

Blown Film Internals

D.R. Joseph, Inc., Blown Film Process Systems & Consulting

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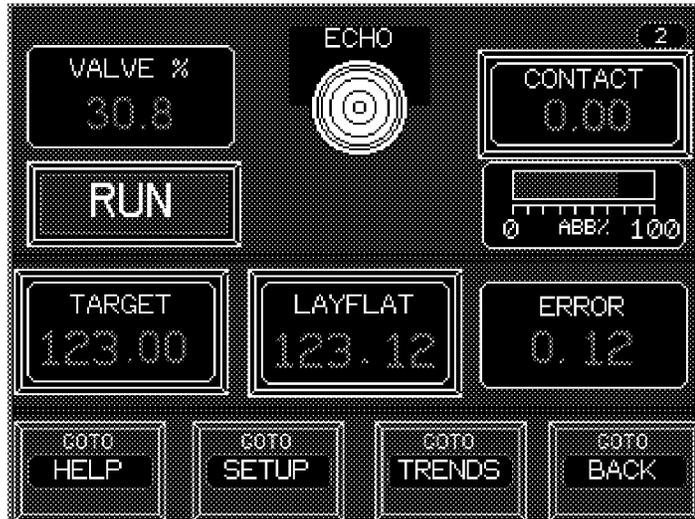
10th Year Anniversary

D.R. Joseph, Inc. is celebrating 10 years of success. Established in 1987 as a provider of blown film consulting services, we are now the leading manufacturer in internal bubble cooling control systems. Although our beginning was very modest, there are now hundreds of IS-IBC1[®] systems operating in virtually every industrialized country. We have made dramatic improvements over previous technologies and have become the standard IBC system for many blown film equipment manufacturers in North America, Europe, and the Pacific Rim. We are now one of the most influential and leading companies for Internal Bubble Cooling technology.

However, our success is due to you, our customer. We want to thank those of you who continue to show confidence in our products and services. For the next decade, we pledge to continue to develop solutions and not just answers for the blown film industry. This newsletter and the next will be dedicated to bringing you the latest news in blown film processing technology.

10th

1988-1998



Making It Easier

by Daniel Joseph

Making the IBC process easier for our customers has been our primary focus for over 10 years. When we say making it easier, we mean making the IBC Control easier to use for everyone who comes in contact with a blown film line. We are accomplishing this task today with three innovative products designed to supplement our state-of-the-art IBC technology. For the operators, we are making the IS-IBC1[®] system easier to use by providing a color touch interface. The color touch screen adds helpful features such as trending, on-line help, and system setup tutors. For the process engineers, we are now providing the handheld setup unit (HSU) that plugs into the IS-IBC1[®] and allows process recipe management and simple trouble shooting tasks (for more information on the HSU see William Jackson's article on

page 3). For the technicians, we are making the technical support job easier by providing an enhanced PC based Viewer program. The IBC Viewer allows the technician to access IS-IBC1[®] systems either locally or remotely (via the Remote Diagnostic Interface) and provides powerful tools for system monitoring, configuration and trouble-shooting (more information about the PC Viewer program will be available in the next newsletter).

