



AN INSIDER'S PERSPECTIVE

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Building the Pipeline

ANJALI'S SUMMER

There is a particular kind of silence that follows when you tell a sixteen-year-old you are available every evening to discuss shot peening intensity and coverage. It is not the comfortable silence of contemplation. In my situation, it lasted about as long as the durability of a poorly heat-treated cast shot — brief and ending in total breakdown. So, imagine my surprise when that very sixteen-year-old, my daughter Anjali, approached me this past summer asking, entirely unprompted, for a proper lesson on saturation curves. I have spent thirty-six years failing to make this subject sound thrilling at dinner parties. It took one summer job opportunity to succeed where I had not.

The job in question was an internship at Vibra Finish LTD., the Mississauga, Ontario job shop whose vibratory peening work I wrote about in these pages back in 2019. She spent her summer around the same oscillating tubs, Almen strips, and saturation curves I described in that article, except this time she was the one asking the questions instead of me.

I did not engineer this. Brian and Zach McGillivray are good friends, industry colleagues and users of Ervin shot for their cleaning and peening operations. When my daughter expressed interest in engineering education, I took her on an exploratory visit to Vibra Finish LTD. where Zach McGillivray was kind enough to offer her a summer position to help her determine the fit for her future. Curious rather than committed, and somewhere in those weeks of watching parts come out smoother and more fatigue-resistant than they went in, something clicked. A couple of weeks into her internship, she was asking me to walk her through the fundamentals properly, and not long after that, she sat for the Level 1 and Level 2 shot peening certification exams. She passed both, which is more than I can say for how she did the first time I asked her to load the dishwasher correctly.

I am telling you this not because I think every reader needs to hear about my daughter, but because her summer accidentally traced out, in miniature, the exact path our industry needs to attract new recruits. Real exposure, followed by structured training, followed by a credential that means something beyond the walls of one shop. I want to spend this column arguing that we should be building that path on purpose, for

a lot more people than just the ones lucky enough to know someone in the business.

THE EXPOSURE PROBLEM

Ask around at your next industry gathering how people got into shot peening or blast cleaning, and you will hear some version of the same story repeatedly: nobody planned it. An engineering job needed filling, a family business needed a hand, a co-op placement happened to land in the wrong building at the right time. I include myself in that list. Almost nobody I have met in thirty-six years chose this field the way they might choose aerospace or software, because almost nobody knows it exists as a choice until they are already standing in the middle of it (or sometimes slipped into it due to a shot spill).

That is a strange thing to admit about an industry this essential. Fatigue life, residual stress, surface integrity — these sit underneath the reliability of aircraft, automobiles, springs, and structural steel that people trust with their lives every day. And yet a sixteen-year-old with a genuine interest in engineering has essentially no path to discover any of it, short of the kind of lucky connection Anjali had. There is no shot peening elective, no career fair booth, no obvious first door to knock on — and then we wonder, in print, in these very columns, why the workforce is aging out faster than it is being replaced.

An internship like the one Vibra Finish LTD. offered Anjali is not a small thing. It is a company treating exposure as worth the investment, even for someone who cannot yet commit to a career. Most shops, understandably, are not set up for this — insurance, supervision, and the fact that a summer intern is not yet productive all argue against it. But somebody must go first, and I want to publicly credit Vibra Finish LTD. for doing exactly that.

Compare this to how most of our industry's public-facing effort is spent. Workshops, conferences, and columns like this one are aimed almost entirely at people already working in the field — worthwhile for retention but doing nothing for recruitment. Anjali found shot peening through a personal connection, which is precisely the problem: personal connections do not scale, and they favor whoever already happens to know somebody.

FROM EXPOSURE TO STRUCTURED TRAINING

Exposure by itself, though, only gets you curiosity. It does not get you competence. Once Anjali came home wanting to understand the process properly rather than just having watched it, I needed a curriculum, not just my own memory of thirty-six years of field experience, which is a wonderful source of anecdotes but a poor substitute for a structured lesson plan.

I turned to the training material developed by Electronics Inc., the same organization whose shot peening workshops I have referenced more than once in these pages, and for whom I train users for Levels 1, 2 and 3 certifications. Dave Barkley, Vice-President and creator of EI Shot Peening Training, and Electronics Inc. generously gave permission for me to use their material to teach Anjali the fundamentals. I am grateful to Dave and Tom Brickley, President of Electronics Inc. for making that possible, and I want that gratitude on the record here, because it illustrates something important: good training material, built by people who have spent careers thinking about how to teach this subject clearly, is worth more than any amount of well-meaning improvisation from a parent, however experienced.

The curriculum starts where it always should: media. We worked through the history of peening, fundamentals of stress, different media types, hardness grades (as per SAE J827), and why conformance to AMS 2431 matters more than whatever happens to be sitting in the storage hopper that day. From there we moved into intensity and the Almen strip — not just how to mount an A, N, or C strip and read an arc height, but why a proper saturation curve requires at least four data points at progressively doubled exposure times, and why saturation itself is defined by a rule, not a feeling: the point at which doubling the exposure time again increases the arc height by 10%, not more or less. Only after Anjali could plot, unprompted, saturation curves by hand (instead of using a curve solver), did we move on to coverage — the visual inspection standards, factors affecting intensity and coverage, and why 100% coverage is a specification requirement (SAE J2277), not a best-effort target.

Teaching Anjali with that material rather than my own loose notes forced a kind of discipline I do not usually apply when I am simply telling a customer or a colleague something I already know. I had to sequence the concepts in an order that built on itself, check her understanding before moving forward, and resist the urge to skip ahead to the interesting parts before she had the basics solid. It made me appreciate, more than I expected to, how much of a gap exists between knowing a subject and being equipped to teach it, and why a curriculum designed for that purpose beats even decades of field experience delivered without one.

