

ELECTRONIC CONTROL SYSTEMS FOR MOBILE MACHINERY



TECHNION



Reliability, Green Values, Safety, Productivity

TECHNION



xCrane Presentation

Jan 20th 2016 / TL

Reliability, Green Values, Safety, Productivity

TECHNION

xCrane system



xCrane is ready made control system to control maximum 16 hydraulic boom movements and tune the movement speeds based on user needs.

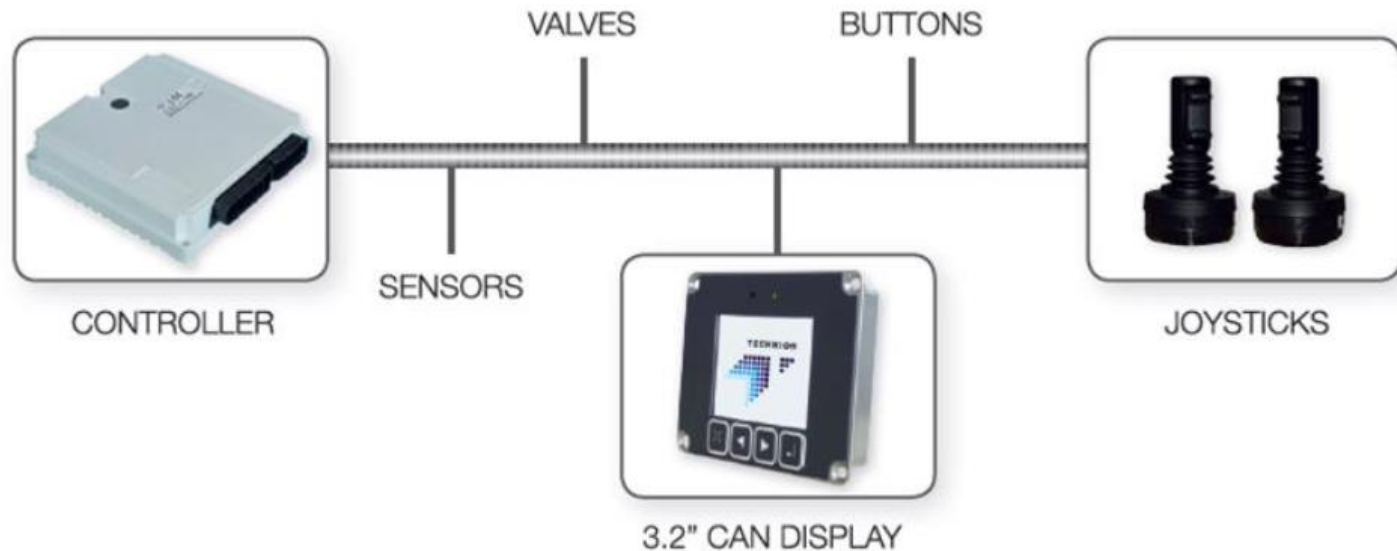
Application sw is developed with Codesys 3.x. Partners and OEM customers can freely develop custom features for xCrane.



Reliability, Green Values, Safety, Productivity



System architecture



There are 3 free CAN buses with standard protocol to connect 3rd party devices like Remote control, CAN joystics, displays etc.

In Ready made xCrane application Joystics, button, sensors and valves are connected to controller's I/O.



Components, TEC152



TEC152 I/O is designed for Crane control applications. There are voltage outputs for Danfoss valves and naturally the capability to control current controlled valves with PWM. **TEC152** is fully functional with both 12V and 24V systems.

The outstanding hydraulics control is based on three main items:

- Maximum for error for closed loop hydraulic control is <1% for complete measurement chain, which means best user experience in the market.
- Every time critical function is performed in separate HW block meaning no delays in hydraulic control.
- Outstanding CPU performance with DSP capabilities allows complicated tailored features e.g. Tip control

Reliability, Green Values, Safety, Productivity



Components, TDC130



- 3,2 inch TFT Colour display
- CAN and USB interfaces (optionally isolated CAN)
- 4 x buttons
- 2 x LEDs
- IP 67 Protection
- Free of charge development tools (TeGUI)
- Cost effective solution

TDC130 display is used in xCrane application as a "CAN Slave display". This means that adapting Technion xCrane system to existing third party display is simple and fast.



Applications



Controlling the Crane,
axel lock and steering of
the tracktor while seat is
in reverse position



Controlling the Crane,
grapples and legs



Controlling the Crane,
grapples and steering in
forest machine



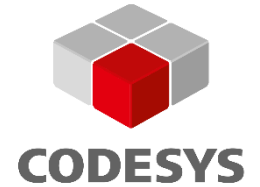
Boom control up to
16 movements



Trailer application
including floating of
the boom and traction



Benefits



- Turn-key solution to control different kind of cranes
- Ideal solution for both current and voltage controlled (PVG32) valves -> One application software -> several hydraulic solutions -> several different kind of machine configurations
- Ideal solution for both 12V and 24V systems -> One application, several different base machines.
- Feedback from the end users -“the best user experience”
- Total freedom for OEM to tailor and develop customer specific features with Codesys tools.
- Free of charge development tools and PC-tool to configure different hydraulic selections, sensors etc meaning very small investment to notice the best user experience in the market.

