

## Built to withstand almost anything

### Safer, cheaper and faster - International Hi-Tech Industries sets out to change buildings construction

KARIN MARK

Correspondent

Roger Rached's suit pocket is ringing again. "Saudi Arabia," he says, pointing to the area code on the cell phone screen.

It's one of several calls Rached receives while giving a tour of International Hi-Tech Industries' factory in Delta, where the company manufactures its steel-and-concrete construction panels.

Rached, IHI's 45-year-old president, is like a proud parent as he shows off the 80,000-square-foot building and the proprietary pre-fab construction system that is garnering international attention.

The factory itself is a showcase for IHI's Hi-Tech System; in 1998, its ceilings, walls and floors were constructed with mechanically interlocking panels that incorporate structural support, insulation and electrical and plumbing services.

"One crane, one month, five people." Rached rattles off the construction figures like sports statistics.

"The offices next door, 14,000 square feet – that was three people, one crane, eight days."

That's not the only novelty. The IHI factory is clean, and more surprisingly, quiet – a function of the largely automated manufacturing process Rached says is key to the panels' strength and cost-effectiveness.

Encased in steel frames, IHI's panels are a precisely-engineered sandwich of insulating and sound-proof foam, structural wire mesh and quick-setting concrete. Engineering tests show the panels surpass all safety standards – earthquake, wind, hurricane, fire, blasts and loads – by 400 to 500 per cent, Rached notes.

"This building will last for generations, for hundreds of years."

Each panel can withstand 12,000 pounds per square inch – three to four times that of typical concrete slabs used in construction. The customizable panels weigh about 30 to 50 pounds per square foot, depending on their width, which can be as narrow as 3.5 inches for interior walls.

The panels can replace walls, floors, ceilings – even foundations. IHI built its 600-metre-long factory on a flood plain with no piles or foundation, yet in eight years, there is not even one millimetre of differential settlement, Rached says.

"It's because of the lightweight panels and structure. The whole building works as one piece – it floats like a boat."

The same principle, he says, protects panelized buildings from earthquakes. With typical construction, earthquakes yank rebar out of the concrete "like spaghetti."

"This one, you shake it, shake it, shake it, it has no effect," he says. "The building will sway and filter out all the tensions. The panels will never be affected."

The technology was 25 years in the making, the sum of Rached's education as a structural engineer (American University of Beirut and California's Stanford University), his work in the field and his family's support. Rached's family, which immigrated to Vancouver from Lebanon in 1988, has invested half the system's \$100-million development costs. His father, brother and a sister are also engineers.



*Construction starts later this year on the Optima condo project in Surrey, B.C.*

Since IHI's first show home in 1994, panel applications have mushroomed to include temporary roads, septic systems, marinas, industrial warehouses and mobile residential/office units.

The three-tower, 21-storey Optima condo project in Surrey, to begin construction before year-end, will be IHI's first high-rises. Typically, a highrise can take six months to a year to build. IHI plans to erect each Optima tower in about six weeks, and up to 25 to 30 per cent cheaper.

"Optima will show the world we can manufacture and put up a complete highrise in a fraction of the time, more economically and stronger. It will exceed all standards – and most importantly, will be a beautiful building," Rached says.

At the factory, Optima panels are stacked next to piles for other projects: a seven-star villa in Kuwait, a marina in Vernon. Nearby, a new panel takes shape: overhead apparatus pours concrete onto the steel and foam core, staff ensure it is spread evenly before the machine shakes the panel to eliminate honeycombing. Later, machines will smooth the panel's two concrete surfaces before it is sealed.

The factory's staff will double to about 70 in the next two months, and within six months, more of the manufacturing will be automated in a new adjacent building. IHI will then open the doors to the 30-plus joint-venture projects queued up around the globe. Delta will remain home base for engineering and innovation, while partner factories will construct the panels under IHI's watchful eye.

"People are lining up," Rached says. "People see this as the future."

Journal of Commerce  
<http://www.joconl.com/>