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TechnicallySPEAKING

Service News and Tips

October
2022

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Air Pressure, Quality, and Temperature

Tips for Maintaining Package Quality

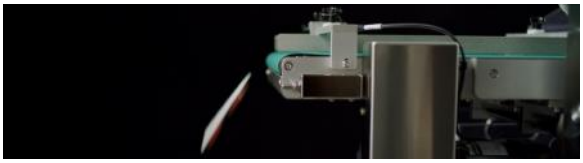
Air Pressure

Air pressure is vital in allowing your machine to run consistently. The machine must have the Main Air Regulator set for 5-10 PSI under plant pressure to ensure no fluctuation during machine operation.

The Forming Air Regulator should be set 5 to 10 psi under Main Air Regulator psi. Some customers install certified air pressure gauges for forming air and calibrate these annually. For standard machines, this gauge is for reference only.

Quality

Remember, whenever working to ensure quality production, the most important steps are those taken by your quality department when they pull samples from the line during production runs.



Routinely pulling product off the line for visual inspection will catch all sorts of issues, including:

Potential Forming Issues

- Blocked vent holes or debris in vent holes causing poor forming issues
- Damaged, marred, or scratched forming tool causing forming issues

Potential Sealing Issues

- Splice tape or debris melted to upper tool
- Damage to the upper or lower seal tools

Potential Print Issues

- Print that is off or damaged
- Condensation smearing the ink

Good quality teams that know their role go a long way toward ensuring that your product is always reliable.

A Common Calibration Scenario

Most customers perform some type of annual calibration or certification on their preheat and seal temperatures to adjust for offsets. I am not a calibration/metrology guy, but I have seen and assisted in many different methods of calibrating temperatures, and they all come with their drawbacks or limitations. If you understand the testing, you should be able to avoid the pitfalls.

One of the most common situations involves a machine that has been onsite for several years, gets calibrated annually, and then one day, out of the blue, there is a problem. Sure enough, the calibration folks were there on Monday and now the machine has forming or sealing issues. No amount of persuasion will lead the calibration team to admitting that their procedure is wrong. You can prove something must be off since the material was forming correctly prior to the calibration. And if you change back to last year's temperatures, it forms and seal just fine. Now what do you do?

This has been a tough one for many customers over the years, and can be made even tougher when a 3rd party company is doing the testing.

A great way to resolve this is with some basic teamwork. Teamwork and communication between machine production, calibration/ metrology, and engineering teams is key. If testing looks like it will change the offset by more than a few degrees, then having a discussion with everyone, understanding the likely results, and perhaps sharing additional data or retesting may lead to a better resolution and prevent production down time.

See the next page for tips on calibrating temperature offsets for RTDs

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"Teamwork between production, calibration, and engineering is the key to better results."

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Understanding Temperature Readouts

Tips for Maintaining Package Quality: Temperature Probes

Temperature Probes, RTDs, and Offsets

Your Pharmaworks machine uses RTDs threaded into the upper and lower preheat plates and upper seal plate to measure heating temperatures. These take an internal temperature reading at the source and display the result on the HMI touchscreen. Since temperatures inside the heating plate can differ from surface temperatures, a temperature offset is available on the HMI to ensure that the material is heated properly. And to be able to set that offset, you have to measure the temperature of the heating surface to find the difference between the internal RTD temperature and external surface temperature.

Taking the surface temperature of your preheat plate and seal tool can be challenging. Here at Pharmaworks we commonly use Surface Probes due to their ease-of-use and immediate feedback. But several types of temperature measuring devices are available for measuring surface temperatures.

We have provided some comparisons between different probe types and calibration tests that are commonly used when measuring heated surfaces. The following pages list some of our conclusions about various device types and methods.

Surface Probes

More than half of our customers use a calibrated multimeter with a surface probe to measure surface temperatures. And for good reason...

PROS

- You know the temperature at the work surface.
- The temperature on display matches the surface temperature, allowing more accuracy when discussing temperatures with material manufacturers.
- It is fairly inexpensive to purchase and calibrate.
- It is easily operated by most individuals.
- Consistent practices over the years result in consistent operations and temperatures.

