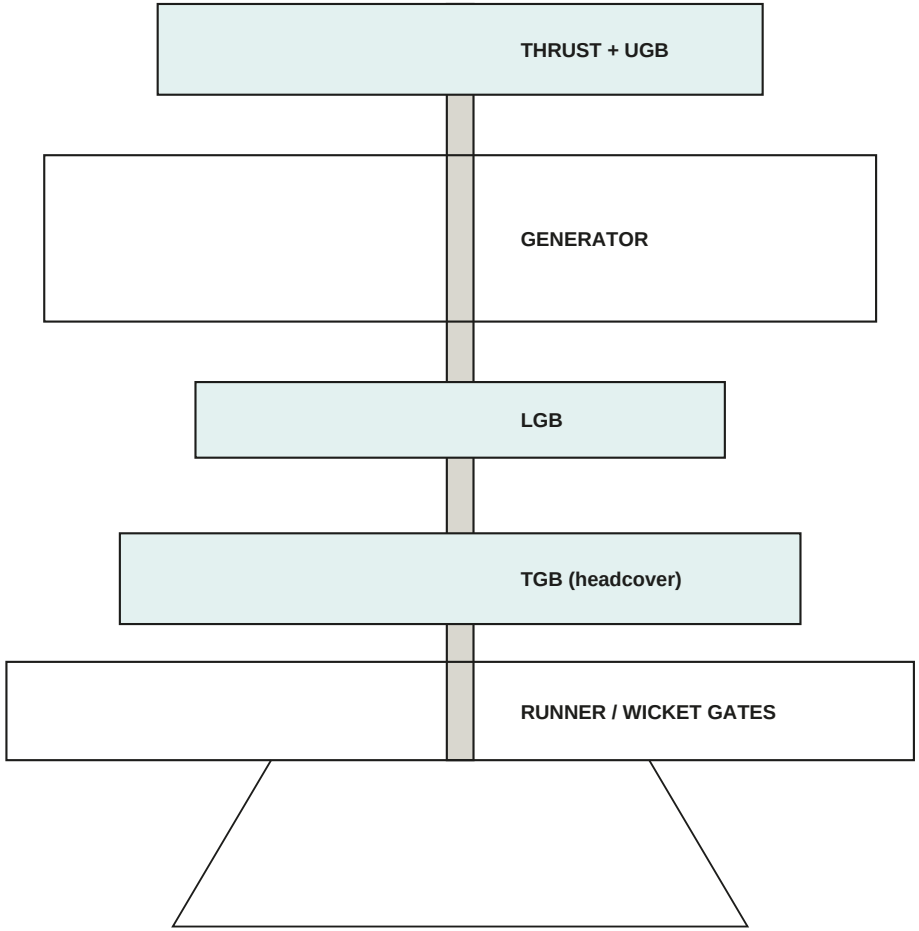
Sheet 1. Unit arrangement: shaft line, bearings and CH monitoring sensors



TE **Upper bracket: THRUST BEARING (6 tilting pads) + UPPER GUIDE BEARING (UGB)**
TE thrust pads 1-6, UGB pads 1-4 (pad 1 dual A/B); oil bath TE and LT; HP lift PT; UGB proximity probes X/Y; keyphasor

TE **GENERATOR: rotor (10 pole pairs) and stator**
TE stator RTDs 01-06; capacitive air gap sensor (minimum air gap)

TE **Lower bracket: LOWER GUIDE BEARING (LGB)**
TE LGB pads 1-4 (pad 1 dual A/B); oil TE and LT; LGB proximity probes X/Y

TE **Headcover: TURBINE GUIDE BEARING (TGB), oil bath, own cooling circuit TB**
TE TGB pads 1-4 (pad 1 dual A/B); oil TE and LT; TGB proximity probes X/Y; headcover accelerometer; headcover PT

PT **RUNNER (13 blades) in 20 WICKET GATES, SPIRAL CASE around**
Spiral case PT; shaft seal water FT; shear pin status (20 pins) and breakaway switch

PT **DRAFT TUBE CONE -> tailrace (vortex rope at part load)**
Draft tube cone PT (100 S/s waveform)

Pad numbering and RTDs

Pads are numbered clockwise seen from above, pad 1 at the +X probe.
Pad 1 of each bearing: dual-element Pt100. Element A -> owner's unit controller (protection).
Element B -> CH monitoring PLC. Pads 2..n: single element -> CH monitoring PLC only.
TGB design radial clearance 0.30 mm +/- 0.05 mm (see CH-DOC-OM-0101 section 4.2).

