

## > ADVANTAGES OF LCD OVER CRT IN PROCESS CONTROL

Invensys Process Systems

### > WHAT'S INSIDE:

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3. Average expected life of LCD backlight
4. Average expected life of CRT
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## > ADVANTAGES OF LCD OVER CRT IN PROCESS CONTROL



*In a very short time, LCDs have become the monitor of choice for a wide variety of applications including Process Control. The initial purchase price, which is higher than traditional CRTs, is offset by the benefits derived from longer lifecycles, reduced power requirements, lighter weights and smaller footprints, providing a very attractive Total Cost of Ownership (TCO).*

Invensys Process Systems (IPS) offers Liquid Crystal Display (LCD) Flat Panels in the P77 Model Code with all Workstation Processors, dating back to WP20/30 stations. LCD displays bring new life into older workstations by replacing outdated Cathode Ray Tube (CRT) monitors with new Flat Panel LCD displays. New mounting kits are now available for installing the lightweight LCD displays on Modular Industrial Consoles (MIC) and Modular Industrial Workstations (MIW) consoles. This is excellent news for customers that have older workstations and enclosures in place, as new flat panels provide the following benefits:

### > 1. LOWER LIFETIME COST AND REDUCED TCO

LCD Total Cost of Ownership (TCO) is significantly less than a CRT. LCDs have approximately double the lifespan of a CRT; have a much smaller footprint, require less space, less power, and save operational costs. The cumulative effect of these variables makes the LCD the most cost-effective choice.

### > 2. LONGER DISPLAY LIFE

All displays slowly decline in performance from their new condition by gradually losing brightness. This decline is measured as the period of time required for the display to drop to 50% of its original brightness.

### > 3. AVERAGE EXPECTED LIFE OF AN LCD BACKLIGHT

The average life expectancy of a LCD backlight is 30,000 to 50,000 hours. This represents three and a half to over five years of use for an LCD display operating 24 hours a day, seven days a week. The backlight of an LCD can be replaced economically, prolonging the life of the display.

### > 4. AVERAGE EXPECTED LIFE OF A CRT

The average life expectancy of a CRT is 12,000 to 15,000 hours. This represents one and a half to two years of use for a CRT display operating 24 hours a day, seven days a week. It is not economical to replace the tube within a CRT.

### > 5. LCDS CONSUME LESS POWER AND EMIT LESS HEAT

Energy-efficient LCDs consume less power and produce less heat. A big advantage flat-panel monitors have over CRTs is their energy efficiency. Flat panels require up to 60% less power, generate less heat, and emit less electromagnetic radiation, which can interfere with other electronic devices. Therefore, while a CRT monitor cost less to purchase, a flat panel will conserve energy and save you money. This makes LCDs the right choice for installations in industrial environments where displays in confined spaces require special HVAC equipment and expense.

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### > 6. SMALLER FOOTPRINT SAVES VALUABLE CONTROL ROOM SPACE

Tabletop LCDs take up less space than CRTs with a flat screen and slim footprint, and save considerable desktop space. The tabletop LCD is adjustable up-and-down, back-and-forth and side-to-side. The 20-inch LCD monitors fit into 40% of the space that is occupied by a 21-inch CRT, and have approximately the same viewable area. In addition, LCDs can be mounted on walls, and kits are available for mounting on consoles with special arms, and within existing spaces inside enclosures without the difficulty associated with the bulk and weight of a CRT.

### > 7. LARGER SCREEN SIZE

A 19-inch LCD has about the same viewing area as a 21-inch CRT, but costs about the same. The screen size of a monitor, like a TV, is measured diagonally in inches. With CRT monitors, two measurements are used. The first measurement designates the diagonal size in inches of the tube, and the second designates the actual area of the tube that displays images. LCD monitors do not hold this distinction; a 20-inch LCD monitor will deliver 20 inches of viewable display space.

