Product Storage Terminals

FOR BULK LIQUIDS

mcdermott.com

MCDERMOTT | CB&I STORAGE SOLUTIONS

United Arab Emirates

Unparalleled Experience

CB&I Storage Solutions has more than eight decades of experience designing and building bulk liquid terminals for the oil and gas, LNG and petrochemical industries. We specialize in building tanks and pressure spheres that store crude oil and refined products, liquefied gases, petrochemicals and specialty chemical products.

With more than 30,000 aboveground storage tanks and 3,500 pressure spheres built in more than 100 countries, We are a leader in the design and construction of bulk liquid storage facilities. Our experience includes thousands of ambient temperature tanks and more than 100 ambient storage terminals, as well as more than 1,000 refrigerated storage tanks and spheres, and more than 150 turnkey liquefied gas terminals around the world.

With extensive concept-to-completion capabilities, we can provide turnkey services for all facets of a storage terminal, including vessels, loading and unloading stations, process piping, power generation facilities, control systems, ancillary buildings and more.

Taking the Lead with Safety

Our strong safety culture reflects the company's commitment to the wellbeing of our employees. Taking the Lead with QHSES is a company-wide initiative designed to incorporate and elevate safety as an integral value within our organization. Our goal is to set a winning example in QHSES and we encourage our partners, subcontractors and clients to work with us in the pursuit of outstanding QHSES performance.

USA

Venezuela

Phased Contracting

Engaging our expertise early in a project helps lower costs, shorten schedules, reduce risk and avoid redundancies, ultimately providing the optimal approach for planning and executing a project.

We can furnish engineered facilities quickly while maintaining maximum customer input and budget control through a phased contracting approach. This is accomplished when we work closely with the customer, selecting facility design and supply options concurrently with final contract development. Both time and money are saved since the need to prepare specifications, obtain quotations and evaluate bids is eliminated.

The advantages of phased contracting include:

Shorter schedule

- To maintain completion dates, personnel and other resources are committed while alternatives and details are being resolved and finalized
- In many cases, permitting and approval times run concurrently with facility design, project planning and scheduling, and contract development
- Purchasing and field work can be implemented on a critical path basis throughout early contracting phases based on customer approval
- The time required to assemble the necessary information, issue requests for quotation, analyze complex turnkey bids from designers/contractors and negotiate a contract is eliminated

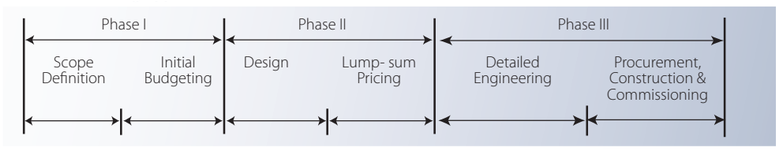
Lower costs

- Constructability reviews are conducted at an early stage to ensure the design and project execution plan are optimized for safe and efficient construction
- A shorter schedule translates into lower costs and brings the project online sooner, thereby starting its revenue stream earlier
- The builder is the designer which results in more cost-effective designs
- Third party engineering costs are eliminated

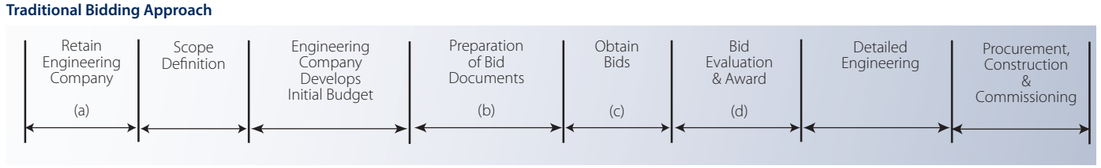
Customer control

We work closely with our customers to develop technical requirements for all aspects of the facility, including commissioning activities.The customer has maximum input on all technical matters and options, with timely feedback on costs and feasibility. Using the phased contracting approach, the project is implemented in three stages.

