



## Welding Heat Stress Relief Product Keeps Welders Cool Under the Helmet in Heavy-Duty Transmission Pole and Tower Fabrication

**Miller's exclusive CoolBand™ headgear-integrated cooling system prevents helmet lenses and glasses from fogging, keeps welders cooler and comfortable throughout the day.**

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We know the right helmet can prevent injuries and even save lives – football players, motorcyclists, miners and construction workers can all attest to that. But, can a helmet make you a more productive and “better” welder? When you think about improving weld quality you usually consider power sources, wire feeders, parameters and weld positions, and maybe even the type and brand of wire and other consumables – but helmets?

**Valmont Industries** – a worldwide leader in the fabrication of structural and transmission towers used by municipalities, utilities, communication companies and irrigation professionals – has 95 facilities worldwide, including in Tulsa, Oklahoma. Outside temperatures in the summer regularly reach triple digits in Tulsa, and temperatures inside the plant can reach as high as 110 degrees. Noting the effects that heat stress was having on his army of 100 welding operators, Valmont Operations Director Tony Schuler worked with Bobby Goodman of Best Welders Supply to identify a solution to keep the staff cool.

The company decided to trial test Miller Electric Mfg. Co.'s exclusive new **CoolBand™ headgear-integrated cooling system** coupled with its **Performance™ Series line of welding helmets**. The result: cooler, more comfortable welders who are able to get more work done in the same amount of time because there is substantially less fatigue and they spend less time wiping sweat and de-fogging glasses and lenses.

***“In the summertime, our welders are working in 100 degree and higher temperatures, so we are always looking for ways to move air and keep our employees cooler. This system looked like the smallest and lightest weight, so we were interested in trying it out. We tested it for 3 months on one of our welders and were very pleased with all the additional benefits we received. We decided to go full-blown and offer those to all the welders and fitters that we have out there on the shop floor.”***

– TONY SCHULER, VALMONT OPERATIONS DIRECTOR



## A COOL SOLUTION

The technology behind Miller's CoolBand is a cooling system that is inserted inside a welding helmet, runs on a battery, and comprises strategically located air vents. Downward air vents provide constant air movement over a welder's face and temples, and upward air vents provide air movement over a welder's entire head. This air movement can lower the temperature inside a welding helmet by 8 degrees.

"Our welders flip their hood down, flip that blower on and air is forced over their face – it simply decreases their sweat," continues Schuler.

***"We're in 105 degree heat, we don't set a break time, if a welder needs to stop and cool off, they just do it as needed. Before the CoolBand, our operators had to stop continuously, lift their hoods, and wipe the sweat off their faces and out of their eyes. Many times they'd have to splash cold water on their faces too."***

– TONY SCHULER, VALMONT OPERATIONS DIRECTOR

All that stopping takes time and slows production. Although Valmont was simply looking to make their operators more comfortable, they've reaped the benefits of a more productive welding operation. "The main thing I notice is the heat," says Brian Mears, a welder at Valmont. "This helmet and CoolBand keeps the heat out of my face. I can take the heat anywhere else, I just don't want it in my face. In this job there's a lot of lifting, going from seam to seam, weld to weld – and I used to have to stop and wipe my face off and clean my glasses and lens. Now I don't have that problem, it's gone."



## THE FOG LIFTED

In both summer and winter, foggy, steamed-up safety glasses and helmet lenses are problems in most welding environments. Wearing a helmet with safety glasses – an often-overlooked regulation – makes for a tight environment with humid air. Miller's CoolBand virtually eliminates fogged-up lenses and glasses, making operators much more effective and productive. "We weld a lot of long poles that have a bunch of clips on them. We can do this so much faster now because we don't have to stop, pick up our hood, wipe off our glasses and then move on. Now we can do a lot more in a row without stopping," continues Mears.

## BUT CAN IT LAST ALL DAY?

Some of the concerns Valmont had about using helmet cooling systems were that they would run out of battery life too quickly and weigh too much. The CoolBand has a compact and sleek look, a comfortable fit that balances evenly on the head and adds just 13 ounces of weight. It also has a battery life of up to 6 hours – more than enough time considering most welders won't spend that much time under a hood during a shift.

According to Mears, "the battery really does last as long as Miller says it will. I usually charge mine while I'm eating lunch because we work 8 to 10 hour shifts and although that's not all arc-on time, I don't want it to run out on me."

## AUTO-DARKENING HELMETS PROVIDE KEY ADVANTAGES

In addition to Valmont providing CoolBand technology, it also offered its welding operators Miller's Performance Series helmets to go along with the system. Compared to many of the welder's previous helmets, the Performance Series helmet is considerably lighter, has the auto-darkening feature, and provides a much better balance.

Mears explains the benefits he has experienced, "My neck used to hurt from the weight of the helmet and I used to get headaches. You see, when your hood is heavy you need to tighten up the band really tight because you don't want it to fall – this gave me headaches. But, I don't have to do that anymore because this helmet is so much lighter. I also really like the auto-darkening aspect. I can keep my hood down when I move from weld to weld. Also, because we weld in such close proximity to each other, I don't get arc flash from the welders on either side of me now that I can keep the helmet down. This new helmet is one of the most balanced hoods I've tried. Even when you tilt your head, it doesn't fall. It doesn't drop unless you want it to. It's smooth and not awkward and cumbersome like most hoods."



