

Spotlight on: *Don Newman*



Printwear caught up with a busy Don Newman at the Philadelphia manufacturing facility of his company, Stretch Device, Inc. Newman is generally credited for pioneering what has become a rare piece of technological common ground among garment screen printers: the virtues of elevated – and, perhaps more important, predictable- screen tension. But instead of questioning Newman specifically about his specialty, we asked him for his thoughts on the state of garment screen printing in general. From his decidedly technological viewpoint, Newman described an industry at a crossroads.



PRINTWEAR: What, in your view, is the most important issue before garment screen printers today?

DON NEWMAN: Yield.

PW: How so?

DN: Yield is a straightforward concept: What's your "machine-efficiency ratio"? Let's say your maximum production with an automatic T-shirt press is 900 per hour, but at the end of the weeks, you count up all your shippable product and you only have 450 per hour that you shipped. What's your machine efficiency ratio? It's 50 percent. So a machine may cycle at 900 an hour when the switch is turned on, but for whatever reason, whatever the problems in production, your saleable product, your yield per hour, per day, per week, per month, is only half what it could be.



PW: Why is that?

DN: The concepts of printing speed or productive speed of a piece of equipment – whether it's manual or automatic – and how that compares to the actual yield is a subject that, while it is a commonly discussed notion in all other printing industries, is not commonly thought of by screen printers, perhaps because they don't think of themselves foremost as manufacturers. You take a substrate, bring it in the door, convert it – do something to it, in this case, decorate it – and put it in a box. You're a manufacturer – who just happens to be printing.



PW: Your example of a 50 percent machine efficiency ratio sounds very inefficient. Are you suggesting that example as typical of garment screen printer?

DN: We did a national survey of it six years ago with the help of Precision Screen Machines and we found out the national average yield was 225 to 325 an hour, with an occasional printer turning out 500 or 600 – but that was rare.

PW: I take it things have not substantially improved.

DN: No. Part of the problem is that many printers don't know the cycle times of their machines during each hour of production during the week. More importantly, many printers don't know their actual yield or don't do enough record keeping to measure it. We happen to be in an industry that doesn't know what its output is, specifically, whether – for a given image style – they are printing faster or slower than average. However, in my view, it is mostly not their fault or responsibility. Information about reasonable production speeds and yield is, in most industries, normally published by trade associations and publications, and the industry's manufacturers and distributors. A printer – a manufacturer – is not usually going to publish his own in-house production speeds and yield. This information may get shared verbally from time to time by printers with fellow printers not in direct competition with them, but not often enough to do an entire industry any good. We have seen a small number of printers that have realized publishing quality and speed information helps to vitalize their industry. And they realize that competitive advantage lies more in such things as artwork creativity, customer service, employee morale, delivery and profitability. All of us on the manufacturing, trade association, publication and distribution side need to do our job, technically pollinating competition by helping to make screen printing better and faster every year. Because we haven't done so well. We have an industry that is below 50 percent machine-efficiency ratio almost across the board – except for the unusual printer – and probably more like 35 or 40 percent.

PW: Is disregard for such a large efficiency gap common in manufacturing?

DN: Not at all. The other printing methods – offset lithography, rotogravure and flexography – have debugged and fully analyzed their print-transfer mechanism. It is down to a science where it doesn't vary much. All of them at one time had enormous variability in their printing plates. The chemistry was inconsistent, as was the aluminum printing plate and the alloys used to make it. In litho, for example, the variables weren't brought under control until the 1940s, early 50s. Until that time there were special printers, journeymen, who had their little bags full of tricks: acids, bases, the whites of eggs, all sorts of things to use when things didn't print. They knew how to tinker with the chemistry and "stretch" the plates on the machines. It was like black magic. Then the litho industry spent about ten million dollars perfecting the science of its ink-transfer method – the chemistry, alloys, and so on – and now its printing plate is always a constant – never a variable.

PW: You contend that garment screen printers are still too dependent on "that old black magic" and need to make their ink-transfer mechanism less variable?

DN: Correct. We are in that process now.

PW: But haven't we made some big leaps in the last few years?

DN: In terms of quality, we're already doing more than we could have imagined 15 years ago. No one could have imagined the complexity of the art we have on textiles. People thought it was a fad, but now it's competing in the mainstream of the fashion industry. No one would have imagined such a thing. But our screen-printing market has been very slow to come to the realization that speed is the most critical issue if we want to stave off other competing methods of decoration. Competition is coming, though the threat is only known to a relatively small number of people. But we're vulnerable. Our potential competitors know how inefficient the garment-screen-printing industry is. Our market is ripe for the taking. There's stuff coming down the pike that nobody knows about, and this was true ten, twelve years ago, but nobody has wanted to talk about it. But now that we've become a seven-billion-dollar industry, everyone is gunning for us.

