How to Get the Most from Your Folding Machine Operators

6 Nuts and Bolts Steps to Boost Productivity and Profits

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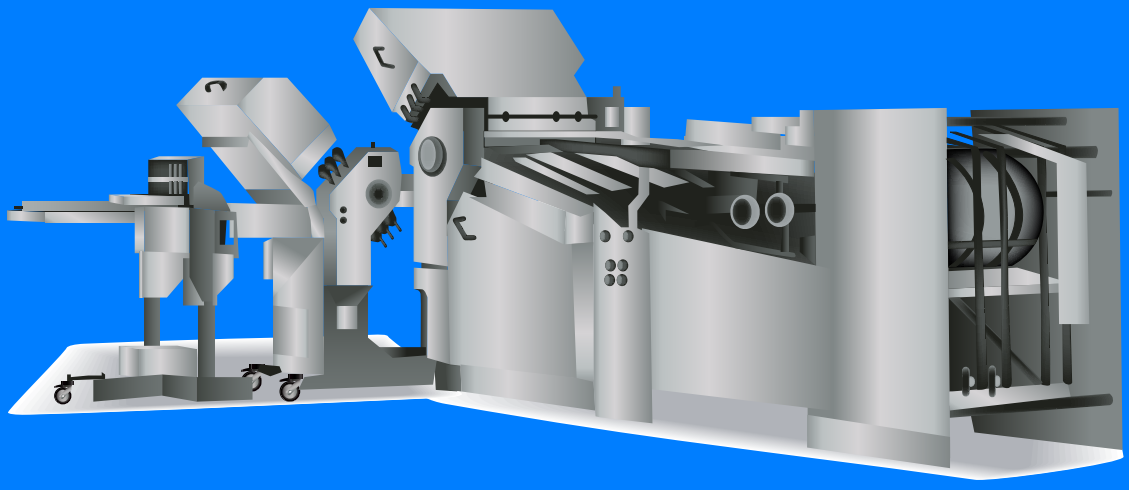

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How to Get the Most from Your Folding Machine Operators - Introduction

So your new folder operator has been to folder school and has a couple years of experience under their belt. The folder mechanic or colleagues at work have shown him or her a few tricks, but they're not even close to the production output promised by the folding machine salesman.

Or perhaps your operator has 20 years of experience but you have the nagging suspicion that you're not getting everything you should be getting from your folding machine, even though he is a hard worker.

Maybe ***you're*** the folder operator and you feel your boss is giving you impossible deadlines.

Whatever your scenario, you know its time to step it up to the next level of productivity on this important piece of bindery equipment. These days you can't afford to get less than maximum productivity from every single piece of equipment in your shop.

In providing solutions to make bindery equipment more productive for thousands of printing and bindery companies around the globe, we couldn't help but notice lots of excellent bindery practices. We also witness far too many sloppy, unproductive habits that rob everyone involved of any chance at success.

"The good operators... never stop trying to improve. Never."

One critical trait stands out in the good operators, as fast and productive as they might be, is they ***never*** stop trying to improve. Never. It's in this spirit of continuous education and improvement that we put this book together.

The point of our book is this--you can indeed get more from your folding machine at any level of experience whether you are the owner, supervisor or operator.

Here are 6 simple steps which when understood and put in to practice, are guaranteed to boost folding machine productivity significantly. These ideas are culled from decades of hands-on experience by the staff of Technifold, from our customers and from loyal Bindery Success™ readers.

They're easy to implement and cost nothing but a few minutes of your time, yet can have a significant impact on operations. If you find that you've already implemented these ideas or you find yourself disagreeing with them altogether, I believe the book will at least inspire you to search out your own new level of productivity.

Step 1 – The 80-20 Guide to Troubleshooting

This could arguably be the most important step to learn as an apprentice folder operator. The folding machine can be overwhelming to a new operator with its high-speed array of moving, complex parts. With the right mindset and systematic approach, it doesn't need to be scary at all.

For the more experienced operators, the 80-20 rule can help fine tune skills even further.

Also known as the Pareto Principle after Italian economist Vilfredo Pareto, the general idea is that 80% of the effects come from 20% of the causes. It's also referred to as the "vital few and the trivial many."

