

Enclosed color touch units hold up in harsh environment; product upgrade with limited investment

Situation

Industrial Ventilation is the leader in potato, onion, sugar beet, and carrot storage ventilation systems. Their microprocessor-based embedded system precisely manages storage climates by controlling the fans, evaporative coolers, humidification, Co2, heaters, refrigeration equipment, and fresh air intake for the largest food producers in the United States and around the world.

Their old product line user interface consisted of a monochrome 8x40 character display and keypad. They wanted their new Centurion product line to stay ahead of industry trends, and they also wanted to improve the customer experience by adding a color touch interface.

Critical Issues

Rugged Environment

Food storage facilities are harsh environments for electronic equipment. Potatoes, for example, are stored under 95-100% humidity. Onions undergo a curing process where they are brought to 100F degrees to dry, and then taken down to 35F degrees to store. Temperature swings and high humidity can cause condensation to form on control screens. Reliability is a key factor for Industrial Ventilation, known for having the best products in the industry. According to Thad Failor, head of programming, "We did not want to swap out bad screens or controller boards all the time. Not only would it reflect poorly on our overall product, but it would become very expensive since we have customers around the world."

Easy-to-Use, Fast, High Quality

Industrial Ventilation had dabbled in a touch screen once before, but it was a monochrome screen and had very slow processing times. According to Failor, "You'd press a button and it would take a long time to draw the screen. We don't want customers standing around waiting for the screen to draw." The company also needed a screen that was bright, since many of the storage units are dimly lit, and was easy to use for gloved fingers.

Affordable Price Point

Other touch screens Industrial Ventilation considered would have increased the Centurion product line out of their target price range.

Limited Development Team

Industrial Ventilation, with a resource limited development team, wanted to find a color touch control surface that worked with the Rabbit Semiconductor RabbitFLEX single board controller powering their current system.



Industrial Ventilation placed the Reach 5.7" Hitachi Enclosed Unit front and center on the main control panel of their Centurion product line.

Solution

Industrial Ventilation placed the Reach 5.7" Hitachi Enclosed Unit front and center on their main control panel using a rectangular cutout and drilled mounting holes. This unit features a metal enclosure housing the display, controller board, industrial 12-24 DC power supply, and backlight driver. A compression gasket between the bezel and the panel, plus another between the bezel and the control panel itself combine to provide an effective waterproof seal.

It took one person approximately three months to get the color touch control device working with their new Centurion product.

Results

Failor, charged to update their product reports, "The transition, in part because we stayed with the Rabbit Semiconductor product line, allowed us to easily transfer the majority of our code into the new product line. Creating an interface between our product and Reach's touch screen was very simple; programming was very easy to do. Customers like the brightness and speed of the system which gives an instantaneous response."

Most importantly, Industrial Ventilation is getting the reliability they need. According to Failor, "We are going on two years of production and haven't had a problem with a single unit yet."

Minimize complexity, risk, and investment

Most customers do business with us because:

1. Complexity is minimized

- No graphics libraries and all the complexities they involve.
- They benefit from short development periods, and quick times to market.
- They spend very little time away from their main responsibilities.

2. Risk is minimized

- They're shielded from the vagaries of the LCD business.
- No worries about supply chain control or a much larger cost per unit than originally anticipated.
- We provide stability and will be around for the long haul.

- No memory leaks and the consequent low-level processor aborts that are the major causes of PC crashes. These are especially problematic in embedded products.
- No boot-up and shut-down problems. Industry-standard operating systems can take 10 or 20 seconds to boot up and shut down. Not acceptable in most embedded products.

3. Investment is limited

- Customers' investment in LCD color touch technology is as low as possible.
- Customers can upgrade to LCD color touch control and get their products off to market as quickly as possible.
- Changing screen size to meet customer requirements is easy.