



## Controlling Humidity to Manage Defects

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### CHALLENGE

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**Uncontrolled relative humidity levels in manufacturing can be the cause of damage to products and strike a serious blow to the top line.** Inconsistent or uncontrolled moisture levels have been linked to everything from electro static discharge defects in circuit assembly to making food unsellable when humidity vacillates during storage. At the 1M sq. ft. Illinois-based Schrock Cabinetry plant, dozens of expansive loading dock and entry doors were creating an unwinnable cat and mouse game with plant operators who tried valiantly to keep plant temperature and humidity stable enough so that the laminated finish didn't crack during production. Through its parent company, MasterBrand Cabinets, Schrock is part of a group of companies recognized as the largest cabinet manufacturer in North America and fabricators of a product expected to last for 20 to 25 years.

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### THE SOLUTION

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**When you manufacture a product with a lifespan that is considered a generation, there is little margin for error.** Mars Air Systems knows about producing long lifespan products and just as much about creating ideal manufacturing environments for the makers of them as well. Mars is the team you want on your side when troubling humidity and condensation create atmospheric conditions that are damaging to your products and uncomfortable or even unsafe for your workers. After evaluating conditions at the sprawling Schrock plant, the Mars engineering team designed a solution that could restore the relative humidity to ideal ranges for their processes, create more comfort for workers and normalize utility costs to more typical ranges.



atmosphere is everything

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# STUDIES REVEAL A 6%-9% UPSIDE EFFECT ON WORK PERFORMANCE BASED ON IMPROVED AIR QUALITY AND TEMPERATURE. (WYON 2004)



## PRODUCING NON-TRADITIONAL SOLUTIONS

A whopping 50% of the total energy produced in Persian Gulf situated-Qatar is needed to air condition the country's interior spaces. With a subtropical climate, very low rainfall and average summer temperatures of 107°F that easily rise to 122°F, a powerful and consistent response is a requirement to keep the outdoors from working its way inside. The need to manage large cavernous structures such as the Doha International Airport – which spans over 22 square kilometers – and the Al Wakra Hospital that spreads over 130,000 square meters -- gave rise to environmental control challenges that were difficult for even the world's richest country to manage on their own. For the Al Wakra Hospital, a total of 198 Mars Air Systems air curtains watch over every hospital entryway to help uphold the non-negotiable indoor air quality standards of a modern healthcare facility. In a separate effort, Mars installed air curtains over facility entrances and baggage handling areas at the Doha International Airport that once handled over 29 million passengers annually. Dust storms and temperature may not always be predictable in this desert oasis, but service from the Mars air curtain has been both durable and certain.



## PUTTING THE SKIDS ON SLIPPERY

Campbell Soup Company, one of the largest food companies in the world, operates a sprawling, 2.4 million-sq.-ft. facility on a 949-acre parcel, which includes operating a cooler/freezer storage unit 24 hours/day alongside a 8'x16' heavily trafficked forklift entrance with a fast-acting vertical-lift door. The hot, humid warehouse conditions collide with the cold, dry-storage area air which produces condensation and pools of water at the base of the freezer -- both inside and out. Water also flowed from the freezer opening directly into the walkways that hosted both foot and forklift traffic. The Mars Air Systems Engineering team isolated the precise area that needed an air burst then installed a bundle of door-activated air curtains and air diffusers right at the forklift entrance. The air curtain's forced-air action stabilized cold area temperatures by creating an air seal which effectively evaporated most surface condensation and eliminated pools of water in the walkway.



## KEEPING IT FRESH ENOUGH FOR A BABY'S BOTTOM

As P&G's third largest diaper plant in the world, responsible for exporting 60 percent of its production to Europe, Asia and the Mid-East, this Cairo-based plant often leads as one of Egypt's top American business success stories. Set in an area known for legendary dust storms that transfer accumulated debris from the far reaches of the Saharan Desert, on any typical day air quality measurements routinely record dangerously high levels of suspended particulate matter. Mars Air Systems to the rescue. With the installation of over 100 Mars air curtain units in a plant hosting over 1200 workers, the result was an effective embargo on bad air and dust from blowing in doorways and entryways. Deploying the Mars comprehensive facilities-wide approach to controlling both loading dock entries and doorways with a directed stream of air, facility managers were assured that unpredictable climatic conditions would be forced to surrender to the power of the Mars air curtain and their invisible shield of protection.



## LOCKING OUT THE UNWANTED

The outcome of manufacturing is at its best when the environment is highly controlled. Regulating the environment must include the ability to normalize temperature and block dust and debris from precision operations. As one of the industry leaders in home safety, credited with pioneering the tubular lock design, and hosts to multiple US-based manufacturing facilities, Kwikset knew the value they could realize by controlling the atmosphere in their plants and cranking up the heat for worker comfort. The Kwikset team turned to Mars Air Systems to produce the heated air curtains they knew would be essential to ride herd over their shipping and receiving dock doors at their California facility. Now, comfort stays in and dust and debris – and the chill – stay out.



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