

Hibernation of the aquatic centre during COVID-19 period

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About this update

This dated news record has been reorganised for clear reading and connected to current guidance.

Publication date: April 20, 2020.

Status note: Present-tense statements, market figures, deadlines and program details in the archived record belong to its publication date. Check current official sources before making a decision.

What this article reported

In these unprecedented times, our buildings and facilities need to adapt to a new way of working as we have done. In this article, we explore some ways aquatic centres can save energy and money during hibernation.

Over the last few weeks, several social distancing measures have been implemented to limit the spread of COVID-19 in different states and cities. Among those measures are the closure of indoor sport facilities and entertainment venues. Aquatic Centres are concerns and several centres across the country are now close to the public.

It is unknown how long those restrictions will be enforced for. However, it seems clear that it will last for more than 2 months (some predictions talking about 18 months). Aquatic Centres are typically the largest energy consumers of a Council's portfolio and hibernating them during the COVID19 period could save a significant amount of energy and money for Councils.

Shutting down an aquatic centre is definitely possible, although some procedures must be clearly followed.

Here we propose three stages to slow down or shut down the aquatic centre:

Shutting down of the water heating,

Reprogramming of the HVAC system to slow down the pool hall air heating,

Shutting down water recirculation and drainage of the pool.

Shutting down of the water heating

This is the easiest and most immediate source of energy saving. All aquatic centres consume energy to maintain the pool water at a suitable temperature. The heat is supplied by one or several heating systems such as gas boilers, electric heat pumps, cogeneration system, solar thermal, or heat recovery systems. During this extended period of time where the pool will be unoccupied, maintaining the heating system active is not relevant.

For every heating systems, especially for gas boilers, heat pumps, and cogeneration systems, there are procedures provided in the user's manual which explain how to hibernate such equipment. The purpose of a hibernation procedure (or extended shut down) is to ensure that the system remains inert

and does not degrade during the shutdown period.

If necessary, get your contractor to attend the site and perform the procedure.

The BMCS should be maintained in operation during the whole period of COVID-19. If necessary, you can change the pool water setpoint to 0 degrees C (in order to remove the need from the BMCS to activate heating and to avoid getting fault alarms).

The consequences of stopping the heating are:

Heating water loops are stopped, which leads to energy savings from the operation of the pumps.

Pool water will naturally cool down. Note that it could take several hours (up to one or two days) to heat up the pool water to its original set point when the centre will re-open. The timeframe requires to heat up the pool water depends on the water volume to heat and heating capacity available.

Water heating systems in hibernation mode. No hazards related to the operations of the heating systems and savings on the maintenance costs.

Note that, when available, pool covers should be used during the whole period in order to protect the water from dust and reduce evaporation.

Reprogramming of the HVAC system (applies to indoor pools)

The next step of the shutting down of the aquatic centre is related to the HVAC system. This applies to indoor pools only. While the pool is unattended, heating and cooling of the pool hall air are not necessary. However, to protect the building from condensation, you must keep the relative humidity within an acceptable range and the air temperature above dew point!

Separately, you can slow down the fans used for the air circulation. It is important to keep the air flowing, but it should be limited to the strict minimum required. Reducing the air movement reduces evaporation from exposed pool water, which help to maintain the relative humidity within an acceptable range.

Get the pool operators or BMCS contractor to adapt the set points and controls of the BMCS:

Reduce the air flow,

Disable the air temperature set point,

Disable the heating and cooling systems, unless when they are used to maintain the air within the acceptable RH range and air temperature above the dew point.

Shutting down water recirculation and drainage of the pool

Finally, the recirculation pumps could be stopped. However, this can have a significant impact on other assets and must be carefully planned. For instance, when recirculation pumps are stopped, chlorine used for disinfection of pool water will naturally degrade until none is left. At that point, microorganisms can thrive especially with natural light. This can become a health hazard. If the circulation pumps are stopped, it would be recommended to drain the water out to reduce health hazards.

As a minimum, any superfluous filters should be isolated and put into a hibernation mode. Especially with UFF (Ultra Fine Filters), make sure you follow the protocols described by the manufacturer.

Note: if you slow down the pumps to save energy, make sure that you comply with the minimum flow rate required by the filtration system! Sand filters, particularly, do have a minimum flow rate. Below this value, water can create channels in which biofilm forms. These biofilms then accelerate the growth of micro-organisms.

Shutting down all unnecessary equipment

Finally, and this applies to any step above, shut down all non-essential items such as:

Domestic hot water systems (for change rooms typically),

Lighting, if on a timer,

Any automatic features on a timer,

Small A/C units for office rooms,

Equipment from the gym.

How much money could be saved for the above recommendations?

Below is the typical energy breakdown of swimming pools

| Typical ratio | Assets | | --- | --- | | 60-80% | Pool heating (and air heating for indoor pools) | | 10-15% | Pumping system | | 5-15% | Domestic hot water | | 5-10% | AC, office, other |

Now, consider your annual energy expenditure. Let's assume \$300k. Note that, as a rule of thumb:

for an indoor pool, the energy consumption is fairly stable throughout the year, while

for an outdoor pool, 2/3 of the energy is consumed during 1/3 of the year (winter).

With steps #1 and #2, the pool could save from \$15k/month to \$20k/month.

With step #3, the pool could save from \$2.5k/month to \$3.8/month.

All non-essential items could save from \$2.5k/month to \$6.3/month.

