



Energy. Managed.



# Mersyside Maritime Museum Case Study

## Consultancy Services

Maritime museum makes significant savings with TEAM.

The energy management expertise offered by TEAM Consultancy services has meant the Merseyside Maritime Museum has seen a rapid return on their investment in half-hourly metering in preparation for the CRC deadline.

## Background

Merseyside Maritime Museum is one of the largest of its kind in Europe, and has the most extensive collection of Grade I listed buildings in England. Located on the prestigious Albert Dock, it houses many collections of maritime history including paintings, models, artefacts and several full-size ships. The collections reflect Liverpool's historical importance as a gateway to the world, and attract around 331,700 visitors a year. The museum is part of the National Museums Liverpool, which has committed to a formal Energy and Environmental Policy, and it is an established user of TEAM Sigma software to monitor its energy cost and consumption.

The rapid rise of wholesale gas and electricity prices, and the need to meet funding requirements set by the Department for Culture, Media and Sport encouraged the Merseyside Maritime Museum to look at ways it could reduce its energy consumption and CRC emissions/costs.

They contacted TEAM and decided to use TEAM's consultancy service as part of an advanced metering project.

## Installing half-hourly meter readers

Like many other museums and galleries, Merseyside Maritime Museum had no provision for 30 minute data readings for its electricity, gas and water consumption. This meant that it was not possible to pinpoint what was causing noticeable variations in energy use.

National Museums Liverpool Energy Manager Carole Youds said, "The site had provisions for collecting internal temperature and humidity but nothing in place for obtaining detailed profile data for electricity, gas and water, or other factors relating to energy consumption".

Carole continued: “We used to receive monthly utility bills and compare them to monthly meter readings from the site maintenance team. As we were not receiving real-time data it was extremely difficult to pinpoint what we should be doing differently. The practical solutions provided by TEAM have therefore been invaluable in helping us to get back on track”.

The initial solution involved the utility companies replacing the meters and TEAM installing a multi-log data logging system.

## Identifying energy savings

TEAM's first challenge was to identify where savings could be made. Through analysing half-hourly data using Sigma HF it highlighted that 400 kW of electricity was typically used during the day and that a level of 280 kW was still being used at nighttime. It identified that the chillers, Air Handling Units (AHUs) and heating systems were in operation 24 hours a day, seven days a week in order to maintain a desired temperature level of 24°C and a relative humidity of 50% for preserving the museum's artefacts.

TEAM Consultancy advised on how the museum should operate the three AHUs serving the theatre, entrance foyer and shop. These AHUs were operating continuously but TEAM made the recommendation for time switches to be installed, resulting in an automatic switch off whenever the building was unoccupied. To investigate how the chillers should be operating, additional sub-metering was installed on all three chiller units. It was recommended that Carole measured the system performance by relaxing the chiller controls and their set points. The next step was to install temperature and humidity sensors to measure the external conditions and observe how effective the systems were.

The report below, taken from Sigma HF, illustrates site performance before and after relaxing the controls. TEAM recommended relaxing the humidifying systems and setting the bands to 40%- 60% instead of 50% (where appropriate). This has resulted in substantial electricity, gas and water savings for National Museums Liverpool.

Speaking of the difference made by TEAM's involvement with the museum Carole said: TEAM's introduction of a more thorough and efficient way to manage energy has led to significant savings for National Museums Liverpool, not least because the museum consumes 20% of the total electricity and 13% of the total gas for all of our sites. Our gas consumption has been reduced by a staggering 25% and our electricity consumption by 7% in seven months.

## Key achievements

TEAM has helped National Museums Liverpool to make a number of significant savings including:

- Reducing electricity consumption by 7.0% in 7 months
- Reducing gas consumption by 24.6% in 7 months
- Reducing water consumption by 10% in 7 months
- Achieving £22,633 of electricity and gas savings in 7 months
- Improved heating and cooling efficiency

The Estate Management Department for National Museums Liverpool has also received energy efficiency accreditation from the Carbon Trust for all of their sites.

## Savings

The total cost of the Merseyside Maritime Museum's meter reading system was £7,500. The system has paid for itself within 3 months; a rapid return on investment.

## About TEAM

TEAM is a leading supplier of integrated energy and carbon management solutions, providing monitoring and targeting software, utility bill validation and consultancy services across a wide variety of sectors. Established for over 25 years, TEAM's expertise makes them the perfect carbon management partner.