

Berner International Corp.

Moran Chevrolet



Service Door's Energy Savings Success Prompts Four More Air Curtain Installations at Detroit Auto Dealership

Moran Chevrolet's air curtain nets nearly a \$7,000 energy savings and short seven-month payback with increased employee air comfort.

Clinton Township, Mich.--Moran Chevrolet executives were so enthralled with the energy-saving and air comfort results of its busy service door's new air curtain, the dealership later installed air curtains in the body shop, the customer lounge and two on showroom doors.

All totaled, the nation's eighth largest Chevrolet dealer is now using five air curtains for its 77,000-square-foot suburban Detroit complex. The overhead vehicle door's air curtain showed the greatest results, because cars are constantly ushered in and out of the 32-bay service area. "The service area's vehicle access door operates up to 400 times daily," recalls Moran Chevrolet's President Pat Moran. "Service techs were cold in the winter and temperatures were up to 103°F in the summer, so we knew we were losing a lot of energy."

Moran became an air curtain advocate after observing a Las Vegas, Nev. car dealer's energy-saving successes. Therefore, Moran didn't hesitate choosing an industrial-grade air curtain after an estimate of \$4,800 installed and a 1.4-year payback from Buyline Building Products, a 30-year-old, Rochester, Mich.-based manufacturer's rep firm that also has a service/installation branch. Buyline President Rudy Aho's energy audit estimated the doorway's total heat loss at 3,468,871-BTU/hr and 833 MMBTU/hr per heating season, which adds up to an annual \$3,487 operations loss.

Aho estimates the payback is actually less than half of 1.4-years now because the audit was for heating and didn't include a recently-installed three 15-ton rooftop air-conditioning units manufactured by Trane, Tyler, Texas, for the 20,000-square-foot service area. Needless to say, the annual \$3,487 annual energy loss would have doubled. "Without the air curtain, the service area's new air conditioning wouldn't have been very effective because of the excessive car traffic," said Moran.

Aho incorporated ingenuity into the 12-foot-long industrial-grade air curtain installation by vertically mounting it. The 12 x 14-foot overhead roll-up door and its roller tracks would have blocked airflow from a horizontally-mounted air curtain above the opening, according to Aho.

The Model VSB manufactured by Berner International, New Castle, Pa., uses four single-speed, one-hp. motors with dual blowers to distribute the 9,500-cfm airflow. Aho also used an airflow calibration instrument to ensure the air curtain's nozzle azimuths and directional vanes blow evenly across the doorway and meet at the side jamb to essentially seal it from wind gusts and the outdoor environment. It also features the industry's only volume, velocity and uniformity balance (VVU Balance®), which is critical to performance.

A plunger switch activates the door, but because the door has more than 400 cycles daily, Aho programmed the VSB's control panel for a two-minute delay after the opening/closing sequence. The delay reduces motor wear-and-tear due to constant start/stop operation. "This doorway is a good candidate for staying open all day because of the many opening/closing cycles," said Aho.

Air curtain performance specifications by manufacturers can sometimes be inaccurate, which in this circumstance might have cost Moran optimum energy savings. Therefore, Aho purposely chose a model certified by the Air Movement & Control Association-International (AMCA), a Arlington Heights, Ill., which is a not-for-profit organization that tests and certifies manufacturer's stated performance of fans, blowers, air curtains and other air movement devices.

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Air Curtains Are Part of Remodeling

The air curtains are part of Moran's air comfort control and energy savings updates that include a new light-colored insulated rubber roof, high efficiency boilers that supply radiant heating to showroom sidewalks and windows, insulated plate glass replacements, and other improvements.

The service area success led to an identical VSB air curtain installed in the body shop area. Aho installed an optional cleanable filter in both units because of the inherent industrial environment of body work and service areas.

In coordination with a newly-remodeled customer waiting lounge and service repair write-up area, a six-foot-wide MaxAir air curtain was mounted horizontally overhead. Its anodized aluminum exterior matches the aluminum framing of the glass double door pedestrian entrance. This 3,026-cfm air curtain saves energy and maintains set point temperatures in an area where the door is used 200 to 300 times daily.

While energy is important, the air curtain's 20-kW electric heater maintains a 66°F wintertime set point for employee and customer comfort and is controlled with Berner's on-board proprietary Intelliswitch microprocessor. Aho programmed the Intelliswitch to run the 10-speed fan control on speed number 8 when the door is open to separate indoor and outdoor environments. After the door closes, the air curtain continues to run on a time delay setting to prevent continuous on/off cycles during busy periods. If the thermostat calls for heat after the door closes and the time delay setting has expired, the microprocessor switches to a quieter motor speed number 3. The air curtain and heater shut off after satisfying room set point temperature. "The two most important things of a pedestrian door air curtain is aesthetics and fan adjustability for the application," said Aho. "Some of the write-up stations are six feet away and I've had no complaints on drafts, uncomfortable temperatures or noise."

The showroom has been outfitted with two multi-speed MaxAir air curtains with thermostatically-controlled electric heat coils—for the main showroom door, and the combination pedestrian/vehicle showroom door. The latter used a custom-manufactured nine-foot long air curtain with an electric heater on the pedestrian side because the door's vehicle side is seldom used.

Like all mechanical equipment, air curtains need annual check-ups to ensure performance standards. Therefore, Aho included a semi-annual service agreement with each air curtain purchase that includes a:

- filter cleaning;
- directional airflow adjustment for winter (directed slightly outdoors) or summer operation (directed slightly indoors);
- airflow effectiveness check;
- check thermostat adjustment with handheld digital temperature reading 10 feet from the air curtain;
- and delay (if any) operation;

Moran has yet to compare energy bills, but there's no doubt in his mind he's getting a substantial energy savings from his five air curtains. "It's difficult to scientifically compare energy use before and after the air curtain," said Moran. "because we added service area air conditioning, increased the building footprint during that period and other variables. However, our energy bills haven't risen much over the pre-air curtain years and last summer was the hottest we've had."