



INTEGRAL
GROUP

DEEP GREEN ENGINEERING

Green to their core



Joseph Segal
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Green to their core

Integral Group is a leading global network of engineering experts specializing in innovative building systems design and energy analysis services to deliver cutting edge energy-efficient buildings. With offices throughout North America and the UK, Integral Group is well known as a worldwide leader in deep green sustainable design, and aims to set the standard for best practice in the engineering industry.

Taking a collaborative approach, Integral Group works closely with their diverse clientele to create customized solutions for each client's individual wants and needs. They have undertaken numerous high profile contracts in Canada, including the recently completed \$300M RCMP E-Division Headquarters and the \$213 million A-B Connector expansion at Vancouver International Airport, but remain open to taking on smaller projects for the right client.

"We're not typically involved in the very large industrial projects, but we'll pretty much take on any size of building engineering project," says Managing Principal



Stuart Hood. "For example, we did the engineering for Olympic Village, which had multiple architects for the different parcels of land, but we were the mechanical engineer for each of those parcels."

"In terms of the lower end, we do lots of small things like office fit-outs for just a few thousand square feet. We don't much in the way of single family residential, but sometimes if there's a large custom residential house, we'll consider it," he says. "When it comes down to it, we typically look at projects ranging from \$1 million to \$500 million and beyond."

INTEGRAL GROUP

WALKING THE TALK

At the 2014 Canadian Green Building Awards, two Integral Group projects were recognized as being "among the most exemplary sustainably-designed buildings in Canada." According to Stuart, those projects – the VanDusen Botanical Garden Visitor Centre and the CANMET Materials Technology Laboratory – both epitomize cutting edge energy efficiency, providing further proof that Integral Group employees "walk the talk."

"These awards show that we're pushing the



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boundaries and demonstrating leadership in the engineering world in regards to sustainability," says Stuart. "One of our core values is to be a leader in deep green engineering projects, so it's very rewarding to be recognized for that. Frankly, it's just the tip of the iceberg in terms of what we're doing to bring that level of design and engineering excellence to all of our projects."

The VanDusen Botanical Garden Visitor Centre is regarded as both a Vancouver landmark and as one of the city's top tourist destinations. The \$22 million renewal project

– which features a beautiful new garden pavilion – incorporates numerous innovative features to achieve a net-zero carbon footprint, such as the use of geothermal heating systems that extract heat from the earth in the winter and put heat back into the earth during the summertime.

"We designed that building according to the Living Building Challenge, which is the pinnacle of the green building movement," Stuart explains. "The Living Building Challenge doesn't allow for the burning of any combustion forces in the building, so we use a heat



pump system that exchanges energy with the ground. It's a cyclical approach, where we use the earth as a great big thermal store of energy to avoid the need for fossil fuels."

"The idea behind the Living Building Challenge is to create buildings that are net-zero in terms of energy consumption, where they're producing as much energy as they consume over the span of a year, while also being self-sufficient in terms of water," he continues. "Hypothetically, it's a building that could almost be completely disconnected from the grid."

"To accomplish this, we harness rainwater to flush the toilets," he says. "The sewage system has a living machine in it that cleans up the water by separating the sludge from the filtered water, where the filtered water is re-integrated into the facility and the sludge is used as compost for the gardens themselves. Those are the types of initiatives at play to put into practice what's required for the Living Building Challenge."

The \$40 million CANMET Materials Technology Laboratory project integrates similar design features with the aim of producing a



Stuart Hood





70 per cent improvement in terms of overall energy efficiency. This is an impressive feat, considering that laboratories often consume up to ten times the energy of conventional buildings due to ventilation requirements and the need to keep operations running 24/7.

"It required a lot of innovation to reduce energy consumption," says Stuart. "For example, we used displacement ventilation, hydronic radiant slab heating and cooling, and a very large solar thermal system that uses solar pan-

els to heat the water and the building itself." "You'll often find that the coldest days are the brightest days, so there's a lot of heat energy available," he adds. "The solar thermal system is connected to the district energy system, so when there's excess heat available from the solar panels, that heat is re-injected into the district heating system and moved onto other buildings on the campus."

Integral Group is very familiar with these features. Not only have they experienced tremendous success incorporating them into





their workforce. According to Stuart, their deep green reputation and success over the years have made it very easy to handpick the perfect employees for the job.

"When they hear about our values and see us winning awards, it attracts the kind of people we want to work for us," he proclaims. "Our employees are green to the core and put these principles into practice in their daily lives. That makes our commitment to the environment genuine, rather than being a gimmick or a marketing tool."

While many companies simply "greenwash" sustainability by spending more time and money on advertising than on actual environmental initiatives, Integral Group has consistently proven themselves to be true leaders in the global deep green engineering arena.

"We're looking to accelerate the growth of green buildings by being leaders and moving the deep green engineering practice forward," says Stuart. "We believe there's an urgent need to reduce greenhouse gas emissions, and the climate is in need of intelligent people to make that happen. Without leaders, it's not happening quick enough."

their designs for clients, but they also use them internally.

"The offices that we occupy are fit-out with the same systems that we use for clients, which provides us with the opportunity to better understand the systems we implement into our designs," Stuart says. "We actually have an office down in San Jose where the roof is covered in solar panels and the building is lit entirely by daylight, so the building produces more energy than it consumes."

TRUE LEADERS

Integral Group's commitment to best practice is matched only by their commitment to



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