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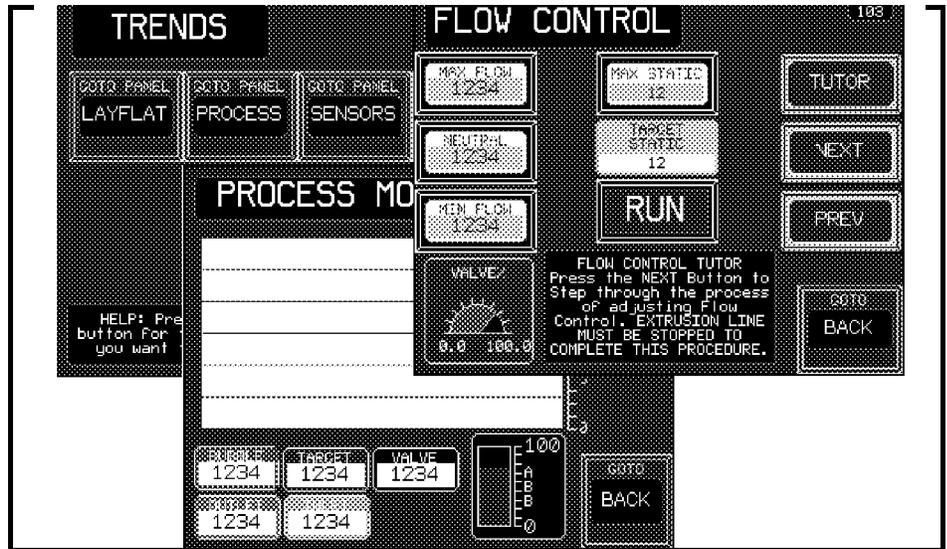
In this article, I want to focus on the color touch screen product and provide an overview of why the color touch screen may be right for you. Color touch screens have come a long way in terms of durability and functionality. Touch screens are showing up more and more in blown film applications because of improved design flexibility, operator friendliness, and a measure of expert assistance.

Design Flexibility

What makes color touch screens so useful is the tremendous flexibility provided by the unit. Color significantly reduces the time the operator needs to become acquainted with the functions on a screen. Multiple trend charts are very easy to read when using color. Conversely, black and white trends rely on patterned lines that can be very hard to see. We use a color touch screen supplied by a nationally recognized company that has been producing them for years. The commitment to software development and product reliability has been significant. Recent additions of multiple color trending, screen printing, and full animation have improved color touch screens from expensive mimic panels to productivity improving tools worthy of the added cost. Additionally, integrating the IS-IBC1[®] system into your blown film line has never been easier. You can incorporate the patented IS-IBC1[®] technology into your blown film line with as little as a standard serial communication line and the list of control points in the system.

Durability

If you are worried about system durability, the unit can take a wide range of temperature extremes and continue to operate properly. The unit has a screen saver that blanks the screen after 60 minutes of non-use. If the touch screen should become disabled, your line will still run properly. The touch screen can be serviced with the line running. The new PC Viewer program will even allow you to run



your IS-IBC1[®] system from a laptop during the time the touch screen is being serviced.

Operator Friendliness

What can be friendlier than a screen with only a few operational buttons to view and very little input required? Standardized colors and shapes provide the operators with clues to the function of each control. Assistance is immediately available for the controls. A variety of ways to view data allows operators to use the system in a way that best suits them. We are now offering the system in a large 6-inch version to provide larger buttons for even easier visibility and use.

Ask the expert

Expert assistance is our greatest opportunity to provide the customer with solutions...not just answers. When the operator is checking the system or performing an unfamiliar task, the color touch screen allows us various ways of providing "expert" assistance. What other software companies call wizards, we call tutors. Regardless of the name, the purpose is the same - to show you how to complete a particular task while in the middle of it. No looking for manuals, supervisors, or scratching your head. Just press TUTOR and you are on your way to completing the task.

There are three setup tutors that help in the initial setup of the system. There are also tutors for normal operational tasks, such as starting the line. Additional tutors are being developed for doing fast diagnosis of the system and the process.

While online help is nothing new, we are making innovations in how the tutors function. Most of us are familiar with the help systems that are available on personal computers. Most use long paragraphs of text to "show" us how to do something. One problem with this approach is the help text covers the screen entirely, making it difficult to view the help text and the program at the same time. Our tutors always allow the operator to continue using the function and see the tutorial information at the same time. In addition, we want each tutor to act like an expert, guiding you and even performing some of the steps for you. With our color touch screen system, there are tutors that follow your steps and provide automatic "next step" assistance. This allows you to do the task and get help when you need it without having to ask.

The next time you are considering IBC control, call us and ask for a quote on the most innovative IBC controls available. You'll be the next customer with a solution... not just an answer.

