

Blown Film Internals®

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

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NPE 2003

We are proud to announce that we will be exhibiting at our 4th consecutive National Plastics Exposition (NPE) in Chicago, IL June 23rd-27th. We cordially invite all of our customers, future customers, or anyone interested in Internal Bubble Cooling control systems to come by our booth. We will be located in McCormick Hall North, booth number 6022.

This year we have an exciting, newly designed booth (pictured above). On display will be our latest IS-IBC1® Internal Bubble Cooling control system, complete

Join Us!



Booth # 6022

with a new microprocessor that is faster and more powerful than before. The new microprocessor will allow for better diagnostics and provide additional capacity for adding features for the future. In addition, we will be featuring the new Seal-Cut system (see article page 2). We have many new upgrades (see pages 3-4) and as always, we will have an array of solutions designed specifically for blown film producers.

To better serve you, we will have a host of local representatives available at our booth with whom you can meet and discuss specific projects. Here is a list of some of our guests: Ulrich (Uli) Buettel, author of the book Blown Film Extrusion - A Science in Itself, Gerrit A.B. of Hobi International (Seal-Cut sales support), Christophe Vanpe of VCA bvba (technical and sales support for Benelux countries), Isao Kato of I. Kato & Associates and Mr. T. Hayashi (sales and technical support for the Pacific Rim and China), Brad Natzke and David Acklin of IAS (technical support for Midwest United States), and Paul Waller, P. Eng., of the Plastics Touchpoint Group

(technical and sales support for Canada). Most of our guests will not be attending the entire show, therefore please contact Trevor Grossklaus to set up an appointment (trevorg@drjosephinc.com).

Please make it a part of your plan to stop by our booth so we can provide you with solutions in getting higher production rates, better layflat control, and better overall performance out of your blown film line by incorporating DRJ products to your arsenal. We look forward to seeing you there! ♦

Table of Contents

New Local Support.....	2
Seal Cut	2
Upgrade Corner	3
New Processor	3
Last Call for Sensors	4
New IBC Viewer	4
Tech Tip: Turbulence	5
Last Word	6
15th Anniversary	6

New Local Support

DRJ continues our commitment to providing local sales and service to our customers around the world. We know that having competent sales and service support available from a local company improves response time to our customers. This year we are happy to announce two more companies that are certified to provide support for the IS-IBC1 non-contact IBC control system. Representatives from both companies have attended our three-day focused training program that ensures they are competent in dealing with each aspect of the system and associated options. In addition, DRJ provides backup support to each of these companies.

The first company is Industrial Automated Systems (IAS) out of Davenport, Iowa. IAS will be handling service support for our customers in the

Midwest United States. Their central location minimizes travel time to plants located in Iowa, Nebraska, Kansas, Missouri, Illinois, Indiana, Minnesota, Wisconsin, Michigan, North Dakota and South Dakota. IAS also provides a wide variety of system integration services that are key to bringing shop floor systems and information together under a comprehensive system. IAS also manages some 200 contract electricians, so the next time you have a large expansion, upgrade, or relocation project feel free to give them a call.

The second company is Plastics Touchpoint Group out of Ontario, Canada. Paul Waller, P. Eng., heads the company, which provides a wide range of blown film extrusion training programs in addition to the new service of providing technical and sales support for DRJ. Their expertise is in solving process problems and developing programs to improve production and quality

specifically for blown film extrusion facilities. Both of these capabilities work hand-in-hand with supporting IBC control systems. The main geographical areas of support will be the provinces of Ontario and Quebec, but they are able to attend to customers throughout Canada.



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The New Seal Cut

D. R. Joseph, Inc. would like to introduce the new high-speed SEAL-CUT sealing system for plastic film that offers an original, innovative solution for machine direction sealing. The seal cut is capable of producing high quality sealed edges in a wide variety of film applications. Designed with a very simple concept, the unit provides consistency, which is extremely important for inline extrusion, while keeping the cost low.

The seal-cut is the fastest in its class; running line speeds up to 250m/min (820ft/min) while the maximum line speed of its competitors is 140m/min (459ft/min). The stand-alone design allows it to be free standing or easily attached to existing converting equipment, blown film extruders, bag-making machines, and rewinders. It can easily be bypassed while not in use.

The Seal-Cut allows you to produce various size poly bags into master or jumbo rolls. This gives you more flexibility on your bigger blown film lines by allowing you to run large rolls and converting them to various size poly



bags using the Seal-Cut. This saves time, production costs, and reduces scrap because you no longer have to produce all your small tubing orders off smaller individual blown film lines.

