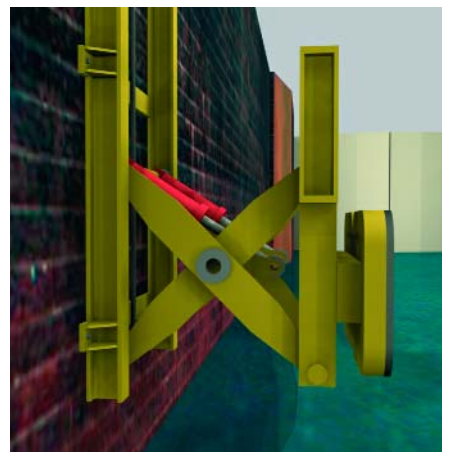
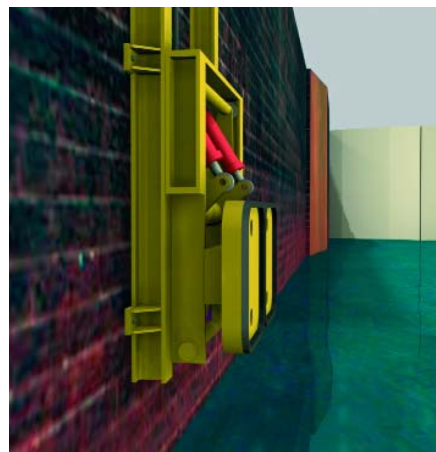
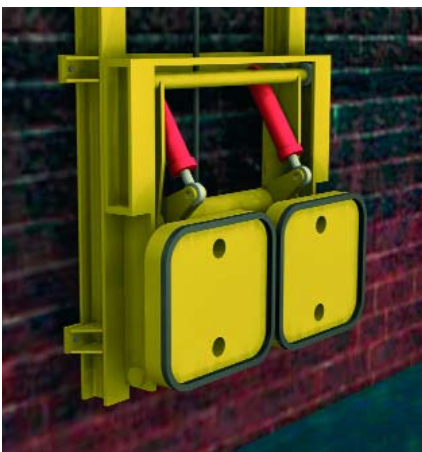
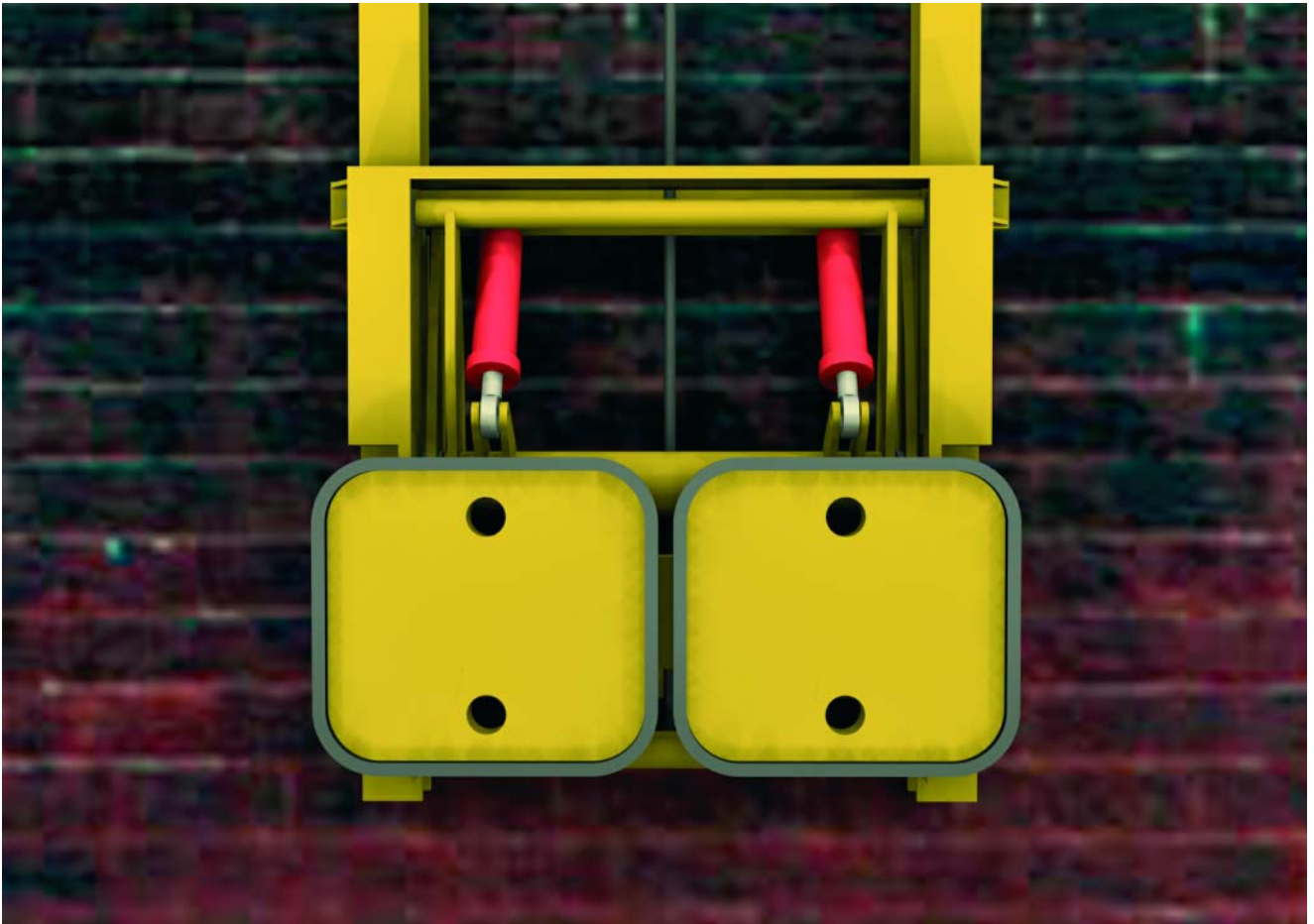