### > 8. REDUCED OPERATOR EYESTRAIN

Operators spend most of their time in front of the I/A Series® system. Eyestrain caused by an older CRT with diminished clarity can cause fatigue, which is a possible safety issue. Reduce operator eye fatigue by upgrading to a flat-panel monitor using the AdvantageSM program. LCD flat panels reduce fatigue as they reflect ambient light away from operator eyes, reducing glare and eyestrain.

### > 9. GREATER CONTRAST PROVIDES BRIGHT, CRISP GRAPHICS

Rich colors and amazing clarity are two main reasons for using a flat panel LCD display. There are no concave angles, no distorted images at the edges of the screen, and no focus issues. Straight lines are straight and curves are smooth. It shows a higher-quality image with little to no screen flicker problems, with refresh rates as low as 60Hz.

### > 10. BETTER FLICKER-FREE IMAGE QUALITY

LCDs are approximately twice as bright as CRTs and deliver a flicker-free image, which makes them the best choice for environments with high ambient-light levels and applications (such as control rooms, in which a brighter display attracts attention and invites usage).

### > 11. FORM-FIT-FUNCTION FOR NEXT GENERATION OF LCDS

In contrast to consumer applications, in which the service life of a particular version is limited, displays for industrial applications must offer availability and reliable service over several years. Our manufacturer has responded to this need by creating a de-facto standard with form-fit-function compatibility. The next generation models of this flat panel display are mechanically and electrically compatible, with a projected four-year minimum continuation of the form-fit-function on the current model.

### > 12. LCDS WORK WITH ALL GENERATIONS OF I/A SERIES WORKSTATIONS

Older 70 Series processors and WP20/30s have components that degrade with time, resulting in the graphic display not appearing as clear as on newer hardware. LCD flat panel display run the correct resolution for the target hardware, which may be less than the optimal 1280 x 1024 or 1600 x 1200 resolution at 60 Hz, and provide a better display than the older CRTs. This LCD works with all I/A Series workstations, and when you upgrade your older equipment, you can continue to use the new LCD.

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### > 13. UPDATED LOOK AND FEEL OF YOUR I/A SERIES SYSTEM

Retrofit kits are available for customers who wish to replace existing older CRT monitors with LCDs in both Modular Industrial Consoles (MIC) and Modular Industrial Workstations (MIW) consoles. Both top mount kits use an extendable and adjustable arm providing maximum viewing angles on the LCD screen and offers greater operator adjustability. The in-bay mounting kits and LCD panels occupy much less space in the consoles than a CRT, giving you more space for additional use. The LCD's sleek design increases the appeal to customers who want to associate their company or application with leading-edge technology.

### > 14. LIGHTER WEIGHT CREATES FEWER SAFETY CONCERNS

LCDs weigh much less than comparable CRTs, and is a major consideration for displays mounted on mechanical arms and in bays. The typical LCD weighs only 21 pounds compared to a CRT weighing 66 pounds, making it inexpensive to ship and receive. This makes LCDs much easier and safer to move, install, mount, and remove.

### > 15. LESS SPACE FOR SPARES STORAGE

A lightweight LCD is shipped in a box and can be stored off the floor, on a shelf, or in a storage area. CRTs are shipped skid mounted, and generally are not removed from the skid until they are ready to be installed. The dimensions of the skid and CRT are 25" X 25" X 30" and the combined weight is approximately 90 pounds, making it likely that the CRT will use valuable floor space in the storage area.

### > 16. TOUCHSCREEN AND PROTECTIVE SHIELD OPTIONS FOR IPS PRODUCTS

IPS is the first in the process control industry to offer a touch screen and/or protective shield option on the 20- inch LCD display and combine the benefits of LCD technology with the superior intuitiveness of touch screen operator interaction.

### > 17. FOR FURTHER INFORMATION

For more information about the flat-panel LCDs described in this paper, or the I/A Series system, contact the IPS Foxboro® automation group.