The Seal-Cut has some major advantages over its competitors. It is capable of running much higher line speeds and it has a much lower sealing temperature than other models. The seal-cut sealing temperature is approximately 30°C (86°F) above the mass melt temperature of the extruder. That means the seal-cut has sealing temperatures in the range of 210-250°C (410-482°F). The competitors are sealing in a range of 375-450°C (707-842°F). The end result is that the seal-cut has no material build up along the seal. Due to the low sealing

temperatures, the flexibility of the film next to the seal remains constant, which allows for better seal strength. This also keeps the roll edges from curling when producing jumbo rolls or from creating spiders as the film is slit. The seal-cut also maintains better seal strength because it preheats first, seals the film next, and cuts last. The two film layers are sealed upon each other causing an extremely tight and strong seal. The competition cuts the film by heat first and then seals the two layers edgewise. This method weakens the strength of the seal. The Seal-Cut will be on display at our booth 6022. Please stop by our booth for more information and film samples. We look forward to seeing you at the show. ♦

Upgrade Corner

The following is a list of all the upgrades that are now available:



Cage Not Small Enough?

Occasionally, we have a customer that simply must run their IBC line at a blow up ratio that is smaller than the smallest cage size. The current cage contact control allows some degree of undersize operation, but it is limited to a minimum layflat of nine inches less than the smallest cage size.

Our new “Undersize Cage Mode” option allows the customer to run up to 36 inches less layflat than the cage normally allows. This means that when customers have an extra small bubble to run, they can do it without removing the IBC system. Because the bubble is unsupported, production rates do drop some, but are still much better than running without the IBC system. The option is integrated into the auto cage control system so operators are still able to maintain the “set it and forget it” operation. This option is field upgradeable. ♦

Six-Inch Touch Screen Now in Five Languages

Any customer with the need for more than one language on the IS-IBC1 color touch screen will be happy to know that a five-language option is now available. The five languages include English, Spanish, German, French and Italian. The operator can change the language at any time from a simple intuitive screen that shows the five flags representing each language. This option is field upgradeable. ♦

Previous Upgrades:

1. **PA340 Proportional Valve** – 30% faster than the 2nd Generation BBH series, provides easier startups, and is less expensive than the BBH series valves.
2. **EZ-Viewer** – If your IS-IBC1 system does not have a touch screen, this upgrade will help you access system information without a laptop computer. Modeled after familiar variable speed drive interfaces, this feature allows customers to quickly diagnose problems, do calibration and make setup changes.
3. **Handheld** - updated to support the new EZ Viewer features, sensor monitoring and error reset. If you already have a handheld, contact us about the handheld update kit.
4. **Big bubbles** – Cage and Layflat control systems now support maximum layflat of 520 inches (13.2 meters)!
5. **Cage Controller systems** get a backlash control to compensate for cage drive train slack.
6. **Color Touch Screen – 6 inch** (160mm): New TFT technology provides the widest viewing angle possible with a brighter screen, double the memory and faster screen refresh time.
7. **New Digital Ultrasonic Sensors** - More power, easy to install and compatible with all systems. Ask for the PP4 upgrade package.
8. **Cage Control** – Adds the ability for the system to automatically position the cage diameter to the correct size to produce the desired layflat.
9. **Layflat Control** – Adds a second control loop to the IBC system that reduces the time to achieve a desired layflat, with or without gusseting.
10. **Automatic Blower Balance** - Eliminates need for operators to balance or null blowers prior to every startup of the line. The system also automatically rebalances the blowers if needed.



Operators select any one of five languages by touching the appropriate flag.



Extrusion de Film Soplado

It is not really an upgrade, but Ulrich Bueettel’s book on blown film extrusion is now available in Spanish with all the same great explanations of blown film process and troubleshooting techniques. Both the English and Spanish versions will be available for a special price during NPE only to those who visit our booth. If we run out of books, we will provide the special show price to all those who were not able to receive a book at the show. ♦

New Processor

After more than a year and a half of hardware and software development, the second generation IS-IBC1 controller is finally here. The first units start shipping in July and will provide our customers even more control capability and flexibility at their fingertips. A new Ethernet port allows the IS-IBC1 to communicate over the plant intra-net allowing unprecedented access to process data from an IBC system. A total of four other ports allow greater flexibility in shop floor integration options.