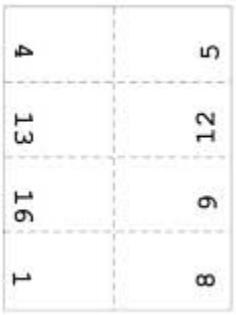
Some examples:

- **80% of your sales come from 20% of clients**
- **80% of staff problems come from 20% of the staff**
- **80% of production output comes from 20% of the staff**
- **20% of what you do each day generates 80% of your output**

Take a look at the activities in your work or personal life and you'll be surprised at how often this principle appears, even when we're talking about folding machines and bindery operations!

Many years ago as a bindery department manager, I unknowingly used this 'law of the vital few' to help me with folding machine and general print finishing production. **I noticed that whenever operators came to me with problems, the majority of problems (probably 80%) could be narrowed down to a few basic troubleshooting items.**

For instance, when running 16pp signatures on our MBO or Baum folders, I knew from experience that 80% of problems originated with 3 basic items: folding register, fold squareness, or perf inconsistency in the main parallel section (and these were probably about 20% of the possible causes.) Anyone who has ever run a large folding machine knows there are dozens, if not hundreds of variables that affect a job, and it's especially frustrating to an operator new to producing 16 page signatures.



While the folder operator might claim he had a register problem in the last 16pp section—because it looked that way at first glance—in most cases it was a problem in the first section. No matter what, I'd ***first*** have the operator check these 'vital few' items in the parallel section.

(Here are two blog posts with tips on running 16 page signatures. Click Links to access.)

What's the Best Technique for 16 Pagers?

3 Tips for Perforating 16 Page Signatures

In most cases, the problem was solved without me ever having to set foot near the folding machine. 80% of the time, the root cause could be traced to that 20% short list. The net effect was that instead of walking over to the folding machine five out of five times to help with a problem, I only had to walk over one out of five times (20%.)

A Basics Checklist (you'll find one at the end of this book) became a superb training aid for new operators as well as a huge productivity booster. As the operator learned to start with his "basics checklist," the number of requests for troubleshooting help declined. That made the operator more productive, and it freed up my time to make me more productive. Dealing with these vital few problems first was the key.

Step 2 – Less is More: Why Higher Bindery Equipment Speed Does NOT Always Equal More Productivity

You might think that a discussion about folding machine productivity could never be heated. Think again! In my early years with a commercial printing company, the subject of folder speed versus productivity was divisive, causing lengthy discussion and loud disagreement among folder operators and shop management.

Since man began putting ink on paper, one of the driving-force questions has always been ***"How can we do this faster?"*** Answers to that question have led to remarkable new technologies in printing and bindery equipment and there is always something faster and better on the horizon.

The big disagreement would arise however, over how to get the maximum productivity from the varied bindery equipment at hand. The "experienced" operators steadfastly insisted, to the point of becoming red-faced, that you simply had to crank up the speed control and run the machine as fast as it would possibly run. It didn't matter if you had to stop frequently for reloading or for clearing paper jams.

I argued that if you ran the machine at the maximum non-stop speed possible, the yield at the end of the shift would be greater than their crank-it-up-to-10 effort. If for example, you were to run the folder at 4000 sheets an hour without having to stop to reload, to catch up on the delivery, to make adjustments, then you would get more done than the guy who turned the machine up to 6000 sheets an hour but had to stop every few minutes to take care of something. They were confusing machine speed with productivity.

Kevin Carey of DieInfo.com writes about machine productivity in his ABC's of Diemaking & Diecutting, ***"almost anyone can run a press [or folding machine in our case] at its slowest speed, but far fewer can run the***

press at its maximum speed. Increasing speed exposes weaknesses in methods, in practices, in tools, in technology, in organization, and in knowledge, skill and experience."

Notice there are at least 8 variables mentioned that directly affect the speed at which any given operator can run a machine. In other words, running at a maximum speed will expose each and every flaw in operator, machine and work methods, to the point it will have a negative impact on productivity.

So Who Was Right?

The only way to resolve such disagreement is of course to see who produces the most per shift over a period of time. This particular printing company had an IT guy who could track how many breaths we took in a day, number of sheets folded, number of sheets wasted and most importantly, our average daily production for any given time frame. It was impressive, considering he did this back in the pre-personal computer days of punch cards.

