

Eureka Project Completed in Record Time Thanks to new Robor Hybrid Structure

A new lightweight Robor Hybrid Structure, introduced by the steel tube and pipe manufacturer, accounted for the remarkably successful fabrication and erection of the structural steel of a Eureka DIY 11 800m² factory in Stormill, Gauteng.



Robor's Hybrid Structures are a cost and time-saving alternative to traditional structural steel systems. The Eureka factory was constructed in just three months.

Eureka had very strict requirements and tight project deadlines, which Robor – in conjunction with main contractor Renico Construction, and Entity Architects and Engineering – successfully met due to the speed of construction offered by its innovative development. With a footprint of 148.4m × 79.5m × 8.8m high eaves and a total structural steel weight of 147.8t, the Eureka factory illustrates the power of this Hybrid Structure's unique combination of materials. Impressively, the structural steel was erected in a three-month period. The project was started at the end of November 2009 and the main structural steelwork was complete in February 2010.

The new Hybrid Structure not only offers construction industry professionals the freedom to customise their products and solutions for a wider range of service, but also presents the opportunity for up to 40% savings in mass and a major reduction in project delivery times in a very competitive and demanding market.

Supplying a comprehensive range of value-added products and services, Robor worked in consultation with Entity Engineering in developing the highly successful Robor Hybrid Structure as an alternative to the traditional structural steel systems used for mini-factories, factories, warehousing, shopping centres and other types of buildings that rely on structural steel roofing. Entity Engineering's Andrew Bull says, "The Hybrid Structure used for the Eureka project is an outstanding application of advanced building technology to deliver an efficient, economical and strong building."

Traditional engineering designs vary from 15kg/m² to 30kg/m², sometimes more. Although these structures have evolved over the years, the construction industry is still at times restricted by the limits on the transportable length of steel sections, high erection costs and the ever-diminishing complement of qualified boilermakers and welders.



Eureka used Robor's innovative Hybrid Structure for constructing its 11 800m² DIY factory in Gauteng. The structural steel is lightweight and allows for customisation.

Also, the current worldwide economic crisis has made banks more reluctant to finance new developments and it seems the best way forward is to find cost-effective building concepts that will positively contribute to the growth of the economy.

The Robor Hybrid Structure offers just such a solution through a system that combines Robor-manufactured structural tubing with high-strength, lightweight galvanized steel. System co-designer, Hendrik Beyleveld, says, "This extremely competitive system allows for a much lower rate per square metre cost compared to any other system available on the market." The new design method and technology have reduced weight per square metre from 22kg/m² to as little as 12.5kg/m².

The cold formed section and structural tubes were chosen carefully to optimise the design and exploit the inherent benefits of each section. Pieter Dorland of Eureka DIY is very impressed with Robor's new offering: "The light steel design and construction have made a great difference to this project. It has not only enabled us to save costs on the steelwork, but the ease of fabrication and erection has facilitated the project's completion

within very tight deadlines, despite the adverse weather conditions of the first couple of months of 2010."

One of the greatest advantages of the system is that the rolling and fabrication can be done on site without the need for boilermakers and welders and advantageous, long lengths can be rolled on site, minimising the transport costs and the amount of joints in the structure. Supervised fabrication using local labour delivers further cost savings, as do lower maintenance requirements. In addition, corrosion protection costs can be reduced as half the structure is made from pre-galvanised steel, as a result of which no further corrosion protection may be required, even in some coastal environments.

Entity Architects' Almero Retief commends Robor on the outstanding execution of the Eureka project. "The tempo and erection method not only ensured a saving for the client, but also allowed for minimal rain delay during the construction period. It was a real pleasure working with a professional steel contracting team that exceeded all deadline expectations – we will definitely be using the lightweight steel structure in future projects!"