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How a Swiss hospital turned an underground ‘bunker’ into a day-lit jungle

The radiotherapy room at Hôpital de La Tour is three floors underground, but looks like it’s filled with natural light.

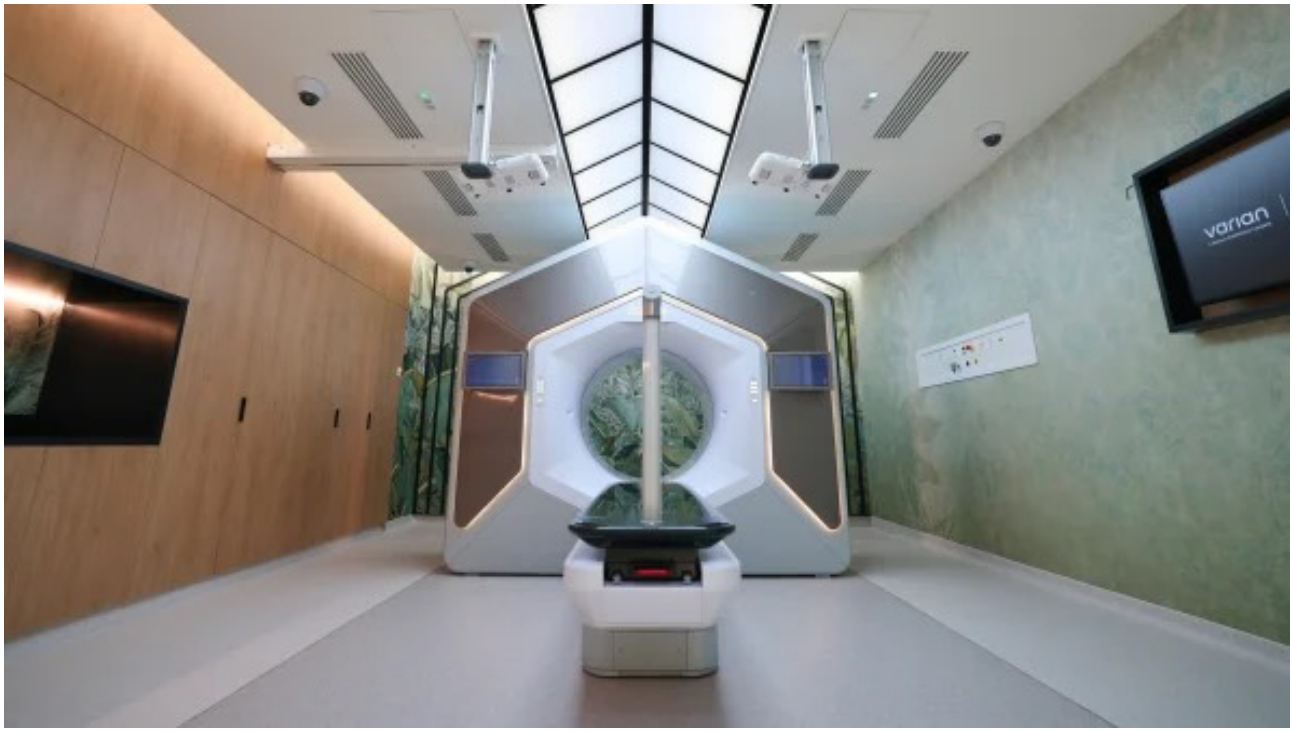
[Photo: Dcube.Swiss/Hôpital de La Tour]

BY ELISSAVETA M. BRANDON 4 MINUTE READ

Every (respectable) architect knows the value of daylight. Decades of studies have shown that natural light has a positive impact on both mental and physical health. According to a recent study, offices with abundant daylight even come with a 5-6% rent premium compared to those with low daylight.

But what happens when you're forced to build a room with no windows?

