

# Trends Impacting Towage Operations

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# Initial Question



- All is good when tugs are purchased. When it comes to maintenance, spare parts etc. Tug owners are having to depend on subcontractors and not always directly the manufacturer.
- Sometimes these subcontractors are difficult to get hold of, or they are not necessarily up to standard.
- What I'm after is a practical way of how best to deal with such subcontracting, and possibly think about all this before the purchase.



# Questions to fleetmanagers



- Vessels too advanced/complicated for the area where they are working
- Lacking superintendents due to smaller staffs and fewer trained people
- Central purchasing organisations rather than local control
- Suppliers have become too big and limited choice between them
- Bigger (more important) customers for the suppliers/service companies
- Simply not enough skilled people
- ....
- Appreciate your thoughts.





# Experience/feedback remote operations



- **KEEP IT SIMPLE**
- **SETUP** right from day 1
- **ASK...** how others are dealing with problems in operations
- **FIND** the right people
- **TRAIN** and **RETAIN**
- **RELATIONSHIP BUILDING** with contractors / suppliers
- **CREW COMMITMENT**
- **MONEY!**



# References

- Norwegian Coastal Ferry Industry
- Mining industry
- Dredging industry





# References



## - Rio Tinto: 130 Autonomous Trucks

### Autonomous trucks

We run more than 130 autonomous trucks, part of our Autonomous Haulage System, across our Iron Ore operations. The trucks are operated by a supervisory system and a central controller, rather than a driver. The system uses pre-defined GPS courses to automatically navigate haul roads and intersections and knows actual locations, speeds and directions of all vehicles at all times.

In 2018, each truck was estimated to have operated on average 700 hours more than conventional haul trucks, with 15% lower costs – delivering clear productivity benefits. They also take truck operators out of harm's way, reducing the risks associated with working around heavy machinery.



# References

## - Rio Tinto: 35 Zero Emission Autonomous Trucks

Text & Image source: RioTinto – [Click here](#)

### Rio Tinto Teams Up with Caterpillar for Zero-Emissions Autonomous Trucks

14 September 2021



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MELBOURNE, Australia—(BUSINESS WIRE)— Rio Tinto and Caterpillar have signed a Memorandum of Understanding (MoU) for Caterpillar's development of zero-emissions autonomous haul trucks for use at one of Rio Tinto's Western Australian mining operations.

