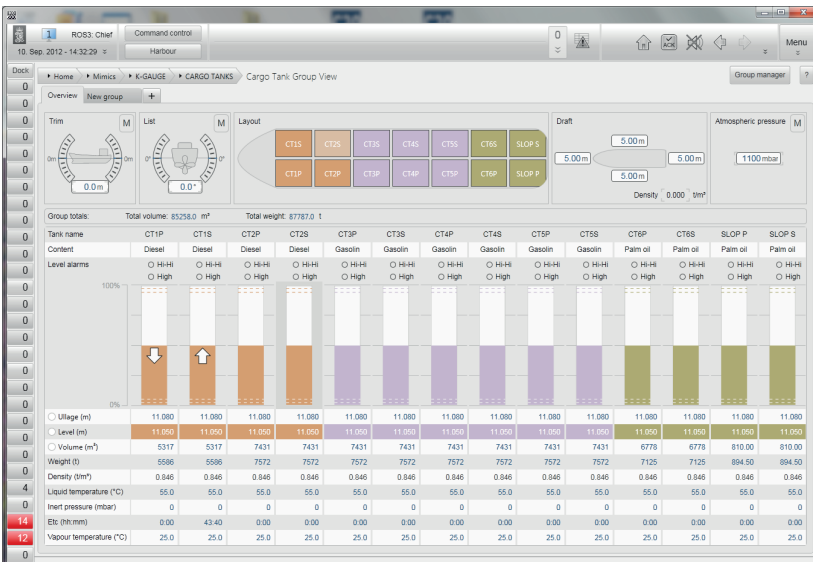




## K-GAUGE CLS 600

### UPGRADE SOLUTION FOR GL-90 / GL-100 / GL-120

To improve the maintainability and reduce the maintenance cost a system upgrade will be the most viable solution, especially towards the later part of the life time of the vessel. Typically, a midlife upgrade will involve obsolete systems, such as operator stations, processors and monitors, that are too expensive to maintain over and above the intended life time.

