Nominee: Hydro66

Nomination title: Hydro66 Datacentre - the Node Pole, Sweden

Hydro66 is an ultra green data centre using Europe's lowest cost 100% Hydro energy and free air cooling, located on the edge of the Arctic Circle in Sweden's Node Pole development area.

Located just 30km from Facebook's European datacenter, Hydro66 is the first large-scale colocation provider in the region. The local power grid has not suffered an outage since 1979.

What are your company's key distinguishing features and/or USP?

100% renewable hydroelectric energy

100% free air cooling resulting in a design PUE of 1.07

Building designed around efficient airflow and integrated into the surrounding environment.

Located directly adjacent to abundant generation to avoid power transmission losses.

-A new design to solve a global problem-

Many of the unique features in the Hydro66 data centre stem from the disruptive design that takes advantage of the local environmental and operational climate to minimise the impact on the environment as well as significantly reducing costs.

The design has four key differences to the 'normal' data centre found in major European cities. These are:

1.   A "spread-out" design taking advantage of the relatively low cost and high availability of land in our location.

The data centre is not a normal multi-floor 'square box' design, but a unique 'spine and branch' design that enables significant innovative ideas for lowering carbon footprint impacts as well as dramatically lowering the overall PUE of the data centre.

2.   The use wherever possible of locally sourced materials and labour to build and operate the data centre.

The design draws on decades of local building experience. All of the major construction materials have been sourced and fabricated in Sweden or the wider Nordic area using 100% local labour for the major superstructure. Where sourcing within the Nordics was not possible, European based companies selected in preference.

3.   100% "free air" cooling, 100% of the time.

Hydro66 does not use any indirect transfer mediums or 'split' forced chilling units anywhere within the facility. Even in the height of summer when supplemental water based adiabatic cooling is required this is done 'in-hall' and all cooling is housed entirely within the building. This is important to protect from extreme low temperatures and the significant amount of snow that occurs during winter. There is no compromise in terms of the rack environment provided, with temperature and humidity fully controlled within ASHRAE guidelines.

4.   Resilient power designed-in and used as the base line

The facility has the unique attraction of being directly adjacent to a new 120MW substation that is multi dropped from separate regional grid infrastructures. There is a 80MW hydro-electric power station just 500m away with other grid feeds coming from the local, regional and national grids, including the 16 other hydro-electric power stations further up the Lule river which generates a huge 4300MW.

5. Collaboration with manufacturers

In adopting free air cooling and rejecting compressor based or indirect free air solutions Hydro66 needed a solution that would process and filter large volumes of air efficiently and also be able to control humidity.   Through close collaboration with EcoCooling a customised version of the ECT10800 evaporative cooler was created and has been deployed in the datacentre.

What tangible impact has your company had on the market and your customers?

Hydro66 has changed the economics of colocation by rejecting expensive traditional designs and adopting techniques pioneered by large internet companies for the colocation market for the first time.

Customers have been able to reduce their carbon footprint and reduce their costs by 50% compared to conventional colocation.

What are the major differentiators between your company and your primary competitors?

True renewable power from nearby 100% hydroelectric generation. Inner city data centres buying green energy certificates do not make windmills spin faster or the sun shine brighter. By using power close to the generation source transmission losses are avoided and renewable energy can be used that would otherwise be wasted.

For many years the high cost of bandwidth made it impossible to make economic use of the climate and power in regions such as the Node Pole. Now that connectivity is incredibly cheap it makes sense to ship photons not electrons.

Facebook in Luleå, Sweden and Google in Hamina, Finland have realised this.

Hydro66 has made responsible green low cost colocation available for everyone.

Why nominee should win

- Ground breaking building design with 'whole wall' air intakes.

-100% renewable hydroelectric power located directly adjacent to abundant generation to avoid power transmission losses.

-100% free air adiabatic cooling

- Design PUE of 1.07

- Engineered resilience through independent distribution of power from diverse generation sources throughout the datacentre.