USE CASE · DATA INSPECTOR

SIX VESSELS. 116 MILLION DATA POINTS. 97% VERIFIED QUALITY.

How a six-vessel ro-pax fleet lifted verified data quality from 66% to 97% with Hoppe's **Data Inspector** service, by fixing every fault at its source instead of the data.

A real fleet, anonymised. Three and a half years of its own operational data on Hoppe's Fleet Connect platform tell the story.



66 → 97%
avg. overall quality, before / after

2,658
signal incidents resolved in the first 18 months

~1 day
median time to restore a failed signal today

HOPPE
PROVEN SYSTEMS — DIGITAL SOLUTIONS

SUMMARY

EXECUTIVE SUMMARY · THE USE CASE AT A GLANCE

THE WHOLE CASE, ON ONE PAGE.

A six-vessel ro-pax fleet was rich in data and poor in certainty. Here is what changed when quality moved from monthly checking to daily verification.

THE SITUATION

Some 91,000 quality-relevant data points a day, yet overall quality averaged just 66%. Drifts, stalls and dead signals surfaced only at month-end, when the measurements were already lost.

THE INTERVENTION

Data Inspector checked every quality-relevant signal against seven dimensions each day, tracing each fault to its source and fixing it there. No measured value was ever edited.

THE OUTCOME

97%, and holding. Failed signals restored in about a day, no month-end surprises, reporting audit- and charter-ready by default.

AVERAGE OVERALL QUALITY

66 → 97%

+31 points across the fleet: measured, not retroactively corrected

−95%
monthly incident rate once the root causes were fixed

116.7 M
data points verified in 3.5 years: the cover's 116 million

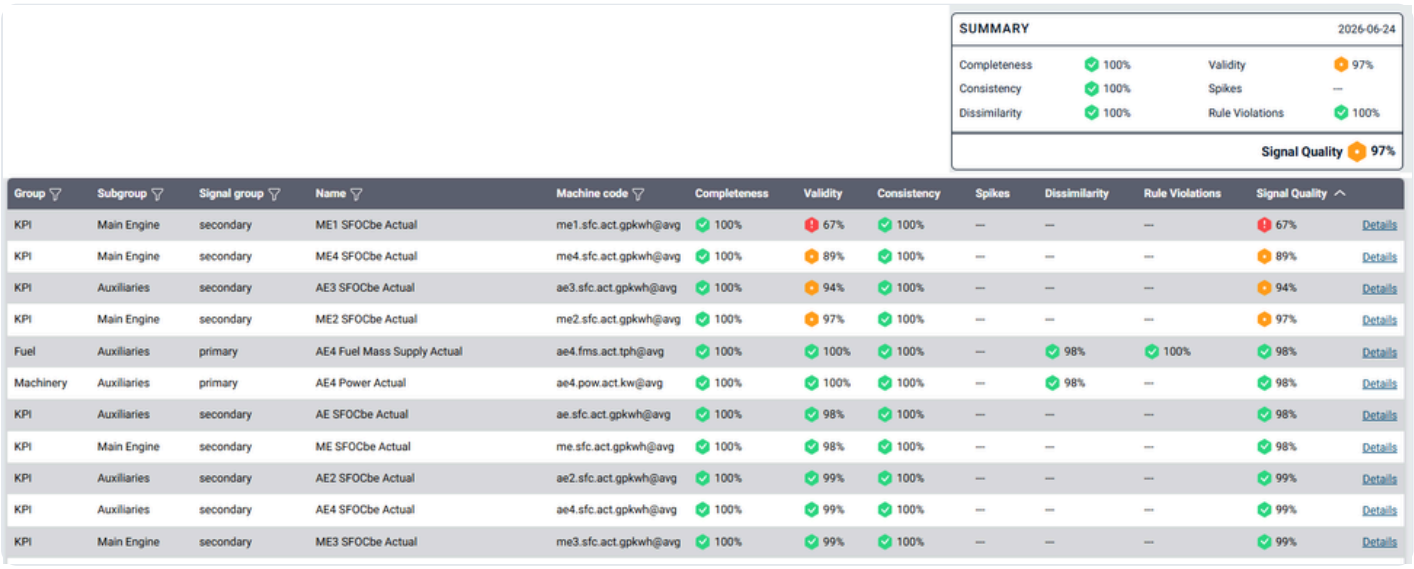
THE OPERATING PRINCIPLE

"Fix the cause — not the data."

Measured values are never retroactively changed. Every fault is resolved at its source, so future data becomes correct by itself.