CONS

- Use of different tooling during calibration with different metals, knurl, or other features may cause temperature readings to be incorrect, leading to an improper offset.
- The pressure applied to the tool during use can alter the temperature displayed.
- Surface probes can have the element bent, worn, or damaged, causing a reading variance.

"By having a properly calibrated temperature device, your RTD offsets will be spot on."

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Understanding Temperature Readouts

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Rod Style Probe (air)

A fairly simple method used by some of our customers is to have probe holes drilled into the seal tools and preheat plates. Then a probe, often with a small amount of thermal paste applied, is inserted into the hole and a reading is taken.

PROS

- Probe utilized in the same location, same depth, year after year, is a practice easily repeatable allowing for consistent observations over time.
- Readings will more closely match surface temperature than some other methods.
- Fairly inexpensive to purchase and calibrate.
- Consistent practices over the years result in overall consistent operations and temperatures.

CONS

- The temperature recorded is neither at the work surface or the RTD.
- Differences in metal composition of seal tooling may lead to variation in offsets.
- Planning must be coordinated with other OEM's to create the probe holes and design to ensure the placement in relationship to the cartridges and RTD.
- Limited opportunities as to where on the plates the measurements can be taken.
- Confusion can occur between immersion style probes and air probes, leading to temperature inconsistencies.

Oil (fluid) Bath W/Rod Style Probe (immersion)

The RTD is removed and placed into an oil bath with a calibrated immersion probe. The offsets are then set based on the difference between the HMI and the RTD reading.

PROS

- Immersion probes and oil baths are very accurate methods of setting the RTD offsets.
- It is possible to eliminate many other variations that can occur with other methods, such as pressure applied, air gaps, or differences in tooling metals.
- Consistent practices over the years result in overall consistent operations and temperatures.

CONS

- Requires trained metrology department team following careful practices.
- Requires removal of the RTD. Failure to reinstall correctly or use the correct thermal paste on installation can lead to air gaps, damaged RTD's, or incorrect readings.
- Temperature offset is for temperature seen at RTD, not at the surface.

"By having a properly calibrated temperature device, your RTD offsets will be spot on."

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Understanding Temperature Readouts

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Calibrated Thermal Imaging

Calibrated thermal imaging is used to map the seal and preheat temperatures. This is then used to create the offsets.

PROS

- The equipment is easy to use.
- This method allows the temperature on the display to match the surface allowing more accuracy when discussing temperatures with material manufacturers.
- It is possible to eliminate many other variations that can occur with other methods, such as pressure applied, air gaps, or differences in tooling metals.
- Consistent practices over the years result in overall consistent operations and temperatures.

CONS

- This method is new and not all risks may have been identified.
- The equipment is expensive with a limited number of calibration locations.
- Variations may occur depending on how well the mapping process is done.

Regardless of which method best suits your needs, understanding device calibration, differences between surface and RTD temperatures, and setting temperature offsets goes a long way toward ensuring that your machine will consistently perform above and beyond year after year.

"By having a properly calibrated temperature device, your RTD offsets will be spot on."

Additional Resources

To understand why these three "calibrated temperature probes" might show three different temperatures, watch this video made by Omega Engineering, who I am certain you will recognize as one of the world's leaders in temperature probes and calibrations.

Click the thumbnail below or paste this link into your browser to see what Omega has to say about calibrating using a surface probe.

https://www.youtube.com/watch?v=FNSnMbsik-0

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Setting New BTR Positions

Tips for Setting New BTR Positions Using Existing Formats

So You Have a New Format...

How do we determine a brand-new set of BTRs when a new tooling set is installed on the machine? Obviously, if you have a recipe tested and stored with a matching index length, you would simply replicate those BTR numbers into your new recipe and test. We would expect the results to be a 100% pass since the index length is the same. So that would be our first shortcut.

