry that closes a cycle and releases a tank
IFR	Internal floating roof tank
KL, MT	Kilolitre, metric ton
OTR	Outturn quantity, the quantity received into the shore tank
Physical stock	Quantity found by dipping, after correction, including any pipeline quantity
Safe capacity	Highest normal fill level of a tank
T/L	Tank lorry
VCF	Volume correction factor, converting volume at tank temperature to volume at 15°C
WCF	Weight correction factor, used here as D15 − 0.0011

Further information

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TankPulse

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