A completely new digital communication system has been developed that allows the management of every aspect of each IBC, layflat or neck height sensor. In fact, the new interface (completely unseen from the operator’s perspective) supports a fully automatic error detection and reset function. This means the system will detect, log and reset each of six different

(Continued on page 4)

(New Processor - from page 3)

sensor faults without intervention. Since the new interface supports new features that were not supported previously, the system will automatically detect the older digital sensors and upgrade each one as it is installed into a second-generation system. Also, the overall fault detection system has been completely redesigned to provide precise information that allows the technician to find the root cause of the problem faster than before.

All the familiar interfaces (standard controls, EZ-Viewer, and color touch screen) are still the same although some of the screens have been changed to support the new sensor interface. From the outside it will be impossible for the operators to know which system they are running. This will create a seamless transition for operators who are familiar with the first generation IS-IBC1 system.

There will be an upgrade path for those who want to take advantage of the new features. We will even be offering a limited time trade-in program that will reduce the cost of the upgrade. Come see the new system at our booth at NPE 2003. ♦

Last Call!

To all our customers who are still using the old style sensors...this is your last call. The old style sensor assemblies are no longer available, but we still have enough stock to make 15 more units. This is the best time to consider upgrading to the PP4 ultrasonic sensor technology. If you are still wanting to maintain your current system as it is, order a spare MS1-4000 sensor set today. Once the stock is depleted, there will not be any left. ♦



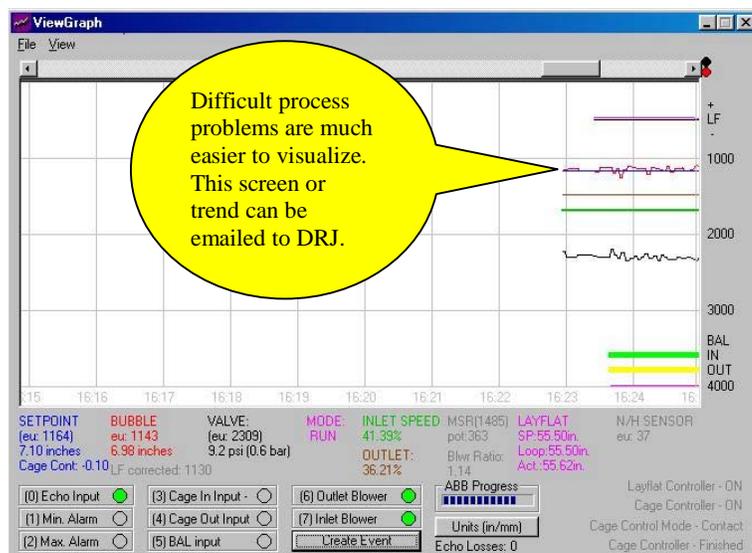
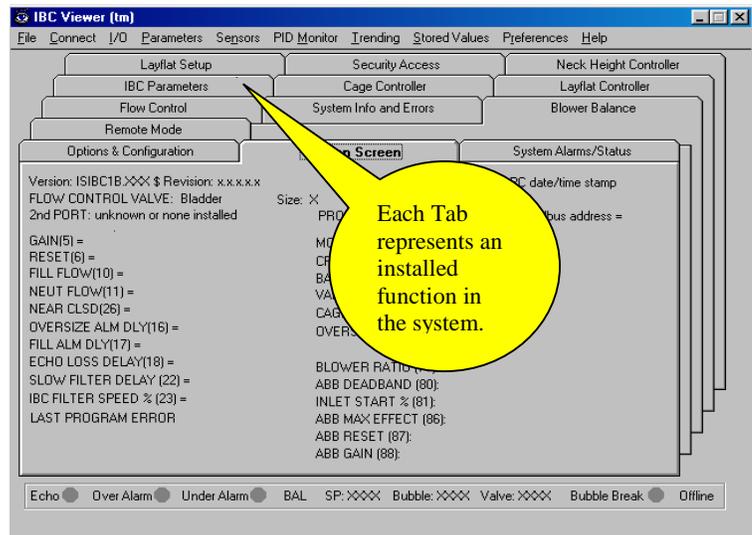
New Diagnostics Software

Diagnostics troubleshooting of the IS-IBC1 system has just gotten easier with the introduction of IBC Viewer. This software replaces our old diagnostics software - Diagnostics 2. The new program incorporates all the possible troubleshooting tools into one easy-to-use version that runs under Windows 98SE, WINDOWS NT 4.0 and Windows XP Pro. When connecting the program to an IBC system, the software automatically configures to show only the features that are installed on the system.