PW: For example?

DN: You've got people like Cannon that are coming in now with laser-jet printing on roll-to-roll for textile. They've been working on this for several years, a \$15-20 million budget. But they don't see that as a big deal because they're looking at our numbers and seeing that they are big enough to justify the expense.

One of the personal concerns I've had in the last three or four years is that – since it's been real apparent to me how slow we've been printing for a long time – if we don't get a lot more efficient real fast, our industry is going to start to decline, and decline substantially. We've had an enormous run of growth, and it's been terrific. But it won't continue that way if our machine efficiency ratios are at 35 percent. We need to wake up and realize how vulnerable we are. We're kicking and fighting and screaming to come into the 20th century, and now we've got to move into the 21st.

PW: What's your prescription?

DN: We've got to get our speeds up to 2400 shirts per hour. People think 1000 or 1110 an hour is fast. To me, in order to stave off other modalities of decoration, we have to break 2000. Otherwise, one year we'll all go to an imprinted-sportswear show and on the floor will be a competing method, decorating garments at 1800 an hour and blowing everybody away. Suddenly the players change, the technology changes, our world – our universe – turns. That's how industries change.

PW: So this is not a unique circumstance?

DN: It happens in all kinds of industries. It happened in the steel industry when the Japanese invented continuous-process casting. Suddenly they had a continuous stream of steel product pouring out of their mills while our steel was still batch-made. They lost the war (because) they were poor, they were struggling. Our steel industry had all the money under the sun. Why didn't we reinvest in new technology? Why didn't we develop continuous-process casting? Because we didn't think (our steel industry was) vulnerable. There was so much money, they felt insulated. And when you get into that position, everything is so good that you just can't imagine (anything) is going to happen. But it always does – unless you continue to move forward. Despite many advances, on the subject of speed we're stalled. There has not been a change in fundamental machine speed in a very long time.

PW: So what's holding things up? If the threat is as you depict it, why aren't press makers turning out faster machines?

DN: The machine industry happens to be in disarray at the moment. More important, people in general tend to focus more on competition that they can see and feel everyday.

PW: You're speaking of the recent sale of Advance, and financial difficulties some other manufacturers have suffered?

DN: Yes. Economically, for reasons which are unusual, there isn't the kind of energy we used to have. Yet what drives the sale of new equipment in every industry is that equipment constantly gets better and faster. That's what drives the whole world of industry – doing things better and faster every year. One of the things that has held back machine manufacturers is that ink transfer has historically been so slow and inefficient it hasn't been worthwhile to make the next generation of machines.

PW: So we're back to the screen. Why haven't screen printers, like those in the other printing disciplines you mentioned, put more effort into improving their own printing plate?

DN: Well, the ink-transfer mechanism isn't an obvious place to look. People think the inks are the problem, the substrate's the problem, the stencil, the squeegee, the machine or the dryer – that there is something else in the process that's inherently slow. But we have transferred ink to substrate at a rate of 6000 units per hour, and I don't see any engineering difficulty in transferring at 12,000 an hour. Ink transfer, in order of magnitude, is today ten times ahead of machine speeds in general.

PW: We'd hazard a guess that elevated screen tension, the concept at the center of your manufacturing philosophy, has something to do with that.

DN: More than we ever realized. As tension goes higher, we're finding that its effect on productivity is dramatic.

PW: So how might we illuminate our "industrial blind spot" in the area of machine efficiency and productive yield?

DN: I would suggest that if trade magazines, trade associations and manufacturers in their literature would start publishing – and pushing – information about yield and productivity, people would begin to take an interest and question themselves about their shop's productivity.

PW: Why is it, then given your obvious concern and your work in providing solutions in this area, that we've so rarely seen your byline in the trade press? Why aren't you writing about yield?

DN: I have written about five articles with some partial success at communication, but most of my and my company's efforts on this subject go into our appearances at trade shows and our ongoing screen-printing school which holds classes two to three weeks per month. Most of this education is done verbally and through live printing demonstrations and examples. I wish we could publish more material from our ongoing research and seminars, but what's kept me from it is more than just lack of time. While I have found ways to communicate important engineering ideas and principles on a common-sense, practical level in a seminar format with the aid of live example, I think bringing those same concepts "alive" on the printed page so that it leads to real, day-to-day improvement on the factory floor is an enormously more difficult challenge. But it's a challenge that every industry, including ours, must face.

Since our visit to Stretch Devices, the subject under this month's Spotlight has agreed to face that difficult challenge. In November and – his time permitting – the months there after, Newman will put pen to Printwear's pages to present a simple, practical and accessible exposition on ways garment screen printers can boost their quality and production yield, regardless of their comfort level with things technical. Don't miss it.