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DETROIT ROBOTICS
COMPLEXITY. AUTOMATED.

THE MACHINE BEHIND THE MOUSE

ANIMATRONIC ADVENTURES IN THE
MAGIC KINGDOM

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The Machine Behind The Mouse

Animatronic Adventures in the Magic Kingdom

Disney is pretty amazing to most people for a bunch of reasons. Kids love it, parents too (until they feel their wallets emptying like a rough night in Vegas.) As mentioned, Disney is amazing.

For some years, Detroit Robotics has been lucky enough to work behind the curtain at a secretive, not-so-little complex right behind Disney World, FL.

This is where the people that make the magic at the parks work.

They are also truly robotic pioneers.

You see that waving Goofy? It's a robot. And a really well-made one. That animatronic T-Rex? It's so complex and functional that if Disney "broke Bad" and decided to make it really "lifelike" you'd want to leave real quick.

Disney do it all too. Design, engineering, machining, advanced composite moldings, audio production. It's like a big manufacturing toy store.

You'd think that working there would be fun. It is, but it ain't easy.

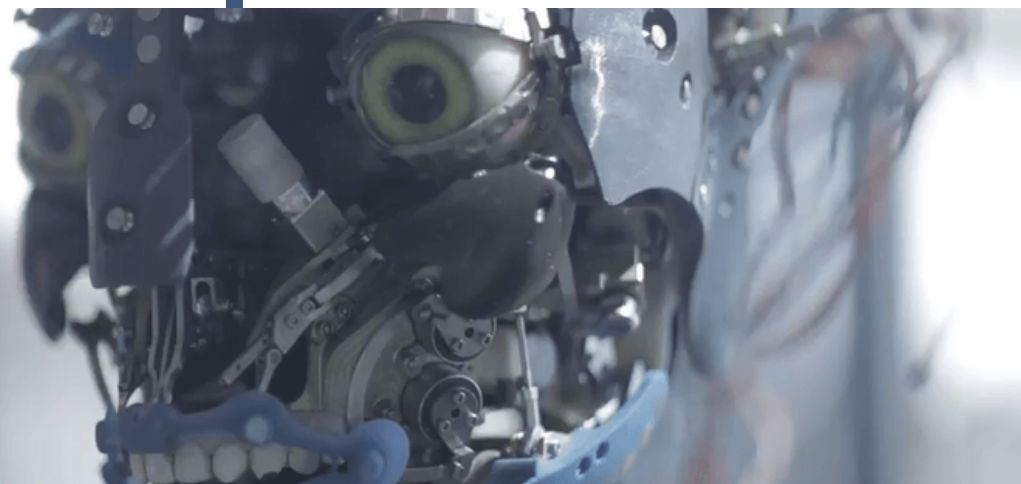
One of the first things we noticed about the Disney folk is they all start work at 06:00 am.

Actually, that's really helpful. It's great to deal with things early in the day, it helps to accelerate the whole workflow.

A lot of the staff have been there forever. And they know everything about their magical world. They deal with constant complexity. With new rides or attractions always coming online, everything is being built for the very first time. And always to a deadline!

Sometimes we're asked to remake "legacy" parts. These are components that have worn over time on older rides. We've remade components that were last made in the '70's. The engineering drawings are blurry photocopies of photocopies someone faxed over back in 1992.

A motion part in constant daily use that takes 40+ years to "wear" is a really well designed and made part.



The Machine Behind The Mouse

The MRO division are some next level folks altogether. They run and maintain all the rides.

A ride at Disney, or any other reputable park, is like a commercial jumbo jet. It carries a lot of people, mostly kids. However, unlike jumbo jets (hopefully!) it carries them at G-Force velocity and often upside down.

So, the Disney MRO crew run the show just like an airline. A really good one.

Maintenance is done to military precision on a scheduled cycle that combines detailed inspection with part replacement. Every. Single. Day.

One of the best things about being a manufacturing partner with Disney is: they know exactly what they want. They've been doing it awhile.

It can be frustrating if you're running a machine shop based on complexity + speed if you can't run the part because customer engineering are doing hot yoga or [insert engineer joke.]

A huge driver of the Disney machine is that people are decisive and respond quickly.

In this they're not unique. All customers want it fast. But not all customers are fast themselves, some by practice, some by process. Government work moves like molasses.

There was a now-closed clothing retailer in NYC (Syms) whose slogan was "An educated consumer is our best customer." In the complex machining rapid prototyping game it's exactly the same.

Years ago, Disney forced us to optimize and automate parts of the workflow that were rooted in traditional manual systems. They made us learn how to red hot prototype 100's of unique complex parts at a time.

In many ways, that's when Detroit Robotics was "born" (out of our traditional manufacturing parent.)

Disney did what great customers do. They challenged us, and made us better, faster, and more competitive.



THE TAKEAWAY

- If everything ran as well as Disney, the world would run more smoothly .
- We've been to [DARPA](#) and [NASA](#). Beyond cool, as expected. But, of course, super secretive. Disney, though? Ask to take a selfie with an upcoming skunkworks build and the Mouse Ears come off. (Think: Men in black suits and sunglasses with earpieces... not really though.) Disney know what they want and all we have to do is do it right and quickly (and tell no-one!)
- Disney people are smart, experienced, and put in 110%. Especially that guy/girl in the Winnie The Pooh suit in Kissimmee in August.
- Disney pioneered robotics using vision and creativity. They saw the impossible and made it work. [Even when their robots don't actually do something, Disney make it look \(and function\) like they do.](#) Modern robotic R&D and manufacturing, notably in the Space sector, also combines world-class engineering fueled by imagination. Infinity and beyond stuff!
- For the truly modern machine shop, robotics will enable us make the parts that change the world. But, even in the future, customers will want their parts yesterday! (see what I did there? [#tenet](#))

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THE DATA

Disney vs. Space Component Comparison



100's unique prototype parts with complex geometries and up to 150 features		
Tight tolerances up to 0.0001 (ten thousand)		
Advanced space-grade materials e.g. Titanium and Inconel		
Component needs to function perfectly in harsh other-worldly environment (Florida or Outer Space) for years		
All parts 100% right and needed yesterday!!!		
Non-conforming parts.		

THE TOOLS



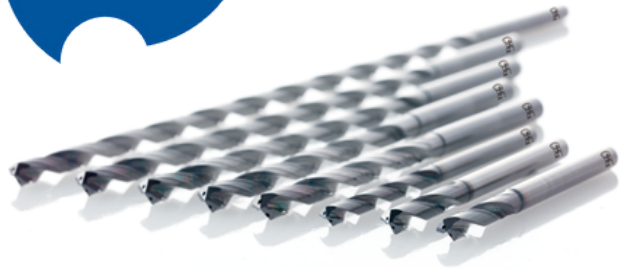
Hermle C-400 5-Axis



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