

General Motors (China) Investment Co., Ltd.

# Automotive Research and Development (R&D) Facility



To meet the market demand for new products in China, GM built its first Chinese Research and Development (R&D) facility in Shanghai. SSOE applied its vast experience in designing automotive R&D facilities and familiarity with the Chinese design and construction process to deliver this high caliber, sustainable project. The project included areas for advanced vehicle development, powertrain design, electrical and fuel cell design, chassis, HVAC, body, exterior and interior development, and telematics.

SSOE designed an interior hydrogen fuel cell garage space, along with an exterior hydrogen fueling station and garage space. Special considerations, including distance from nearby high rises, were made during design due to the potential for explosions. Fuel farms were also integrated to provide for blending and testing operations for hydrogen-based vehicles and hybrids.

A significant design feature was a central garage space that separated the building into two halves. The central garage space functions as a central spine and serves as a common use area for multiple groups. It potentially allows groups to share tooling.

Another feature was a visually secure, exterior patio for GM to view vehicles in natural sunlight. This requirement created an interesting challenge, since the site was located within city limits and near a multiple-story building. SSOE designed a visual screen to obstruct the view from the building while still allowing the natural sunlight to enter the space.

SSOE provided an innovative design which minimized environmental impact, while maximizing occupant safety, health, and comfort. Design criteria also emphasized the use of sustainable materials and other energy reduction features.

## value promise

Input from programming phase was used to eliminate duplicate space requirements and reduce the building footprint by 15%. Additionally, a method was developed to capture and reuse energy generated during dynamometer testing process throughout the facility.

**size** 355,000 SF

**location** Shanghai, China

## highlights

LEED® Gold certified

Sustainable features for long-term energy savings

Programming

Conceptual design

Master planning

Detail design

Construction management