IBC Viewer also supports our ISU Handheld programming device by uploading and downloading data from the unit into a recipe database. The database

allows an unlimited number of system setups to be stored as recipes for later verification (using the verify feature) or reloading a new controller.

Our new digital sensors are now fully accessible through IBC Viewer. This means that each sensor on the system can be monitored for signal, temperature, and possible faults. Also, an enhanced trending system has been provided that allows long term trending, logging to a file, screen and trend captures. Each of these features makes recording and communicating the difficult problems much easier. We will be able to demonstrate the software at the NPE show and all customers that have Diagnostics 2 software will be able to upgrade at a reduced price. ♦



TECH TIP

When Turbulence Meets Low Melt Strength

Reducing layflat variation while improving production rate is a difficult task no matter how you look at it. Each production rate increase adds heat to the process that must be removed with additional cooling. As the speed of the cooling airflow streams are increased (assuming the cooling temperature is at the lowest feasible level) more stress is placed on the molten melt. To make matters worse, the added production rate also increases melt temperature, which further reduces melt strength. The bubble surface begins to shake and eventually the dreaded bubble breathe begins.

Blown film operators know this condition as the edge of bubble stability. They also know that running in this state for very long will result in large pile of scrap. Good operators find this edge and then slow things down slightly to achieve the maximum consistent production rate.

Need to Go Faster?

What can you do when the edge of processing stability is lower than the rate you need in order to meet production targets? While having a high performance IBC control system certainly helps keep things under control, there is only so much a control system can do when turbulence meets low melt strength. Turbulence induced bubble instability causes very high speed variation that is much faster than what the high speed IS-IBC1® system can influence. Assuming it is impractical to increase the melt strength, an effective approach to reducing this type of variation is to reduce turbulence while maintaining the required volume of cooling air.

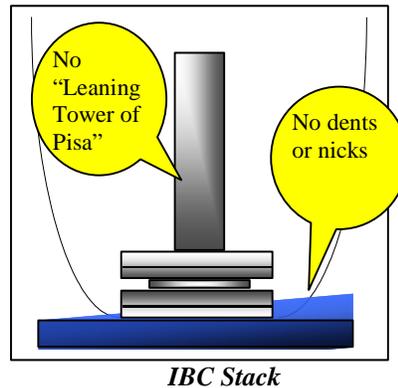
Start with Component Integrity

The first step in this process is to take care of the obvious. Make sure the

integrity of all hoses, pipes, plenums, and most importantly, the IBC stack is

intact. The IBC stack components are often nicked or dented during the cleaning process. In some cases, these nicks or dents can cause turbulence problems that result in uneven airflow and poor gauge quality.

It is important to repair any damage to the air exit paths on the IBC stack and on the air ring forming cone. Also, make sure the exhaust stack is standing straight up and not leaning.



An issue not related to IBC is the die-gap. Make sure the die gap matches the resin manufacturer's stated specifications for optimum performance.

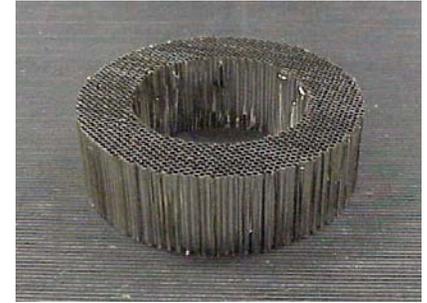
If these steps do not help improve the amount of cooling air that can be applied to the bubble, consider contacting your machine manufacturer regarding the design of the IBC stack with respect to the materials you are running. As material properties have changed, the stack designs have evolved to provide improved performance with low melt strength materials. If an improved unit is available, consider upgrading to achieve the best possible air flow to the bubble surface.

Flow Straighteners

When component integrity and the latest stack designs do not help reach the desired production objectives, consider installing flow straighteners into the IBC cooling air flow path. Using flow straighteners does a lot to reduce the turbulence effect of the air on the bubble surface. This benefit is particularly helpful when running high

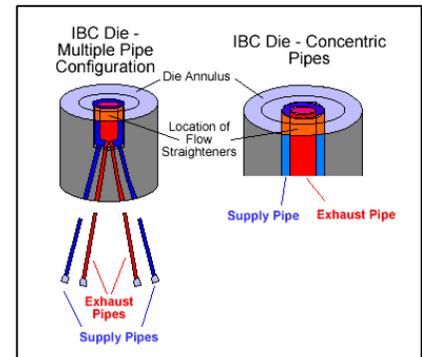
concentrations of metallocenes, other low melt strength linear low resins, or high concentrations of nylon.