WHAT THE VERIFIED DATA NOW CARRIES

EU MRV · EU ETS · maritime · FuelEU Maritime · IMO DCS · CII rating · ISO 19030 performance · Charter-party claims



SUMMARY 2026-06-24

Completeness	100%	Validity	97%
Consistency	100%	Spikes	–
Dissimilarity	100%	Rule Violations	100%

Signal Quality 97%

Group	Subgroup	Signal group	Name	Machine code	Completeness	Validity	Consistency	Spikes	Dissimilarity	Rule Violations	Signal Quality	
KPI	Main Engine	secondary	ME1 SFOCbe Actual	me1.sfc.act.gpkwh@avg	100%	67%	100%	–	–	–	67%	Details
KPI	Main Engine	secondary	ME4 SFOCbe Actual	me4.sfc.act.gpkwh@avg	100%	89%	100%	–	–	–	89%	Details
KPI	Auxiliaries	secondary	AE3 SFOCbe Actual	ae3.sfc.act.gpkwh@avg	100%	94%	100%	–	–	–	94%	Details
KPI	Main Engine	secondary	ME2 SFOCbe Actual	me2.sfc.act.gpkwh@avg	100%	97%	100%	–	–	–	97%	Details
Fuel	Auxiliaries	primary	AE4 Fuel Mass Supply Actual	ae4.fms.act.tph@avg	100%	100%	100%	–	98%	100%	98%	Details
Machinery	Auxiliaries	primary	AE4 Power Actual	ae4.pow.act.kw@avg	100%	100%	100%	–	98%	–	98%	Details
KPI	Auxiliaries	secondary	AE SFOCbe Actual	ae.sfc.act.gpkwh@avg	100%	98%	100%	–	–	–	98%	Details
KPI	Main Engine	secondary	ME SFOCbe Actual	me.sfc.act.gpkwh@avg	100%	98%	100%	–	–	–	98%	Details
KPI	Auxiliaries	secondary	AE2 SFOCbe Actual	ae2.sfc.act.gpkwh@avg	100%	99%	100%	–	–	–	99%	Details
KPI	Auxiliaries	secondary	AE4 SFOCbe Actual	ae4.sfc.act.gpkwh@avg	100%	99%	100%	–	–	–	99%	Details
KPI	Main Engine	secondary	ME3 SFOCbe Actual	me3.sfc.act.gpkwh@avg	100%	99%	100%	–	–	–	99%	Details

Fleet Connect · Signals · Quality view: every signal with its verified daily status.

ACT 1 THE STARTING POINT

A DATA TREASURE WITH A QUIET PROBLEM.

Six vessels in regular service, each equipped with Hoppe onboard data acquisition and automatic shore transfer: fuel flows, shaft power, speeds, temperatures. Every five minutes, each vessel sends its complete set of signal values ashore, well over **600,000 data points per day** fleet-wide. On paper, everything a modern operation needs.



6	~52 of ~400	5 min	~91k
ro-pax ferries in the fleet	signals per vessel checked daily: the quality-relevant subset (2,397 signals fleet-wide)	transfer resolution (~288 values / signal / day)	quality-checked data points received / day, fleet-wide

Signal counts from the fleet's current transfer configuration; the daily verification set averaged 52 signals per vessel over the analysis period.

THE FLEET BEHIND THE DATA

Six ro-pax ferries in scheduled liner service, year-round with short port turnarounds. Build years span almost three decades: six very different sensor and automation landscapes, held to one common quality standard.

WHY THIS PROFILE IS DEMANDING

Tight schedules leave crews little slack for troubleshooting, and no two vessels fail alike. Even the newly delivered tonnage did not produce trustworthy data out of the box.

The problem was plain to see, but hard to quantify: a drifting flowmeter, a bypass left open, failed sensors, loose cables, interface faults, even undetected design errors. Hoppe's structured data quality checks delivered the answer, signal by signal: overall quality averaged 66%; the weakest vessel sat at 51%.

GARBAGE IN, GARBAGE OUT

Every report, KPI and analysis is only worth as much as the data feeding it. As long as quality is not assured, trust in the data, and in every result built on it, is questioned by default.

EVERY DAY UNDETECTED IS A DAY LOST FOR GOOD

A sensor drifts on day 3 → discovered on day 30 → 27 days of measurements compromised. A missed measurement cannot be re-measured. The damage grows with every unnoticed day, which is why fast detection and intervention are worth so much.

