

**AQUARAY CASE STUDY: Liverpool World Museum, Liverpool, UK**

**The Client**

Liverpool's World Museum has a long history and remains one of the city's premier public institutions, with hundreds of thousands of visitors every year enjoying its diverse collection of impressive exhibits. The museum has a long history of aquarium exhibitions, going back to the mid 1800s, and recent investment has included a significant modernisation of the museum's current aquarium. This work has provided the opportunity to upgrade infrastructure and take decisive action to reduce energy and associated operating costs.



**"BEFORE"**  
With 250w metal halide



**"AFTER"**  
With 2 x 2000HD Ultima NP tiles

**The Brief**

The challenge presented by Paul Tyson, the aquarium's curator, called for a lighting solution that delivered a sustained reduction in maintenance, equipment replacement and energy costs and a dramatic visual

experience for the museum's visitors while, at the same time, ensuring that the various welfare requirements of the aquarium's display animals were secured. The brief also included a requirement for lighting in the extensive quarantine and off show holding facilities and the solution had to include a flexibility that would allow for the continually changing nature of public aquarium displays.

**The Solution**

The diverse range of biotopes on display at the museum meant that the entire range of colour variants in the AquaBeam range could be deployed, taking maximum advantage from the system's modular format. The various options built into the AquaRay<sup>®</sup> MMS mounting system meant almost no bespoke fabrication was required to optimise the position of individual units which could be directed as required to highlight particular features or display specimens. AquaRay<sup>®</sup> MultiControl units were used to provide distinct intensity and photoperiod control on each display, addressing energy reduction, welfare and aesthetic considerations at the same time.

**"We could not be happier with the results of the new lighting installation. The compact, modular and low-profile system and flexible mounting options work perfectly in the often restricted spaces above displays. We also now have "off-show" quarantine lighting which is cost-effective and robust and provides much improved illumination for observing stock. Visually they look fantastic, particularly where we've used the near-UV option over some of the marine displays, and our visitors regularly comment on the quality of the displays! Most importantly we are achieving great ongoing savings and enhancing our carbon-reduction credentials."**

*Paul Tyson - Education Manager and Curator (Living Centres)  
National Museums Liverpool*

**Comparison of Savings in Electricity and CO<sub>2</sub> Emissions**

Savings per year (energy)	<b>£999.37</b>
Savings over projected minimum lifespan	<b>£4996.85</b>
Percentage saving	<b>70%</b>
Reduced CO <sub>2</sub> emissions over projected minimum lifespan	<b>4.44 tons</b>
Total reduction in CO <sub>2</sub> emissions	<b>31%</b>

**ROI**

AquaRay unit price	<b>£41.24</b>
Total investment in AquaRay lighting	<b>£6500.00</b>
Total savings per year	<b>£1703.37</b>
Total savings over specified period	<b>£8516.85</b>
Payback period on initial investment	<b>3.80 years</b>