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DETROIT ROBOTICS
COMPLEXITY. AUTOMATED.

ROBOTICISM

AUTOMATIN' AIN'T EASY!



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Automatin' Ain't Easy

Modern manufacturing is at an inflection point.

And that's good.

If, like our family, you've worked in the machining world for nearly 100 years, you know the future looks brighter than the past.

Machining was never easy. If, like our family, you know what it's like to operate manual lathes on sweltering shopfloors in the all-too-brief Michigan summers or, even worse wearing two coats during our endless winters, you know that automation is your friend (that includes our Michigan-proof climate-controlled facility.)

But, maybe the best part of automation mastery is that it gives our company access to some of the most exciting machining programs in the world.

In 1924, our founder (AKA Grandpa) made screw machine parts for GM and Ford. Today we make parts that go into space. I mean, really... how cool is that?

One thing about applied robotics and automation is that it's all so new.

One way you can see the newness of it all is the absence of acronyms and certifications.

There's literally no name for the degree of automation employed or official requirement for the hard skills that drive robotic manufacturing.

Until now. We're calling it....

Roboticism

The truth is, no-one really cares now. But they should, and here's why.

Roboticism, like every complex process has rules and levels.

For arguments sake let's say:

- Level 1 uses robotic arms for material handling only.
- Level 2 integrates handling with robotic probing and automated data capture for QS.
- Level 3 integrates an intuitive programming and digital speeds & feed library with a robotic cell for multiple unique parts.
- Level 4, all of the above, lights out full automation 24/7.
- Level 5 your boss is a robot.

Detroit Robotics is on level 4. We'll get our certificate when they invent it.



Automatin' Ain't Easy

If, like most customers, you depend on your supply chain to deliver right on time every time then wouldn't you want to know that there's a measurable level of competence to compare capabilities?

**Managing a robotic arm is one thing.
Running a fully automated 80-shelf pallet loader overnight to finish 50+ unique parts to be ready by 05:00 am is another.
Different levels.**

These competency measures already exist in most critical industry segments:

- ISO 9001: General manufacturing
- AS 9100D: Aerospace and space
- ISO 13485: Medical
- TS16949: Automotive
- ITAR/NIST 800-171: Defense

And so on.

Bad robot

Anyone with pets and a Roomba knows that automation can turn bad, really fast. You fill in the blanks.

Think of the absolute worst shop floor employee on a really bad day. Drinking on the job, checking Facebook, and not following any kind of Quality Management System. A total disaster.

As bad as that sounds, a million-dollar state-of-the-art robotic cell missing a single, but crucial, "zero" amongst tens of thousands of lines of code is far, far worse.

This bad robot doesn't even know it's bad! And it's being bad at 100 times the rate of the worst employee.

In the good old days, you could curse, throw wrenches, and kick things. In the automation age that's just going to void your warranty.



Automatin' Ain't Easy

Oh, and integrations?

Creating operational harmony between a Japanese robotic arm and a German automated multi-axis cell ain't easy either.

One day all robotics may share a common OS, a universal language. But not today.

Integration mastery is a bit like being a translator at the United Nations. Explicit translations ignore nuance and get lost in translation = international incident.

For example, the similarity in Chinese between the phrases "No problem!" and "No! Problem!"

The point is, as clean and cool as an automated shop environment looks, all white floors, lab coats, and the whoosh of robotic kinetics in motion, these Japanese-German toys need a firm hand.

Think like a robot

In our experience, people with a real flair for robotics have a bit of robot in them. And no, engineers, you're not all like that! [insert engineer joke.]

Thinking like a robot means going from A to B with no detours. Smart, lazy people are great at automating.

Press a button and get a pizza delivered by a drone? A non-robot person would love that. But, a smart, lazy person would figure out a way for the drone to fly through the window so they didn't have to get up and pause Minecraft or Love Island.

If/when there are robotic executives their desks will be super tidy. Funnily there's a correlation between high IQs and messy desks. Actually, it's not a contradiction. Smart people = focused on the work, not the desk aesthetic. Robots don't have programs for "mess" and they really don't give a **** what the environment looks like.

Robots don't like dust though. No bueno.

Smart, focused people tend to want two things: speed and perfection. They like a quick A to B. They make good robo-buddies. They get robots.

Bad robo-people can be identified when they curse or wave wrenches at expensive automation. Robo-people need patience.

But watch out. If someone is too robo-friendly they may be a time traveling android from 2120. Or drunk.



Automatin' Ain't Easy

Moore's Law

As we all know, we're living at a pivotal point in manufacturing, AKA Industry 4.0

If you've been following Industry 4.0 for a while you know it's sort of cool, but a bit same-y, i.e., one day robots will do everything.

Rapid change is the constant.

In healthcare, defense, and most areas of life, robotics are playing an increasingly large role.

This will not only continue but follow Moore's law (of processing power) which states that: *we can expect the speed and capability of our computers to increase every couple of years, and we will pay less for them.*

As automation inevitably drives the next wave of manufacturing, don't you want to be sure that your key supply chain has a high degree of roboticism?

A tale of two robots

Two identical manufacturers: exact same automation tech, running the exact same parts, but two different outcomes.

The difference?

Company "A" either failed to harness the full capabilities of their machining automation or are still on a (steep) learning curve. They're driving a Ferrari to the supermarket and missing the potential for precision at speed.

Company "B" made the investment in training and applied this to the shop floor to develop the necessary skills for automation mastery. The net gain of these skills and efficiencies accrue to both the customer and the supplier in time and cost reductions.



THE TAKEAWAY

- All robotics and automation tech are in the nascent phase. Even the most advanced current robotics will seem outdated in 10 years. Have you seen a Phone 1 recently (how did we cope in 2005?)
- Automation is a highly dynamic field. Manufacturers mastering new tech and tools require a culture of continual improvement and training. It will never end in our lifetime. We'll always be catching up even if we're leading-edge.
- Manufacturing automation has fundamental goals: reducing cost, time, or both, and achieving ever higher degrees of precision and accuracy.
- For aerospace, defense, and medical programs that typically run low initial volumes before scaling, automation mastery provides a solution for today and a plan for tomorrow.
- Robotics may replace people in some sectors but, in precision manufacturing, it redefines their roles and skillsets. Developing automation skills, such as programming, is a good plan for the millennial without a plan.

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