The result: It was a hard lesson for the old-timers who believed they were running their machines 'faster.' Their average daily production was substantially lower, month after month. It didn't matter whether it was the brand new MBO folder or an antique Dexter**. Maximum non-stop speed was the better strategy for maximum yield.**

The challenge of course is that such an effort requires personal responsibility. It would be easy for a lazy operator to loaf along at what he claims is his maximum non-stop speed. Even the diligent, responsible operator could, as Carey says, *"find a comfort zone or a sweet spot and prematurely settle into that mode."*

So in our relentless pursuit for a faster speed which truly yields greater productivity, the question for you is two-fold: how fast are you, (you do know, don't you?) and what are you doing about becoming faster?

Step 3 – Garbage-In-Garbage-Out: Banish Feeding Issues on the Folding Machine

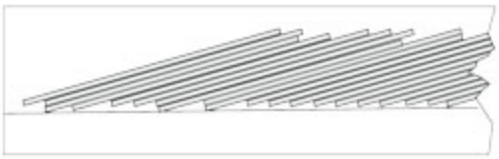
The idea of garbage-in-garbage-out seems self-evident but it's not necessarily so to the folder operator who carelessly loads his machine and then wonders why it isn't feeding smoothly.

If the folder isn't feeding consistently and without stops, it will be tough to get good register and fold quality. Here are some items that contribute to feeding problems.

Loading problems

This is simply operator error, typically found in inexperienced operators who can't consistently fan the sheets for a continuous feeder or jog them correctly for a pile feeder.

Side view of sheets fanned correctly



Side view of sheets fanned incorrectly

Pressroom issues

You may find that the sheets come from the press with hidden problems.

- **Sheets are poorly jogged**
- **Sheets stuck together due to water problems, coatings, varnishes or improper drying**

Paper problems

- **Sheets are not square.** This is not so bad if the entire job is printed with sheets oriented the same way. If they're turned or flipped then you have a 'register' problem that is difficult to fix. Sheets inconsistently skewed may register OK on the printing press, but a

buckle folder will be stopped frequently for 'fold' adjustments every time the paper changes.

- **Sheets are different sizes.** Best fix is to trim before printing, for the sake of both press and folding operations. If the pressman printed it without issues, in theory you can get good register...IF you can feed it without doubles!

- **Sheets are badly curled.** When you can't get it to run on the folder try flipping the sheet or remove the curl by hand.

Folder setup incorrectly

The key is to recognize such problems before time is wasted. Setup should always be systematic so that no important item is left out. Experienced operators have their own mental checklist they follow every time but the new operator may need to use an actual checklist.

For instance: an operator forgets to adjust the vacuum and the sheets are feeding inconsistently. He continues to set up a complex job and runs into various “register problems.” Valuable machine time is wasted trying to fix the wrong problems instead of the basic vacuum problem.

If feeding problems persist on a regular basis, then it’s time to isolate the cause and do what’s needed to correct it.

Step 4 – The Fold Rollers: Is Your Thinking Outdated?

Perhaps you wince at the thought of replacing fold rollers. *"What...spend thousands of dollars on recovering rollers?? Nah, just stick some tape on them and we'll be fine."*

You might 'get by' with a cheap solution like this but your bindery operation will never be competitive. If investing in folder productivity to this extent leaves you feeling squeamish, here are four tips that should help you get over it.

Change your mindset. Think of fold rollers as a consumable item. The fold rollers are the heart of the folding machine and most today are made from a combination of steel and urethane or rubber. They ***will*** wear out with use; there is no way around it.

Consider how well the machine runs with new rollers…

- **Make-ready is much faster with few adjustments needed**
- **Paper jams decrease and there is less waste**
- **Quality is better**
- **Run speeds are higher**

Roller wear is slow and it takes an insidious, almost unnoticeable toll on productivity. That partially accounts for the reluctance of many owners to replace them.

If you track production, worn rollers take the form of decreased production. If you don't track it directly, you'll notice that you're working harder with more overtime. For a high-volume folding operation, a loss of even 5-10% fewer sheets per month equals a big loss of time and money over the course of the year, probably far more than the cost of roller upkeep.