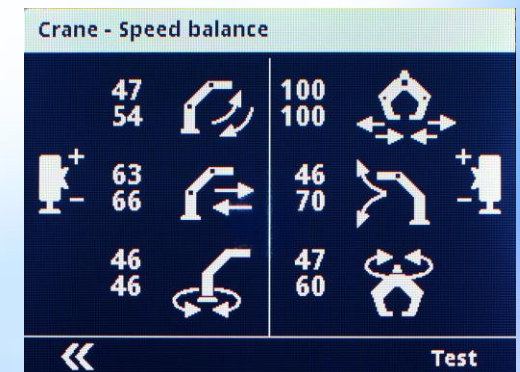
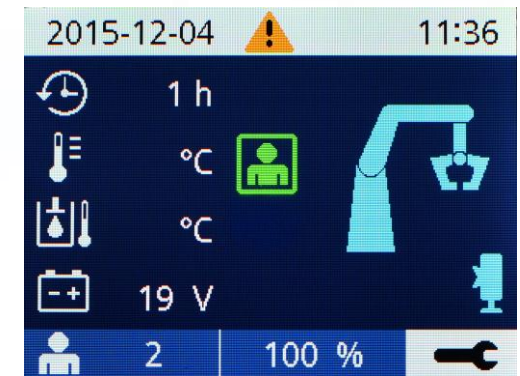
xCrane is the most user-friendly and flexible crane control system on the market offering an unparalleled user experience.

Reliability, Green Values, Safety, Productivity



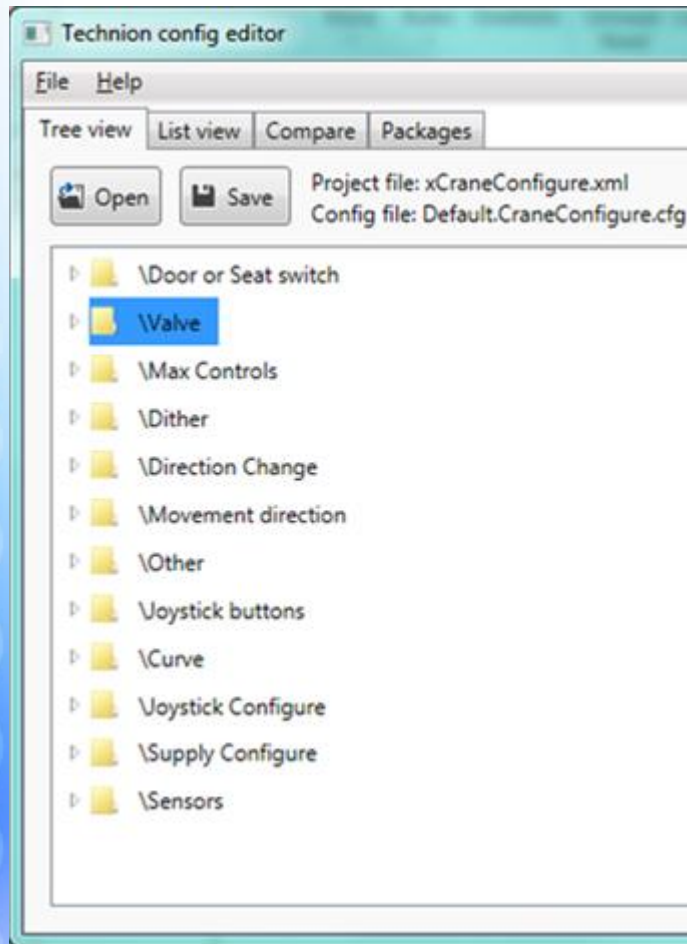
Features

- Speed adjustment and ramps for each movement individually
- Adjustable progression for each movement individually
- Technion QUICK TRIM (changes the all movement speeds maintaining the same ratio between the movements)
- Setting for 6 drivers & factory setup
- Joystick calibration
- Adjustable deadband
- Joystick filter
- Working Hours
- Detailed diagnostics
- Boom home indication
- Load indication
- Oil temperature and pressure
- Stabilizer home indication