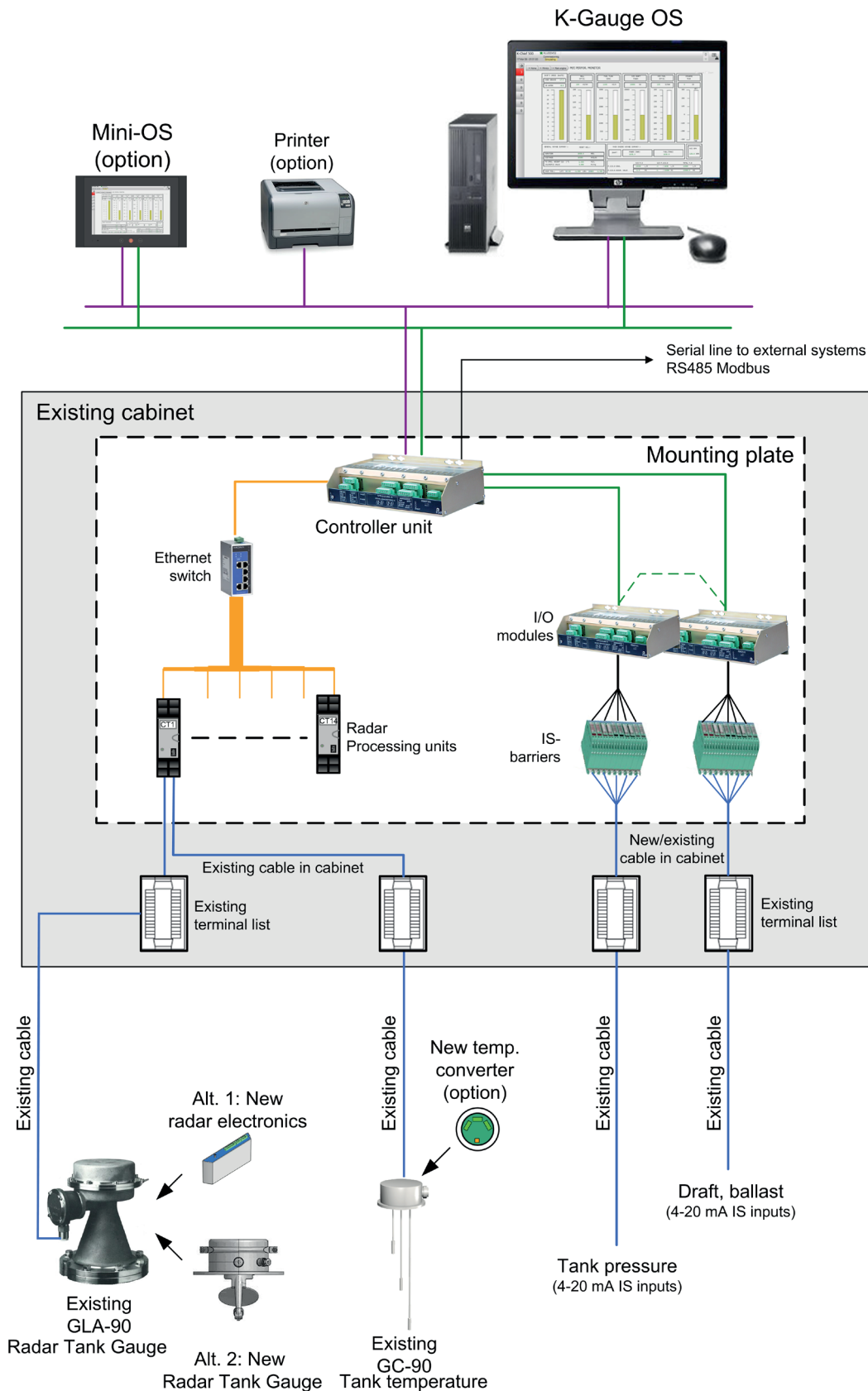


#### K-Gauge CLS 600

- Event and alarm history storage
- Enhanced trend functionality
- Custom views
- Split screen
- Bargraph views with color coding for different cargoes.
- Groupviews
- Listviews

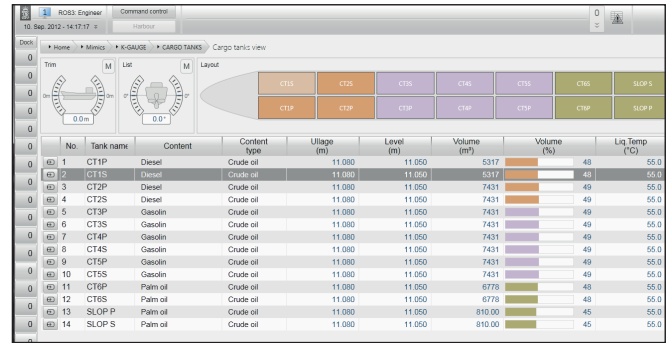
# RETROFIT OF GL-90 SYSTEM

This example drawing shows the retrofit of the main computer, radar processing units, controller unit and radar electronics in radar antennas on deck. The existing steel parts on deck, cabling from sensors and cabinet in control room is kept as is if general condition of the parts and cables are good. If the existing system includes Ex-LON transmitters and network on deck, this can be kept as is and may be refitted later on. KONGSBERG can propose different alternative retrofit solutions for the ExLON infrastructure on request.



### Retrofit of operator station and back-up panel

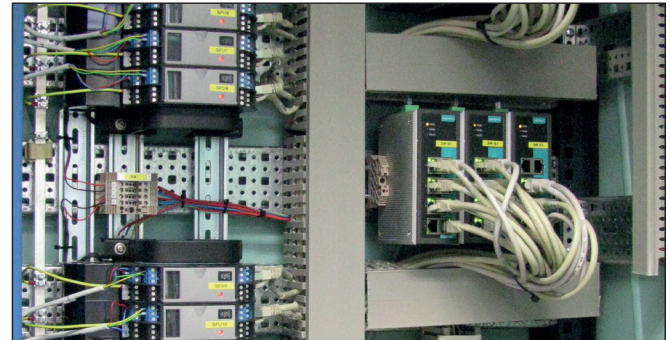
The main computer will be replaced by a new Operator Station based on Windows 7. K-Gauge CLS 600 is designed for monitors supporting 16:9 format. The back-up panel in cabinet door will be replaced by a new touch screen control panel including graphical presentation software. A new cabinet door with correct cut-out will be delivered



