



Personal Protective Equipment

Touchscreen Gloves Designed to Perform and Protect

Vanessa Jo Roberts | Apr 16, 2020

As the use of tablets, mobile devices and CNC machines pervade manufacturing, the need for touchscreen gloves is becoming essential. We talk to experts at Ironclad Performance Wear about the evolution of PPE for the hands, merging safety with durability and practicality.

Although Ironclad Performance Wear began selling gloves with touchscreen capability in 2012, it was only with the introduction of its Command line series in 2018 that it developed touchscreen technology that lasts the life of all its cut-and-sew and knit gloves.

Engineering a touchscreen technology that was both better and long-lasting just made sense, Ironclad General Manager Eric Jaeger says.

Everything is going digital, but you don't want your workers taking off their personal protective equipment to do data entry, he points out.

"Look at a manufacturing and machining environment: A lot of the machines are all CNC machines, and they have touchscreens," says Ron Broussard, senior vice president of sales for Ironclad.

"It's how they operate; they have to be programmed."

Engineering an Evolution in Touchscreen Gloves: 2020 vs. 2012

Ironclad's initial touchscreen offering, released more than eight years ago, taught its designers a lot, Jaeger says.

Trying to continually improve its gloves through engineering has been part of the "ethos of the company from the start," says Jaeger, who spent nearly two decades as a medical device engineer before teaming up with his brother Ed Jaeger to found Ironclad.

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The ROI of Glove Safety

Safety managers in manufacturing don't just look at the unit price of a glove, says Ironclad Performance Wear General Manager Eric Jaeger.

"They get it," he says. "In the manufacturing safety world, you have people whose job it is to calculate safety cost. They don't look at per-glove cost. They look at annual spend."

And here's why.

For a single injury, the average Occupational Safety and Health Administration recordable cost is around \$8,000, explains Ron Broussard, vice president of sales for the glove maker. "But if you look at the total cost, you're looking at closer to \$22,000 for one injury."

Broussard recalled a mining manufacturer that was using a cheap glove at a plant with 800 people. "They weren't even spending \$30,000 a year on gloves, which is nothing. But their injury costs were sky-high."

The company had one injury where a worker had cut a tendon in the crook of the hand. Ultimately, he says, it expected the total cost to reach at least \$250,000.

The company tripled its glove spend, and injuries went nearly to zero. The cost avoidance savings? The company estimated it at upward of \$300,000 in the first year, Broussard says.

"If times get tough, businesses often focus too much on cost and unit price," he says. "Safety has to be a powerful factor."

What's on the Horizon for Hand Protection?

In the near future, safety chiefs can expect gloves with new technologies in both yarns and coatings.

"You're going to start seeing a lot of yarns that are even thinner and more cut-resistant, giving gloves better dexterity," says Ron Broussard, vice president of sales for Ironclad Performance Wear.

Plus, there are additional coatings that haven't been commercialized yet that will offer more abrasion resistance and be more durable. "Ironclad is on the forefront of these product developments," he says.

The company also recently introduced its first chemical gloves.

"What we came out with that's unique is a glove that is fully chemical-proof and that has external impact protection on the back of the hand," says Ironclad General Manager Eric Jaeger.

"It's a kind of all-in-one glove in the chemical world: chemical-resistant, A5 cut-resistant and Level 2 impact-resistant."

Going forward, Ironclad plans to expand its new line of chemical gloves, offering longer cuffs and making changes to meet additional needs for companies in the energy and heavy industries sectors.

Going back into the lab to rethink how to craft a better touchscreen glove was no different, he says: "What's the failure point when you dive down deep into it, and how can our engineering approach resolve it?"

Read the story of Ironclad's beginnings in the construction glove business in "Ironclad Gloves: Dexterity, Protection and Performance."

The original touchscreen gloves on the market had either a surface conductive coating brushed onto them or patches of conductive material sewn on the fingertips. Many makers still use one or both of those techniques.

"When the coating wears away, you've lost the conductivity," Jaeger says. "That really was the state of the art for many years: a fabric with a coating on it."

For its Command line, Ironclad produces two types of gloves: cut-and-sew and knit.

"Our cut-and-sew touchscreen gloves don't have any coating," he says. "We take conductive carbon ions and embed them into the matrix of the fabric when we build the synthetic leather." The fabric on the gloves is conductive for the entire life of the fabric that way.

"We were one of the leaders in getting that technology into our gloves and commercializing it so that it was affordable," Broussard says.



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Ironclad does use a coating on its knit dipped touchscreen gloves, but it also infuses the carbon into the coating on the palm so that it's conductive all through the thickness of that coating. "On a cut-resistant glove with the coating, the touchscreen will last as long as the coating on the glove," Jaeger says.

In a manufacturing environment, typically workers wear their gloves until the palms wear out, so all the Command gloves maintain conductivity throughout their use life.

Designing Gloves That Drive Down Safety ROI

When designing the knit gloves, the design team initially found that hand flexing led to failure in the saddle between a wearer's thumb and index finger. The coating would delaminate from the cut liner over time through normal flexing of the hand, which reduced the life span of the gloves, Jaeger explains.

That's why the new cut-resistant gloves in the Command line have "a second layer of coating on that saddle that actually wraps around a little bit to the back of the hand from the palm," he says.

That second layer also adds some strength in abrasion resistance, Broussard says. But, more importantly, the gloves last four times longer.



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"It doesn't cost four times as much to make them," Jaeger says. "So, your glove spend is cheaper, and your overall costs go down."

In "How to Choose the Right PPE: Safety Gloves," we offer pointers on what to look for when selecting hand protection for your workers.

Why Ease of Use Matters—Even in Gloves

In addition to the reinforcement on the thumb saddle, Ironclad also color-codes its gloves. It was the first to do so, though other glove makers do it now too, Jaeger says.



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That way a safety or production manager can look out across the shop floor and quickly verify that workers are wearing gloves with the right cut level for the jobs they're performing. On flexible work lines, where workers move from station to station, it's important that they're also changing their gloves as needed. The colored saddles make checking for that a fast visual inspection.

The goal? "Make it easier for the person who is wearing the PPE and for the safety manager or facility manager," Jaeger says. "The color coding was a big deal in making our gloves easier to use—a human factor's touch."



Ironclad has an extra dipping process during knit glove production to add conductivity coating for the touchscreen gloves.

What factors are most critical to you in glove selection?

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