

Ship Building i n d u s t r y

Vox Máxima

ROYAL LAUNCHING

Mustang

THOROUGHbred WORKHORSE

Manannan

FLAGSHIP CONVERSION

Cazanga

BUILT ON TRUST



Manannan



A Flagship Conversion

Burgess Marine has completed the world's largest passenger fast ferry conversion by transforming Incat hull no. 050 into Manannan, the Isle of Man Steam Packet Co's flagship vessel. She is the largest diesel-powered high speed craft on the Irish Sea with greater cruising speed and increased vehicle and passenger capacity.



The high speed craft, was originally built in Tasmania in 1998 for commercial service in Australia and New Zealand before being chartered to the US Military in 2001 for evaluation purposes. Now over ten years old, she has significantly less hours of service than a vessel of comparable age which made her ideal for the substantial refit and inevitably, very attractive to purchase. Manannan represents a GBP 20 million plus investment in the Manx operators' fleet with a clear objective; as HSV-X1 the vessel crudely catered for 363 passengers, Manannan would increase passenger capacity by some 125% to carry approximately 820 people in comfort. Onboard facilities have been improved to include lounges, various bars and eateries, and pre-bookable executive seating which equal or better anything found on similar vessels operating around the British Isles.

Securing Expertise

Burgess Marine was contracted by the Isle of Man Steam Packet Co in June 2008 for their expertise and credible partnerships in the industry. They set about putting together the best team to manage such a challenging conversion. With all the key skills in-house with regards to the structural fabrication and project management the immediate need was to find a dock-yard partner and an interior fit out specialist.

Burgess Marine's long standing partnership with BVT Portsmouth ensured that the very best dock-yard facilities in the UK were made available to the project. In July 2008 Burgess Marine contracted BVT Portsmouth as the supporting dock-yard. Shortly thereafter Trimline joined the project team to handle the interior fit out of the vessel.

Unprecedented in Scale

Incat 050 arrived late in July 2008 and works began in earnest. The project had five main phases:

1. The strip out of the existing interior, ensuring that as many materials as possible were removed in a controlled fashion, thus allowing them to be reused in the conversion project.
2. The removal of the existing small 32 passenger 'pod' style sky lounge on tier three, and the replacement with a considerably larger, three class, 160 passenger capacity sky lounge, to include the addition of an internal passenger lift.
3. Transom modifications including a passenger lift from the vehicle deck, new stern quarter bulwarks, a substantial loading ramp to allow Manannan to carry heavy freight traffic in addition to cars and light vans should the need arise, and the removal and 'making good' of a central slipway utilised to launch Special Forces RIBs at high speed.
4. A new aft accommodation module adjoining the

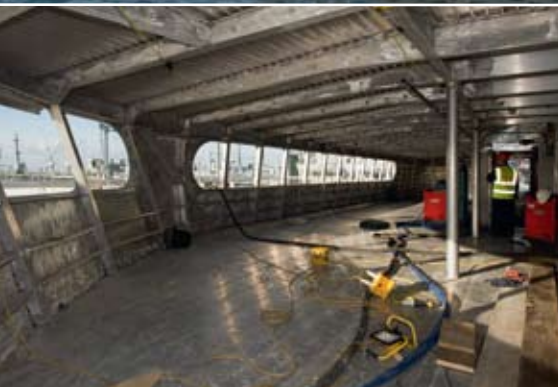
What's in a Name

Manannán mac Lir, mac Lir indicating he is the Son of the Sea, is said to be one of the Tuatha Dé Danann – a race of people in Irish mythology featuring, under slightly varying names, across early Irish, Scots, Welsh, and Manx myth. Manannán has strong ties to the Isle of Man, where he is referenced in a traditional ballad as having been the nation's first ruler. On Midsummer, the Manx people offer bundles of reeds, meadow grasses and yellow flowers to Manannán in a ritual 'paying of the rent', accompanied with prayers for his aid and protection in fishing. He is also believed to have been a magician who could make an illusory fleet from sedge or pea shells in order to discourage would-be invaders.