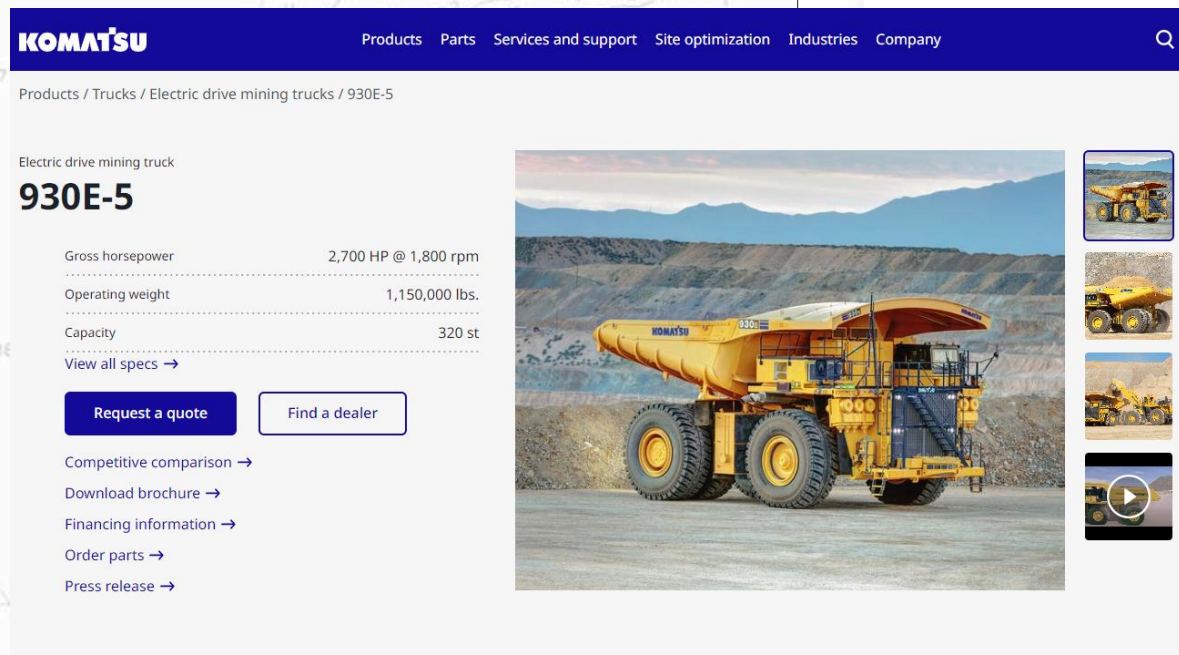
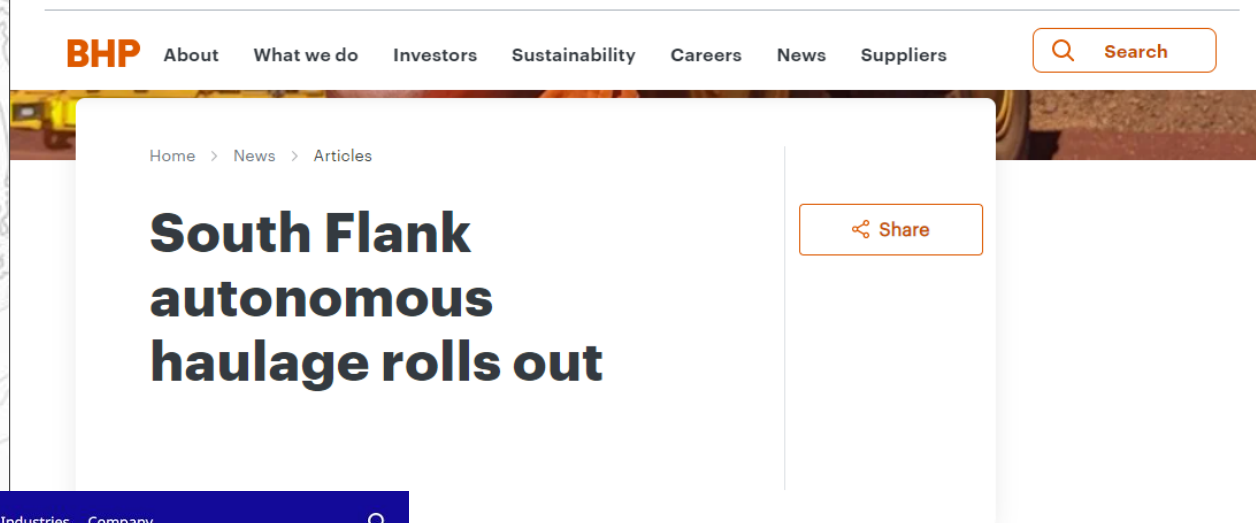
The collaboration will see Rio Tinto work with Caterpillar to advance the development of the manufacturer's future 220-tonne 793 zero-emissions autonomous haul truck including the validation of Caterpillar's emerging zero-emissions technology.





# References

- BHP: 41 Komatsu 930e autonomous Electric trucks



Text & Image sources: BHP – [Click here](#) & Komatsu – [Click Here](#)





# References

- BHP: readying rollout of 20 autonomous trucks at Eastern Ridge

## BHP readying rollout of autonomous trucks at Eastern Ridge

Posted by Daniel Gleeson on 5th June 2020



BHP is looking to start the roll out of autonomous trucks at its Eastern Ridge mine site in the Pilbara of Western Australia in the next month, with the fleet of 20 Cat 793 haul trucks set to be fully converted to autonomous mode by the end of the year.

The company announced earlier this year that Eastern Ridge (also referred to as Newman East) would be the next mine to benefit from autonomous haulage. This came after a previous automation announcement related to the jointly-owned Goonyella Riverside mine, in Queensland. BHP has also agreed to acquire 41 new model Komatsu 930E-5, which are autonomous ready, for its in-development South Flank iron ore mine, but the company has not yet confirmed if it will use the autonomous capability at the site.

A BHP spokesperson confirmed the existing fleet of Cat 793s were set for automation retrofits, explaining that the roll out would occur from the end of June/early July.

Despite the restrictions in place to curb the spread of COVID-19, the spokesperson said the company was on track for full roll out completion by the end of year, as planned.

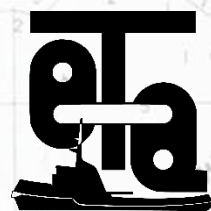
In the announcement back in February, BHP said the automation project at Eastern Ridge, which the company is currently using as its proving ground for innovation, was down to the significant safety benefits offered by the technology and its ability to complement the mine's design, culture and existing infrastructure.



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