

The Desert Rose



The net-zero energy home designed, built and operated by students from UOW and TAFE NSW and Second Place Winners in the Solar Decathlon Middle East 2018 competition.

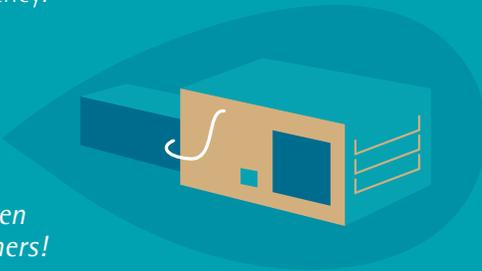
House Features

The Desert Rose harnesses a combination of smart design with industry leading technology, while still keeping the heart of the home intact, to create a comfortable, efficient and architecturally inspiring home that will grow with the occupants as they age. Truly, **A House For Life.**

HVAC

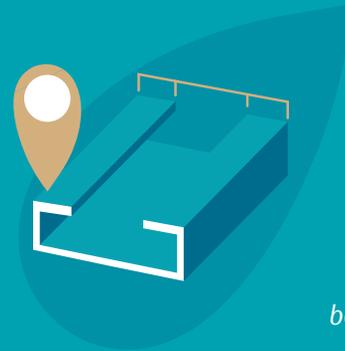
The heating, ventilation, air-conditioning and cooling system in the house utilises thermal energy storage in the form of a Phase Change Material (PCM) tank to increase efficiency.

Did you know the Desert Rose fits into just seven shipping containers!



Modularity

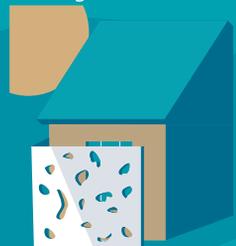
The house is built using locally manufactured light gauge steel – Enduroframe. This has been ordered and made millimeter perfect, reducing waste and enabling a modular design. Floors, walls and the roof are all divided into panels to allow for easy assembly and shipping. Bathroom 'pods' have been developed by the team, that come as a whole unit.



Did you know the Desert Rose can be re-assembled in just fifteen days!

Second Skin Wall

Designing our house for the climate of Dubai, a 'second skin' wall was created to act as a shading structure to reduce solar heat gains. The walls are placed on the east, south and west faces of the house as these sides are hit by direct sunlight (in the northern hemisphere). This exterior feature uses a lightweight foamed composite concrete with recycled glass as a cement replacement. The mixture is poured around a template to create a pattern that references the Desert Rose logo and creates a striking aesthetic feature.



During the construction phase of the project 1249 cups of coffee were consumed!

Grey Water System

A Recycled Vertical Flow Constructed Wetland has been created. This innovative system is a lot smaller than conventional systems. The wetland component is comprised of sand, gravel and common reed. The grey water is circulated through the system multiple times. The treated water can then be used for non-drinking applications. This natural treatment process has minimal energy usage, is made from recycled materials and is a perfect example of team philosophies.



The Competition

There are 10 contests in The Solar Decathlon Middle East 2018. These contests have a focus on sustainability and challenge the teams to adapt their designs to the heat, dust and high humidity that is experienced in Dubai.

The contests include Engineering & Construction, Comfort Conditions, House Functioning, Energy Efficiency, Communications, Architecture, Energy Management, Sustainability, Innovations and Sustainable Transport.



Safety Culture

A core principle of the Desert Rose team is to always work in a safe environment. Our talented graphic design team have developed two characters to help convey our message.

Saferoo is our safety mascot. Rosa, as we call her is there to remind the team to promote and maintain safety throughout the construction process.

Safe Clayton takes reference from our Project Manager - Clayton McDowell. 'Safe Clayton Says' highlights key important safety concerns and reminds the team of safety expectations on site.



Dementia Focus

Our approach to planning the Desert Rose has been informed by the criteria of the SDME rules and objectives, and also the story of who we want to live there. **Wanting to achieve more than just a net-zero energy house**, our team is taking this opportunity to design a house that will help solve a growing problem in Australia, and around the world - housing for the elderly.

The Desert Rose is a house that balances a floor plan that would satisfy the requirements of an ageing couple living with dementia or physical disabilities, whilst also being sensitive to the Islamic traditions of our host nation. An example is in the living room. Floor to ceiling panels can be open, allowing for line-of-sight from bathroom to kitchen to living room, but when closed provide separate, private areas for the occupants and their guests.

The **heart** of the Desert Rose is the dining room. The physical centre of the space and the house experience. Social interactions and family are essential for elderly people as they bring joy and security into their twilight years.

Residents with physical disabilities have also been accommodated for, with hallways and rooms all sized to enable wheelchair or walking frame ease of access. The **structure of the building** allows other accessibility features to be easily installed when needed, such as handrails in the shower and toilet.





www.desertrosehouse.com.au

 TeamUOWAustralia

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Desert Rose

Team UOW

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