Photo courtesy of Ian Collard





existing tier two passenger accommodation aft of frame 17. This module needed to accommodate approximately 300 passengers in a spacious 'airy' environment, with both bar and basic galley facilities, whilst seamlessly integrating with the rest of the vessel.

5. The final phase of the project was the interior fit out. The conversion project would increase the passenger capacity by approximately 125%, or 760 m². This new interior needed to accommodate 820 passengers, of three differing classes, with superior facilities throughout.

Challenges to Overcome

The strip out progressed well with no major problems. However, phase 2 presented one immediate challenge. Hart Fenton, the owners' representative and naval architect, confirmed that

every transverse and longitudinal roof beam from frame 17 to frame 36 on tier two needed to be cut out and replaced primarily due to the increased loadings from the enlarged tier three sky lounge. This presented two major problems, the first being the weather. The conversion was taking place alongside and not in an enclosed dock; hence, the vessel would be fully exposed to the elements for many weeks. The second issue being time; removing and replacing these eighteen beams added approximately 1,920 man hours to the conversion, roughly 160 man days.

Pre Isle of Man TT

The latter proved of no concern as Isle of Man Steam Packet Co's requirement for delivery was simply pre the Isle of Man TT race at the end of May, the former however proved a major problem. As summer moved in to autumn substantial rain



Photo courtesy of Gary Davies Maritime Photographic

and extreme cold snaps prevailed on a regular basis; post completion Burgess Marine summarize that the beam replacement exercise and poor weather conditions contributed to approximately eight weeks slippage with regards to the original project plan. Nicholas Warren, Managing Director of Burgess Marine comments: "Working alongside rather than in an enclosed dock always presents problems on a conversion of this scale. Unlike our Mediterranean refits, Portsmouth isn't renowned for its good weather. Whilst we had an expansive provision for working in poor weather conditions we certainly didn't expect weeks of subzero temperatures, snow and ice." He goes on to say: "This conversion project is unprecedented in its scale; I'm happy that the biggest problem we had was the weather".

Nerve Centre

With the foundations in place phase 3 moved forward swiftly. The newly created sky lounge equated to 278 m² of premium passenger space. Structurally the only problem encountered was the interface with the ship's electrical room which is obviously the vessel's nerve centre. This room, mounted below the bridge, had originally sat positioned aft of the small 'pod' style sky lounge. The new design fully enclosed the electrical room, in an 'island' like fashion, within the new tier three sky lounge.

Cat of Many Lives

Incat 050 has enjoyed an illustrious career; entering service in 1998 for TT Line as Devil Cat, then in 1999 she was renamed Top Cat by Fast Cat Ferries. In 2001 she was chartered to the US Army TACOM (Tank-automotive and Armament Command) for a five-year period as HSV-X1; a test platform to trial high speed craft in a military environment. The vessel was extensively modified to suit this role; a heavy duty tank loading ramp was fitted to the starboard aft quarter, and a helicopter landing pad added aft of the tier two accommodation. In her TACOM role Incat 050 supported various NATO operations globally including Operation Enduring Freedom. She visited Norway, Guam, the Horn of Africa and Honolulu. Having proven the versatility of HSC to the military the charter came to an end in 2006 and she returned to Hobart. In late 2007 a Mexican operator, Express Ferries, came very close to securing ownership of the vessel; her main engines were overhauled and the operators' livery added to the ship. With the aforementioned transaction stalled by uncertain economic times the Isle of Man Steam Packet Co. seized the opportunity to secure ownership of Incat 050 and the transaction was concluded in May 2008.



Photo courtesy of US Navy Frederich McCaham

Now surrounded by passenger space on all four sides the electrical room not only had to be A60 clad and protected, Burgess Marine had to carry out a very time consuming structural interface to ensure that a) non of the ship's key components or systems were disturbed, and b) the interface was strong enough to support the appropriate loads and weather extremities.