Phased Contracting Approach



Traditional Bidding Approach



Phased Contracting vs. Traditional Bid to Specifications

Saves time – Skipping steps a-d reduces project timeline by up to 50 percent
Saves money – No third party engineering costs associated with steps a-d

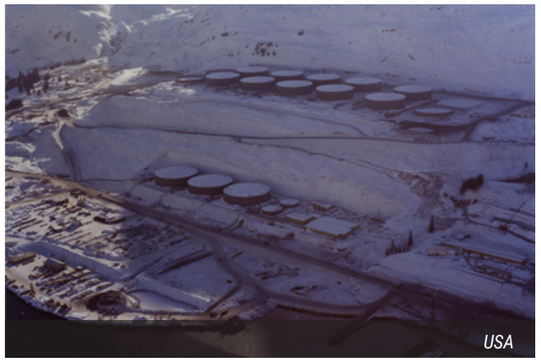
USA

Comprehensive Capabilities

By combining our project experience with our extensive knowledge of all facets of a storage terminal, as well as our ability to self-perform every aspect of the project, we can provide our customers with the most cost-effective solutions. We apply its comprehensive capabilities to the following bulk liquid storage terminal components:

- Atmospheric storage tanks
- Buildings
- Control systems
- Emission control systems
- Fire protection systems
- Foundations
- Low temperature and cryogenic storage tanks
- Marine jetties and offshore loading systems
- Pipe fabrication and process piping
- Power generation and standby power generation facilities
- Pressure spheres
- Product pumping and handling systems
- Refrigeration systems
- Ship/truck/train loading and unloading stations

Nigeria


USA

EPC Solution

Providing Unparalleled Value

We have extensive experience designing both ambient and low temperature bulk liquid terminals for the storage and handling of crude oil and refined products, liquefied gases, petrochemicals and specialty chemical products. We offer a complete package of EPC solutions – from conceptual design through commissioning/start-up – providing a full range of capabilities to meet our customers' needs.

Our project services include:

- Concept definition
- Front-end engineering studies
- Development of alternative solutions
- Project site and cost evaluations
- Design and analysis
- Code interpretation
- Hazard analysis and mitigation
- Regulatory agency compliance support
- Brownfield evaluation and environmental remediation
- Permitting assistance
- Detail engineering and specifications
- Material procurement and inspection
- Integrated constructability studies
- Site development
- Plate steel fabrication
- Pipe and module fabrication
- Construction
- Project management
- Subcontract management
- Quality assurance
- Final documentation
- Pre-commissioning
- Start-up
- Operator training

Philippines

Oman

Hortonsphere® Pressure Vessels
Flexible & Economic Storage

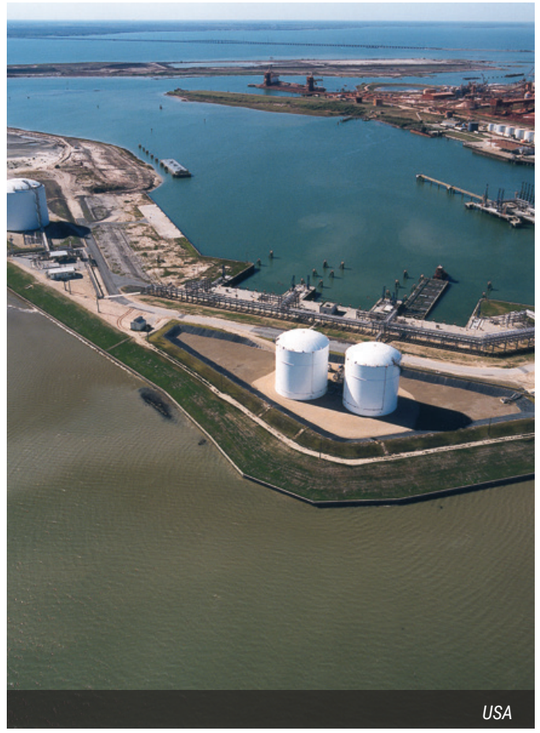
In addition to introducing the world's first floating-roof tank to the oil industry in 1923, we also built the world's first Hortonsphere pressure vessel. Designed to store natural gasoline, butane, propane and other volatile petroleum products, it quickly became the industry standard for pressure storage. Since its introduction, we have has built more than 70 percent of the world's field-erected spheres.