***"We've had a very hot summer, and we haven't had any heat related incidents since we switched to our new helmet system. That reason right there more than pays for the investment."***

**– TONY SCHULER,  
VALMONT OPERATIONS DIRECTOR**



## VALMONT KEEPS IT COOL

Although an extremely warm environment for welding, Valmont works hard to make its employees as comfortable as possible. The company considers every option to minimize heat stress, because safety is paramount.

For companies that haven't considered cooling systems as a welding productivity issue, Mears provides this information. He says with his old helmet, he raised and lowered his hood hundreds of times per day and that the new helmet has decreased that activity by 60 to 65 percent. He believes that a job that used to take him 2 hours with his old helmet now takes him an hour and 40 minutes. With that type of productivity increase, apparently the right helmet can make you a better welder.

## Sidebar: Carbon Steel Pole Welding Driven by Advanced MIG Technology, Metal-Cored Wire

Wherever you live and whatever you do, chances are you've seen a Valmont product. As the world's largest manufacturer of transmission and structural products, Valmont's lighting, traffic, utility, and communication poles and towers are located in most cities across the U.S. and worldwide. Its irrigation equipment brings much-needed water to croplands across the country. Valmont is headquartered in Omaha, Neb., but operates out of 95 facilities in 17 countries and employs over 8,000 people.

Schuler explains, "I work out of our 350,000 sq. ft. Tulsa facility – here we have about 375 employees of which about 100 are welders. We build structures from 500 lbs. to 60,000 lbs., in fact the largest pole in the world is built here – its bottom section weighs 56,000 lbs."

Everything that Valmont fabricates is done in-house. Massive sheets of grade 65 carbon steel, ranging anywhere from 3/16 inches up to 7 inches thick, are shipped into the Port of Catoosa for Valmont to fabricate into these super-sized transmission poles and structures. Valmont uses a variety of Miller power sources including Miller's [Axxess® 450 advanced MIG welding systems](#). All welding within the facility adheres to AWS D1.1 structural codes. The company uses the Axxess 450 for its Pulsed MIG capabilities and appreciates the machine's programmability. The ability to set programs with set parameters based on joint type and thickness has helped save the company time and resources. The company has also switched from Flux-Cored wire to Hobart's [Tri-Mark METALLOY VANTAGE NI1 Metal-Cored wire](#) for all its welding applications.

*"We run and lock in about 2-3 different welding scenarios in this environment," says Schuler. "We do 100-percent Complete Joint Penetration (CJP) welds. There is also an array of T-joint bevels, butt joints, splices, seam welds, but the majority of the process was driven from getting to 100-percent penetration from the outside of the plate and not having to go inside and back out or use a back-up bar to be able to do that."*

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“The Axxess machine is programmable,” he adds. “It has several different variations of welding applications that our older equipment does not have. It allows us to adjust and control the penetration in the joint at the 2 o’clock position to be able to penetrate the plate fully and roll up what looks like a weld bead on the inside as we weld the outside.”

The Axxess 450 also provides a number of features that add to the reliability and performance of the machine, including Wind Tunnel Technology™ that prevents abrasive dust and particles from damaging the inside of the machine, and the Fan on Demand™ cooling system that only operates when needed, also minimizing the airborne material pulled into the machine. As most of Valmont’s welding is conducted in the

230-250 amp range, the Axxess 450 also provides the duty cycle Schuler was looking for.

“You have 100 percent duty cycle on those machines (for our application),” says Schuler. “I really like the Miller machine in that it has a tunnel blower in it. Dirt is the number one killer of welding equipment and they have created a scenario that they can cool that unit through a tunnel through the center of the machine. And its Fan-On-Demand, it doesn’t just run all the time. It doesn’t suck this dirt and blow it all into the computer components and the contactors and all the pieces inside the machine. It takes it through a tunnel and cools it from the inside out. They’ve alleviated a big chunk of that problem by doing that.”

***“ It’s probably one of the best things that I’ve seen in thirty years of working with the welding equipment.”***

Valmont relies on Metal-Cored wire for a variety of reasons, including increased deposition rates, deposition efficiency, faster travel speeds and reduced post-weld clean-up.

“We found that Metal Cored is very, very clean, has a high deposition rate, is extremely strong, galvanizes well, and requires very little clean-up,” says Schuler. “Metal Cored has increased our productivity and saved our company a lot of money. For example, I can run .052-inch Metal-Cored wire against 1/16th-inch Flux-Cored wire on an 18-inch 3/8th bevel plate. I will run off the end of the plate about 25 percent faster with the Metal-Cored wire. Metal Cored is a little more costly, but for our operation only 15 percent of our welding costs are consumables. 85 percent of our costs are labor. So if I can save 2 percent in labor then I am doing better than even a 25 percent savings in wire and gas. When I’m looking for better processes, I’m not really paying that much attention to how much the gas and wire is going to cost. I’m looking more as to how many minutes can I save on this piece.”