

Anywhere, anytime

The Kuala Lumpur Hospital's Emergency Services Department has gone mobile. Rizal Solomon was present at the unveiling of the new Mobile Surgical Unit.

NECESSITY CAN BE THE MOTHER OF innovation, especially if the necessity is married to scarcity, which is often the case with healthcare. More so in the emergency services of healthcare.

When a life-threatening emergency occurs, we need to get the victims of whatever disaster to the nearest medical facility for prompt treatment. But what if you can't get them to the medical facility on time? Well, as the Kuala Lumpur Hospital's Emergency Services Department showed recently, we'll just get the medical facility to the victims via the new Mobile Surgical Unit (MSU).

The mobile surgical unit (MSU) is a standard size Operating Theatre (OT). It provides a unique combination of high performance, functionality and high mobility. The MSU is the first of its kind in Asia and according to Johnson Medical, the first of the latest breed of mobile emergency units in the world.

Before you go on and say – "uh-oh, here we go again ...", it is interesting to note that this is not the familiar case of Malaysian money used to buy foreign materials and expertise to come up with a so-called "Malaysian" product that would be trumpeted as another milestone in national development. This time, it really is proudly Malaysian-made and instead of just adding prestige, this product is really needed locally.

It is manufactured by Johnson Medical Equipment Sdn Bhd in Malaysia, using almost exclusively local materials. "Over 80% of the materials used in the manufacturing is of local origin," said Fredrick Nyberg, the Technical Director of Johnson Medical. Johnson Medical's core business is in engineering specialist medical equipment. In 1993, they began designing and manufacturing in Malaysia.

Developed in close collaboration with Dr Abu Hassan Abdullah, KLH's Head of Emergency Services and his team at Hospital Kuala Lumpur Emergency Services Department, the MSU incorporates several new patented designs to improve functionality and raise safety standards.

"The MSU is designed to be used as an additional standard OT that can be temporarily used by an existing hospital during renovations of its OTs or as a low cost-hospital extension. And for major disasters, the MSU will allow emergency surgery to be performed at a disaster site," said Abu Hassan.

Nilsson explained that the unit consists of three separate ISO containers that are docked together. "The unit includes the main OT, separate induction and disinfection rooms, as well as a store for sterile goods. Once in place, the containers are bolted together using specially designed docking channels to ensure a secure fit," he said.

"The MSU is the first mobile unit that successfully separates a fully functional OT into two halves during transportation. The unique design permits a much larger size OT than what is normally seen in mobile theatres," said Nilsson.

"The MSU also fulfils the Malaysian standard of OT ventilation with 100% fresh air filtered through special sterile filters. The OT ventilation system in the MSU is an improved version and new to Asia. It is designed and developed by Johnson Medical and is patented worldwide," said Nilsson. Abu Hassan stressed the point that it was developed specifically with Malaysia and Southeast Asia in mind.

"If you transplant foreign technology without customising it to local needs, you will only create a misfit," said Abu Hassan. Which is why it was so important that Abu Hassan and his team collaborate with Johnson Medical to "Aseanise" the MSU design.

"The technology used is of European origin, but all equipment has been designed to meet the very specific requirements of hospitals in Southeast Asia," said Fredrick Nyberg, Group General Manager of Johnson medical Group of Companies.

Nilsson, who is no stranger to the Malaysian environment, played a key role in making sure those "very specific requirements" were met.

In fact, he was appointed by the Swedish Government to serve with the Malaysian Health Ministry for four years, from 1990 to 1993. His primary job at the Ministry was to provide functional and conceptual designs for various departments in different disciplines in Malaysian hospitals.

The MSU has a variety of unique features that provide an efficient working environment with best possible ergonomics, including a novel design ventilation system that reduces infection rates; cabinets and shelves hung on unique MediRails for maximum flexibility; stainless steel protected doorways to minimise wear; heavy duty high density wall surfaces for easy cleaning and minimal wear; a window for sunlight; multi-movement ceiling pendants that provide medical gas and electrical services from above; a new ceiling installation system that integrates the ventilation system.

It also provides a normal size OT with normal OT ceiling height, fully meeting standard OT hygiene requirements. It also complies fully with normal hospital requirements and follows the ISO container standard in terms of external size (30 feet long and 10 feet wide). "This facilitates ease of transportation by utilis-

ing normal low-bed trucks and a standard crane," said Nilsson. "It can be installed and made fully functional within a short period of three hours," he added.

"Because of its mobility, the unit can be transported easily to a disaster site, or to an existing hospital that has been subjected to flooding or fire," said Abu Hassan.

"The MSU was designed to our specific requirements by marrying the functionality of high mobility with the effectiveness of a fully-equipped, standard size OT," added Abu Hassan. "The design also had to incorporate good ergonomics. While aesthetics are pleasing, we were more keenly focused on ergonomics for the sake of creating a medical treatment environment that is better, safer and more effective from the patient's and medical staff's perspective."

The unit complies with the Malaysian

standard in OT ventilation – which is 100% fresh air filtered through HEPA filters and uncompromising standards of hygiene, he said. As such, according to Abu Hassan, no compromises have been made in the design of the unit. There is also another feature of the MSU that has Abu Hassan glowing with pride. "Most of the field OTs cannot handle major surgeries. However, this one can," he said.

Even though it all seems like a dream come true, it wasn't easy for Abu Hassan and Nilsson to turn the dream into reality. "Make no mistake, the excitement of making the MSU was often tempered with many challenges, from both the creative and engineering perspectives," said Nyberg. However, all the challenges that they had to face seemed to pay off that morning, as the MSU stood ready, waiting to begin operations in less than two weeks time.



From left: Nyberg, Nilsson and Abu Hassan. The MSU was designed with local needs in mind.

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