To check if rollers need replacement, insert a strip of light text stock at each end of the roller and set evenly for a light drag. Then insert 3 strips, one at each end and one in the middle. If the middle sheet has no grip, it's time for new rollers.

Follow manufacturers' directions for setting the rollers

- It only takes a few minutes to set with calipers
- It extends the life of the rollers
- It improves quality overall
- You can always 'cheat' if you need to add pressure but be sure to re-set when done

Ask five folding machine operators how to set the rollers and you'll probably get five opinions. The best starting point is with what the manufacturer suggests. Later, if experience dictates otherwise, you can change the setup procedure.

For instance, one popular notion is that the strips of paper have to be cut neatly to insert in the calipers. According to Alfred Furler's 1983 book ***Folding in Practice***, when adjusting fold roller tension on a Stahl "the adjustment strips must be inserted as folded and not as single strips". That's how Stahl designed their machines but other manufacturers' machines could differ. It pays to check since an improper setting will affect roller performance and life expectancy.

Perhaps you see operators skip the caliper setting procedure entirely and then struggle throughout a folding run, when a couple minutes inserting the right sheet in the calipers would have prevented the problem. I've even seen operators running their folders with no sheets in the calipers who then crank in excess pressure on the rollers. I never did see an upside to this and the downside of course is an increase in folding problems and premature roller and bushing wear.

Fold rollers need to remain clean to work properly

Dirt, ink, powder all conspire to rob fold rollers of their effectiveness. A small amount of glop in the wrong place can ruin a folder operator's day. When set correctly most fold rollers will stay remarkably clean but it can't hurt to take a look at their condition each day and perhaps schedule a regular cleaning, using only the type of cleaner recommended for your rollers.

Think of fold rollers as a tool

Let's suppose you have one folder that always runs aqueous coated jobs and it's a headache to do these jobs. Consider switching fold rollers to a combo with open cell foam urethane. It's softer than standard urethane and has a better grip on slippery paper. Perhaps you run numerous glue jobs. Select from a variety of segmented glue rollers with a choice of urethane or rubber materials to suit the job.

Talk to your folder manufacturer or roller supplier. There are toolboxes full of off-the-shelf and custom fold rollers available to suit any application.

An additional benefit: improved fold roller performance means better scoring, perforating and trimming functions. If you do a little honest number-crunching, you'll see that good fold roller maintenance pays for itself, and it's a guaranteed way to keep your bindery department productive.

Step 5 – Slitter Shafts: What Are They and Why Should I Care?

These days there are numerous scoring, cutting and perforating tools designed to fit the slitter shafts of folding machines, scoring machines, saddle stitchers, perfect binders, folder gluers and more.

When I was introduced to bindery work in the late 1970's the slitter shafts were seen as a vehicle for moving the sheet into the cross carrier or onto the delivery table. A perf or cut applied to the sheet was typically done for signature work, which would trim off later in the finishing process. A score simply aided the folding of brochures and creasing was unheard of; you did that on a die cutter or press. ***Occasionally*** a low-quality throwaway brochure would be trimmed on the folder.

Slitter shafts would take years of punishment before there was any thought of replacing a bearing, never mind the shafts themselves. They just weren't THAT critical to the folding operation. Today it's different. Creasing, micro perforating and high-quality trimming all happen on the slitter shafts. Lots of finished product comes off the folder. (The name 'slitter shaft' remains, despite the multiple uses of tools applied to them.)

The tools that fit the shafts, by their very nature, are precision devices and are only as good as the shafts to which they are attached. Some slitter shaft items that affect tool performance:

- **Bent shafts** - tools 'bounce' up and down, thus losing precision and effectiveness
- **Dings and severe scratches** - tools can't be freely moved, limiting function of free-floating devices and making setup difficult.
- **Worn bushings or bearings** - increases shaft movement which reduces effectiveness of precision tools

Today they are central to folding machine production. Major manufacturers even make slitter shaft make-ready tables and cabinets.

The goal:

1. Reduce make-ready time.

2. Get maximum value from experienced operators by putting them to work in the critical tool setup area.

Remember then, that slitter shafts are as important as the fold rollers. Don't overlook them.

