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400-600 MB per vessel with hybrid satcoms

Hapag Lloyd has begun a project to exchange the satellite communications systems installed across its entire owned container fleet, moving to a hybrid L-band/Ku-band system. Martin Gnass, Hapag Lloyd, says the company is expecting to need 400-600 MB per vessel per month by 2013 and told *Digital Ship* why he chose this solution

Hamburg based shipping company, Hapag Lloyd, operates more than 135 ships, approximately fifty of which are to be equipped with Stratos' FBBPlus service as part of a satcom project initiated in 2011 and set to be completed over the course of the next two years.

Under an agreement concluded in February 2011, the Inmarsat-owned satellite communication provider will supply its FBBPlus solution – combining L-band FleetBroadband with Ku-band VSAT – to all of Hapag Lloyd's owned vessels, thus uniting the entire fleet under a uniform communication technology that Hapag Lloyd has described as "state-of-the-art."

So far, six of the nearly fifty vessels to be fitted have exchanged their old communication technology for FBBPlus as part of a roll-out that will continue throughout 2011 and 2012. By the end of next year Hapag Lloyd intends to have both existing vessels and a number of the already commissioned newbuilds equipped with the service.

Hapag Lloyd began reassessing its satellite communication system during 2009. The company soon decided that its existing assortment of limited bandwidth communication systems was ill suited to keep up with its plans for future services and operations.

Aware of the expansive scope of the project, as well as the investment that would be required, Hapag Lloyd began working on an implementation strategy during 2010 which would take into account the various different available options, offerings and suppliers.

Although the company had been working with Stratos previously and had been pleased in its experience with the solutions, it openly invited other providers to tender for the contract. However, none were able to trump Stratos' offering, and the FBBPlus contract was agreed.

"We did very extensive market evaluation, opening up a market tender," says Martin Gnass, managing director IT at Hapag Lloyd. "And we are very confident that we have found the best partner. This has so far been confirmed throughout the project."

The onboard implementation of the new hardware is being conducted jointly by Hapag Lloyd and Stratos, and follows a three-step approach.

The first step is the performance of a site-survey of the vessel in port, which generally takes a few days. This is followed by a second stage where the details of the installation are prepared, and then a third step involving mounting and commissioning the antenna with installation of all the components, cables and connections.

Hapag Lloyd expects each of its vessels to be generating between 400MB and 600MB of satcom traffic by 2013

Typically, the entire installation is carried out when the vessel is in port, though in some cases it has been possible to continue the journey and finish the implementation while underway, which saves the company waiting time as well as port dues.

Hapag Lloyd says the experience with this approach has been satisfying and that, so far, the implementation is going according to plan.

"Our preliminary assumptions have turned out to be reliable," said Mr Gnass. "The system is stable and we have not had any negative surprises."

"The seamless integration of the new system has only been possible because of the good preparations from Hapag to have the ships ready and the good cooperation of our partner, Stratos."

Real-time communication

According to Mr Gnass there were several reasons behind Hapag Lloyd's fleetwide implementation of a new satellite communication system. Foremost amongst these driving factors were operational, technical and legal considerations, areas that were now requiring higher bandwidth than had been previously available on the vessels with the existing systems.

Hapag Lloyd, as a global liner shipping company, offers services covering all continents so on the operative side it was considered key that the new satellite communication system would provide worldwide coverage.

A further key operational consideration was the ongoing expansion of voice and data traffic for ship-to-shore communication, for which, the company realised, much higher bandwidth would be needed.

Remote management and maintenance is also something which, although it has been performed by Hapag Lloyd for the last couple of years, has been limited by the restricted bandwidth available via the previous satellite communication systems.

Since the company not only uses remote access for the engine but increasingly controls IT applications and systems onboard remotely, as well as updating electronic charts over the satellite, it was clear that the existing systems were in need of replacement.

"We also want to integrate the ships better into our own Hapag Lloyd network, which means that ship-to-shore communication will grow more and more important," explains Mr Gnass.

"In addition, a growing number of applications on our vessels require real-time connection to our shore organisation, such as remote maintenance of the engine and monitoring of IT systems onboard."

"Another possibility is real-time data synchronisation for documentation, as well as for the fleet management."

