



This photo is of the rear of the building. The steel plates in the foreground would allow for the structure to be pushed the 90-meter distance. The two-story structure contained 3,700 square meters of space. The actual move was accomplished in 44 working hours.

## 3,000-Ton Move Sets Record for Southeast Asia

**D**o Quoc Khanh is a 53-year-old cybernetics engineer and the director of Vina DSF, a company founded in 1998 in Hanoi, Vietnam that specializes in the relocation of buildings. In January his company moved a 3,000 tons structure, the heaviest in Southeast Asia and reportedly the fifth heaviest in the world. The previous relocation record for Vietnam was moving of a 2,000-ton temple, according to the *Viet Nam News*.

The project was by far the company's largest and trickiest move. Situated in the Phu Cat Hi-Tech Park by Lang-Hoa Lac Road, 27 kms Northwest of Hanoi, the two-story building measured 3,700 square meters wide. The Informatics Telecommunication Hi-Tech Manufacturing Science Union and a United States partner own the building.

Originally constructed in 2003, the building that had never been put into operation needed to be relocated in order to allow for construction of a water pipeline from the Da River Water Plant to Hanoi.

Before contacting IASM member Vina DSF to take on the project, the building's investors placed their trust in another company that previously had succeeded in relocating approximately 250 structures, but none of those structures reached this magnitude in weight. While the competing company had moved a spa weighing 1,500 tons at the Princess d' Annam Resort in Binh Thuan province a distance of 11 meters, after two years the company, according to a source, abandoned the project. The building owners then turned to Khanh and his company to complete the project in only one month.. Government officials gave an ultimatum that if the structure had not been relocated within one month it would be demolished.

Khanh's solution included splitting the building from its foundation, building the new foundation

in advance, strengthening and retaining the building's structure by steel girders, lifting it up and placing it on a system of 1,400 rollers and rails, using cylinders to push the structure to its new location and keeping the move on track by using 200 winching cables.

Khanh recognized a number of complicated mathematical problems had to be solved since he had only a few weeks in which to prepare to meet the allotted time of 10 days estimated to make the move. Vina DFS's 40 employees were supplemented at the construction site with 140 civil engineering student from Hanoi University and the move was completed in four and one half days.



This photo is of the front of the building. Notice the "pushing cylinders in orange. This was the last day of the "pushing" process. The object in the foreground is the remains of a pillar of the original foundation. The pillars were cut and the building was placed on rollers. The building contained 88 pillars

“We designed, manufactured, tested and operated all of the equipment at the same time and right at the relocation site,” stated Khanh “There is nothing secret about the technology, you can check it out on our company’s website [www.xulylunghieng.vn.com](http://www.xulylunghieng.vn.com)” While the quote from sources in Vietnam indicated the “pushing” equipment had been “designed, manufactured and tested” on site, Mr. Khanh confirmed otherwise. “Vietnamese firms cannot manufacture devices which calls for extreme precision”, said Khanh. In fact he bought old machines manufactured in Japan, Russia and China that had been sold in Vietnam. He took cylinders from the Japanese machines, pumps from Russian equipment and bars from the Chinese machines to make the equipment used for the movement of the 3,000 building. Khanh has designed 80% of his company’s equipment.

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Six rails of 55 meters each, a total of 330 meters, were used. The weight of each rail was 2,150kg for a total of 12,900kg.



There is no company in Vietnam manufacturing house moving equipment. Khanh designed and manufactured the six cylinders used for the move. Each cylinder had a stroke of 1.5 meters. Two workers were assigned to each cylinder. The men in the foreground are two of 40 Vina DSF Co., Ltd. employees. For this job there were 140 third-year students from the University of Civil Engineering who volunteered to assist with the project.