

# Clear Solutions

## Bergen Regional Medical Center

### AN AQUIS® CPR-1 SYSTEM CASE STUDY

IAQ INNOVATION  
PROFILES

#### Customer Profile:

Bergen Regional Medical Center (BRMC) is located on a 65 acre campus in Paramus, New Jersey. With 1,885 patient beds, BRMC is the largest hospital in the State of New Jersey.

#### Customer Issues:

- Aging air handlers
- Excessive air handler maintenance
- Upcoming inspection by JCAHO

#### Project Objective:

Provide a solution that avoids significant capital investment for BRMC while still improving air quality and air handler efficiency

#### Results:

- Cost avoidance in excess of \$3 million
- 15.3% improvement in efficiency
- Full regulatory compliance
- Reduced air handler maintenance

### NON-COMPLIANT CONDITION



### COMPLIANT CPR-1 SYSTEM



Air Quality Innovative Solutions (AQIS) was asked by Bergen Regional Medical Center (BRMC) to conduct an assessment of their HVAC air handlers. What AQIS found was typical of many aging air handlers; the condensate pans and fan chamber floors had been installed without adequate surface pitch for drainage of condensate water. Consequently, the air handlers drained poorly and were prone to standing water and biological growth which required the constant attention of the facilities management team. As a result of years of standing water, the condensate pans and fan chamber floors were severely rusted. This condition had led to damaging water leaks, reduced air handler efficiency, and compromised structure of floors and walls. The "before" condition of the BRMC air handlers can be seen in the following photograph.

Joe Glaski, Vice President of Facilities & Engineering for BRMC, was greatly concerned about the condition of the BRMC air handlers. "Aside from the reduced efficiency and damaging leaks, these air handlers presented a serious risk of regulatory non-compliance," he commented. Without an effective and compliant solution, BRMC had been forced to contemplate replacement of the air handlers.

After a comprehensive evaluation of the BRMC air handlers, the AQIS Assessment Team determined that they were prime candidates for remediation with the AQUIS® CPR-1 System. The CPR-1 System is a patent pending and proprietary multi-layer system for the remediation of problematic condensate pans in commercial and industrial HVAC systems. The CPR-1 System is the only system of its kind that is fully compliant with all applicable regulations for use in HVAC systems as defined by the NFPA, ASHRAE, the EPA and others.

Mr. Glaski found that the cost to remediate an air handler was just a fraction of the replacement cost of each unit. Armed with this data, he proceeded to approve the remediation of 13 air handlers across the BRMC campus.

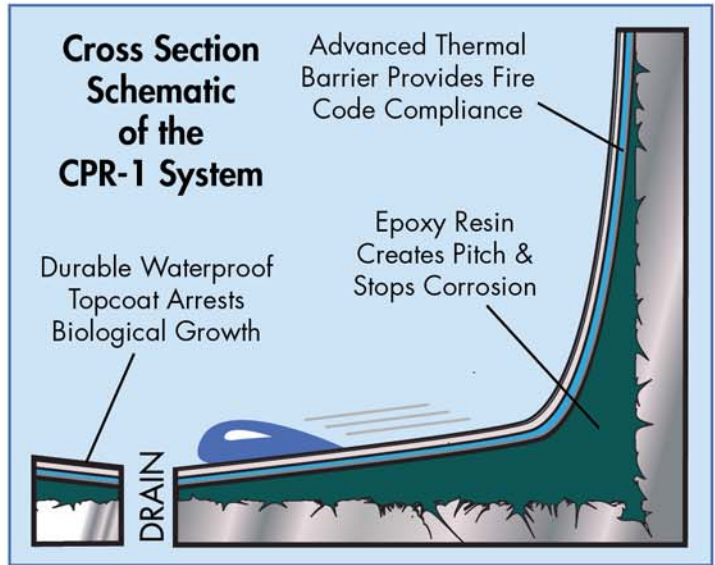
The results of the remediation are as follows:

**The CPR-1 System has eliminated standing water and improved air quality in the BRMC air handlers.**

The CPR-1 System was installed in all air handlers at a pitch in excess of 1/8" per linear foot to the drain (per ASHRAE 62) to ensure the prompt removal of condensate water and the complete elimination of standing water. A schematic of the CPR-1 System can be seen in the illustration at right. The removal of standing water coupled with a built-in active antimicrobial, has virtually eliminated biological growth on the floors of the BRMC air handlers. This improvement in performance has enabled BRMC to successfully meet their JCAHO (Joint Commission on Accreditation for Healthcare Organizations) Utilities Management Plan.

**The CPR-1 System has stopped damaging water leaks and improved efficiency by sealing all holes in the condensate pans and chamber floors.**

In order to quantify this improvement in efficiency, AQUIS conducted an air flow analysis both before and after the installation of the CPR-1 System. These measurements indicated that after the installation of the CPR-1 System, the air flow across the coils increased by an average of 15.3% for the air handlers analyzed. To further capitalize on this improvement in efficiency, BRMC made the decision to install variable speed fan motors. The air flow data for the three air handlers tested is as follows:



to halt further degradation and restore rigidity. Floors that had been compromised by corrosion have been structurally restored and are once again safe to walk on for maintenance activities.

**The CPR-1 System has extended the service life of the BRMC air handlers.**

By improving efficiency, restoring structure, and halting corrosion, Mr. Glaski anticipates that BRMC will gain 10 or more years of service life. "BRMC was able to avoid spending an estimated \$275,000 per air handler by installing the AQUIS System" he said.

**The CPR-1 System has restored the BRMC air handlers to a state of full regulatory compliance.**

Mr. Glaski stated that "The AQUIS System was a key part of BRMC's recent EOC deficiency-free inspection by JCAHO."

Air Quality Innovative Solutions, LLC (AQUIS), located in Orlando, Florida, is a specialty services and technology development company focused on addressing the health and safety issues associated with industrial HVAC systems. AQUIS can be contacted at (888) 494-1191.

	AHU-1	AHU-2	AHU-3
Flow - Before (CFM)	27,328	21,500	21,896
Flow - After (CFM)	29,678	25,536	25,935
% Change	8.6%	18.8%	18.4%

Before & After Air Flow Test Results

**The CPR-1 System restored structure to floors and walls of the BRMC air handlers.**

The advanced Nanocomposite Epoxy Resin used in the CPR-1 System binds to rusted and corroded steel

<sup>1</sup> The air flow analysis was conducted using a Shortridge multimeter with Velgrid attachment where the air velocity was measured across the entire face of the coils allowing for the calculation of CFM