These examples are indicative of Mr Gnass' belief that the number of applications needing remote management will significantly grow in the future.

Finally, on top of these operational aspects of its decision, Hapag Lloyd also felt it was necessary to exchange its communication technology in order to comply with legal requirements imposed by international bodies such as the International Maritime Organisation (IMO).

"We have to ensure that we comply with the IMO regulations, for example regarding external communication," says Mr Gnass.

"Under the new system we have more sophisticated redundancy channels and are able to offer two independent communication lines and concurrent transmission of data as well as voice."

"All these requirements have come together in our decision to implement FBBPlus. We would not have been able to keep up with the existing satellite communication systems on our vessels as they will be outdated in a few years."

Usage patterns

According to Mr Gnass, the implementation of the new systems has already had an effect on satcom traffic, even though it has so far only been deployed on six vessels.

Overall, Hapag Lloyd anticipates that its bandwidth consumption will grow about 30 per cent per year with the new technology. The key driving factor for this increase will be additional applications enabled by the systems that the company has not extensively utilised so far.

Prominent amongst these are things such as file transfers, online software updates, maintenance, document exchange and electronic chart distribution, all of which require more bandwidth and more data traffic.

With all of this in mind, by 2013 Hapag Lloyd expects to reach an average traffic level of 400-600 MB per vessel per month.

Even at that level there will still be usage monitoring under the new system, despite the fact that Stratos' solution comes for a flat-fee. According to Mr Gnass, the main reason for this is the desire to keep track of how the consumption of the bandwidth is evolving over time, in a real-life environment.

"There are still certain rules and restrictions in place with regards to web content," explains Mr Gnass. "For example we do not allow video streaming."

'The implementation of FBBPlus will provide more possibilities to increase crew welfare in the future'
– Martin Gnass, Hapag Lloyd

Satisfying growing demand

Hapag Lloyd says that the improvements it hoped for have so far been achieved, and highlights that with the implementation of the new technology the foundation has been laid to introduce more applications and solutions, especially for ship-to-shore communication and fleet management systems.

"We are stepping into a domain of ship-to-shore communication that is new and has not been there so far. This will be growing ever more important," explains Mr Gnass.

"The fact that we have broadband and real-time communication from the vessels via voice and remote management and the supply of electronic charts are the main drivers (of growing data traffic). Based on this technology we will be able to improve the service level of our vessel operations."

Hapag Lloyd says it has already realised savings on time and cost and is looking forward to increasing efficiency once all vessels have been deployed with FBBPlus.

"Some of our applications, so far, required onboard technical support since remote maintenance possibilities were limited," says Mr Gnass.

"Under the new solution we are looking forward to improving that, and also reducing the travel costs and onboard visits. We have already been able to reduce the amount of man-hours spent on sending technicians out to the vessels."

Overall, Hapag Lloyd envisages a payback period of less than two years.

Another additional benefit of the FBBPlus solution is seen in its providing a path to upgrade to Ka-band satellite communications services, once these become available in the market – an option that Hapag Lloyd is willing to take into consideration.

The implementation has also brought advantages for the crew, who have been highly appreciative of the new technology, which adds to the operational and commercial benefits for the company.

In the past there was a limited possibility to make phone calls onboard, restricted to the vessel's stays in port and where the costs would be charged to the crew member's account.

"The implementation of FBBPlus will provide more possibilities to increase crew welfare in the future," says Mr Gnass, "we are working on concepts and offerings in this regard."

Criteria of choice

Ultimately, Hapag Lloyd believes that, in these early phases, it has so far managed to conduct a relatively pain-free introduction of the new technology, and is able to offer some words of advice to shipping companies looking into exchanging their own shipboard communication systems.

A first key factor to look out for, according to Mr Gnass, is the technical stability of the solution. Secondly, and no less important, is the coverage available, which in Hapag Lloyd's case needs to be global.

In addition, shipping companies are advised to watch out for a proven track record of successful implementations. Mr Gnass points out that the reliability of partners is very important in order to give your investment a solid and steadfast base.

Finally, he acknowledges the necessity for any organisation to look for a commercially attractive package.

Mr Gnass sums this up in these words: "You need a partner that is capable of delivering a solid solution for a long term, that requires competency, knowledge and expertise. We found this with Stratos." DS