Cryogenic Tank Boil-Off Log

How-to guide: what the workbook does, how to use it and what every number means. mfgcalcs.com

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Log every bulk cryogenic tank's inventory each period, work out the liquid lost to boil-off and its value, and see which tanks run above their target boil-off rate.

For: Plant engineers, utilities and maintenance teams, and gas buyers running bulk liquid nitrogen, argon, oxygen or other cryogenic tanks.

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Quick start

1. On Setup, type the site, volume unit and currency, and list your tanks with product, capacity, target boil-off per day and product price.
2. On Readings, give each tank and period a row: start and end dates, starting inventory, delivered, withdrawn and ending inventory.
3. Fix anything the Check column names.
4. Open the Dashboard: boil-off per day against target by tank, the value lost, and the trend of the tank you pick.

What is in the workbook

Start Here	Read this first: what the workbook does and how to use it.
Setup	Site, units, the near band, and the tanks with their target boil-off and product price.
Readings	One row per tank and period: inventories in; boil-off, rate per day, status and value lost out.
Dashboard	Boil-off per day against target for every tank, the value of the product lost, and the trend of the tank you pick.
Method	How every number is calculated, with assumptions, limits and sources.
Verify	Self-check: the workbook's formulas recomputed on fixed inputs against an independent reference.

What each number means

Quantity	How it is calculated	Units
Days	Period end - period start.	days
Boil-off	Starting inventory + delivered - withdrawn - ending inventory.	volume
Boil-off rate	Boil-off / starting inventory, for the period.	%
Rate per day	Boil-off rate / days.	% per day

Quantity	How it is calculated	Units
Target for period	Target per day x days.	%
Above target	Boil-off rate - target for the period.	points
Status	On target at or below the target per day; Near target up to the near band over it; Above target beyond.	-
Value lost	Boil-off x product price.	currency
Average per day (tank)	Total boil-off / sum of starting inventory x days over the tank's periods.	% per day
Latest status (tank)	The status of the tank's latest period, so a rising rate shows even when the average is on target.	-

Assumptions, limitations, sources and the self-check (the Verify sheet, which recomputes the workbook's formulas on fixed test inputs) are in the workbook. The last page shows the Dashboard with the example data for Northmoor Foods, a fictional business.

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Engineering estimates for planning and improvement work. Verify the results against your own process, data and standards before you rely on them.

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Boil-off per day against target for every tank, the value of the product lost, and the trend of the tank you pick.

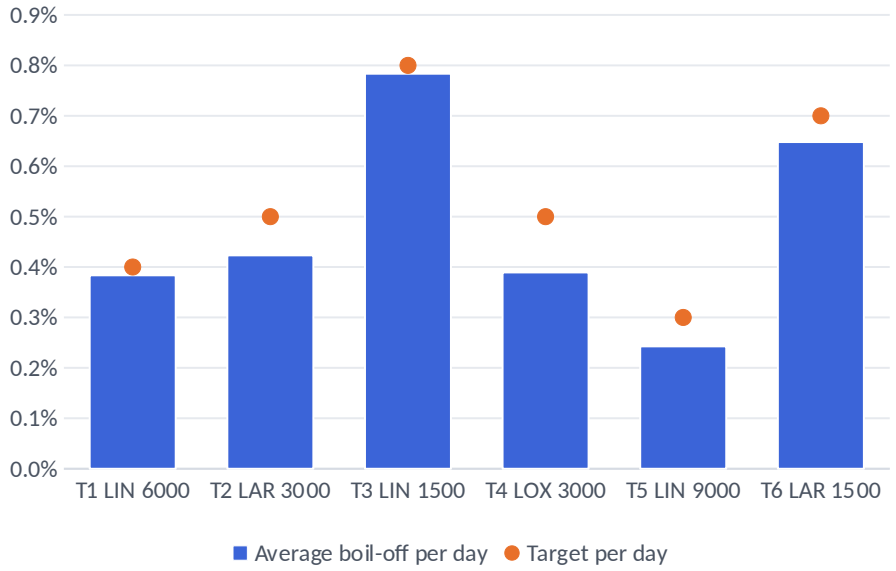
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Tank shown in the trend: T1 LIN 6000

Northmoor Foods, bulk gas yard (example): 6 tanks, 48 periods logged. Volumes in gal, amounts in USD.

PERIODS LOGGED	BOIL-OFF LOST (gal)	VALUE LOST (USD)	PERIODS ABOVE TARGET
48	3,338	3,289	3
Rows with a boil-off rate	Inventory balance, all tanks	Boil-off x product price	Status Above target

Average boil-off per day against target



Boil-off per day, tank shown

