

# LEISURE CENTRE



# VALE OF GLAMORGAN BMS OCCUPANCY CONTROL CASE STUDY



Legacy Leisure works in partnership with your Local Authority  
Legacy Leisure yn gweithio mewn partneriaeth â'ch Awdurdod Lleol

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## BACKGROUND

Despite the age of the building the site survey for Barry Leisure Centre identified that the existing building management system (BMS) controls were in good condition, and there was scope to harness significant energy savings by adjusting the BMS operating strategy.

### DESCRIPTION

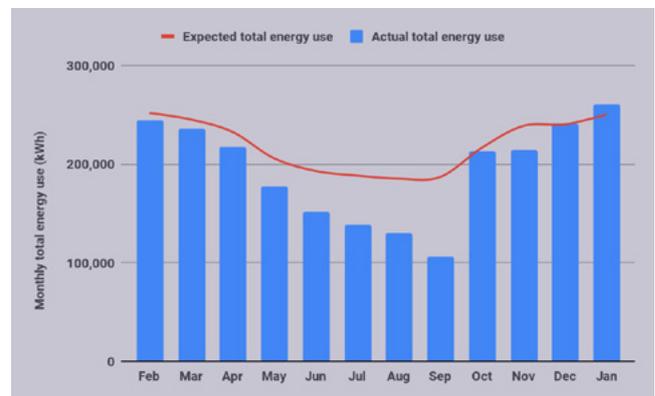
Pure World Energy recommissioned the existing BMS with an advanced controls strategy which incorporated

- Free heating from pool hall extract air to preheat fresh incoming air
- Time zones and temperatures adjusted to meet the requirements of different zones within the building
- CHP was set as lead boiler to ensure the traditional boilers only operate when the CHP is unable to satisfy the heating demand.
- Replaced temperature sensors to ensure accurate inputs on which the control strategy relies
- Installed CO2 sensors in the main sports hall, changing rooms and squash courts extract duct. Human beings breathe out CO2 so there is a positive correlation between CO2 levels and the number of people present, hence why CO2 levels are used to measure occupancy. The variable speed drive adjusts the speed of the fan automatically based on the number of people present, i.e. don't need same amount of fresh air for one person in a sports hall as for 50 people in the same sports hall.

### IMPACT AND BENEFITS

12% reduction in overall electricity and gas use which accounts for an annual saving of **£20k and 73 tonnes CO2**.

Project paid back within **6 months** and had no noticeable difference upon customer experience.



### LESSONS LEARNT

- CO2 sensors are effective for AHU control in low use areas where a VSD is already installed because air change rates required vary dependent upon level of occupancy. Works particularly well in spin rooms which offer virtual classes, and sports halls where otherwise the AHU must be on 100% during occupied times.
- Maximum savings were seen in the summer as better controls prevented boilers and CHP from running at the same time.