

# Blown Film Internals

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

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## NPE 2000

**W**e are proud to announce that we will be exhibiting at our 3<sup>rd</sup> consecutive National Plastics Exposition (NPE) conference in Chicago, IL from June 19<sup>th</sup>-23<sup>rd</sup>. We cordially invite all of our customers, future customers, or anyone interested in Internal Bubble Cooling control systems to come by our booth. Our booth is located in McCormick Hall South level 3 and we will be in **booth number 11720**.

This year you can get a hands-on demonstration of the IS-IBC1® Internal Bubble Cooling control system. Witness first hand a complete simulated start-up using the IS-IBC1® system. On display will be our color touch screen controls with on-line help tutors, our new IS-IBC1® smart sensor with a micro processor built right into the sensor, new high speed proportional valve, and the very popular high flow capacity bladder valve. Our latest system will also be running on a blown film line at the show.

In addition, you can get a taste of all the new and improved options: automatic blower balance controls, automatic cage controller, layflat controller, and neck height controller for high density-high stalk bubbles.

All this and more will be on display, so please make it a part of your plan to stop by and see the latest solutions D.R. Joseph Inc. has to offer you. ♦



## Upgrade IT!

**U**pgrades – the endless quest for improved operations without having to recapitalize. The personal computer industry has made “upgrade” a commodity term, a concept people are familiar with. In the blown film industry, however, much of the running machinery and controls remain generally unchanged (with the exception of changes made to correct an improper operation) until a new capital expenditure can be made to replace it. In other words, most machines rarely have more capability at the end of their useful lives than when the machines were new.

While it is harder to make upgrades to large machine assemblies, upgrading control systems can be quite easy and the cost of upgrading can generally be expensed.

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## The Right Features

**C**ould your company benefit from improved bubble stability, higher production rates and easy to operate equipment? Those are the benefits most commonly reported by our customers.

If your organization does not have experience with internal bubble cooling (IBC), we can help you get the necessary equipment and teach you how to use it. We also do all sizing of the air-flow components (blowers, ducting, and

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At D.R. Joseph Inc., we provide our customers with our very best system at the point in time when we sell our equipment. Since our commitment is to continually improve the product we provide, the passing of time means we accumulate additional knowledge about internal bubble cooling systems. This knowledge is then used to improve the software and the hardware components that make up the IBC system. Many times it means a new capability can be added to the machine. After we have developed the new feature, we then create an upgrade path for existing equipment.

Why should you bother with an upgrade as compared to running with what you have for 10 or 20 years and then replacing it? Because your competitors who purchase their machines after you have better machines than you do - machines that are more efficient, easier to use, and cost less to run. This places your competitor ahead of you in the market place.

No one has an endless budget to continually replace outdated equipment, but if you select equipment suppliers who incorporate an upgrade path into their design, you cannot afford to miss out on the incremental improvements that are provided. ♦

*(The Right Features - cont. from page 1)*

flow control valves), which are critical to successful IBC operation.

Typically, film lines with IBC can expect a 20-40% increase in production rate over lines without IBC. A six inch die is about the smallest effective size that can be supplied with IBC. Production rate increases are generally lower with a six inch die, but still range 10-20% over non-IBC. IBC systems are available for dies as large as 90 inches in diameter.

To make using the IBC even easier, we can supply a fully automatic system to

manage the blowers, sizing cage position and final layflat. We can even handle gusseted film accurately. Our customers who have used other IBC systems report that the bubble is much more stable with a D.R. Joseph IBC - even for their difficult products. This stability helps them reduce or eliminate wrinkles that are caused by bubble movement. They also tell us how pleasantly surprised they are with our service, both over the phone and at their facilities.

We do not want our long time customers to miss out on a good thing either. We make all of our improvements upgradeable to protect your capital investment.

