

INTEGRATED DESIGN FOR PRODUCTION FACILITIES

Dr.-Ing. Robert Himmler (EGS-plan) and MA Dipl.-Ing. Elmar Kleiner (OIA)

Many international manufacturers prefer to locate their production facilities in Thailand over other Southeast Asian countries, due to the country's central location in the region, the excellent infrastructure, tax incentives, a well-trained work force and a developed network of suppliers and buyers.

After choosing the country, companies have to decide on the location of their factory in the country. But the real hassle starts with the design and construction of the actual factory and production buildings.

Considering the fact that budgets are being spent on "big" decisions, client requirements should be placed on the table in the early days of a project. Alternative layouts and designs, cooling load and lighting calculations require detailed analysis and assessments. This is crucial in order to avoid future negative consequences in floor layouts as well as higher operational costs or reduced lifetimes of technical systems in order to ensure an improved overall building quality. In addition, an integrated team approach is a recommended remedy for avoiding the risk of loss of information during the process from design to construction.

The German-Thai sustainability experts at the Office for Interior and Architecture Co., Ltd. (OIA), and the energy and sustainability engineers of EGS-plan (Bangkok) Co., Ltd. strongly believe in such integrated design services. One of their outstanding examples of this approach is a new production facility in Lamphun, northern Thailand, for PANDORA, the world largest jewellery manufacturer.

As the chief design mastermind, OIA abandoned mundane factory stereotypes

and turned this enterprise on approximately 79,000 m² into a state-of-the-art industrial lifestyle complex. Unique elements, such as a large elliptical shading roof fashioned after the company's famous beaded bracelet, tie individual gem-like buildings together and provide natural cooling around a central feature of water and trees. This breathes life into a quality working environment with a strong increase of production efficiency. The sustainability engineers of EGS-plan designed an energy concept which focuses on reducing the cooling load, not only through external shading and thermal insulation but also through designing an innovative fresh-air ventilation system with energy recovery for the more than 3,500 workers. LED lighting provides glare-free illumination in the workplaces and a 1 MWp photovoltaic system that meets parts of the building's energy demand, thereby reducing the factory's electricity consumption by 18 per cent compared with a conventional factory. In addition, with the careful selection of water fixtures and a custom-designed water management system, the facility can reduce water consumption by 45%. Around 30 per cent of the facility's construction materials comprised recycled content and 75 per cent of the project's construction waste was diverted to recycling facilities. This outstanding green factory ultimately earned a valued LEED award with a distinguished GOLD certification.

Another example of OIA and EGS-plan collaboration is the new zinc die casting factory designed for GROHE, the world's leading provider of sanitary fittings, in Klaeng, Thailand covering an area of 14,800 m². The



main design goal of this factory was to achieve a balance between functional, economical and ecological qualities. For sufficient thermal comfort in the non-air-conditioned production area, the climate concept combines thermal insulation under the roof to reduce long-wave radiation, enhanced natural ventilation and a balanced window-to-wall ratio with excellent daylight quality throughout the building. Further sustainability features include an ecological water concept, green resting areas indoors and outdoors together with a 1,200 kWp photovoltaic system. The building is currently undergoing the certification process and is expected to achieve DGNB (Deutsche Gesellschaft für Nachhaltiges Bauen) silver certification, making the factory the first DGNB certified production facility in Southeast Asia.

Contact details:

Dr.-Ing. Robert Himmler
Managing Director
EGS-plan (Bangkok) Co., Ltd.
info@egs-bkk.com
www.egs-bangkok.com

ELMAR KLEINER, ma dipl. ing. architect
OIA founder & director
OFFICE FOR INTERIOR &
ARCHITECTURE CO., LTD.
elmar@o-i-a.com, www.o-i-a.com