Amsterdam energy efficiency

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Can you imagine a whole 40,000 square meter office building designed around its hall? Welcome to the Edge, in Amsterdam. A building born of the merge of advanced technology and efficient design, both working together towards a zero-waste policy.

Designed by PLP architects, it achieved the highest score ever recorded by BREEAM, the British real estate agency that rates how green a building is, at the time of its construction. Standing at 98.36 percentage points, only 0.24 percent under the current record, the headquarters for Deloitte is undoubtedly one of the greenest constructions on Earth. But what did it take to earn that qualification?

As mentioned above, the atrium is one of the keys to this achievement. Taking up 15 floors of the total volume, the social heart of the building does not only act as a transitional link to the city but also as a natural and efficient way of insulation and energy reduction.

Every facade is carefully conceived so as to make the most of every possible light. When the usual go-to is to get as much light as possible coming from the south, the Edge opts for a volumetric design that leaves that one out, given it comes with a high temperature that would require elevated energy consumption from cooling systems. Instead, the massive atrium leaves all heavy structures on the south end, benefitting from mass insulation and small controlled light and ventilation points that are shaded according to the sun-incidence angles.

While such control is only possible in small wall perforations, the north facade is designed to open up to the north side of the volume, letting in indirect light that is free of shades and thus optimal for the office environment too.

And light is not the only aspect that can be controlled through the materiality of a facade. On the sides of the atrium, also facing north, the glass walls covering the office spaces are turned into a thicker type of glass, still taking advantage of the orientation, while acting as a noise-insulation.

This smart way of controlling environmental conditions is the main energy-saver of the design. But it does not act alone. The roof plays a role that is as important as the facades" one. It houses no less than 65,000 solar panels, as well as a carefully-planned water collection system for the reuse of it.

In order to be ever greener, PLP"s building counts on the energy produced by the solar panels to give electricity for every employee, their office devices, and the office rooms themselves. In fact, technology goes one step further here, and what would look like an expensive initial inversion in high-tech tracking sensors all around the place, is also a money and energy saver in the long run, as it analyses the occupation patterns of every space, and optimizes the temperature and lighting settings of them according to it.

Just like a futuristic film in the 90s may have imagined it, the office building comes together with something as light (yet powerful) as a phone app. Every user can track free working spaces throughout the building just by accessing the phone software and set up their preferences for their work environment. This way, any area that is free of occupation will automatically become free of any acclimatization attempt and add up to the total energy-saving levels.

Regarding the rainwater, it is collected on the roof and then redirected to a tank space, where it will be stored for its future use at any non-potable water source, such as toilets or the watering of green areas.

As far as sustainable architecture has gotten in the last decade, and as full of possibilities as technology is, the Edge has come with the best formula to mix the two of them, in a way that they jointly offer what none of them can offer on their own: the merge of smart, sustainable design alongside with technology development has resulted in a negative-consumption building. That is, it actually produces more energy than it consumes at all.

If anything, it seems like the only problem of the Edge"s concept is it may have resulted too sustainably. Exceeding any original expectations about the energy save levels, no batteries or energy storage systems were incorporated into the design, so the building is currently giving some of the energy it produces back to the electrical supplier, instead of keeping it for its future use within the building itself.