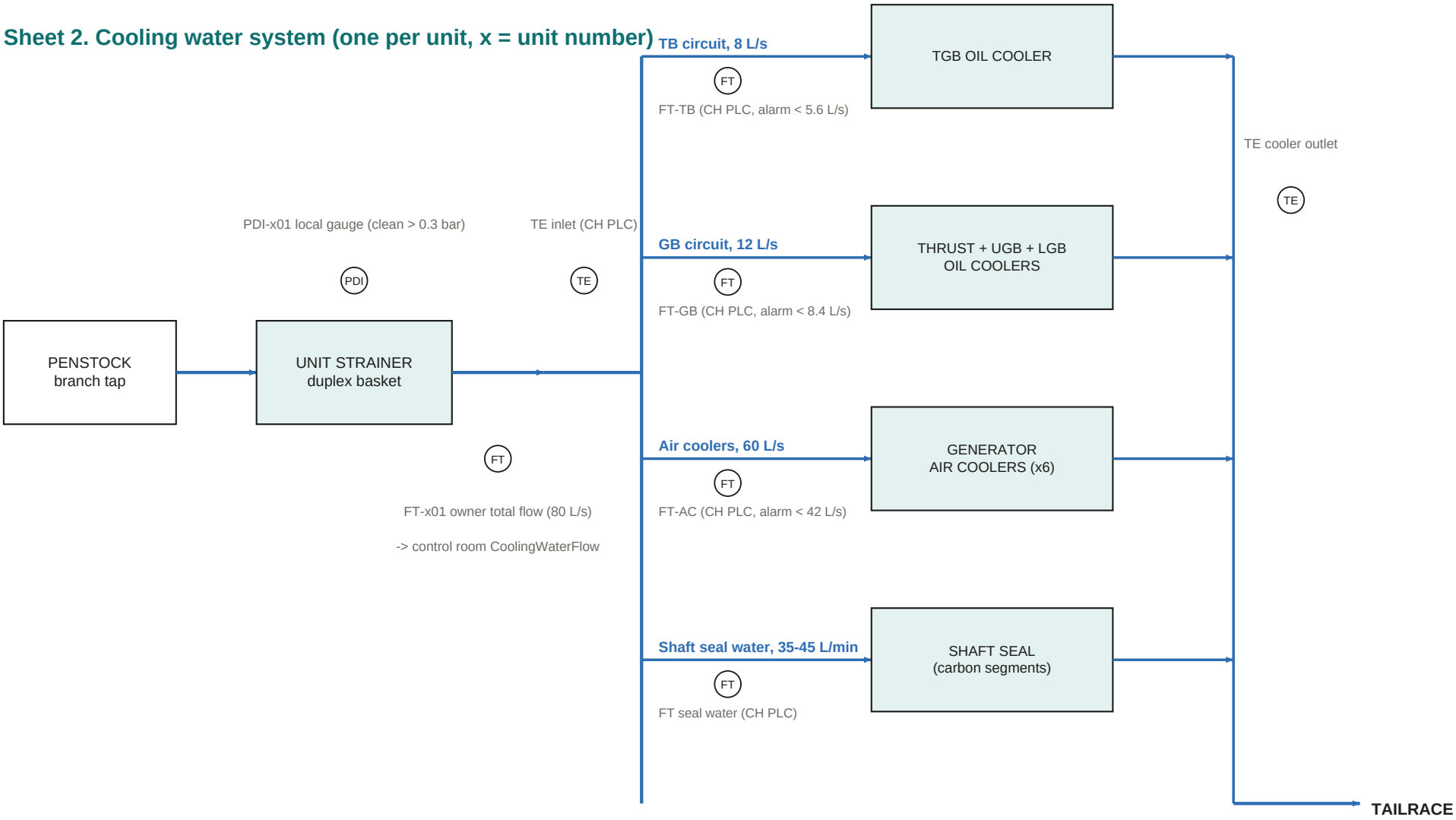
Schematic, not to scale. Supplier document. Fictional, for training only.

CROMLEY HYDRAULICS

Unit arrangement: bearings and monitoring sensors

CH-DOC-DWG-0102 Sheet 1/3 Rev 2 2026-08-14 FC-40/100 Copper Canyon U1-U3

Sheet 2. Cooling water system (one per unit, x = unit number)



Notes

1. The TGB has its own circuit (TB). Thrust, UGB and LGB share the GB circuit.
2. A blocked unit strainer reduces ALL circuits together: every bearing and the generator warm up at once.
3. The owner measures total flow only (FT-x01). Circuit flows are measured by the CH monitoring PLC (retrofit 2026).
4. Strainer cleaning: at PDI > 0.3 bar, and at least monthly during the high-silt season (spring runoff).

