



# CASE STUDY



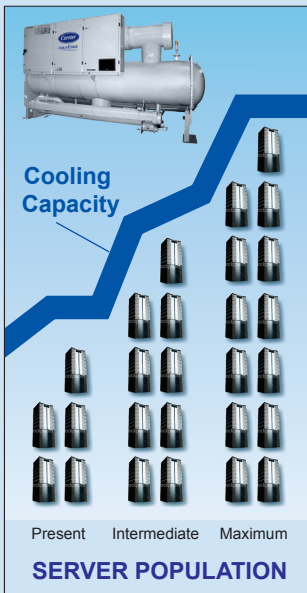
## Iron Mountain

# CHILLERS PROVIDE EFFICIENT COOLING TO GROWING DATA CENTER

### Project Objectives

Iron Mountain® operates a secure data storage facility, including a data center, in a former limestone mine in rural Pennsylvania. The data center maintains servers that provide secure information back-up for clients around the U.S. and internationally.

In order to meet the precise cooling needs of the growing data center in an efficient manner, and to obtain a top industry rating for their facilities, Iron Mountain needed a completely reliable chiller that could operate efficiently under part- or full-load conditions.



*A variable speed drive allows the AquaEdge® 23XRV Chiller to provide efficient cooling to the Data Center as the server population grows to maximum capacity.*

**“The AquaEdge 23XRV Chiller is an exceptional product. The efficiency has been even greater than we expected.”**

— Chuck Doughty,  
Vice President Engineering  
Iron Mountain

### The Solution

The Carrier AquaEdge® 23XRV Chiller features a variable speed drive that enables the unit to deliver impressive efficiency regardless of load. This allows the 23XRV to effectively “grow” with the data center’s server population, providing more cooling as more heat-producing servers are added. Also, the AquaEdge 23XRV Chiller’s stellar performance in fail-safe testing by an outside agency helped to secure the facility a top rating in the data center industry, providing peace of mind for Iron Mountain clients and a marketing advantage for the facility itself.



## Project Synopsis

Iron Mountain® operates a secure data storage facility, including a data center, in a former limestone mine in rural Pennsylvania. Individual storage units contain paper, magnetic media, film and microforms stored by organizations as diverse as the U.S. government, Warner Brothers, Disney and the Pro Golf Association. The facility serves 2,300 customers in the U.S. and four foreign nations. In addition to its individual storage facilities, Iron Mountain added a data center to maintain servers that provide secure electronic information back-up for clients. As in each individual storage unit, the data center was designed with its own self-contained cooling system and redundant electrical supply for the purposes of safety and reliability.

In order to meet the precise cooling needs of the growing data center in an efficient manner, and to obtain a top industry rating for their facilities, Iron Mountain needed a completely reliable chiller that could operate efficiently under part- or full-load conditions. They installed two Carrier AquaEdge® 23XRV Chillers, a centrifugal chiller with a variable speed drive that enables the unit to deliver impressive efficiency regardless of load. The 23XRVs will effectively “grow” with the data center’s server population, undertaking a greater cooling load as more and more heat-producing servers are added.

The AquaEdge 23XRV Chiller also played an important role in the data center’s quest to receive a top industry rating. The chillers’ stellar performance in fail-safe testing by an outside agency helped to secure the facility a “10” rating, the best in the data center industry.



Rich Benkowski, Commercial Sales at Pittsburgh-based Standard Air and Light, commented, “The chillers performed beautifully in the testing. Under no circumstances did they fail. That contributed to Iron Mountain’s receiving a “10” rating.”

With this top rating, Iron Mountain is acknowledged throughout the industry as a first-quality provider of data center facilities and services. In addition to the peace of mind this gives their customers, the rating places Iron Mountain at a competitive advantage in recruiting customers for their data center space.

Since installation and fail-safe testing, facilities staff at Iron Mountain have experienced ongoing satisfaction with the 23XRV chillers’ performance. Chuck Doughty, Vice President Engineering, said, “The AquaEdge 23XRV Chiller is an exceptional product. The efficiency has been even greater than we expected. We’ve been so pleased we’re planning to acquire two more 23XRVs in the near future.

## Project Summary

**LOCATION:** Boyers, PA

**PROJECT TYPE:** Retrofit

**BUILDING AGE:** 100+ years

**BUILDING TYPE/SIZE:** Former limestone mine converted to data storage facility

**BUILDING USAGE:** Secure data storage and growing data center “server farm.”

**UNIQUE FEATURES:** Data center operates 220 feet underground in a former limestone mine. Servers generate tremendous heat; as the server population in the data center grows, the AquaEdge® 23XRV chillers will respond with efficient cooling due to the chillers’ variable speed drive, which enables units to work efficiently under part- or full-load conditions.

**MAJOR DECISION DRIVERS:** Growing data center needed a chiller that could operate efficiently under present part-load conditions, and also operate efficiently at maximum load when the facility is completely populated with servers. Industry standards demand reliable HVAC systems and redundant power sources.

**HVAC EQUIPMENT:** Two AquaEdge® 23XRV Chillers

**OBJECTIVE:** Control environmental heat and humidity in underground data center facility. Provide reliable environmental conditions to earn data center top industry rating and ensure data center customers’ information is secure.

**NOMINAL COOLING TONS:** 750

**INSTALLATION DATE:** August 2006

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