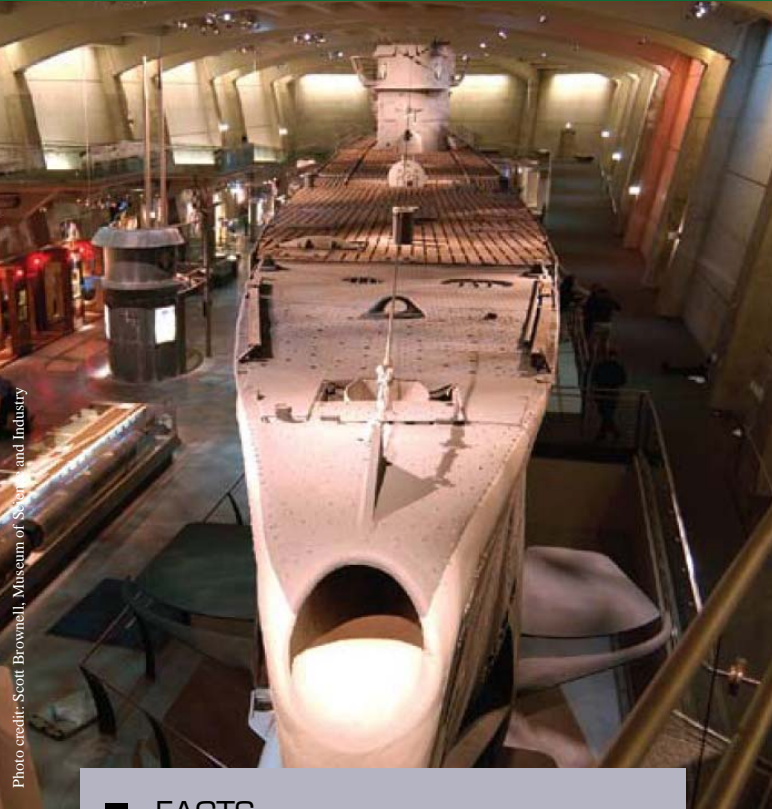


## ***SEMCO Technology Helps Preserve World War II German Sub at Museum of Science & Industry***



Nearly a half-century has passed since the German U-505 submarine was captured during World War II, but you would never know it to look at her. Curators at the Museum of Science & Industry in Chicago where the sub is on exhibit want to keep it that way.

### ■ FACTS

**Customer:**

Museum of Science & Industry in Chicago, USA.

**Need:**

A climate controlled environment with state-of-the-art temperature and humidity control.

**Solution:**

Pinnacle® Primary Ventilation and Energy Recovery System with de-humidification wheel, cooling coil, heating coil, total energy recovery wheel and a humidifier for wintertime operation.

# A year round environment of 72°F with constant relative humidity

Since her capture in 1944, the U-boat has survived a near sinking, a treacherous tow from the Atlantic to the Great Lakes, and 50 years of turbulent Chicago weather as an outdoor exhibit. The years had taken their toll, but the Museum launched a massive restoration project to preserve the U-505 and then move her indoors to a climate controlled environment.



Today, the U-boat resides in a specially constructed 75 ft. x 42 ft. underground exhibit space at the Museum of Science and Industry where visitors of all ages can come aboard to see this painstakingly restored artifact.

To make sure that the U-Boat retains her youthful appearance, the exhibit space was engineered for the utmost in temperature and humidity control. Primera, a leading engineering and design management firm in Chicago, was charged with the task of designing a space and mechanical system that would protect the sub indefinitely from environmental wear and tear and provide a comfortable, healthy indoor space for museum patrons.

“We wanted to maintain a year round environment of 72°F with a near constant relative humidity of 40%,” said Ken Panucci, Mechanical Engineer at Primera.

It was not an easy task given Chicago’s broad spectrum climate and the limitations of the existing chilled water system, which could only provide a 44 degree supply temperature. Because Chicago summers can be quite hot and humid, this supply temperature was not low enough to provide adequate cooling and dehumidification.

Furthermore, the traditional method of overcooling the air and then heating it back up would be terribly inefficient. Designers considered active dehumidification options typically associated with natatorium applications, but the heat energy required to regenerate the desiccant was too cost prohibitive.

Humidity and temperature weren’t the only challenges. Space was also limited for a system that would ultimately have to deliver 20,000 CFM of conditioned outdoor air to the exhibit space. Noise was another concern since the exhibit would include both sound effects and interactive options.

The solution to these and other problems was found in a Pinnacle® Primary Ventilation and Energy Recovery System made by SEMCO. The key to the Pinnacle’s effectiveness is its unique passive dehumidification wheel. This wheel uses a desiccant material that is optimized to remove moisture from a saturated air stream without an active regeneration source. Other components included a cooling coil, heating coil, total energy recovery wheel, and a humidifier for winter-time operation.

## SEMCO

SEMCO is a unique indoor environment products manufacturer serving the key disciplines of air distribution, noise abatement, temperature, and humidity control in the commercial and industrial building markets. SEMCO was acquired by Fläkt Woods in 2007.

## Fläkt Woods Group

Fläkt Woods is a global company providing solutions for ventilation and air treatment for buildings as well as fan solutions for Industry and Infrastructure applications.

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