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 thier 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.