THE RESPONSE, IN TWO MOVES

1 · Focus: the Smart Data approach. Of the ~400 signals per vessel arriving ashore, only a small subset carries decisions. Quality assurance concentrates on the ~52 quality-relevant signals; the rest stays available for troubleshooting.

2 · Verify daily. Checking quality at reporting time is always too late. A live dataset stays good only when verified while it is being produced, every day.

ACT 2 THE DECISION & THE DAILY LOOP

DATA QUALITY MAINTENANCE: A DISCIPLINE OF ITS OWN.

Keeping a fleet's data at verified quality takes three things: the right **tooling**, the right **people** and the right **process**. Miss one, and the loop breaks.

1 · THE RIGHT TOOLING

Automated checks score every quality-relevant signal against seven dimensions, daily, turning "the data feels off" into a measurable status:

Completeness | Validity | Consistency | Spikes | Dissimilarity | Rule Validations | **Σ Overall Quality**

Overall quality is the aggregate of these signal-level scores. Methodology inspired by ISO/DIS 8000-210, refined by decades of maritime data experience.

2 · THE RIGHT PEOPLE

A quality flag alone fixes nothing. It takes a rare, double-sided profile:

THE MARITIME DATA ANALYST

Notices that fuel flow no longer matches shaft power, that a signal is stuck, that a counter runs backwards. Knows which of a thousand small deviations actually matters.

THE MARINE SERVICE ENGINEER

Traces an anomaly in a chart back to a loose cable, a mis-scaled interface, a faulty sensor or wrong configuration, and gets it fixed on the vessel.

3 · THE RIGHT PROCESS — THE DAILY LOOP

1 MONITOR
Every quality-relevant signal checked against seven dimensions, daily.

2 DETECT
Deviations raise an issue immediately, long before any report could surface them.

3 ANALYSE
Experts separate sensor faults from interface, configuration and operational causes.

4 RESOLVE
The root cause is fixed at the source, coordinated with crew, then verified in the data.

Building and coordinating all three is a job of its own. This owner chose the full-service route: with Data Inspector, Hoppe runs the complete daily quality loop, so ship owners and managers can focus on working with the data, with full transparency in the Fleet Connect portal. The same tooling is available self-service as Data Butler.

THE AGREEMENT, FROM DAY ONE

"Fix the cause — not the data."

Measured values are unbiased evidence, so they are never corrected, smoothed or gap-filled. Faults are fixed where they originate; invalid values are flagged, the original measurement stays untouched.

WHAT HAPPENED NEXT

This loop ran on every quality-relevant signal of every vessel, every single day. The next page is what three and a half years of it did to the data.

ACT 3 THE TURNAROUND, AND HOLDING IT

THE TURNAROUND: MEASURED AND PROVEN.

The first 18 months cleared the backlog: 2,658 signal incidents traced to their root causes, each eliminated for good and none papered over. The fleet's own data delivers the verdict:

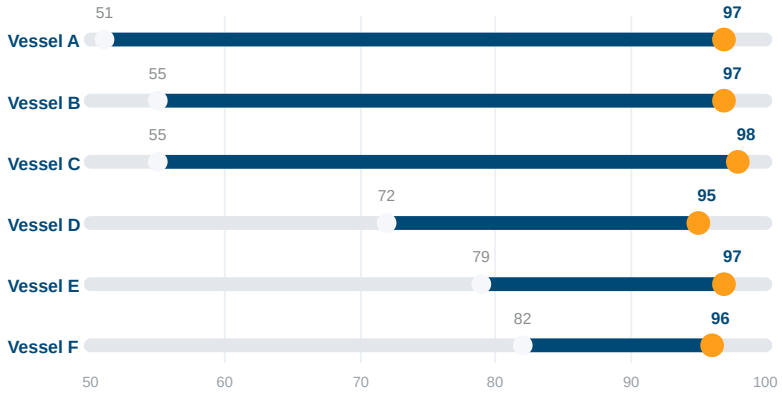
AVERAGE OVERALL QUALITY

66 → 97%

+31 points across the fleet, earned in the first 18 months and held ever since

The lowest vessel jumped by **+46 points**, from 51% to 97%.

OVERALL QUALITY PER VESSEL (ANONYMISED)



Grey = before, orange = after Data Inspector start. Mean overall quality per vessel, split at each vessel's individual Data Inspector start date. Vessels anonymised.

EVERY DIMENSION MOVED

DIMENSION	BEFORE	AFTER	Δ
Completeness	74%	98%	+24
Validity	73%	98%	+25
Consistency	98%	99%	+1
Spikes	99%	99%	±0
Dissimilarity	68%	97%	+29
Rule Validations	93%	99%	+6

ALREADY GOOD, KEPT GOOD
Consistency and spikes were near-perfect before and stayed there.

