

Upgrading from HPR to HiPAP



KONGSBERG

Introduction

HPR systems can easily be upgraded to a HiPAP 500 / HiPAP 350 system. To ensure an installation as cost-effective as possible, existing hardware and cabling can be used where possible.

The HiPAP systems are the ideal alternative to upgrade the HPR systems and Kongsberg Maritime gives credit for the return of “older” systems.

New and existing features are:

- New technology for your future applications
- More reliable through already well proven hardware in the HiPAP systems
- Full HiPAP functionality and operation advantages
- More accurate than the HPR 410 / 418 systems
- The system has no mechanical transducer steering
- Narrow pointing receiver beams, suppressing noise from other directions
- Corrections of errors caused by ray-bending, and display of ray-trace
- Double position measurement, redundancy, quality control
- Optional full Long Base Line (LBL) / Multi-User Long Base Line (MULBL) functionality software

Operator unit

The HiPAP systems use the Windows XP operated Acoustic Positioning Computer (APC 10) with a flat LCD screen display.

Transceiver installation

The new transducers being used with the HiPAP 500 / HiPAP 350 systems contain no electronics to amplify the acoustic signals. A transceiver unit including all electronics is installed close to the transducer.

- For the HiPAP 500 system this means that the transducer cable is 5 m long from the top of the shaft. This restricts the placement of the transceiver to an area where the transducer cable will reach both when the transducer is in fully raised and fully lowered positions.

- For the HiPAP 350 system the cable is 5 m long from the centre of the gantry. This means the length of the cable will not be affected if the transducer is lowered or raised.

HiPAP 350 upgrade

The HiPAP 350 transducer can be installed on an existing HPR hull unit by replacing the shaft flange adapter and install a new transducer cable through the shaft. The HiPAP 350 transducer can be used with all HPR system gate valves. The hull unit hoist control unit may be re-used, but it is recommended to change it to a new with interlock function for prohibiting the transducer shaft to run into a closed gate valve. This simplifies the upgrade to a minimum of cabling and work.



HiPAP 500 upgrade

HiPAP 500 requires a gate valve with an opening of 500 mm. The HPR 400 systems delivered the recent years may have been installed with a 500 mm gate valve as an option. The HiPAP 500 upgrade comes with a complete new hull unit with a stiffer shaft and room enough inside the shaft to accommodate all the cables going from the transducer to the transceiver unit. The dock unit comes with an inspection hatch for easy maintenance. The hoist control unit is also supplied new.



Motion sensors

The most common interfaces on older HPR systems are analog roll / pitch sensor and synchro gyro. The HiPAP transceivers require serial sensor data following the RS-422 electrical specification.

This might require a new vertical reference sensor to be fitted. For gyro interface there are repeaters / converters available that converts from synchro signals to RS-422 format.

No new extensive cabling pulling required

Most old HPR systems had their transceiver units installed on the bridge or in a technical room close to the bridge area. Normally the motion sensors are also installed in this area. When interfacing signals to the new transceiver unit, the old transducer cable going from the old transceiver unit to the hull unit can be used as a “communication path”, minimizing extra cabling.

Gyro signal, vertical reference signal, operator station communication and power are patched into this cable in the bridge area using a junction box or the existing terminal blocks in the old transceiver cabinet.

Hull unit conditions

Over the years the transducer shaft suffers from wear and tear. When you install a new shaft you ensure years of trouble-free operation. At the same time, all seals in the shaft sleeve are changed. The extra cost for the new shaft is often partly covered from less man-hour needed for the conversion job. A new shaft has not suffered from years of mechanical stress. It might be necessary to fit new support rods on the gantry when installing a new dock unit with inspection hatch or a HiPAP 500, due to different height of the mountings.

Environment conditions

Since the transceiver is installed close to the hull unit, the environment conditions are not always the best regarding temperature, humidity and dust. If the transceiver is installed in an area with high temperature, ordering a special air condition unit installed on the front door of the transceiver unit should be considered. If the area is exposed to dust, special care should be taken to use correct type of filter and change the filters at adequate intervals.