Here a two related Bindery Success Blog tips that you might find helpful.

Click the Links to read them online.

1) Simple Slitter Shaft Checkup for Your Folding Machine

2) Slitter Shaft Setup

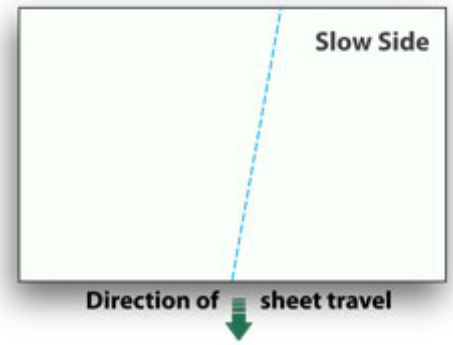
Step 6 – Putting it All Together: Solid Tips from the When-Were-You Going-to-Tell-Me-That Department

In my early years as a bindery apprentice with a good understanding of basics and a positive, eager mindset, I'd occasionally encounter a problem that caused the shedding of some blood, sweat and tears. It was usually at that point that an old-timer would say, *"Hey, all you have to do is tweak the whatchamacallit to fix that problem."*

In the interest of saving you and your operators unnecessary grief (is it ever necessary?) here are some advanced tips to keep it all running smoothly.

1) Use the deflectors to keep your perf or scores running straight.

If your score or perf is crooked—but in a consistent position—this technique will almost always fix it.

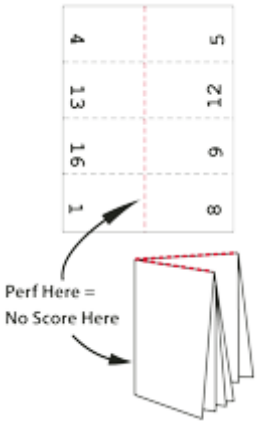


One side of the sheet is traveling too fast through the fold rollers. (*Exaggerated in the illustration at right*) You can slow the 'fast' side by cocking a fold plate (with closed deflector) on the side that you want to slow down.

Usually plate 3 or 4 is used, but you can use any fold plate as long as it's one that is after the fold, if any. Unlock the fold plate that side, pull it out about 1/16" and re-lock. Repeat until score is straight. For severe problems, use two fold plates, with a little adjustment on each plate.

2) Running signature work?

- Leave the press guide and gripper on the sheet
- Perf the head (16pp) or face (32 pp) Click Here for a related article on perforating or go to technifoldusa.com and search "16 page signatures."

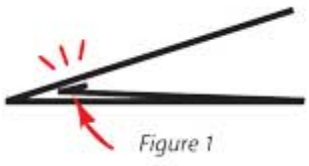


Click Here for some tips for perforating 16 page sigs or use the same search term as above.

- Trim the foot and the face of the signature ***on the folder*** and not on the guillotine. You'll get better register and have better control over the folding.

3) Use this amazingly easy technique to get rid of dog ears on folded brochures.

Click Here for a simple technique from the Bindery Success Blog or go to technifoldusa.com and search "eliminate bent corners" to pull up the blog post.



This is probably my all-time favorite technique. When I first discovered it, I couldn't wait to do my next letter-fold job!

4) Don't overload the slitter shafts with pull out wheels

This is another good example of less being more. Click Here to do directly to the tip at BinderySuccessBlog.com or search "slitter shaft setup" at www.technifoldusa.com

5) When folding right angle work, always take time to ensure the main parallel section is folding, trimming, perforating or scoring correctly <u>before</u> you troubleshoot elsewhere! It only takes seconds to do a quick check of the first section but it instantly narrows down the pool of causes for whatever is ailing your folder.

Implementing Your New Techniques

If you are the folder operator, then changing your specific folding machine techniques is simple. The fact that you're reading this tells me you're open to new ideas, so it's a matter of trying them out on your next job. If, like most of us, you're somewhat resistant to change, then you have a bit of an inside job to do first! But that is precisely where you'll find your biggest rewards, just outside your comfort zone!

If you are a manager or supervisor, whether for a staff of one or one hundred, you have the added step of getting operators to "buy in" to your new recommendations. To inspire others you must first inspire yourself. That means being a believer, not so much in the specifics of this book but in the fact that lots of small, incremental changes can indeed make a big difference in long-term productivity.

