

Hexagon Fill Monitor 2D Chute

Real-time 2D material fill measurement for marine and offshore operations

Radar-based material fill measurement

Hexagon Fill Monitor 2D Chute is a radar-based bunker and chute monitoring solution that delivers real-time material profile and flow information to maximise productivity, reduce downtime, and improve operational safety.

Unlike point-level sensors, laser scanners, or manual inspections, it continuously monitors material profiles across bunkers, hoppers, and transfer chutes, detecting blockages, build-up, and uneven material distribution before they impact operations. Contactless radar technology operates reliably in harsh marine environments while requiring minimal maintenance.

Reliable performance in harsh marine and offshore environments

Reliable radar-based measurement helps maintain performance in fog, spray, humidity, dust, vibration, and extreme temperatures. Fill Monitor 2D Chute continues to operate during these challenging conditions, whereas traditional LiDAR or laser-based systems may be compromised.

By delivering 2D surface profile data, the system supports better control and automation of challenging material-handling processes. Its contactless radar design also reduces the maintenance and recalibration required by solutions exposed to abrasion, corrosion, and fouling, helping minimise downtime.

Precision measurement and monitoring

Maximise production rates and vessel utilisation through continuous monitoring of bunker charge and discharge conditions. Detect blockages, material build-up, rat-holing and flow restrictions at an early stage, helping prevent downtime, rehandling, and process interruptions.

Installed in a single shift

Easy-to-use hardware components and intuitive software enable customers to install and commission the system themselves, minimising downtime. Designed for rapid deployment, the Fill Monitor 2D Chute can be fully installed within a single shift.



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Benefits:

- Real-time visibility of material flow and bunker discharge conditions
- Early detection of blockages, build-up, and uneven material distribution
- Reliable operation in harsh marine and offshore conditions
- Easy retrofit installation on existing bunkers, silos, and holds

Features:

- Contactless radar technology with no wear parts or recalibration requirements
- High-resolution data logging and historical trending
- Integration with supervisory control and data acquisition (SCADA) and control systems

Performance:

- Designed to operate in harsh conditions on deck, below deck, or integrated into bunker structure
- Graphical 2D surface information, as well as programmable logic controller (PLC)/SCADA-readable outputs, including the filling height of virtual bins
- Performs in rain, spray, fog, humidity, dust, vibration, and extreme temperatures

System architecture

Radar-based system with distributed sensing and centralised processing, consisting of the following:

Processing unit	iRPU-F
2D radar sensor	iSDR-C

Measurements

Total volume [m³]

Total filling [%]

Average filling height [m]

Filling height in sector n [m] (customer configurable)

Note: Total volume and total filling are calculated values derived from measured 2D material profile and bunker geometry model.

Note: Other specific requirements are available upon request

Performance

2D surface model accuracy	<1 cm
Update rate	20 Hz (typical)

Communication

Ethernet IP

Modbus TCP

PROFIBUS DP

PROFINET

DeviceNet

Analogue 4–20 mA

Note: Other interfaces are available upon request

Environmental

IP Rating	IP67
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Operating temperature

iRPU-F	-20°C to +65°C
iSDR-C	-40°C to +70°C

Compliance	CE, FCC, RED, RoHS, UL/UR
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Features

- Dedicated processing unit (iRPU-F) enabling integration with industrial control systems
- Real-time 2D material profile monitoring
- Early detection of blockages, build-up, and flow restrictions
- PLC/SCADA-ready outputs for material level, profile, and flow monitoring

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