

Monitoring Grain in Flat Storage Facilities

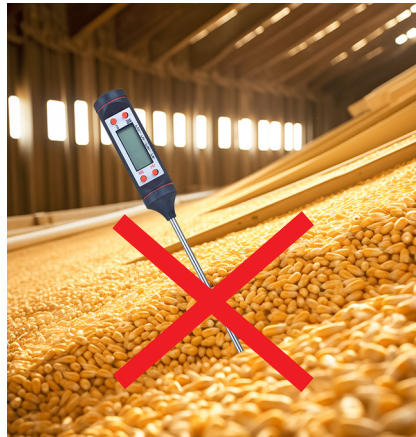
All-In-One bulk warehouse grain monitoring
with iGRAIN AIO Floor Sensors

Flat storage challenges

- **Ventilation:** Stored grain is difficult to ventilate properly even if aeration channels are in place
- **Moisture:** The corners of the flat stores are often accumulating moisture and acts as an “initiator” of an infestation
- **Front loader access:** Sensor cables hanging from the roof are inconvenient for the front loaders moving the grain in/out. Damages can easily occur.
- **Risk warning:** Temperature monitoring only is a poor solution because it detects hot spots very late and by the time you receive an alarm, there is already a significant infestation/spoilage in the grain.
- **Uniform readings:** Hot spots often emerge in the corners or along the walls and sensor lances are not efficient enough even when placed closer to the walls.
- **Manual labour:** Substantial manual labour required when using sensor lances for monitoring



Sensor cables not recommended



Spears not recommended



Avoid obstructions for machines

Solution: iGRAIN AIO Floor Sensor

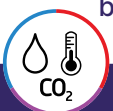
CO₂ infestation monitoring is strongly recommended, as temperature sensors are slow to warn about an infestation. The fastest and most reliable method is to monitor the CO₂ concentration and the grain moisture. The iGRAIN AIO Floor Sensor solution entails:

- Hidden sensors in the floor so they don't obstruct front loaders
- Monitoring the CO₂ for early infestation control. You only need a few sensors, since CO₂ is a gas and all gases spread evenly in all directions.
- Monitoring both humidity and temperature for grain moisture control

- ✓ No obstructions for front loaders
- ✓ Fast infestation warning
- ✓ Less manual labour

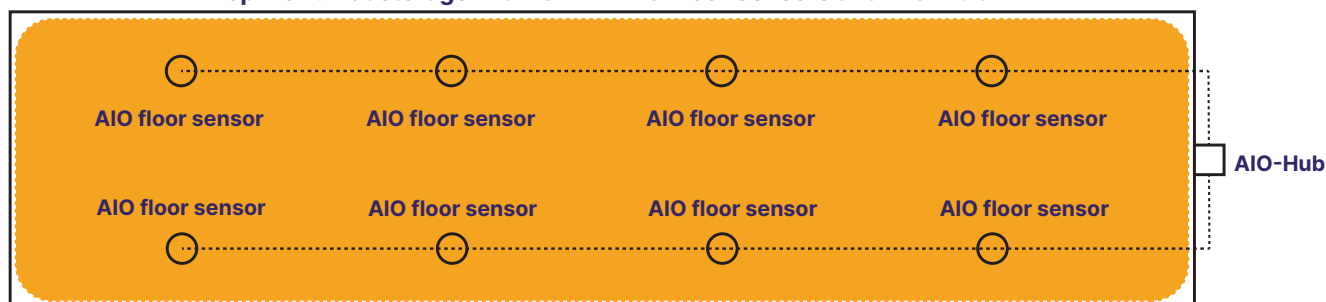
This solution provides distinct user advantages

- Receive reports specifying the TRUE grain condition
- Follow the development in real time in the iGRAIN Smart App
- Receive an AI based calculation of longest possible SAFE storage time
- No manual labour required
- Move the grain around freely without the front loaders getting obstructed by cables/spears and causing damage to the sensors

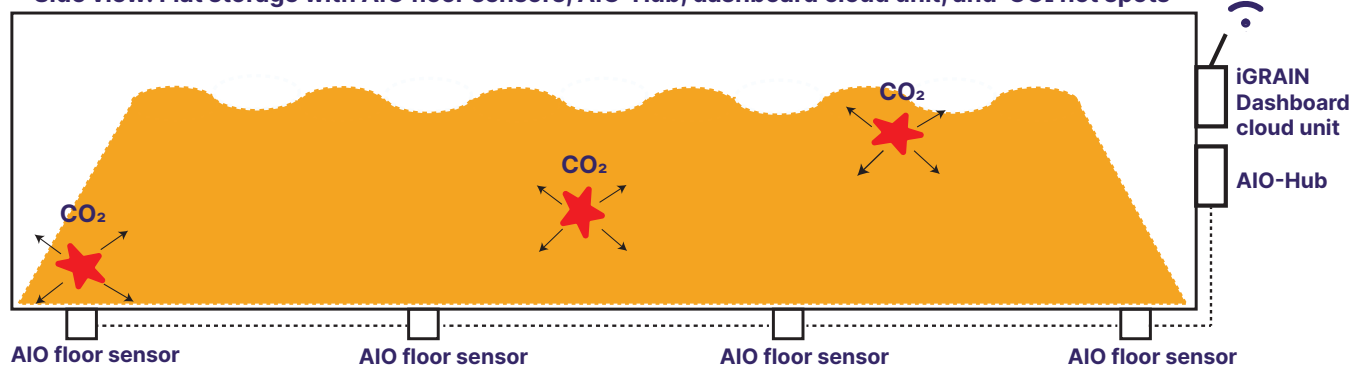


Monitoring principle

Top view: Flat storage with iGRAIN AIO Floor Sensors and AIO-Hub



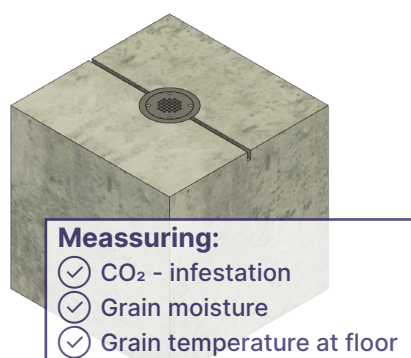
Side view: Flat storage with AIO floor sensors, AIO-Hub, dashboard cloud unit, and CO₂ hot spots



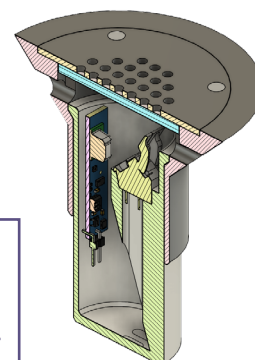
Flat storage with rapeseed



Sensor placed in the floor



Cross section of sensor



Advantages

- Best flat storage monitoring
- Easy installation of sensors in the floors
- Maintenance free operation
- Most advanced monitoring: CO₂, moisture and humidity
- Reporting directly to the iGRAIN Smart App
- Lower monitoring cost than in any other system
- Supports grain aeration decision-making

iGRAIN Flat Storage Monitoring Parts

Part No.	Description
1020-000	iGRAIN AIO Floor Sensor
	iGRAIN 3-wire cable
1058-002	iGRAIN AIO-Master-Hub Modbus RS 485
1072-005	iGRAIN 7" touch screen PC and WIN10-PRO incl. wall mount cabinet
9950-002	iGRAIN CAT6 outdoor black cable, OD max 6,5 mm
1041-002	iGRAIN Weather Station PRO for AIO system

Integrates with the iGRAIN Smart App

