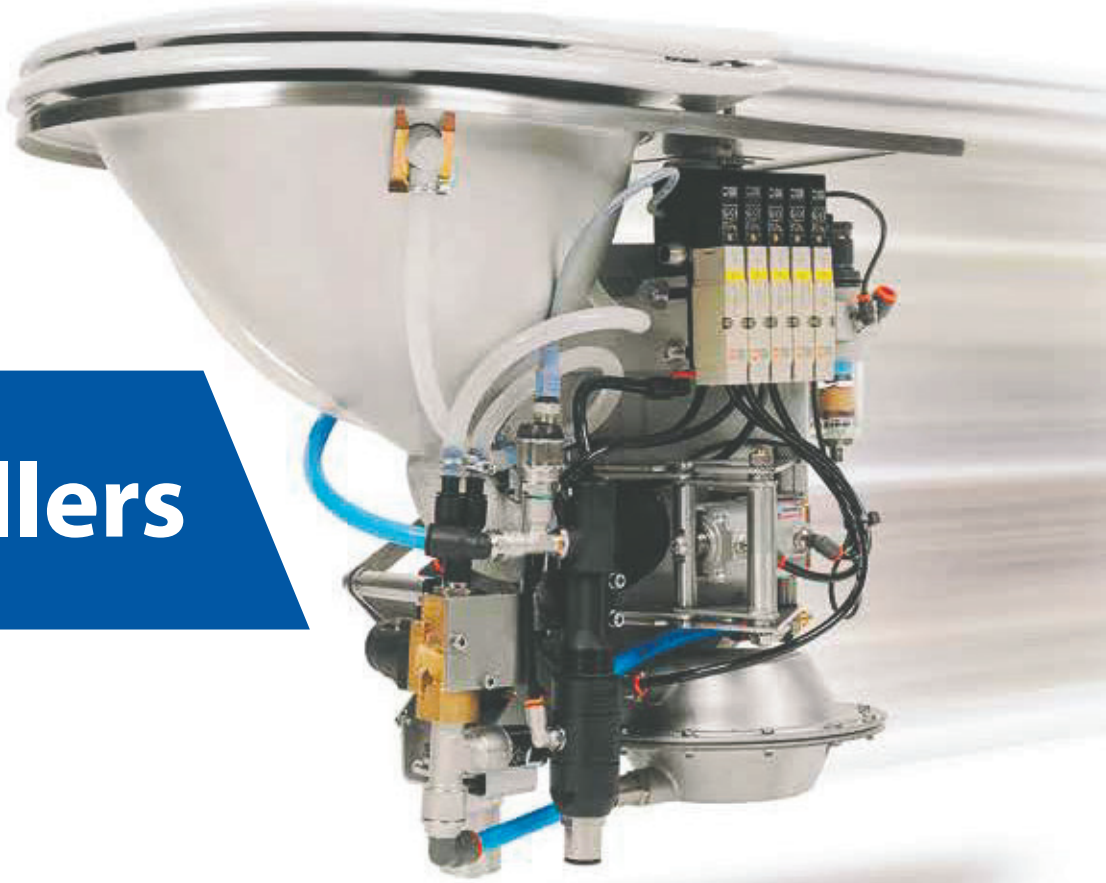
Controllers



Always on track

Glova is a **European vacuum toilet system** manufacturer and an important key player in the rail industry. In order to operate, integrate, monitor and communicate with the toilet system we have developed our own electronic controller systems.

Control

Standard toilet controller

Man-Machine-Interface has always been a key part of the Glova controllers and with Glova's unique touch screen solutions it is as easy and familiar as operating a modern mobile phone.

All operations can be carried out directly using the touch screen and with 11 inputs plus 12 outputs available beside the toilet unit most cabin accessories can be controlled via the toilet controller without any need for extension boxes.

All events will be written directly on the front page including the common reason for this issue as well as the most common way to solve the issue.

Graphics and straight information

With a screen it is possible to directly inform people in plain text rather than often strange codes. Use of icons bring us all together and quickly we all see the same in the symbols.

Switching between two languages is straight forward and all events will be written directly on the front page including the common reason for this issue as well as the most common way to solve the issue.

It is also possible to help people by showing data as graphics and the performance of the toilet flush.

Robust

Harsh environment

Experience have shown that not all places are equally suited for electronic installations. In more remote places heat and especially humidity are taking a toll on the controllers life if not special attention and care is taken.

To suit these places and without losing any of the facilities on the controller Glova has made an IP67 version of the controller. In order to prove the robustness, the controller and the electronic part of the toilet unit was powered up and activated after being submerged into water.

Control based upon communication

The overall principle of the way Glova control all the attached parts are via CAN communication. This dramatically reduces the need for cables in between with only two 24v DC power wires and two wires for communication. This system also has the advantage that more or less only software set the limit of information to be passed on to the controller or even further out of the toilet cabin. Toilet unit, water heater, air compressor and level management systems can be monitored directly from the touch screen.

Communicating with the tcms

The Glova controller is as standard fitted with a range of possible communication methods. Internally the controller communicates with the toilet, a hand dryer or other sub-items via CAN. Collection of the data log and reprogramming is done by means of a conventional memory stick and for PC attachment the controller has a USB connector.

Externally, a part from the default RS232 access, it can be fitted either with CANOpen or Ethernet and as further means of communication there is an option of three independent switch functions or making a direct communication via 5g modem.

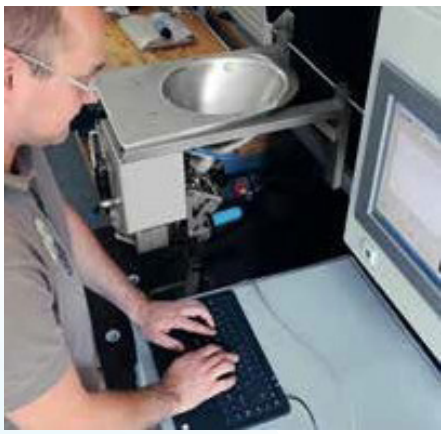
Extension

When large is not enough

From time to time all the available in- and outputs on the standard controller are limiting the wishes for a total integration of a toilet cabin into a train.

We have therefore developed a new and extendable controller where more or less the sky is the limit. As these projects also often demand the controller to be placed at an inconvenient place, we have at the same time taken the opportunity to make the touch screen independent from the controller. A single cable between the two and are in fully control with all the information and functions on the PDC220 XL.

Even though the main purpose was to design an expandable controller this can also be delivered like the standard controller but with the touch screen positioned at a more service friendly position.



Predictative preventative maintenance

For those with extraordinary focus on system reliability it is possible to extend the controller system with Glova Telemetrics.

Running via the 5G modem or Ethernet it is possible to send all statuses of tank levels, flushes, system incidents and door lock periods giving the maintenance staff a perfect chance to organize maintenance well in advance before system failure.

A combination of the collected data also highlight leaks on the water system when water consumption do not match the number of usages of sink and toilet. With the system installed the maintenance staff are typically maximum one minute behind the actual events on-board.

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