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Keeping coal on course

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MARINE surveyors are the lesser-known heroes of the coal chain. They ensure that coal dug from the ground is loaded correctly so coal ships reach their destination in one piece.

Captain Louis Koutelas is the CEO and Director of Hunter Marine Surveyors, which was established in 1999 by Louis and Captain Andrew Graver. Louis found his love for the satisfaction of loading a coal ship while working at sea, taking coal from Australia overseas and iron ore from the west coast to the east.

“I had a natural love for mathematics and astronomy. I studied in Tasmania and ended up going to sea with BHP Transport, climbing the ranks to achieve my Master’s ticket. I spent 13 years at sea, sailing from Newcastle to Japan with coal and then loading up with iron ore in the Pilbara and taking it to the

steelworks at Port Kembla and Newcastle.

“From a shipping point of view, I really enjoyed the navigation and going out to sea – seeing nothing for 10 days and then all of a sudden coming close to a port and seeing ships all over the radar as if it had chickenpox.

“Most of my time at sea was spent as a Chief Officer – I was, and still am, one of the smallest guys on board,” Louis laughed. “I could fit through manholes and inspect areas others couldn’t. I was more agile than most. I took it upon myself to inspect the ship structure. The most important thing is to not break the ship in half so inspecting ballast tanks and cargo holds was something I had a passion for and all the math behind the calculations to get everything correct.”

The process of loading a coal

ship is a complex task that requires coordination between the vessel, terminal and technical assistance from marine surveyors to ensure safety during the



One of the draught measures on the side of the coal ship.

loading process and the vessel's voyage to the discharge port.

Louis' team of surveyors' main work focuses on draught and trimming surveys. The draught survey for a coal ship determines the exact weight of coal loaded or discharged by measuring the vessel's displacement by reading draught marks at six points of the ship.

The trimming involves ensuring the coal is distributed correctly at the tail end of the loading to achieve the correct departure condition. This could be for a departure tide, cargo quantity or arrival draught at the discharge port. There are many variables and calculations that go into this stage of loading.

"We do 95 per cent of the draught surveying here in Newcastle and about 50 per cent of the trimming work," Louis explained. "Newcastle is a challenging port to navigate and one of the biggest difficulties for draught surveying is the fact that it's a river port. For instance, after heavy rain, a large vessel will sink more – the difference can be up to 40 centimetres, which is considerable, especially when they're only allowed to have

about 1.5 metres under the keel for departure.

"So, we take the density during the draught reading using a zeal hydrometer and we calculate based on the current density of the dock water. That is challenging in itself, because the tide and density can change quite quickly, whereas at somewhere like the Pilbara the jetty is right out at sea, so we don't have that problem.

"The other challenge is being able to distribute the cargo in such a way that the ship doesn't bend much. A large ship can bend like a banana about 30 centimetres in the middle, so that means the deepest draught is in the middle, so you're displacing less water which means you're carrying less cargo. Distributing the cargo at the right percentage in each hatch is crucial to carrying as much cargo as possible.

"Back when I was working with BHP, I loaded the largest vessel in the world at the time, which was 315 metres long. I was at Kooragang overseeing the new Chief Officer. I looked at his load plan and suggested we review it because this ship had been doing the run to Newcastle for 10 years but always sagged by 30

centimetres, so its cargo-carrying capacity was restricted.

"I reviewed previous plans and came up with a new one that had the vessel sagging just two centimetres and that loading was a record lift for the port. Everyone was cheering and I said, "Well, I would actually be disappointed, because imagine how much cargo was left behind over all those years!"

Louis used his time at sea and solving problems like that to build the "CargoMax Pro" software that essentially helps the Chief Officer load to the right draught and trim, and calculate how much is loaded.

"You could make a mistake so easily at 2am and the ramifications of making a mistake at that stage are quite severe. We have had some cases of vessels being overloaded, about 16 years ago, before surveyors were involved with helping the Master and they literally had to discharge cargo because the Chief Officer made calculation errors. Discharging cargo at a port that is designed to load is very difficult," Louis explained.

It's easy to see how intense those mistakes can be when you





stand on the deck of one of these coal ships. When @ The Coalface met Louis, we were lucky enough to get on board MV *Bear*, which was being loaded with steel-making coal to take to Ukraine.

The size of the job was unbelievable, and it was easy to see how one hold being loaded incorrectly could cause all sorts of issues.

With all the talk about

transition and claims that coal's days are numbered, Louis firmly believes that the Port of Newcastle will continue to export coal for many, many years to come.

“The throughput for the port hasn't changed. It fluctuates with market demands but the reality is we have the best-quality coal in the world and, as we saw on MV *Bear*, that is key: that shipment is going to Ukraine because of its quality. They want good coal, not

the poorer quality coal they can source closer to home.

“Newcastle has a strong future because of that quality and I think that will hold the region in good stead for some time,” said Louis.

You can access *The Coalface* here: <https://thecoalface.net.au/>

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