Note that this shutdown can be the opportunity to move forward with the implementation of equipment upgrade and energy efficiency improvements.

If you have any questions, the Northmore Gordon team will be happy to help.

Stay safe.

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Why are aquatic centres particularly important targets for energy hibernation during facility closures?

Aquatic centres are typically the largest energy consumers in a Council's portfolio, making them high-impact candidates for hibernation strategies. Pool heating, air handling for indoor pools, and water circulation systems consume 60-80% of total energy for pool heating and air heating, 10-15% for pumping, 5-15% for domestic hot water, and 5-10% for other uses. During extended closures like COVID-19, these systems can be sequentially shut down to achieve substantial savings—potentially \$15k-\$20k monthly from steps one and two alone, with additional savings from non-essential equipment shutdown. Our energy audit and management assessment capabilities can identify which systems are consuming energy unnecessarily during closure periods and develop site-specific hibernation protocols.

What are the three sequential stages Northmore Gordon recommends for hibernating an aquatic centre?

Stage one involves shutting down water heating systems entirely, allowing pool water to naturally cool over several hours to days. Stage two requires reprogramming the HVAC system to slow pool hall air heating while maintaining relative humidity and temperature above the dew point to prevent condensation damage to the building. Stage three involves shutting down water recirculation and draining the pool to eliminate health hazards from chlorine degradation and microorganism growth. Each stage can be implemented independently based on closure duration and operational constraints. The Building Management Control System should remain operational throughout to monitor conditions and prevent faults.

What operational hazards must be managed when hibernating pool water systems?

When recirculation pumps stop, chlorine disinfectant naturally degrades, allowing microorganisms to proliferate, particularly with light exposure, creating potential health hazards. Sand filters and other filtration systems require minimum flow rates to prevent biofilm formation. For indoor pools, HVAC systems must maintain air circulation and humidity control to prevent condensation accumulation that could damage building structure. Pool water temperature can be set to 0°C on the Building Management Control System to prevent heating activation and fault alarms. These considerations require careful sequencing and monitoring. Our energy management system expertise helps establish appropriate control parameters and monitoring protocols during facility hibernation.

How long does it typically take to restore an aquatic centre after hibernation shutdown?

The pool water naturally cools during hibernation, requiring several hours to one or two days to reheat when the centre reopens, depending on water volume and heating system capacity. This reheat period is a practical consideration for reopening timelines and energy cost planning. Our measurement and verification services can help track actual reheat performance and energy consumption during startup periods, establishing baseline conditions for ongoing energy management. Understanding reheat dynamics supports realistic operational planning and cost forecasting for partial or full facility hibernation strategies.

What monthly energy savings can be achieved through different hibernation stages at a \$300,000 annual energy facility?

Implementing stages one and two—shutting down water heating and reprogramming HVAC—typically saves \$15,000 to \$20,000 monthly. Adding stage three—water recirculation shutdown and pool drainage—contributes an additional \$2,500 to \$3,800 monthly. Shutting down non-essential equipment including domestic hot water systems, lighting timers, small air conditioning units, and gym equipment can save an additional \$2,500 to \$6,300 monthly. Total monthly savings across all stages can reach \$20,000 to \$30,000, demonstrating substantial financial impact. Our energy auditing and opportunity assessment capabilities help quantify facility-specific savings and prioritise implementation stages based on operational constraints and financial objectives.

How should the Building Management Control System be managed during aquatic centre hibernation?

The Building Management Control System (BMCS) must remain operational throughout the hibernation period to monitor facility conditions, prevent equipment faults, and control the staged shutdown sequence. The pool water setpoint can be adjusted to 0°C so the BMCS does not activate heating systems unnecessarily and to avoid triggering fault alarms. The BMCS enables coordinated control of heating water loops, HVAC fan speeds, humidity monitoring, and temperature maintenance above the dew point. Maintaining BMCS operation eliminates operational hazards associated with unmonitored hibernation. Our energy management system development and monitoring services support BMCS configuration for hibernation protocols and establish performance indicators to track energy savings throughout the closure period.

What precautions prevent building damage when HVAC systems are slowed during indoor pool hibernation?

Indoor pools present unique condensation risk because pool surfaces release moisture continuously. When HVAC heating and cooling are reduced, air temperature must remain above the dew point and relative humidity must stay within acceptable ranges to prevent moisture accumulation on walls, structural elements, and building systems. Air circulation fans can be slowed significantly but must maintain minimum airflow to control humidity and prevent condensation. Complete fan shutdown risks structural damage and mold formation. This requires careful calibration of ventilation setpoints during hibernation. Our HVAC assessment and energy optimisation expertise helps establish appropriate minimum ventilation parameters that balance energy savings with building protection during extended closures.

Which non-essential aquatic centre systems can be shut down to reduce energy consumption during hibernation?

Non-essential systems include domestic hot water systems serving change rooms, lighting on timers, automatic features on timers, small office air conditioning units, and gym equipment. These typically represent 5-10% of total facility energy consumption but can contribute \$2,500 to \$6,300 monthly in savings depending on facility size and usage patterns. Shutting down these systems carries minimal operational risk during closures and supports straightforward implementation. However, security lighting or emergency systems essential for building safety must remain operational. Our energy audits can identify facility-specific non-essential loads and quantify their consumption patterns, supporting prioritised implementation of hibernation measures.