THEN THE JOB CHANGED: FROM REPAIRING THE PAST TO GUARDING THE PRESENT

−95%
incident rate: from ~148/month while repairing to ~8/month on guard (2,658 → 183 in total)

~1 day
median restore time today, three times faster than at the start (3 days)

9 of 10
these vessels consistently score better than 9 of 10 vessels in the entire Hoppe-connected fleet

WHY THE INCIDENTS FELL

Fewer incidents *and* faster resolution: the pattern of causes eliminated at the source. Shore-side value correction cannot produce it, because it leaves the causes in place.

ACT 4 WHAT IT UNLOCKED

THE WORK GOT LIGHTER. THE NUMBERS GOT STRONGER.

The same verified signals now feed a growing list of obligations and decisions, from in-house analytics to third-party platforms. Several carry a direct price tag for bad data.

EMISSION COMPLIANCE

Under EU ETS, verified emissions set the allowances to surrender; under FuelEU Maritime, the GHG-intensity balance and penalties. Every reported tonne of CO_2 rests on valid fuel data.

HULL & VESSEL PERFORMANCE

Speed–power baselines, hull degradation, dry-dock and coating decisions (ISO 19030): all derived from long, uninterrupted measurement series.

COMMERCIAL PERFORMANCE

Charter-party performance claims, benchmarking and fleet decisions, argued on unbiased evidence instead of disputed estimates.

THEN → NOW

Month-end surprises became a non-event. The month now closes on a dataset already known to be good.

THEN → NOW

Chasing gaps gave way to reading dashboards. Every signal carries its verified quality status: trust is visible, not assumed.

THEN → NOW

Data discussions with verifiers and counterparties got shorter: a documented quality status for every value gives them a factual basis.

> *We generate actual performance metrics to improve fuel consumption and emissions by collecting and analysing data from our performance platform and Hoppe Marine.*
>
> FLEET MANAGEMENT · THE SHIP OWNER

WHY "FIX THE CAUSE — NOT THE DATA" MATTERS HERE

Verifiers, authorities and counterparties all ask: can this number be trusted? Here the answer is structural: values are verified daily, never retroactively altered, and every quality flag is documented transparently.

EPILOGUE

How much is your fleet's data really worth? Find out.

Every fleet's starting point is different. The loop is the same. Hoppe turns raw signals into verified, decision-grade data, without you hiring a data team of your own.

REQUEST A FLEET DATA QUALITY ASSESSMENT →

Companion story: How TT-Line cut their fuel bill (the MIoT use case) →

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All figures anonymised, from a real Data Inspector fleet (2023 – mid-2026).

YOUR FLEET LET'S TALK ABOUT YOUR STARTING POINT

WHERE DOES YOUR FLEET STAND TODAY?

These questions are how we usually open the conversation. A rough answer is enough.

1 · DATA ACQUISITION TODAY

How does operational data get from your vessels to shore today?

- ☐ Do you already run high-frequency data acquisition, or do you rely on noon reports?
- ☐ Which signals reach shore automatically today, and how often?
- ☐ Do you know which of your signals actually feed reports and decisions, and which are only nice to have?

2 · YOUR DATA QUALITY EXPERIENCE

How much do you trust the data you receive from your vessels?

- ☐ Do the numbers add up when you need them, or do month-end surprises sound familiar?
- ☐ How do you find out today that a sensor has drifted or a signal has failed, and how long does that typically take?
- ☐ Could you state, per signal, how trustworthy your data was last month?

3 · WHAT THE DATA HAS TO CARRY

What depends on this data being right?

- ☐ Which obligations rest on it today: EU MRV, EU ETS, FuelEU, IMO DCS / CII, charter-party claims?
- ☐ Have discussions with verifiers, charterers or authorities ever come down to whether a number could be trusted?
- ☐ Are there analyses or services you hold back on because you don't fully trust the input data yet?

4 · PEOPLE & PROCESS

Who takes care of data quality in your organisation?

- ☐ Whose job is it today, and how much of their time does it take?
- ☐ When a data issue is found, who traces it back to the sensor, cable or interface on board?
- ☐ Where would your team rather spend its time: checking data, or working with it?

THE FIRST CONCRETE STEP

A fleet data quality assessment answers these questions with your own data: the same checks used in this case, reported per vessel and dimension. No obligation, no changes on board.