As a service to our customers, DRJ can provide airflow straighteners that are custom made to match a particular die. The units are made of high temperature, aircraft quality honeycomb to resist the heat of the die.



Typical Flow Straightener

The flow straighteners are installed just below the IBC stack to make the airflow going into the bubble more smooth and to allow added air volume without inducing flutter and breathing. The straighteners can be installed in both multiple pipe and concentric pipe die configurations.



Location of Flow Straighteners

To create an added smoothing effect, multiple straighteners can be installed in the die.

If you need help deciding whether you can benefit from this technology, visit us at our NPE booth or give us a call. We will be happy to assist you. ♦

The Last Word

By Daniel Joseph

Don't ever give up" is my motto. Some call it the bulldog or terrier approach to problem solving; grab on and never let go until the problem has been completely taken care of. If you look carefully at our company's unique selling proposition, "When You Need Solutions... Not Just Answers[®]" you will notice the hint of my motto.



Back in 1994, I ran across this picture while visiting a customer in Germany. I have kept this picture in my office as a reminder of how difficult it can sometimes be to solve a problem for a customer. The upside of solving a difficult problem is that the solution is yours to keep. Each time that problem reoccurs the solution is at hand while your competitors are still wondering what to do.

Solving tough problems is what differentiates you from the rest of the market. It is the hard road but it provides additional value that can only come from the reputation you earn by taking care of your customer's toughest problems.

An important thing to remember is that finding the solution is not the end of the matter. If there is opportunity to apply

the new solution for other customers, take the extra step of systematizing the solution. A good system is a means to leverage the resources of the company in order to free up manpower for development of other solutions.

At D. R. Joseph, we work to build solutions into systems that can be used by any of our customers. While this philosophy has undoubtedly played a part in our celebrating 15 years of business to the blown film industry, an additional ingredient is necessary to handle the exceptions that customers can create. That ingredient is understanding.

Understanding is what allows you to quickly adapt your system to meet the specific needs of each customer. Having this ability expands the available market your system can successfully reach. The unfortunate part about obtaining understanding is that it does not come cheap, easy or fast. It comes with a lot of money, hard work and time.

Our hope is that your experience with DRJ always results in a solution and not just an answer. If it doesn't, feel free to give me a call (+1-972-641-7711) or drop me an email (danielj@drjosephinc.com). Let me know how we can do a better job of understanding your needs. ♦

15 Years of Excellence

D. R. Joseph, Inc. is celebrating 15 years of excellence in providing the blown film industry with the most innovative and technologically advanced internal bubble cooling control system on the market. The IS-IBC1[®] internal bubble cooling (IBC) control system has evolved over the past 15 years into the most comprehensive IBC system available, always staying one step ahead of the competition. It is now the industry standard for many blown film equipment manufacturers in North America, Europe, and the Pacific Rim. No other IBC system provides the quality, performance or available options that the IS-IBC1[®] offers.

Our high standard of excellence has been achieved by providing outstanding customer service and support and by supplying the highest quality product line. We value input from you, our customers, along the whole corporate chain, from top managers and maintenance personnel to the floor operators. We listen to your needs and concerns, and incorporate your ideas into our product mix. Your concerns are our number one priority. It is because of you that D. R. Joseph has been so successful over the past 15 years. We will always strive to provide solutions...not just answers to fit your blown film needs.

I would like to finish with a heartfelt thank you to all of you who allowed us to serve you. We would not have a door to open each day if it wasn't for you. ♦



Forms of Payment.

D. R. Joseph, Inc. also accepts payment by credit cards. We accept American Express, MasterCard, and Visa for spare parts orders. This is a great way to order those emergency spare parts orders quickly without the hassle of issuing a purchase order. Don't delay – get the parts you need today. ♦



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Email: admin@drjosephinc.com, Telephone (972) 641-7711 or (800) 767-4470, Fax (972) 641-8747 Website: www.drj1.com. D. R. Joseph, Inc. manufactures the internal bubble cooling and layflat control systems for blown film extruders. President: Daniel Joseph; Managing Editor: Tamara Handley