

Wire sawing in the Caribbean

Removing a 58 tonne engine from a luxury cruise liner was no easy task, especially as the job was to take place whilst it was actually sailing in the Caribbean. Neil Taylor describes how diamond wire sawing was used to complete the job with no disruption to passengers or crew.

The Caribbean Princess is the jewel in the crown of Princess Cruises, a luxury cruise company based in Southampton, UK. Launched in April 2004, at 290 m long and 48 m wide, it is the largest ship in the fleet. The 1200 strong crew look after as many as 3100 guests in over 1500 cabins, sailing to islands such as St Kitts, Antigua, St Thomas and St Johns.

In autumn 2008, the company had to remove a redundant engine from the cruise ship in the most cost effective way. Crucially also, the job had to be carried out whilst the ship was on the move with no inconvenience or disruption to the fare paying passengers. The engine in question was a V16 Sulzer ZA 40S which weighed 58 tonnes and was 7500 mm long x 2450 mm wide and stood 2350 mm high and produced 16,000 hp.

Cardiff Craftsmen Ltd, who are known within the marine engineering services for their reliability, resourcefulness and ingenuity, were approached with the project. Due to space and time constraints, the proposal was to use a diamond wire saw to cut the cast engine block and crank shaft into sections for easy removal.

Whilst Cardiff Craftsmen were experts in their own field of work, they had never chosen the method of diamond wire sawing before and it would prove to be inspired. Mark Haines of Cardiff Craftsmen contacted Drill Cut Ltd, based in Chipping Sodbury, near Bristol, UK, in the knowledge that the company had vast experience of all types of wire sawing. A meeting was scheduled early September 2008 between Phil Goodfield of Drill Cut and Mark Haines to discuss, what on paper and in theory was a fantastic job, but logistically could turn out to be a nightmare.

Phil Goodfield then enlisted the support and advice of Mike Hetherington and Torran Hayward, long standing contacts within Tyrolit UK of Crick, Northants. Tyrolit had been supplying Hydrostress equipment for wire sawing, diamond track sawing and diamond drilling to Drill Cut for many years, and between them they compiled a list of requirements – the jigsaw puzzle was starting to come together.

Drill Cut then organised the palletising of four loads consisting of Hydrostress SB wire saws, RDS power packs, hoses, pumps, crimps, leads, grinders, spares, spanners, P. P. E. and of course, most importantly, the diamond wire.



Fig 1 The engine to be removed weighed 58 tonnes and was 7500 mm long x 2450 mm wide and 2350 mm high



Fig 2 An electroplated diamond wire used because of its qualities in cutting metallic objects



Fig 3 Hydrostress SB wire saws were supplied by Tyrolit



Fig 4 A cutting pattern was devised to meet the least resistance, e.g. cutting through voids within the block

This was type BSG 1, an electroplated wire chosen by Tyrolit for its qualities in cutting metallic objects. The joining of the wire was very important, as breakages only cause downtime and frustration: SVG 10 knuckle crimps were chosen to minimise such problems, and in fact there was to be no disruption for wire breakage during the entire operation.

The date was set for two of Drill Cut's experienced wire sawing operatives to fly out to New York (not surprisingly Drill cut had no shortage of volunteers for this job), on the 25th October they hooked up with the four pallets on board and by the 27th October the plan of cutting was devised to meet the least resistance e.g. cutting through voids within the block. The Hydrostress SB wire saw was set up, wire loaded and wrapped, and shortly after

the first pull was underway (along with the cruise ship). The pulls through the main body of the cast engine block were to take most of the day, allowing for setting up etc. It was also decided to wire saw through the crankshaft, which itself was 400 mm diameter, and took 6 hours alone. This now made a total of 11 cuts (one cut per day).

The engine pieces were mechanically lifted out and transported to the loading bay ready for removal on docking at the next port of call. The job was very successful for all parties involved, team work being paramount; the idea was inspired, the planning and back up second to none and the skills of the operatives outstanding.

Diamond wire sawing techniques once again proved to be versatile, cost effective and ground breaking. ♦

Contacts

Cardiff Craftsmen Ltd,
Bute House, Titan Road, Cardiff, CF24 5EL. Tel: +44 2920 495 312;
www.cardiffcraftsmen.co.uk

Princess Cruises,
Richmond House, Terminus Terrace, Southampton, SO14 3PN. Tel: +44 845 3 555 800;
www.princess.com

Drill Cut Ltd,
Units 2 & 3 Bowling Hill Business Park, Chipping Sodbury, Bristol, BS37 6JL. Tel: +44 1454 324 236;
www.drillcut.co.uk

Tyrolit UK Ltd,
Eldon Close, Crick, Northants NN6 7UD. Tel: +44 1788 823738;
www.tyrolit.com

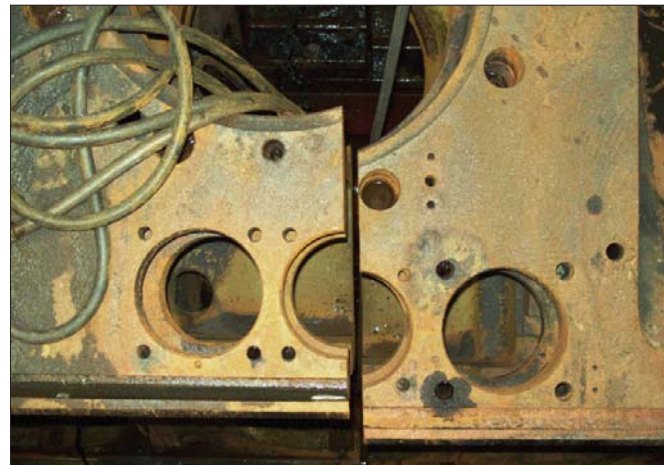


Fig 5 Cut sections were lifted away to the ship's loading bay for removal once it docked



Fig 6 The Caribbean Princess can accommodate up to 3,100 guests