If you can accept that fact, then endorsing a bit of experimentation for the sake of improvement is a no-brainer. The upside: improved folding machine productivity and quality. The cost; just a little bit of your time and your operator's time, time that you might currently be squandering every day in the form of lost productivity.

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About the Author

Andre Palko was bitten by the entrepreneurial bug at age 12 when he began selling flower seeds and delivering grocery store flyers door-to-door in his hometown of Frederick, MD. His intro to the printing industry came while he was playing bass guitar for a New York City rock & roll band in 1980. The bands lead singer and songwriter was part of a family printing business and it wasn't long before Andre was packing boxes, running a folding machine, and learning the printing and bindery trade by day, while taking classes at Columbia University and playing clubs by night.

Rock and roll didn't pay the bills so Andre stuck with the print industry, including a stint as owner/operator of a trade bindery as well as manager of a small commercial printing and copy operation. It was these 20+ years of hands-on operational and managerial experience that laid the foundation for the opportunity he seized on in 2002 in the form of a little-known folding machine device called the Tri-Creaser™.

Andre took the opportunity and ran with it, and today is President of Technifold USA, Inc. The independently owned company provides patented solutions and unique strategies that enable printers to get up to twice their normal yield from bindery and finishing equipment. Their customers include the top printing companies and finishing equipment manufacturers in the world.

Andre's success at making printing and bindery companies more productive propelled Technifold USA to the ranks of the Inc. 5000 in 2009, gaining national recognition as one of the fastest growing private companies in America. This notable achievement comes at time when many businesses in this and other industries are shrinking.

For fun he pilots a Cessna 172 aircraft and musically has moved from the likes of New York clubs such as the famed CBGB's to the church hall, playing bass and singing with a contemporary choir throughout New Jersey and with his church choir every Sunday.

Free Bindery Productivity Resources

Be sure to take advantage of the 8 free bindery resources available to you, courtesy of Technifold USA.

Go online to http://www.TechnifoldUSA.com/free-resources or click the images below.

1 Bindery Success Blog

Weekly Online **Bindery Tips, Tricks, Videos and Business Strategies** to Keep You Profitable.
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Troubleshooting Checklist: Must-Do Items for Right Angle Signature Folding

This checklist is intended to speed up troubleshooting on 16pp and other signature work, primarily when using right angle fold units or knife folders. It's not a comprehensive guide on how to set up your particular folder. Refer to your manufacturer's directions for more details.

Check These Items First

❑ **Fold #1 registers in correct position** with regard to lineups (crossovers) and bleeds. Note: Sometimes you have to fold a sheet in a skewed position to get crossovers and bleeds to line up, especially when dealing with full press sheets. Whatever the case, be sure it is 100% consistent.

❑ **Perf is square to the sheet and/or the printed image**

❑ **Perf is in correct position**

If one of the three items above isn't right, take the time to fix it. Below are some items to check in your troubleshooting search.

PAPER

❑ Is excessive curl a problem?

❑ Is it jogged sufficiently?

❑ Is it stuck together?

❑ Is it wrinkled?

❑ Is it fanned out correctly?

FEEDER

❑ Is it feeding consistently?

❑ Is it set correctly?

❑ Is the pile height correct? (pile feeders)

❑ Is the sheet advance consistently stopping the sheet in the right position? (continuous feeders)

- ❑ Are the sheet guides set for proper clearance?
- ❑ Are front and side blowers set for proper sheet separation?
- ❑ Are backstops and rollers in proper position on or behind paper?
- ❑ Is the caliper set?
- ❑ Is sheet pulling to side lay?
- ❑ Is side lay registration consistent?
- ❑ Is side lay square to fold roller?
- ❑ Are register table belts and/or marbles correct?

FOLDING SECTION

- ❑ Is fold roller pressure set properly?
- ❑ Are fold plates adjusted to correct length and square to sheet?
- ❑ Are the fold rollers clean?
- ❑ Are the slitter shafts locked properly?

TOOLS

- ❑ Is the correct perf being used?
- ❑ Are tools positioned correctly on slitter shaft?
- ❑ Are jam detectors positioned and set correctly?

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