The more difficult situation arises when we need to determine the BTRs of a new index length that doesn't match any of our currently stored and tested recipes. Let's examine a test case to see how these numbers can be determined with the least amount of labor hours.

Method 1: Use Existing BTR Positions

The format in Figure 1 has an index length of 37.9mm producing the known tested BTR results. The new index length is going to be 51.8mm, with no known BTR positions.

Using the information from Figure 1, we can determine the overall length from the farthest BTR position (in this case, the Base Upper Splice), and the 0 BTR position. To do this, multiply our index length by the farthest BTR position.

37.9mm X 94 = 3,562.6mm

Now we can divide this total by our new index length of 51.8mm

3,562.6mm / 51.8mm = 69 (rounded up to the nearest whole number)

We can see that this is within 1 position of the final BTR position shown in Figure 2.

This will most likely be within one or two positions of the correct BTR position for that station. Perform this calculation for each station position listed on the Blister Tracking Register screen and, after some testing and confirmation, you will find that this method is a great way to use pre-existing BTRs to get within one BTR position of your new index length.

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BLISTER TRACKING REGISTER

Function	Repeat Fault	Spread (+/-)	Timer	Position	Enable
Base Upper Splice	5	1		94	ENABLED
Base Lower Splice	0	1		94	ENABLED
Lid Upper Splice	5	1		79	ENABLED
Lid Lower Splice	0	1		63	ENABLED
Preheat Station		1	999	86	ENABLED
Forming Station				82	ENABLED
Pinhole Detector	0	0		77	DISABLED
Feeder				66	ENABLED
High Product Detect		0		50	ENABLED
Product Inspection	0			45	ENABLED
Seal Heat Timeout		0	999	35	ENABLED
Sealing Overload	5	0		36	ENABLED
Perforator				23	DISABLED
Indexer Open					ENABLED
Die Cutter				9	ENABLED
Partial Reject Kicker				5	
Empty Reject Kicker				3	
Blister at OutFeed Sensor				1	

Figure 1: Index Length 37.9mm

BLISTER TRACKING REGISTER

Function	Repeat Fault	Spread (+/-)	Timer	Position	Enable
Base Upper Splice	5	1		70	ENABLED
Base Lower Splice	0	1		70	ENABLED
Lid Upper Splice	5	1		60	ENABLED
Lid Lower Splice	0	0		49	ENABLED
Preheat Station		0	999	64	ENABLED
Forming Station				61	ENABLED
Pinhole Detector	0	0		57	DISABLED
Feeder				48	ENABLED
High Product Detect		0		37	ENABLED
Product Inspection	0			34	ENABLED
Seal Heat Timeout		0	999	27	ENABLED
Sealing Overload	5	0		28	ENABLED
Perforator				18	DISABLED
Indexer Open					ENABLED
Die Cutter				8	ENABLED
Partial Reject Kicker				4	
Empty Reject Kicker				2	
Blister at OutFeed Sensor				0	

Figure 2: Index Length 51.8mm

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Setting New BTR Positions

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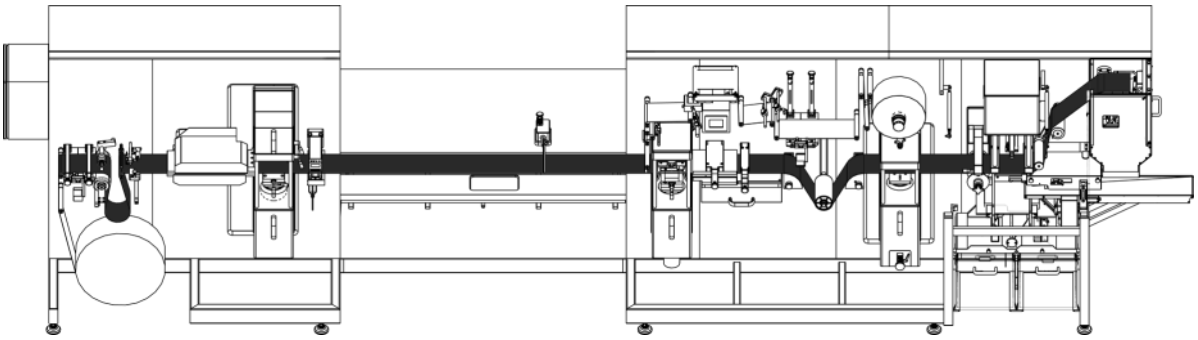
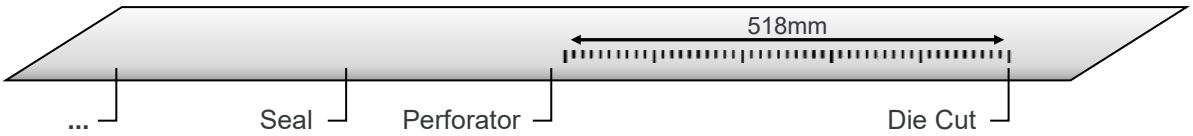
Method 2: Thread, Mark, and Measure

