XCRANE FEATURES

6 DIFFERENT DRIVERS
- ❑ Each driver has own set of parameters to adjust
  - ▪ Valve parameters
    - o Minimum current (mA)
    - o Max speed   (%)
    - o Ramps (ms)
      - • Acceleration
      - • Deceleration
    - o Progression control (factor)
      - • exponential control curve
    - o Technion quick trim (factor)
      - • General speed of movements
    - o Rotator direction change
  - ▪ Joystick Parameters
    - o Dead band (%)
    - o Filter (factor)
    - o Calibration

- ❑ Parameters can be adjusted from display

VALVE CONFIGURATIONS
- ❑ Predefined list of valves that can be used in the system
  - ▪ New Valves can be added to list

- ❑ Configuration items:
  - ▪ Max current for both directions
  - ▪ Dither parameters for both direction
    - o Amplitude
    - o Frequency
  - ▪ Fault behavior
    - o Turn off both or just faulty output

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CONTROL FUNCTIONS FOR VALVES

Basic functions

- ❑ **Slew**
- ❑ **Lift**
- ❑ **Outerboom**
- ❑ **Rotator**
- ❑ **Boom extension**
- ❑ **Grapple**

Optional functions

- ❑ **Stabilizers (Left/right)**
  - ▪ Control from joysticks
    - o Change between crane/Stabilizers via switch or button
  - ▪ On-Off-On buttons
- ❑ **Floating**
  - ▪ Activating:
    - o Button
      - • Optional activation from display
      - • Without confirmation
        - • Sequence activation
          - • Press for 2 seconds
          - • Release
          - • Press again within 1 second
      - • Deactivation
        - • press for 500ms
    - o Switch activation

- Software disables Slew, Lift and Outer boom movements automatically
- Disabling other movements can be configured

❑ **Steering**
- Separate joystick (Thumb wheel etc.)
- Right joystick X-axis (disables rotator)
  - Varieties of configurations for activating function:
    - Switch
    - Speed dependent
- Valtra CAN bus:
  - Possibility to replace Valtra rear steering wheel
  - Over speed handling (disables Valtra drive, set gear to N, if speed is over limit)
  - Valtra driving direction control (F-N-R and Park)

❑ **Axle lock**
- switch or speed dependent activation

❑ **Trailer traction control (On-Off/Proportional)**
- On-Off
  - Local connection
    - pins can be configured
- Proportional control
  - Local connection
    - Potentiometer
    - Pulse sensor
    - Pins can be configured for both methods
  - Machine driving speed
    - From J1939 bus
  - Speed control curve can be configured
    - Speed/Potentiometer value to valve control

❑ **Cabin angle control**
- From separate joystick (Thumb wheel etc.)

❑ **Trailer brakes**
- Functions needs to be enabled
- Certain conditions must be met to activate brakes
  - Needs information from J1939
    - Driving direction and park brake states needed

❑ **Crane lights**
- Activate via switch

SAFETY FUNCTIONS

- ❑ Door switch
  - ▪ Local connection
  - ▪ Pins can be configured
- ❑ Seat switch
  - ▪ Local connection
    - ○ Pins can be configured
  - ▪ CAN bus information
    - ○ From Machine can bus (J1939)
  - ▪ Operator present confirmation from display
    - ○ Function can be configured
- ❑ Dead man switch
  - ▪ Local connection
    - ○ Pins can be configured
  - ▪ Time variables can be configured
    - ○ Active time
    - ○ Button pressing time

SENSORS

- ❑ Configure items for sensors:
  - ▪ Pins
  - ▪ Sensor types
  - ▪ Measurement limits
    - ○ input values
    - ○ output values
  - ▪ Signal filtering
- ❑ Variety of sensor
  - ▪ Outside temperature
  - ▪ Hydraulic oil temperature
  - ▪ Hydraulic oil pressure
  - ▪ Load pressure
    - ○ Inclination symbol in work view
      - • OK
      - • Warning
      - • Over load
    - ○ Pressure value in diagnostic page
  - ▪ Oil pressure filter switch
  - ▪ Cylinder length measurement
    - ○ Analog sensors
    - ○ CAN bus sensors
  - ▪ Cylinder end damping sensors
    - ○ Inductive sensors
    - ○ Length measurement

TIP CONTROL / PARALLEL CONTROL

- ❑ Requires cylinder length measurements
- ❑ Modes can be changed from display
- ❑ Variety of parameters for user

Open loop parallel control

- ❑ Left joystick Y-axis controls lift and Outer boom
- ❑ Right joystick X-axis is used for correcting movement (Changes the control ratio for Outer boom and Lift
- ❑ Movement parameters for user