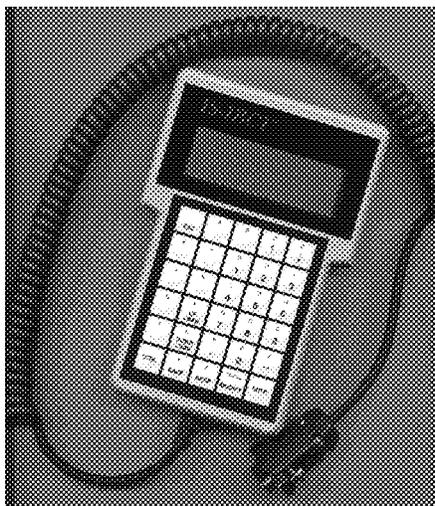
Handheld Diagnostic Tool

by William Jackson

If you have a D.R. Joseph, Inc. IS-IBC1[®] system, you may have seen someone hooked into it with a laptop computer or have worked with us while we were logged into it through a phone line. Many of our customers have asked if there is an easy way to get into the IS-IBC1[®] themselves. Now there is. Every adjustment and every piece of information has always been available through a terminal program, but there was no on-screen help to guide the user. Our latest diagnostic product, the Handheld Setup Unit (HSU) is a small, handheld terminal device that allows direct access to the IS-IBC1[®] system for calibration, storing and retrieval of parameter "recipes", diagnostics, and monitoring of the process. It eliminates the need for a laptop computer to interface to the system. It is field selective between English, German, French, Italian, and Spanish.

What can the Handheld Setup Unit do for you? The IS-IBC1[®] system has always been fully configurable. There are parameters available to adjust the responsiveness of the system and to calibrate the valve over a wide range of die/blower combinations. Many of our customers run vastly different products on the same line, and several actually change dies between jobs.

To optimize performance of the IBC system, we often recalibrate the bladder valve for the different back pressures. In the past, for a startup or change-over, we either had to log in through the modem and calibrate the valve, or the customer had to hook a laptop computer into the system and recalibrate it. The new Handheld Setup Unit allows the user to plug directly into the IS-IBC1[®] system. A simple menu walks the user through a step-by-step process of balancing the



valve. Besides the automated process to balance the valve, every modifiable parameter in the system is accessible from the handheld. For example, some of the most commonly modified parameters are system gain, bubble break output delay times, hole alarm delay times, beginning blower ratios until auto blower balance begins, startup and idle percentages for inlet blower, dynamic filtering, and auto-tune model. Each parameter has a description on the display and error-checking is performed every time a value is changed. If the user tries to send a bad value, the IS-IBC1[®] corrects the value, and the handheld displays an error message showing the attempted bad value and the final "corrected" value. After calibrating the valve for a specific product or die or modifying a parameter, the user may save the recipe in the handheld with any alpha-numeric name up to 18 characters long. A maximum of ten recipes can be stored in the handheld.

With the software package that comes with it, you may download recipes from a PC to the handheld and store an unlimited number of recipes in Microsoft[®] Excel. This is ideal for OEM users who may write a subset of known recipes from Microsoft[®] Excel into a handheld for use by a technician. While in the field, the techni-

cian may also upload the final settings of the IS-IBC1[®] into the handheld, bring them back to the plant, and store them in Microsoft[®] Excel. Error checking is also performed on every recipe parameter sent to the IS-IBC1[®] and upon downloading, the user is notified of each value in the stored recipe that is invalid. In addition to recipes, the handheld comes pre-programmed with the factory defaults for every valve size and type. These values provide a good starting point when setting up a new system or re-configuring an old one. There is also a menu choice in the handheld that allows the IS-IBC1[®] system to be reset to the factory defaults with which it shipped. These "as shipped" values are stored in the IS-IBC1[®] and cannot be modified. The handheld can be used for copying these parameters to the active list to reset the system to its original factory state. The handheld is also ideal for checking out suspected problems with the IS-IBC1[®]. A technician can use the handheld to check the status of all digital and analog inputs and outputs from the system and check for any error codes in the IS-IBC1[®]. The Handheld Setup Unit plugs into the main serial port on the IS-IBC1[®] and is powered from that port. The modem link is still fully usable on the second serial port, so we are still available to log in and assist as needed (refer to the article, "Remote Logging Through the Modem," in the October 1997 newsletter.) For downloading and uploading recipes to a PC, we supply a serial cable with an attached power supply.