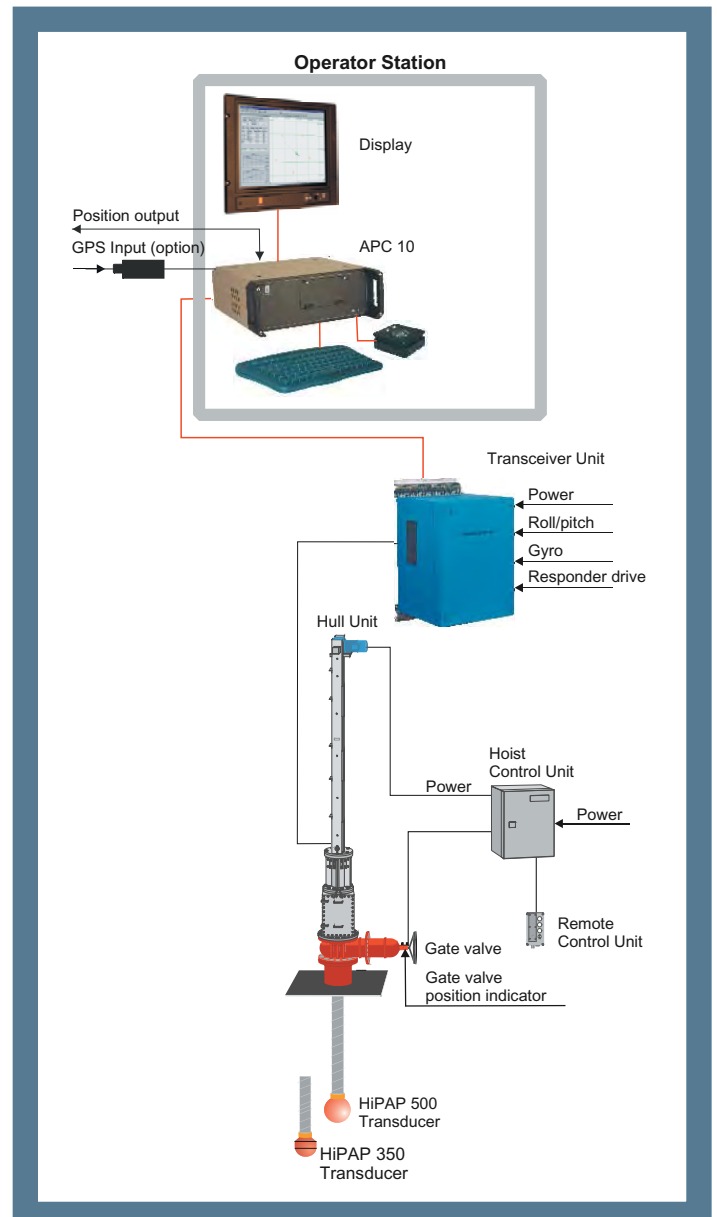
Transceiver power consumption

The supply voltage is normally 230 Vac and cannot be changed after installation. A 115 Vac version is available. It has to be ordered specifically.

The consumption is 700 W / 350 W peak load for HiPAP 500 / HiPAP 350 respectively, and this is in most cases higher than the old HPR transceiver. The existing power circuit must supply enough current and if the power comes from an UPS system, the extra load must be acceptable for the UPS.

Serviceability

There must be enough room around the transceiver unit to make it possible to open the front cover and take out the 19” rack units inside. When installed high up on a bulkhead, platform or stand, it must be possible to work safely during installation as well as during maintenance or service. If a hull unit without service dock is used, there must be enough headroom (min. 1 m) over the hull unit so it can be lifted off the gate valve by a chain block to do maintenance or service on the transducer head. The hull unit area / transceiver area should have adequate light during installation and service calls to ensure safe working conditions.



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