Technion config editor PC-Tool

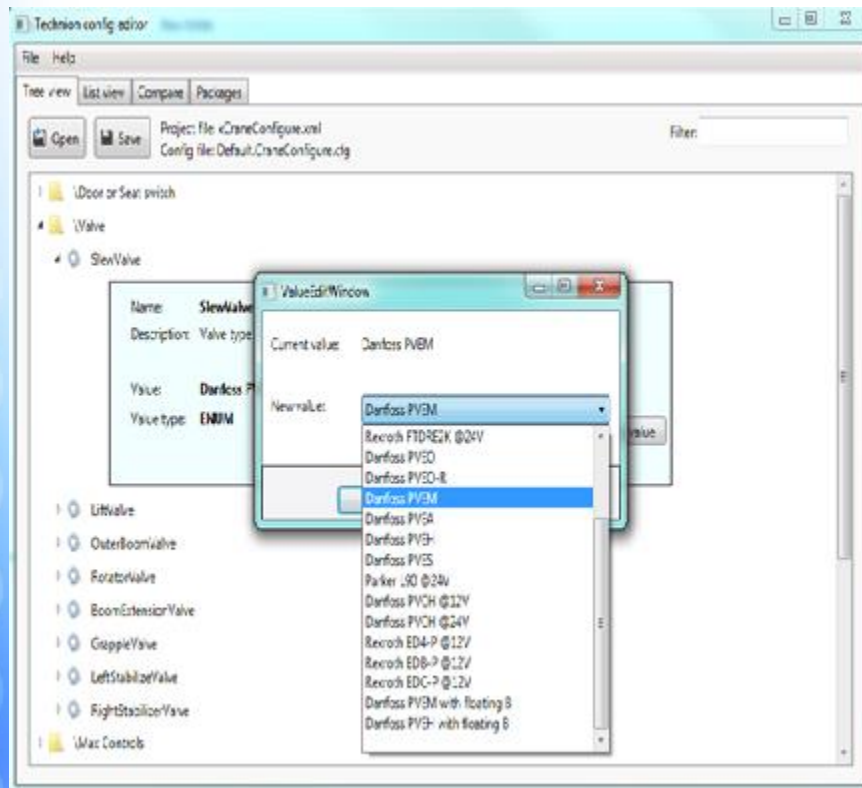


In the main view there are four tabs:

- **Tree view** where are all the main configuration topics
- **List view** where all the possible items that can be configured is listed
- **Compare** tab allows to compare two configuration files and shows the differences between the files
- In **Packages** tab user can create the file which can be downloaded to the system.



Technion config editor “tree view”

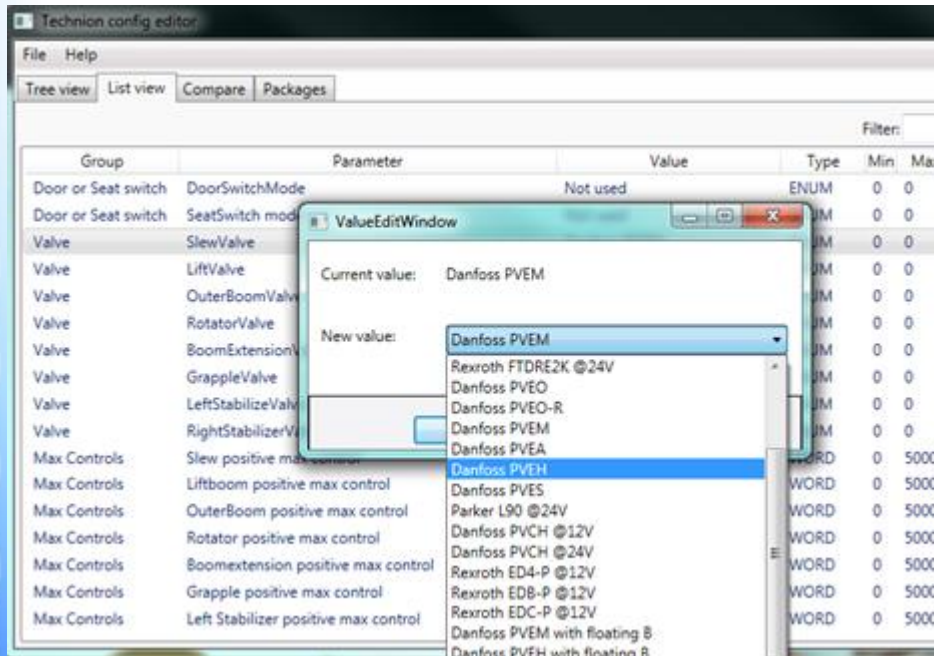


When opening the folder “Valves -> Slew Valve”, user can define the hydraulic selection assembled to the actual crane you are making the configuration. Based on the selection, the tool defines valve constraints where all the parameters should be and how the valve is controlled.

For example if maximum allowed current for valve is 1A, this sets the maximum value so that the user cannot set higher current than 1A and break the valve.



Technion config editor “List view”



List view extracts the tree view as a list where you can see all defined features and values for your system.

Filter in top right is perfect tool to search easily everything under the written topic. For example if you filter with word "sensor" you will get the list of the defined sensors with the defined constrains.

TECHNION



THANK YOU!

Reliability, Green Values, Safety, Productivity