

the challenge:

Encompass Health Rehabilitation Hospital of Middletown, DE is a provider of inpatient rehabilitation following a stroke, hip fracture, and other complex neurological and orthopedic conditions. It contains 40 beds and includes one patient room that functions as a negative pressure infection isolation room. The room is 19' x 19' and conditioned using one constant volume supply box and one dedicated exhaust fan.

The room was designed to operate at a minimum differential pressure of -0.020 " w.c in relation to the adjacent corridor. However, the exhaust fan for the space could not always achieve the required -0.020 w.c. pressure, which caused nuisance alarms and, in some instances, a reversal of the room pressure when room doors opened. The actual exhaust air from the space was increased to the maximum extent possible for the exhaust fan.



Project | *Encompass Health Rehabilitation Hospital*
Location | *Middletown, DE*
Product | *Calla® Health Zone™ AirAssure™ ceiling panels*

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BPCS-6460-0121

the solution:

Instead of replacing the exhaust fan to achieve the required room differential pressure and to help eliminate the pressure variability, the facility replaced the existing ceiling panels with new Calla® Health Zone™ AirAssure™ ceiling panels from Armstrong Ceiling & Wall Solutions. When placed in a standard ceiling suspension system, AirAssure acoustical ceiling panels form a tight seal and reduce airflow leakage through the ceiling plane up to more than four times more than panels without AirAssure performance.

According to Tim Roaten, President of Eastern Air Balance of Manheim, PA, which conducted tests before and after installation of the new panels, the target was to maintain the minimum -0.020 " w.c. pressure differential under all conditions. By changing the ceiling panels, room pressure increased to -0.0368 " w.c., providing an 84% buffer above the design minimum. There were no measurable changes to the supply and exhaust airflow in the space. The only change was the replacement of the existing ceiling.

The increase eliminated nuisance room pressure alarms and the need to replace the exhaust fan. It also brought the room into compliance without any other costly upgrades to the HVAC system. In addition, replacement of the ceiling only took a day, so extended downtime for the room was eliminated. Also eliminated were labor costs involved in caulking ceiling panel edges, an action some facilities are forced to undertake to achieve desired pressure.

"We knew the ceiling would make a difference but didn't know how much," Roaten states, "and it performed much better than we imagined, nearly doubling the pressure differential in the room. We simply weren't expecting that much of an increase."

Kevin McNeil, Director of Plant Operations for the hospital, agrees. "It was a significant improvement," he says. "We are now able to maintain the required pressure throughout the day, which is especially important today because of the pandemic. If we need another room that requires negative pressure, I would highly recommend this system."

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