Joystick screen display

The LCD is an amazing tool for displaying user messages and important information for the robot such as sensor values or battery level, and also interact with the robot programing in any way using the three buttons on it.

The problem

But the LCD have an unfortunate disadvantage, must be connected to the robot microcontroller, away (in most of the cases) from the users. **It becomes useless when the robot is far.**

Solution

Our team have seen this problem that is causing the waste of this device and we search for a way to get the full potential of it. The LCD should be where the interaction is always possible. **The joystick is the principal element that make possible the direct interaction between human and robot, the best place for the LCD.**

The joystick screen display will simplify the human interaction, , **now the drivers could see what robot feels** just looking at the screen with sensors information in the top of the joystick, will not only improve the LCD but all sensors that can now be better used in driver control.

The idea is to continue whit all of the previous functions of the LCD and the joystick, with the advantage of having them together, in the same way all of the other function are going to be easier and useful.

Connectivity

The LCD works as the RobotC debugguer window using the VEXnet WIFI conection allows sending and reciving data between the joystick and microcontroller.

Design process   (Autodesk inventor professional)

The idea to incorporate a screen to the joystick come to us since we begin using the LCD, and then we realized we were not the only ones who had this idea, we saw some entries in the forums talking about it. For these reasons we consider the VEX Robotics Engineering CAD Challenge as a great opportunity to make this idea come true.

We started from the classic VEXnet Joystick, using that empty area in the center of the joystick that allowed maintain the symmetry of the model and does not interfere with the use of it.

Then readjust the size and add inclination angle of 45 degrees making it easier to see while driving.

Using the center of gravity application of inventor we verify the stability of the model after adding the new component.