The handheld is a very handy device for interfacing to our system. Any new system can be specified to be compatible with a handheld, and existing systems can be made compatible by changing two chips on the main board. The chips will be supplied with the handheld. What's more, any system compatible with the Handheld Setup Unit will automatically work with the PC version of the handheld which will be available in

April 1998. The PC version will install on any computer laptop running Microsoft® Windows® 95, and can do everything described above, and then some. Please call us for more information regarding our new products.

TECH TIP

Ducting Blockages Affect Bubble Stability

by Daniel Joseph

Here's another situation where the root cause for slowly degrading IBC performance can be hard to find. Over time, the operators notice the layflat variation increasing more and more. Only when the variation exceeds specifications does maintenance get involved. In many cases, the root cause problem may be already be several weeks old. Although there are several sources for this type of problem, I want to discuss blockages of air flow ducting and how to correct the problem.

The potential severity of the problem depends on the layout and size of the ducting for the exhaust or outlet blower. The hot air pulled from the die contains residues that can adhere and accumulate to internal surfaces. If the duct layout has places where residue can accumulate, air flow restrictions can result. For instance, elbows in the exhaust ducting are a common place that residue can accumulate. The residue accumulation reduces the cross-sectional area of the air flow path and reduces flow. Small diameter ducts are particularly susceptible (4 and 6 inch diameter) when mitered elbows are used. Another residue accumulation problem is long vertical duct runs just after the exhaust blower. Residue accumulates

either in front of the blower outlet or inside the blower housing. The accumulated residue impedes air flow movement and, in some cases, causes the blower to become unstable.

The type of IBC control system you have is another factor. If the control system controls air flow with a valve in the exhaust duct, then you must periodically remove the valve and clean it. (D.R. Joseph systems control air flow in the supply duct.) Residue can greatly impede the operation of the valve and reduce overall performance of the IBC system.

The solution for existing installations is to periodically clean the ducting and the exhaust blower housing of accumulated residue. Generally, an annual inspection of the ducting is sufficient. The best place to look is in elbows that are just before or just after a vertical run of ducting.

The solution for new installations is to minimize locations where residue can accumulate. Reduce the number of accumulation points by making specific choices of elbows, duct diameter, and duct layout. Use elbows that have a 2:1 ratio of outer diameter to inner diameter. Do not use mitered elbows. Make sure the duct size is large enough for the planned flow of the system. It is best to avoid duct diameters of less than 6 inches. See the table below for recommendations.

Avoid long vertical runs (10 feet or more) just after the exhaust blower. This will reduce the amount of residue accumulation within the blower housing itself. If a vertical run is unavoidable, attempt to have four to five feet of horizontal run between the blower and the vertical run. This will give the residue a much larger area to accumulate and significantly increase the time between required cleanings.

| If Maximum CFM is less than . . . | Then use a duct diameter of . . . |
|-----------------------------------|-----------------------------------|
| 1000 | 6 |
| 2100 | 8 |
| 3700 | 10 |
| 5000 | 12 |

Finally, choose an IBC system that controls air flow with a valve in the supply ducting instead of the exhaust ducting. This will eliminate the periodic cleanings required to remove accumulated residue in the valve mechanism.

Keep in mind that clogged ducting is just one possible reason for unstable bubble operation. Before you start the difficult task of breaking open the ducting, look for the simple possibilities first.

Questions and Comments

Please feel free to contact us with any questions, comments, or suggestions you may have for our newsletter. If there is a topic you would like us to discuss, please let us know and we will work to incorporate it in our newsletter.

If you have an associate who would be interested in receiving our newsletter, please fax or write to us and we will add them to our mailing list. We hope you have enjoyed this issue of Blown Film Internals and we look forward to hearing from you.

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