With many options to choose from, it can be hard to decide what is needed and what features can be justified from an economic standpoint. We put together a simple guide to help you decide what features would be helpful in meeting your organization's objectives. ♦

Your Objective	DRJ IBC	Blower Balance	Color Touch Screen	Layflat Control	Cage Control	Bubble Break Detector
Eliminate Blocking Improve Production Rates Reduce Seasonal Rate Swings Improve Bubble Stability Increase Profit Margins						
Reduce Startup Manpower Requirements						
Reduce Operator Proficiency Time						
Maintain Tight Layflat Specifications and Accurately Control Size of Gusseted Products						
Easily Manage Short Order Runs and Reduce Start Up Scrap						
Improve Processing of Reclaimed Materials						

## IBC Sensor Position

If you have ever called our office for technical support, one of us has probably asked you, “Where is the sensor in relation to the frost line?” This is not because we are reading from a script and going down a troubleshooting tree. It is because the sensor position is the single most important factor that determines how well the IBC system controls. This article will tell you why it matters and how to tell where to put the sensor.

### Why Does Sensor Position Matter?

Shouldn't the IBC system control no matter where I put the sensor? First of all, it is important to realize that the sensor only sees about a one inch spot on the bubble. If you are standing in front of a bubble, adjusting blower speeds and air flow manually, you have the advantage of seeing the entire bubble. If the bubble is breathing, snaking, or hula-hooping, you can see that. Now, pretend that you can only see what an IBC sensor sees. Picture a wall in front of the bubble, with a 1 inch tall slice cut out through which you can look. That is what the IBC sensor sees.

Secondly, remember that any size changes on a bubble happen at or just below the frost line. Now, if you have a vertical adjustment on your 1 inch window, where would you put it? Probably close to where the size is changing, right? To understand it better, let's talk about what happens if the sensor position is wrong.

### Sensor Too High

First, consider the extreme case where the sensor is two feet above the frost line. This may run fine for a while, but as soon as there is any disturbance in the bubble, the bubble will start to breathe. (“Breathing” is defined here

as a periodic variation in the layflat.) The two feet of separation causes a delay between the point where the sensor sees the bubble and the control point where the size changes. If the bubble size decreases, there is a slight delay before the sensor sees it. Then, when the IBC responds and corrects the problem, it inflates the bubble too long because of the delay. Then it goes back the other way. This is analogous to a temperature control loop with the thermocouple in the wrong place.

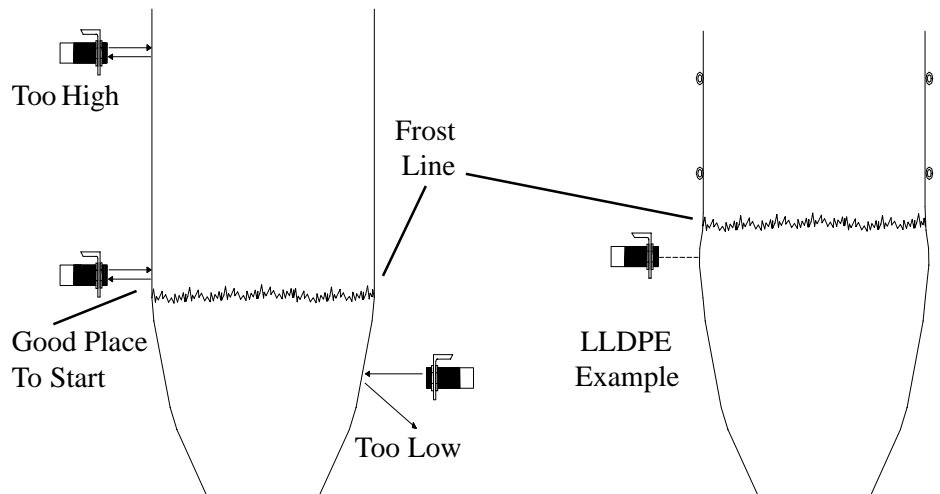
### Rear View Mirror Driving

Another very good analogy is to picture driving your car by only looking in the rear view mirror: you'll do fine on a straight road, but when you get to the first curve, you won't know it until you see that you've run off the road or crossed the center line. (Don't try this at home; just imagine it.)

deflected downward. This is when you will see the ‘ECHO’ light flickering or going off. Also, if the sensor is too low, the bubble may be too tight in the cage, because it continues to grow after it passes the sensor.