So what do you do when no formats exist? The following procedure will help you find the correct BTR Positions for a new format on a machine with no BTR Position values.

1. Thread the machine from base unwind to waste shredder.



2. Using a marker, mark the center of each station's position on the base material.
3. Remove the marked base material and lay it out on the floor.
4. Measure the distance from the Die Cut Station to each position marked on the base material.



5. Divide the distance by the index length. This will usually put you within one or two positions of the final BTR position:

   518mm / 51.8mm = Perforator is about 10 indexes away from Die Cut

6. Now, count the number of blister packs between the Die Cut and zero BTR position. We don't want to measure here, we just want to count the number of packages on the conveyor.
7. Add this number of packs to all station positions to get a final BTR Position starting point. Again, these will only be off by one or two positions in the end.

And there you have it, a way to estimate BTR positions when none exist. While the likelihood of having to figure out new BTR positions from scratch is very low, understanding the basic method used here will assist you in finding new positions when the need arises.

"This is a good starting point when you don't have any BTRs pre-loaded into the HMI."

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Lidding Materials – Pros and Cons

The Pros and Cons of Different Types of Lid Material

Many types of lidding materials are utilized on Pharmaworks machines that fulfill many different types of packaging needs. Anticipating and understanding the benefits and difficulties of each type of lidding material is important, and allows the packager to stay one step ahead of potential issues.

Paperback Foil Lidding

PROS

- The paper backing provides a superior surface for printing with many types of ink.
- Print inspection is typically easier on paperback lidding due to consistent printing.
- Paperback lidding is strong and easy to thread.
- Paperback lidding can stretch if needed for registration, however, paperback lidding holds length well during normal indexing.
- Typically provides a more consistent seal than a thinner foil material.

CONS

- Paper can absorb humidity in the air during shipping and handling then release this as steam during the sealing process. This steam becomes condensation that can lead to smearing of print and wet lidding.
- Improper UV light for print curing can yellow or brown paper.
- Topside of lid material will need a flat sealing tool.
- Sealing heat typically must be higher to penetrate both the foil and paper to activate the adhesive.

Standard Foil Lidding

PROS

- Can come with many types of coatings to allow for clear visible printing.
- Can be easily stretched for registration, however, holds length well during indexing.
- Heat easily passes through the lidding to activate the adhesive, allowing for lower sealing temperatures.
- Use of knurled tooling allows for easy visual inspection of the seal area for even pressure.

CONS

- Lidding is easily torn during machine threading.
- Requires ink to be correct for surface type as well as correct amount of UV power/time for ink to cure and not smear.
- Some foils are tempered, preventing them from being stretched for print registration.
- Foil lidding can have wrinkles or channeling more often than other thicker lidding.

“Each type of lidding material has its own unique pros and cons. ”

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Lidding Materials – Pros and Cons

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Tyvek Lidding

PROS

- Durable and flexible, allowing for easy machine threading.
- Stretches easily for print registration.
- Sealing is done at lower seal temperatures.
- With correct seal tooling, the seals are consistent with few issues.