Ideal for use in bulk storage terminals, Hortonsphere pressure vessels store large volumes of liquids and gases economically and reliably under a wide range of pressure and temperature conditions. Their spherical shape offers uniform stress resistance, allowing the vessels to contain internal pressures. They require less land area yet provide more capacity than other pressure storage vessels, resulting in lower associated costs for piping, foundations, accessories and painting.

Typical Hortonsphere vessel applications include:

- Ambient Temperature Liquid Storage: Spheres designed for liquid storage can contain a variety of products such as gasoline, anhydrous ammonia, naphtha, liquefied petroleum gas (LPG), natural gas liquids (NGL), butadiene and water. Typical capacities range from 1,000–75,000 barrels.
- Low Temperature Liquid Storage: Low-temperature liquid Hortonsphere vessels offer an economical, partial-refrigeration solution for storing products such as LPG. These spheres feature single walls and external insulation.
- Cryogenic Temperature Liquid Storage: Spheres designed for cryogenic storage can be used to store products such as ethylene, hydrogen, oxygen, nitrogen, argon and LNG. These spheres feature double walls with an evacuated, perlite-filled annular space.
- Gas Storage: Hortonsphere vessels can store large quantities of compressed gases, such as hydrogen, nitrogen, oxygen, helium and argon.

USA


USA

Flat-bottom tanks for ambient temperature storage

We have been in the business of designing and building bulk storage facilities for the oil and gas industry since the early 1900s. We have more atmospheric storage tank experience than any other organization in the world.

We offer a comprehensive package of services for tank projects that includes concept definition, design and detail engineering, fabrication, procurement, site development, foundation and tank construction, painting and coating, commissioning and start-up, and operator training.

We execute our projects on a lump-sum, turnkey basis, performing every phase of the work ourselves, whenever possible. Our integrated business model translates into shorter project schedules, lower costs, improved quality control and reduced risk for the customer.

Our solutions include atmospheric storage systems for a variety of industries. Our expertise includes fixed-roof, floating-roof and special atmospheric tanks, including open top tanks, elevated cone bottom tanks, bins and silos.

Low temperature and cryogenic storage systems

We have designed and built refrigerated and cryogenic storage systems for liquefied gases for more than 50 years. In that time, we've delivered nearly 1,000 refrigerated storage tanks and more than 150 turnkey design-build liquefied gas storage terminals around the globe.

Low temperature tanks can store products at temperatures as low as -60°F (-51°C); cryogenic systems store liquids at temperatures as low as -452°F (-268°C). We provide low temperature and cryogenic storage tanks for the entire range of liquefied gases including ethane, butadiene, butane, ammonia, chlorine, propane, propylene, carbon dioxide, LPG, LNG, ethylene, oxygen, argon, nitrogen and hydrogen.

We provide single-source design and construction of terminals for importing, exporting and storing liquefied petroleum gas. We can deliver a complete terminal, including pipelines; vessels for storing LPG at either full-pressure or refrigerated conditions; boil-off compressors; refrigeration, pumping and heating systems; rail sides; ship/truck loading and unloading facilities; and fire protection systems.

The scope of our refrigerated and cryogenic storage products typically includes concept definition, design and detail engineering, specification and procurement, shop fabrication, field construction, inspection and testing, start-up and project management.

McDermott's storage business, CB&I Storage Solutions, is the world's leading designer and builder of storage facilities, tanks and terminals. With more than 59,000 structures completed throughout our 130-year history, CB&I Storage Solutions has the global expertise and strategically located operations to provide our customers world-class storage solutions for even the most complex energy infrastructure projects.

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