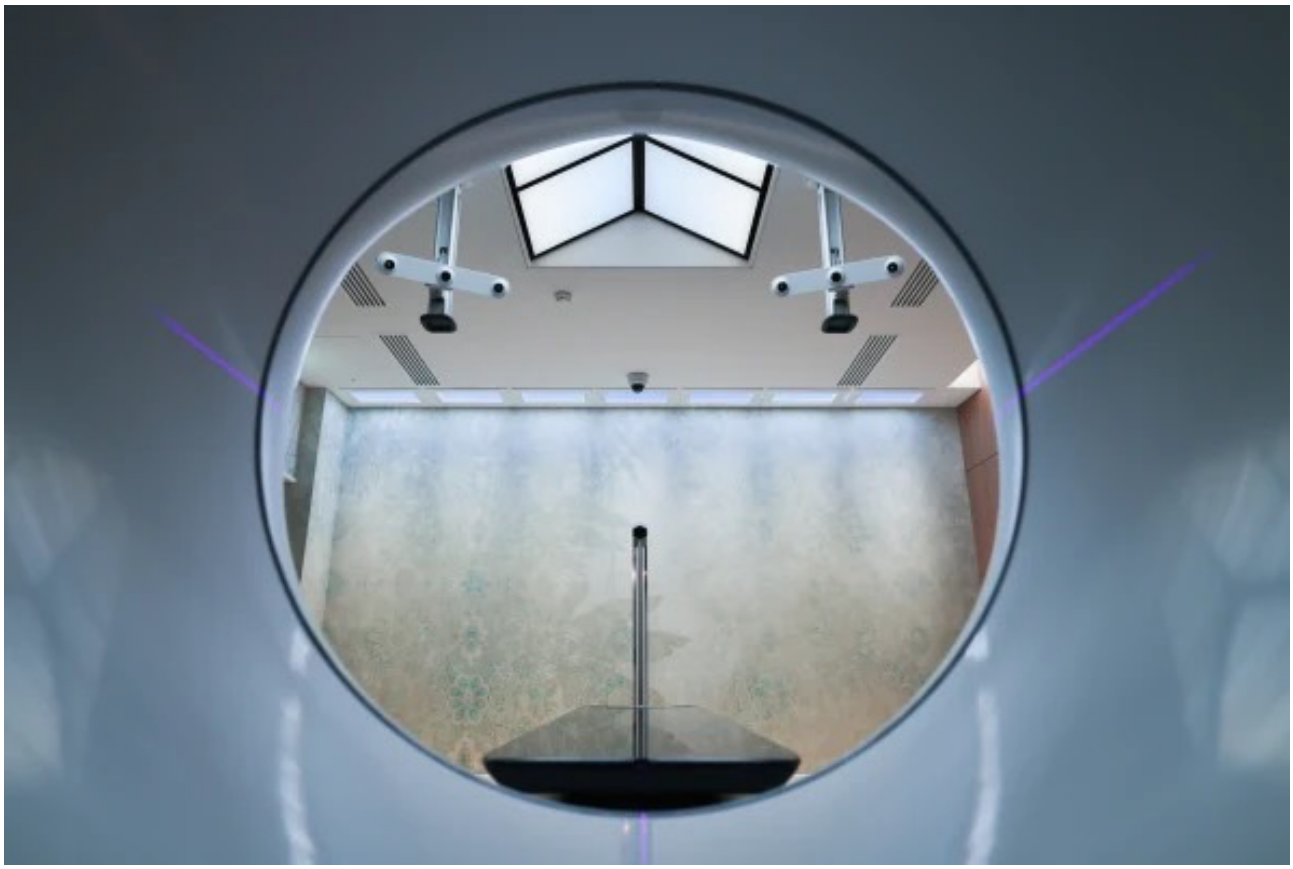
One answer can be found at Hôpital de La Tour, a Swiss hospital just outside of Geneva, where a striking new radiotherapy room appears bathed in natural light but is instead located three floors below ground.



[Photo: Dcube.Swiss/Hôpital de La Tour]

But first, a note about “forced.” By default, radiotherapy rooms cannot be open or day lit; they require thick shielded doors and six-foot-wide concrete walls designed to protect the rest of the building from unwanted radiation. To put it bluntly, they look and feel like a “bunker,” says Axelle Alibert, chief quality and patient experience officer at Hôpital de La Tour.