CONS

- Tyvek stretches several millimeters with just 5lbs. of pull, making consistent tensioning of lidding very important.
- Tyvek can have an inconsistent fibrous and porous surface that can make print inspection difficult.
- Tyvek coating requires inks that are compatible.
- Sealing Tyvek requires specialized seal tools.

Polyester (Poly) Lidding

PROS

- Most specialty Polyester liddings have received extensive testing prior to arriving at your facility; temperatures, speeds, and other factors are often already known.
- Lidding is typically strong and easy to thread.
- Sealing is typically done at lower temperatures.

CONS

- Many of these types of lidding have issues with stretching which are likely to have registration issues unless carefully managed.
- Lidding typically has a smaller threshold (+/- range) for seal temperatures.
- May require special ink for printing on the material.

Understanding the lidding material that you are working with and anticipating some of the possible issues will help you to ensure successful production.

"Each type of lidding material has its own unique pros and cons."

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Service Assistance Call Checklist

When Do We Call the OEM for Assistance?

While our customers have a great deal of expertise when it comes to troubleshooting machine issues, the question of when to call the OEM and what information should be provided does arise.

Have you reached the point in your troubleshooting where the problem is still unknown, and the team has no more ideas to test? In most situations, this is a good time to call. Document your troubleshooting up to that point so key items aren't missed when discussing it later with the OEM. The service department does not have a crystal ball; however, our understanding of the machine and how each system works often leads to knowing which tests to run to locate the problem.

Since troubleshooting relies on good testing, please follow each step carefully. You should have a parts manual and machine schematic on hand so that we can go through it together, and if needed, be able to refer to specific drawings or page numbers. We can even share documents with you online to make sure we are discussing the correct part.

Be sure to have the correct machine model and serial number when calling so that we can locate the correct documentation. While we do note that customers may call their machine "line 2", or something similar, we do not want to rely too heavily on that since line numbers may change, leading to confusion or faulty troubleshooting.

Also, do not hesitate to mention all the facts surrounding the current machine malfunction. It is relevant that "it ran fine before the preventative maintenance was performed on Sunday", or "yes, we took the station apart and now we have an axis fault". We are here to help you get the machine back into production, not to point fingers.

Keep track of all your troubleshooting and save it somewhere that can be added to and shared internally. Intermittent problems are tough to solve. Tracking these issues when they arise and recording each step of the troubleshooting process will help lead to a solution every time.

Before You Call Checklist:

- ☐ Machine model and serial number
- ☐ Parts diagram
- ☐ Schematics
- ☐ Circumstances surrounding failure or issue
- ☐ Troubleshooting steps tried
- ☐ Are the right people on hand for the meeting?
- ☐ On follow-up, is all recommended testing done?

"When should we call Pharmaworks about this issue?"

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Upcoming Pharmaworks Events

PROMACH Pharma Solutions at Pack Expo International

Oct 23 – 26, 2022

McCormick Place
2301 S. King Drive
Chicago, Illinois 60616

Exhibit Hours:
October 23 – 25: 9:00 am - 5:00 pm
October 26: 9:00 am - 3:00 pm

CLICK HERE TO REGISTER
http://nvyt.es/42fc82b4c617944c786a

Multiple Booths,
Multiple Solutions & Lots of Tech

#W-17002 #W-14028 #W-5650

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Training

Increase the productivity of your staff with training from Pharmaworks! We offer a great formal training program with both classroom and on-the-floor instruction that allows operators, technicians, and engineers alike to gain a fuller understanding of both the thermoforming and cold-forming processes. Or, if you're already familiar with the machine, informal training is a great way to master advanced aspects of the packaging process.

Formal Training

Our training staff and technicians will not only teach you the basics, we also provide many tips to increase efficiency when setting up and running your machine. Your more advanced staff will gain an understanding of the underlying issues that cause lost production time and learn best practices for maintaining the machine avoiding unnecessary downtime.

