



The ICE system uses a video camera to monitor the different indicators and displays on an instrument cluster (or any other device).

INSTRUMENT CLUSTER EXAMINER (ICE)

CONTACT

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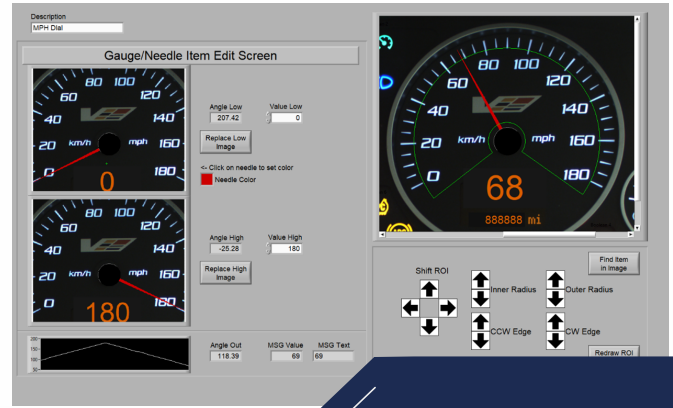
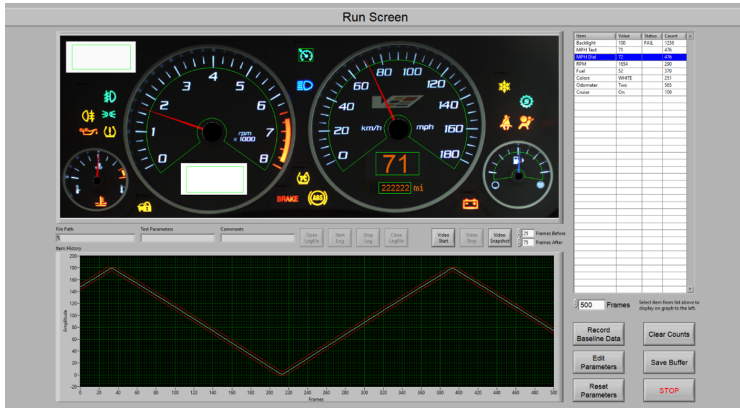
Clio, Michigan



ICE TOOLS:

ICE can learn a repeating pattern and indicate an error any time an indicator deviates from the pattern. It can also monitor the intensity of the background and report if it changes outside a specified limit. ICE can be remotely controlled through Ethernet to start/stop monitoring and report errors.

- Dial/gauge: Read the value of a speedometer or other dial indicator.
- Intensity/brightness: Measure the brightness of an area
- Indicator: Detect if an indicator is on or off.
- OCR: Read odometer or other numeric indicator
- 7 segment: Read odometer or other numeric indicator
- Color: Determine current color of indicator
- Symbol: Determine which symbol is currently being displayed



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- Easy to configure: Select type and location of tool, draw ROI, set low and high values. Color/symbol/text tools require an example of each color/symbol/digit.
- Fiducials help correct for camera movements and slight scaling changes or rotations.
- The system also is capable of recording short video segments. If an error in a pattern occurs, it can automatically save several images before and after the error so the operator can later review the video to determine if it is a serious error or not. This eliminates the need for the operator to continuously monitor the system to see errors.
- Logs errors to text file.
- Complete system (camera and software with optical fiber USB3 extension) is about \$20,000 USD. Works with desktop or laptop PC.
- The system can determine a repeating pattern after seeing two full iterations of the pattern. It can apply error limits to this pattern and alert you if the pattern changes.
- The system is capable of sending and receiving commands over TCP/IP. This would include learning a new pattern, starting a test, retrieving a list of errors, and other useful data. This can be used by your control system to compare the expected results with the actual results.
- The system uses a high resolution color video camera with a fiber optic cable for the signals. This prevents any electromagnetic interaction between the video signals and the surroundings.

Users:

Bureau Veritas - Continental (Vitesco)

NSI - Nissan