This is the piece of the pipeline that is easiest to skip and most necessary to keep. An intern who watches a process for a summer has seen something real, but seeing is not the same as understanding it well enough to apply it correctly and safely. Somewhere between the internship and the credential, someone must sit down and teach the fundamentals, using material built for that purpose rather than assembled on the fly.

THE CERTIFICATION CREDENTIAL

With the fundamentals in place, Anjali sat for the Level 1 and Level 2 shot peening certification exams. I have written before, back in 2016, about these exams from an industry perspective — what they cover, how they are structured, what they are meant to validate in a working operator or engineer. I will not repeat that ground here. What I want to describe instead is what that credential means when it belongs to a sixteen-year-old rather than a working professional.

For an experienced operator, a certification is often confirmation of what a resume and a reference letter already say. For Anjali, it is closer to the opposite: it is proof, independent of me, independent of Vibra Finish LTD., independent of any family connection, that she understands the material. It is a credential she can put in front of an engineering school admissions committee or a future employer that does not require anyone to take her word, or mine, for what she learned over one summer. That portability matters enormously to someone at the very start of a path; in a way it simply does not for someone twenty years into a career.

I will make one claim here that I cannot fully verify, and I would genuinely welcome being corrected on it: as far as I have been able to determine, Anjali may be the youngest person, not just in our industry but anywhere, to hold both Level 1 and Level 2 shot peening certification. I have not found a record of anyone younger doing so. If a reader knows of one, I would be glad to be wrong, and gladder still to give that person their due credit in a future column.

It also matters to the industry, in a quieter way. Every young person who walks away from an internship with a recognized credential, rather than just a line on a resume that only means something to people who already know the company, becomes evidence to the next sixteen-year-old, and to that sixteen-year-old's parents, that this is a real field with real standards, not an odd summer job. Credentials do double duty this way — they validate the individual, and they legitimize the path for everyone who comes after. I will also admit to a selfish motive in encouraging her to sit for both levels. A formal, independent exam told me something my own proud-father judgment never could: whether what I had taught her held up. It did — and there is real satisfaction in having that

confirmed by an exam rather than by my own hopeful read of how the lessons had transpired.

WHAT IT WOULD TAKE AT SCALE

Anjali's summer worked because three things happened in sequence, each supplied by a different part of our small industry: a job shop willing to open its doors to someone not yet employable in the usual sense, a training organization with curriculum built well enough to use effectively, and a certification body whose exams meant something beyond the company that hosted the internship. None of those three pieces is exotic. All three already exist. What does not yet exist, at any scale, is the deliberate connection between them.

I would like to see more companies treat an internship program the way Vibra Finish LTD. did — not as a burden to be tolerated, but as a genuine investment in a pipeline that benefits the whole industry, not just the host company. I know that Dave Barkley at Electronics Inc. regularly conducts one-hour introductory sessions for companies attempting an honest introduction to the subject. And I would like to see our industry associations and publications actively encourage young entrants toward certification, the way we already encourage working operators, rather than treating it purely as a credential for people already employed in the field. None of this requires a large budget or a new institution.

It requires a handful of companies willing to go first, the way Vibra Finish LTD. did this summer, and a bit of intention applied to a sequence of steps that, right now, only happens by luck — a shop that agrees to host one curious student a year, a trainer who sets aside a simplified version of their curriculum for a newcomer, an association that keeps a short list of companies willing to take that first call from a parent or a guidance counselor.

WHAT TRAINING MY DAUGHTER TAUGHT ME

I expected to teach Anjali some things about media, intensity, and coverage. I did not expect to learn quite as much as I did about how I explain this subject.

Talking to an engineer with ten years in the field, I can skip past the “why” of a concept and go straight to the “how,” because the why is assumed. Anjali had no such assumptions. The question that stopped me longest was a simple one: if an S-230 shot and a larger S-330 shot can both be tuned, through velocity and flow rate, to produce the same 10A intensity reading, why would anyone bother specifying the larger, more aggressive particle at all? On the surface, identical intensity looks like an identical outcome. It is not. The larger shot achieves that intensity with fewer, heavier impacts,

which changes the coverage rate, the surface roughness left behind, and, more subtly, how the residual compressive stress is distributed with depth beneath the surface, even when the peak reading on the Almen strip matches exactly. I have known this for decades. I had never had to say it out loud to someone hearing it for the first time, and doing so made me realize how much of what I know lives as instinct rather than as an explanation useful to a curious mind.

It was, frankly, good for me. Explaining fundamentals to someone with no prior context is a different skill than explaining a nuance to a peer, and I suspect a lot of us who have been in this field for decades have let that skill go dormant simply because we rarely need to use it. If our industry is serious about building a pipeline of young talent, we need to get better at teaching from the ground up again. Anjali did that for me before she ever sat for an exam.

CLOSING

Anjali's summer was not the product of a program, a grant, or an industry initiative. It was one company willing to open a door, one training organization willing to share what it had built, and one father willing to relearn how to explain his own field from scratch. That is not a scalable system, and it should not have to be this dependent on luck and business connections for the next curious sixteen-year-old.

If you run a shop, consider what Vibra Finish LTD. did this summer and ask whether you could do something similar, even in a small way. And if you know a young person who has shown even a flicker of curiosity about what we do, consider being the door someone was for Anjali. If she really is the youngest person to hold this credential today, I would like that to be a short-lived distinction — not because I want her record broken, but because it would mean a lot more sixteen-year-olds found their way to a door like the one Vibra Finish LTD. opened. The pipeline gets built one door at a time, or it does not get built at all.

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