vacuum based auto mooring

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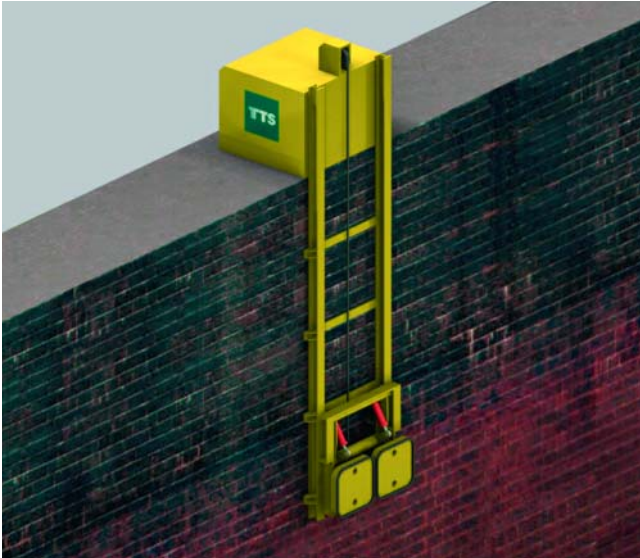


Automatic mooring improves the safety and convenience of mooring procedures because the system dispenses with the use of ropes and quay-side personnel. Operation is remotely controlled and the system's load monitoring and alarm functions relay information to operations staff in real-time. The TTS vacuum based auto-mooring system can be designed with a mooring force to suit varying customer requirements and is suitable for use at harbours and in canal locks.

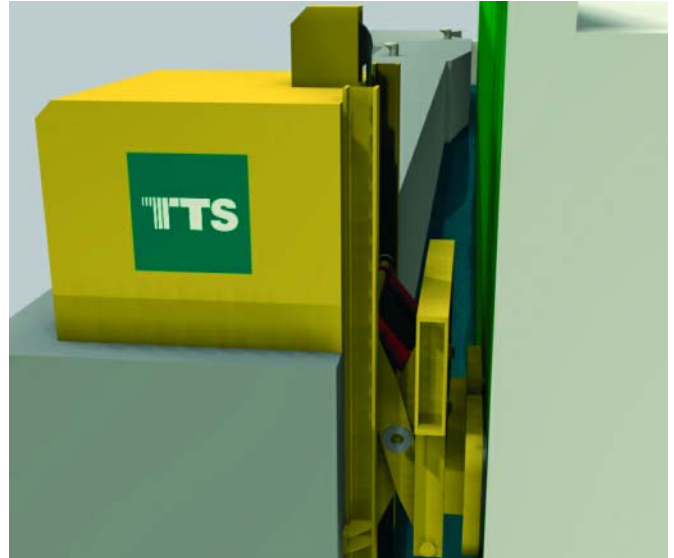
The system consists of a vertical guiding mechanism, a wagon including a vacuum pad, and electric control system, hydraulics, vacuum unit and control panel. Vacuum pads can be installed on the outside of the ship's shell with no internal onboard installation necessary. Heating wires can be fitted to the ship's sides to prevent ice from diminishing the force of the vacuum.