To improve the experience for both patients and staff, some hospitals have resorted to living walls and ceiling distractions like screens depicting cloud-speckled blue skies. But over the past few years, Hôpital de la Tour has been experimenting with the seemingly impossible: daylight, underground.



[Photo: Dcube.Swiss/Hôpital de La Tour]

The secret? Gently glowing LED panels, or “daylight surfaces,” says Sami Salomaa, the founder of a Finnish company called Light Cognitive, which creates LED panels designed to mimic natural light. (Similar companies include CoeLux, and Innerscene.)

[Photo: Dcube.Swiss/Hôpital de La Tour]

A physicist and mathematician at heart (and by training), Salomaa founded Light Cognitive in 2014. After eight years living and working abroad, he found himself struggling with the long, dark winters of his native Finland. “I was trying these different SAD lights,” he says in reference to the kinds of lamps that are designed to mimic sunlight and improve Seasonal Affective Disorder caused by reduced levels of sunlight in the winter. But most lights on the market were very bright and small, he

says. “You’re sitting in the darkness and you don’t want this bright thing, you want something that is a bit smoother to have around,” he says.

A residential Light Cognitive installation. [Photo: Light Cognitive]

And so, Light Cognitive was born. The system counts about 2,000 LEDs per square meter. The lights are controlled electronically and placed behind a diffuser that scatters the light into smooth surfaces that look a bit like a James Turrell artwork. The light is not an accurate representation of the weather outside (like, say, the enchanted ceiling at Hogwarts.) Instead, it can mimic the color and intensity corresponding to each time of day and replicate the dawn-to-dusk light cycle to help regulate people’s circadian rhythms. Likening the system to the

health benefits of a regular SAD light, Salomaa says, “it’s like medication, but what do you want your medication to taste like?”

The first prototype was “handmade in every possible way,” says Salomaa of a series of LEDs he soldered by hand, attached to a panel, and installed at a real estate developer’s office in Helsinki. Since then, Light Cognitive has built virtual windows and skylights for fashion stores like Balenciaga and Zara, makeup studios, camera laboratories, spas, and high-end homes. None of these examples are encased in a concrete bunker three levels below ground, but the effect is the same: “now you can make your underground space look like a penthouse.”

[Photo: Dcube.Swiss/Hôpital de La Tour]

At Hôpital de La Tour, the goal wasn't to achieve the luxury of a sun-kissed penthouse, but rather to improve the wellbeing of patients and hospital staff. "I want patients and doctors to feel at home," said Davide Oppizzi, founder of the design studio Dcube and designer of the radiotherapy room. Usually, he says, the ceiling in a radiotherapy room is cluttered with technical necessities like fans and cameras, which doesn't help put cancer patients at ease.

This particular radiotherapy room also comes with an imposing $3.3 million machine that is shaped like a donut, but with a pitched roof. Developed by the medical device company Varian, the so-called linear accelerator rotates around you as it projects a beam on affected parts of the body. Above the machine, Oppizzi used Light Cognitive's light panels to create a V-shaped skylight that follows the triangular shape of the machine, which Oppizzi likens to a "monster," and helps integrate it a bit more into the overall design.

[Image: Dcube.Swiss/Hôpital de La Tour]

The skylight is just a beautiful subterfuge, but it bathes the room in a soft glow that changes throughout each session (about 15 minutes on average.) At the start, the skylight is aglow with yellow to stimulate melatonin and help patients relax. At the end, it gently shifts to blue, which inhibits melatonin and help patients feel more refreshed.

[Image: Dcube.Swiss/Hôpital de La Tour]

And it’s not just the radiotherapy room. Patients come into the hospital—sometimes driving into a carpark located two levels below ground—then take the elevator down to level -3, where the radio oncology department is located. Then, they are guided to an artificially lit waiting room that branches out toward two radiotherapy bunkers, the older one decked out with panels from CoeLux, the second with the Light Cognitive skylight.

[Image: Dcube.Swiss/Hôpital de La Tour]

Sure enough, the panels can’t beat the warm embrace of real, natural sunlight, but for Alibert, they come pretty close: “Even for me, when I arrive to see the team, I joke and tell them ‘you know, it’s snowing outside, so I come to see you because here I always feel like it’s summer.'”