Your technicians will learn to troubleshoot and isolate problems by increasing their understanding of electrical, mechanical, and controls functions, as well as learn common material behaviors and how to spot issues before they occur.

Informal Training

A better choice for customers who already understand the machine and have a good grasp of thermoforming and cold-forming may be our informal training. This is where we go directly to the floor and explain blister machine principles and nuances while running, testing, and creating faults to provide your on-site technicians and operators with advanced experience in operating the blister machine.

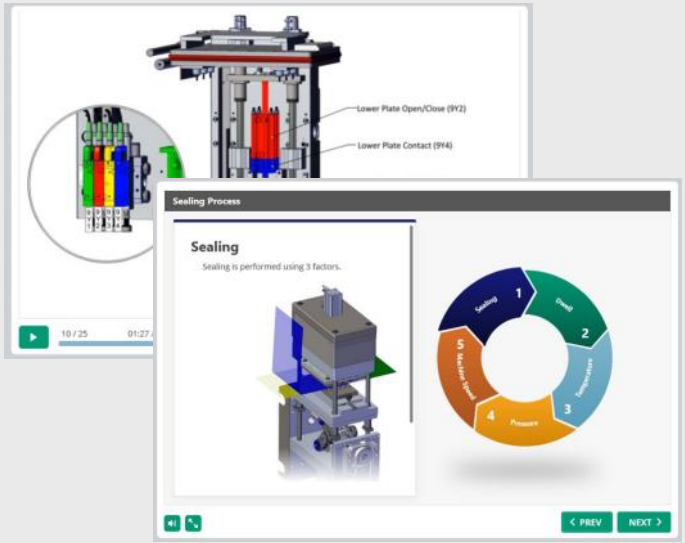
Schedule Your Training Today!

Training sessions can be done remotely or on-site at your facility.

Try Our **Online Training**

TF2 Blister Machine Online Training Available Now!

- Order multiple seats and track each trainee's progress individually
- Interactive animations, easy to follow step-by-step procedures with quizzes after each module
- The flexibility and convenience of logging in from a computer or mobile device
- 100% of the training created by Pharmaworks



Coming soon! Online training for the TF1e Blister Machine will be available in late 2022

Email us to learn more
training@pharmaworks.com

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Careers

Careers at Pharmaworks

Pharmaworks is a product brand of ProMach, a global leader and one of the fastest growing packaging machinery companies in North America.

ProMach offers exciting career opportunities worldwide. Within ProMach and its brands you will find a small-company environment where you can make a difference in the bottom line, while enjoying the benefits of a growing company competing globally. Total compensation includes your pay (base salary) and a comprehensive benefit program.

We hire and promote achievers who are passionate about their work and our customers' success. They demand more from themselves and their coworkers. They enjoy the challenge of reaching their full potential. If this describes you and you're interested in powering the future of packaging, ProMach might be the place for you!

All opportunities listed are located in sunny Odessa, FL 33556-3430, USA, Tampa Bay Area.

Visit us at:

https://www.pharmaworks.com/about/careers/

Current Opportunities

Service Technician
Job Category: Service
Requisition Number: SERVI005986
Schedule: Full Time

Mechanical Engineering Manager
Job Category: Engineering
Requisition Number: MECHA005944
Schedule: Full Time

Senior Mechanical Engineer
Job Category: Engineering
Requisition Number: SENIO005476
Schedule: Full Time

Sr. Controls Engineer
Job Category: Engineering
Requisition Number: SRCON005625
Schedule: Full Time

Controls Engineer
Job Category: Engineering
Requisition Number: CONTR006091
Schedule: Full Time

PHARMAWORKS

Service Department

Phone: 727-232-8200

6AM to 10PM EST | 7 Days a Week

Call us any time during our normal service hours and one of our professional service technicians will assist you.

Call us after hours for emergency support:

Phone: (727)232-8200

Select the after hours support option and leave us a message that includes your machine information, location, and contact information. You will receive a response within a short amount of time.

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Website: www.pharmaworks.com

By your side
when you need
us most!