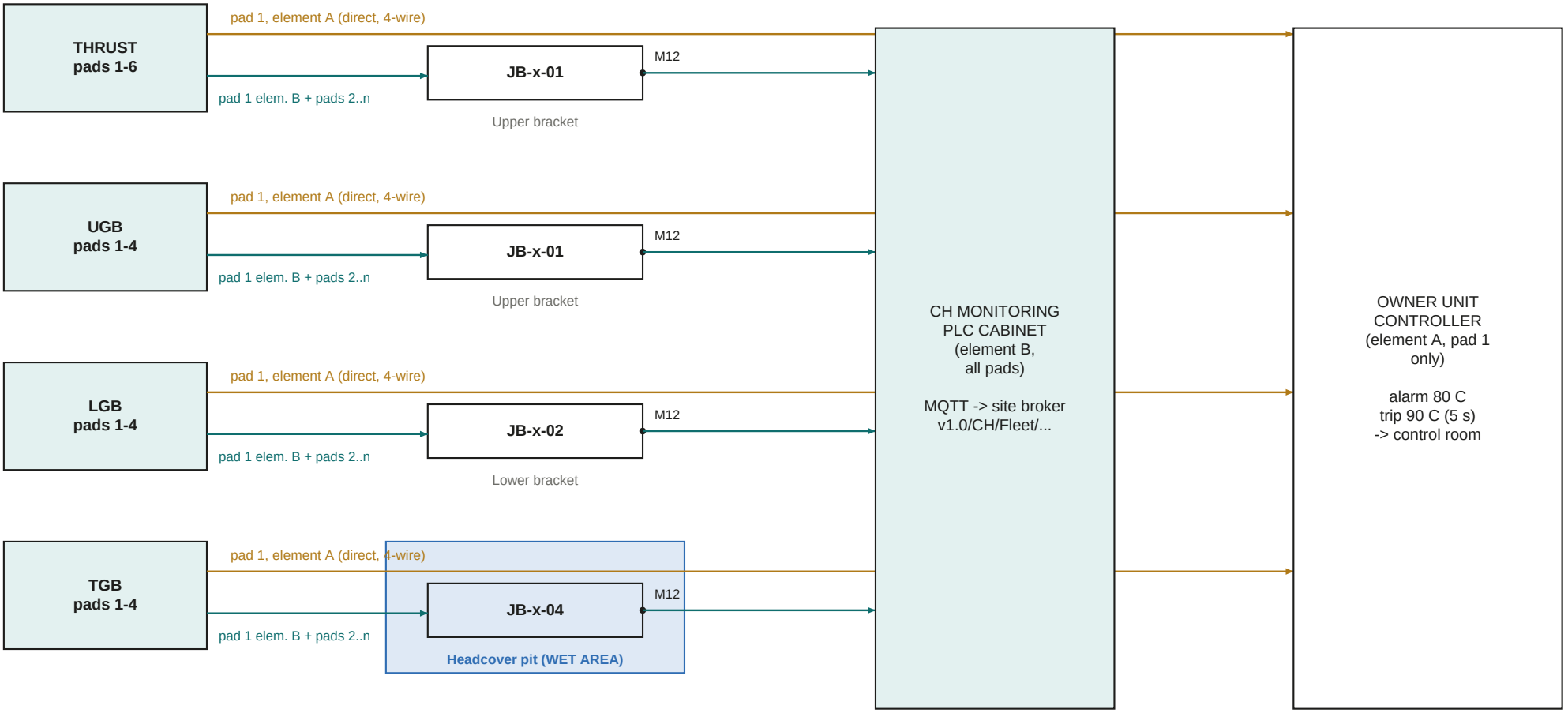
Schematic, not to scale. Supplier document. Fictional, for training only.

CROMLEY HYDRAULICS

Cooling water system, one unit (x = 1, 2, 3)

CH-DOC-DWG-0102 Sheet 2/3 Rev 2 2026-08-14 FC-40/100 Copper Canyon U1-U3

Sheet 3. Bearing RTD wiring: owner protection (element A) and CH monitoring PLC (element B)



Notes

1. The owner's control room sees one pad per bearing (element A). All other pads are visible only in the CH PLC data.
2. M12 connectors are IP67 only when fully mated and with the cable gland fully tightened. See CH-SB-2026-03.
3. JB-x-04 sits in the headcover pit, a wet area: inspect connectors and glands every 6 months.
4. Element B and pads 2..n: 3-wire Pt100 to the PLC analog input cards.

CROMLEY HYDRAULICS

Bearing RTD wiring: element A (owner) and element B (CH PLC)

CH-DOC-DWG-0102 Sheet 3/3 Rev 2 2026-08-14 FC-40/100 Copper Canyon U1-U3

Schematic, not to scale. Supplier document. Fictional, for training only.