Structural Jigsaw

With the sky lounge in place work moved aft. Fabrication teams had since the arrival of "Manannan" utilized 1/3 of the car deck for the fabrication of the structural jigsaw that would make up the aft accommodation module. With the full support of Incat, over 90% of the materials used in the project had been loaded onboard in Hobart and travelled to Portsmouth with the vessel.

The car deck, swiftly converted in to a workshop, suited prefabrication perfectly. As BVT Portsmouth delivered the portal steel deck supports and cross-tie sections Burgess Marine secured these in place and began the installation of the aft accommodation block in its prefabricated modules. This vast section of the vessel, some 400 m² in size sits on flexible mounts aft of frame 17. The aft accommodation module consumed 6,000 man hours of prefabrication and construction time.

Bow to Stern

With the aft accommodation module (phase 4) underway Burgess Marine fully utilized BVT Portsmouth's workshop facilities to begin fabrication of the loading ramp. For a three month period work continued simultaneously on the sky lounge, aft accommodation module and transom. As Burgess Marine moved through the vessel from bow to stern, Trimline followed closely behind. The Isle of Man Steam Packet Co. had enlisted one primary sub contractor, Burgess Marine; this in turn ensured that Trimline was managed in an effective fashion with regards to both timing and cost control. As each area was structurally signed off, Trimline began the interior fit out.

Flagship Vessel

Having dry-docked the vessel in October 2008 to satisfy both class and the clients' overhaul requirements Burgess Marine ensured that the Special Forces slipway had been removed and



Photo courtesy of John O'Keeffe

the transom returned to its original design. By March 2008 the ramp and remaining transom modifications were completed. The sky lounge was mid fit out and the aft accommodation module followed closely behind. The interior featured new air-conditioning throughout, two hi-spec TV audio lounges, two bars and galleys, over 820 seats split across three different passenger classes, a new interior disabled lift between tier two and three, and a new main passenger lift from the tier one car deck to the aft accommodation module on tier two. On Friday 1 May 2009 Manannan left BVT Portsmouth for sea trials off the Isle of Wight. Having removed 45 t of weight in the form of the heavy duty tank loading ramp and helicopter landing pad and adding over 760 m² of passenger accommodation, the vessel made her operational speed with ease. Shortly thereafter the conversion

was completed both on time and within budget. Manannan subsequently left Portsmouth for the Isle of Man where she now proudly serves as the Isle of Man Steam Packet Co's flagship vessel.

i. www.theburgessgroup.co.uk/marine

Suppliers & Subcontractors

AMT Marine & Industrial Engineering Ltd | BVT | Cape Industrial Services Ltd | Clyde Marine Recruitment Ltd | Colbeck & Gunton PTY Ltd | CRA | Hi-Vis | Incat | Lift Emotion BV | RIMS Engineering | SCA Marine Ltd | Total Contracting Services Ltd | Trimline Ltd



The Next Level

Following their previous successful cooperation in installing marine elevators onboard the Natchan Rera and Natchan World (Incat 64 and Incat 65), Burgess Marine called on Dutch marine elevator experts Lift Emotion BV to deliver and install two marine elevators on Manannan. As a main contractor Burgess Marine requested a solution with a short delivery time and an even shorter installation time.

The elevator aft – built according to EN81-70 – moves its maximum load of 650 kg between tier 1 and tier 2. Because tier 2 is separated from tier 1 by means of resilient mounts, a normal lift construction is not possible. Therefore Lift

Emotion has designed and built an elevator including a trunk construction that is only connected to the tier 1 part of the ship. Also the Solas A60 landing doors for tier 2 are fixed to the trunk construction. A Lift Emotion's first, this has enabled the marine elevator company to hoist the whole elevator system into the ship in one piece, saving massively on installation time. Inside the fore ship a lifting platform will be built to transport people between tier 2 and tier 3. This lifting unit will also be capable to transport handicapped people.