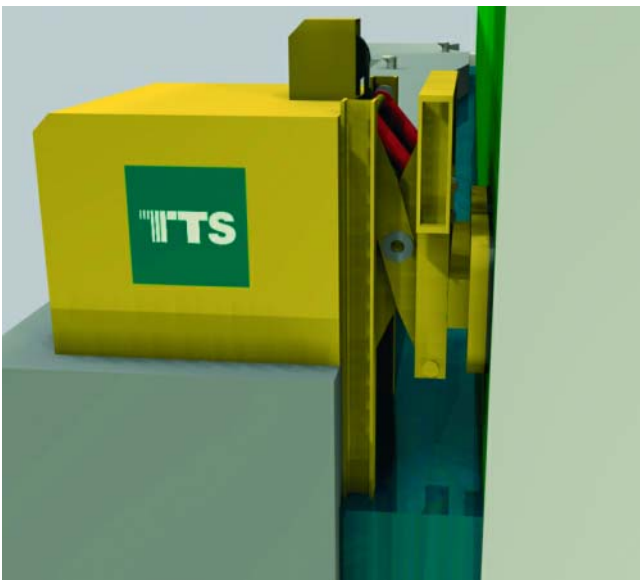
vacuum based auto mooring



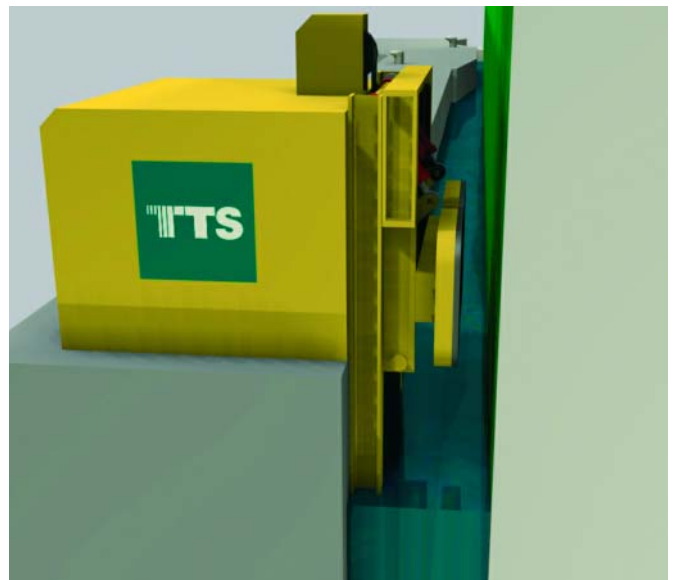
Vacuum system ready for mooring, retracted and levelled to correct height



Vacuum pads are pushed towards the shell of the vessel



Wagon follows vertical movement of the ship



Release of ship by retraction of the vacuum pads

Operating procedure

Once the vessel is in position, the vacuum based mooring procedure is activated by push-button. The wagon with the vacuum pad travels to its predetermined position and the vacuum pad is pushed towards the vessel's shell. The vacuum media then exerts a force on the ship, pulling it into position until it is moored.

Once the vessel is moored, the system's safety features ensure that it remains secure, even during power cuts or loss of control signals. The wagon will follow the movement of the vessel in the water and alert the operator in the event of problems.

The operator releases the ship by push-button, and the vacuum pad then returns to its stowed position allowing the vessel to depart. The wagon then automatically moves back to its parked position.

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