### Proper Sensor Placement

Where do you put the sensor? As a starting point, put the sensor just at, or slightly above the frost line. What if you have multiple frost lines? On multiple frost line bubbles, start at the one where the bubble changes to its final size. Then move the sensor where you get the best control, or minimal layflat variation. If the bubble is breathing, move the sensor down some. If the echo light is flickering too much, move it up. There is no magical spot that is the same on every line. The proper position will depend on line speed, material type, thickness, etc. In some



### Sensor Too Low

If the sensor is too low, breathing may occur, but it is more likely that the sensor will not be able to see the bubble as well. The IBC sensor is an ultrasonic sensor that sends out a pulse, then waits for the ‘echo’ to bounce off the bubble and come back. If the sensor is too far below the frost line, it may be down around the curved portion of the bubble. In this case, the echo can not bounce straight back to the sensor; it will be

cases, you may even end up with the sensor below the frost line. For example, with high percentages of LLDPE and thick films, you will probably end up with the sensor slightly below the visible frost line. (See drawing.)

In conclusion, if the IBC is not controlling as well as you think it should, check the sensor height in relation to the frost

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line. Put the sensor where it controls the best. Likewise, as your frost line creeps up during the day, you may have to adjust your cage to get the sensor up to the frost line, or adjust the cooling rate to get the frost line down to the sensor. ♦

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## The Last Word

**T**he best bottom line belongs to those who can best see and manage change. Why? Change creates profit opportunities. The change can be in the level of consumption or the ability to produce a new product. Regardless of what the change is, those who see it first and act on it have the greatest potential to profit from it. Of course, the change seers have to endure a fair level of development cost to adapt their organization, but they are rewarded with a longer and higher level of profit than those who jump on the bandwagon later. The latecomers take advantage of what the change seers have developed, but competitive price pressures reduce both the profit level and the time span for profit opportunity. Finally, the cycle has to repeat, with the change seers moving on to the next innovation and the latecomers waiting until they are confident a payoff will exist.

This story is nothing new - particularly in the blown film industry, which has experienced a large amount of change in the past five years. New resins, multiple layer dies, and uncounted combinations of materials allow film producers to make virtually any property exist in a plastic film. The film producers who embrace the new resins and invest in the development costs create profit opportunities. In like fashion, machine manufacturers create profit opportunities by recognizing the shortfalls of ex-

isting equipment, which result in innovations of new equipment and methods.

At D.R. Joseph Inc., we know our livelihood depends on the success of our customers, so we want to be change seers and not latecomers. To do that, we focus one hundred percent on replacing the mysteries of producing blown film with easy to use systems.

If you compare our original IBC system from 10 years ago with our full featured system, the original would be considered very basic. The original system (still available today) provides tight layflat control and high production rates. However, it takes some time for operators to become proficient with it. Today, our latest system includes features that continue to make it the best in terms of production and layflat control, but it is also a comprehensive system, easy to use on the widest range of materials.

With IBC technology constantly improving, it is understandable to take a "wait and see" approach before deciding to purchase a new IBC system. However, the "wait and see" approach is like waiting for the price of computers to drop. If you really need a new computer, every day you wait, you are losing more money than you could possibly save. Come see us at our booth at the NPE or give us a call. We would really like to help you become a change seer. ♦

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## Save Three Percent!

**D**.R. Joseph Inc. accepts payment by credit cards. We accept American Express, MasterCard, and Visa. When you pay by credit card for spare parts and services, you will receive a 3% discount. (Discount does not apply on full system orders.) This is a great way to order those emergency spare part orders quickly without the hassle of issuing a purchase order. Don't delay – get the parts you need today. ♦




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## Contact Us Any Time

**A**t D.R. Joseph Inc., we have a keen interest in making sure everyone that calls us is able to reach the proper person to handle his or her needs. Because our customers are based all over the world, it can be frustrating when they want to reach us during their business hours. To address this issue, we have recently added the ability for each of our employees to receive email from our customers. To send an email, enter the address [drjoseph@sprintmail.com](mailto:drjoseph@sprintmail.com). In the subject field add the first name of the person you want to contact. If you do not know the first name, enter a subject code from the list below. Feel free to give it a try! Don't worry, we will still answer the phone! ♦

Name	Subject Code(s) Use only one
Daniel Joseph	Dan, President
Trevor Grossklaus	Trevor, Marketing, Sales
Perry Champagne	Perry, Production, Service
William Jackson	William, Engineering
Ely Leos	Ely, Shipping, Receiving, Ventas, Servicios
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