No	Tank name	Content	Content type	Ullage (m)	Level (m)	Volume (m³)	Volume (%)	Liq. Temp (°C)
1	CT1P	Diesel	Crude oil	11,080	11,050	5317	48	55.0
2	CT1S	Diesel	Crude oil	11,080	11,050	5317	48	55.0
3	CT2P	Diesel	Crude oil	11,080	11,050	7431	49	55.0
4	CT2S	Diesel	Crude oil	11,080	11,050	7431	49	55.0
5	CT3P	Gasolin	Crude oil	11,080	11,050	7431	49	55.0
6	CT3S	Gasolin	Crude oil	11,080	11,050	7431	49	55.0
7	CT4P	Gasolin	Crude oil	11,080	11,050	7431	49	55.0
8	CT4S	Gasolin	Crude oil	11,080	11,050	7431	49	55.0
9	CT5P	Gasolin	Crude oil	11,080	11,050	7431	49	55.0
10	CT5S	Gasolin	Crude oil	11,080	11,050	7431	49	55.0
11	CT6P	Palm oil	Crude oil	11,080	11,050	6778	48	55.0
12	CT6S	Palm oil	Crude oil	11,080	11,050	6778	48	55.0
13	SLOP P	Palm oil	Crude oil	11,080	11,050	8100	45	55.0
14	SLOP S	Palm oil	Crude oil	11,080	11,050	8100	45	55.0

### Retrofit of processing equipment and interface cards

Retrofit of radar processing units (GLK) and process controller (EA) has to be replaced with new K-Gauge processing units.



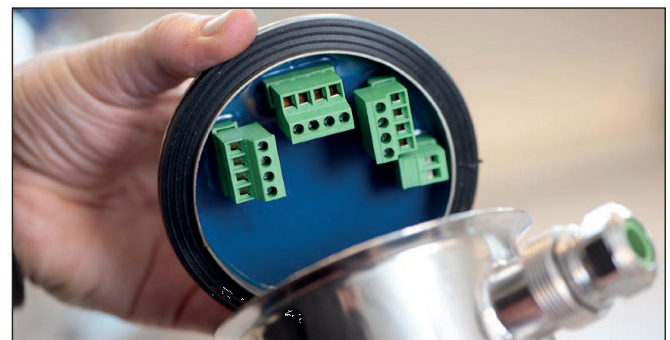
### Retrofit of radar electronics

The radar electronic cards in the radar antenna housing on deck has to be replaced with new K-Gauge technology.



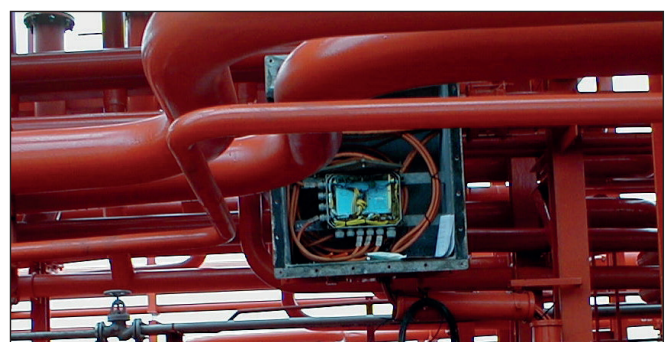
### Retrofit of temperature transmitters

The temperature transmitter on deck has to be replaced with new K-Gauge technology.



### Retrofit of Ex-LON

Existing ExLON transmitters and network can be kept as is or upgraded to new K-Gauge technology. Some cabling work on deck must be expected. Contact KONGSBERG for alternative technical solutions to match your vessel.



### Project execution

Effective project execution is at the heart of Kongsberg's success in undertaking refitting of vessels. By taking the time to gain in-depth knowledge of the customer's needs, we can ensure optimal vessel performance by upgrading the right hardware and software systems.

### Remote diagnostics and analysis - saving cost and time

K-Remote uses online system and health monitoring to provide Kongsberg customer support with remote access to ensure systems reliability. The system is designed to address the challenge of establishing a secure and reliable remote session to the vessel control system via satellite communications. The technical solution is using well proven technology adapted to maritime environments.

### Kongsberg global customer support service

Kongsberg offers technical support, maintenance support, spare part support, training services and regional support on all product lines – world wide. Our Follow the Sun 24 hour support concept ensures you support that never sleeps. No matter the time of day, someone will always answer the phone at Kongsberg Maritime if you call for help. Three high-tech support centres in Europe, America and Asia provide this 24-hour service. A world of virtual collaboration brings the expertise closer to you.



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