



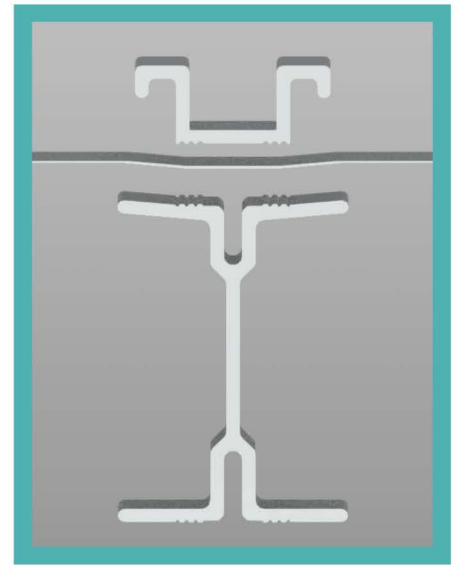
ELEMENT 13

INTERNAL FLOATING ROOFS

Bolted Skin and Pontoon Design

The **Element 13 Internal Floating Roofs** are a skin and pontoon design providing the most economical solution for petroleum and chemical storage tanks. Our aluminum IFRs are cost effective and light weight with varied applications for many products. For material compatibility and corrosion concerns, our hybrid IFRs provide stainless steel wetted parts combined with an aluminum deck and structural framing.

Our IFRs deliver the same benefits as welded and fully stainless options while reducing weight, costs, and installation duration.



Extruded Batten-Beam Detail

ELEMENT 13 ADVANTAGE

The Element 13 Internal Floating Roof:

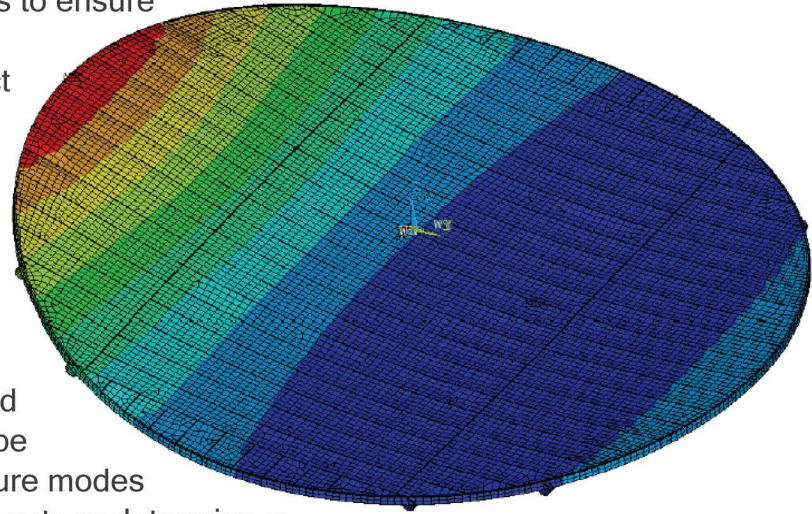
Ease of Installation:

- Ability to install all parts via a 24-inch manway, which removes the necessity for installing door sheets, heavy equipment, and additional operations personnel.
- Bolted assembly means there is no welding required. This greatly reduces the cost and duration of installation, as well as safety concerns by removing the need for hot work.
- Structural design efficiency minimizes the number of structural members needed which further expedites assembly time in the field.

ELEMENT 13 ADVANTAGE

Analysis & Design:

- The Element 13 IFR is custom designed and engineered to meet each client's unique needs.
- 3D structural modeling software and finite element analysis are incorporated into Element 13's designs to ensure a structurally sound, value-engineered product that meets the latest editions of all applicable design codes, including API 650 Appendix H and the Aluminum Design Manual (ADM).
- CFD (Computational Fluid Dynamics) analysis can be performed to identify failure modes due to operational gas upsets or determine a diffuser's impact on the loading conditions.
- Fatigue analysis can be performed for high cycle product application environments.



In-House manufacturing:

- Our state-of-the-art equipment and procedures increase quality while reducing fabrication lead times.
- Repair and replacement parts can be expedited from stocked inventory to meet client needs.
- Extensive manufacturing knowledge allows for custom design solutions from licensed professional engineers.

INNOVATIVE DESIGN FEATURES

The Element 13 Internal Floating Roof:

Pontoons:

- Design accounts for optimized distribution of buoyancy to provide added stability when experiencing product turbulence or increased loading from maintenance personnel.
- Leg or cable supports connect to structural framing, thereby reducing fatigue related failures on the pontoons caused by tank turbulence or high-cycle operations.
- Each has quality control measures implemented that include individual pressure testing per API 650, Appendix H, at 5psi to ensure an airtight seal.
- Design includes proprietary end cap and pontoon joint/connection details that resist fatigue.

INNOVATIVE DESIGN FEATURES

Cable Suspended IFRs:

- Are easily attached to steel cone and aluminum dome roof structures.
- Eliminate the need for leg supports and dramatically reduce product vapor loss through added penetrations.
- When used in conjunction with aluminum dome roofs, they remove the need for vertical support columns required for fixed steel roofs.
- Give free and clear access under the IFR for general inspection and repair when needed.
- Enable IFR roof heights of all variations, rather than being constrained to a high- and low-leg setting. Additionally, the roof height can be adjusted without taking the tank out-of-service.

Leg Supported:

- Our legs are connected to the structure in contrast to conventional IFR designs where the pontoons are attached to the leg supports. When the pontoons attach to leg supports, it causes fatigue issues in the pontoons over time leading to potential failures.

Formed Outer Rim:


- Consists of a rolled rim-channel for increased support and added stiffness.
- Easily accommodates all manufacturers and types of primary mechanical and secondary seal systems without additional reinforcing.


Hybrid & Full Stainless Steel IFRs:

- The Element 13 Hybrid Stainless Steel/Aluminum Internal Floating Roof can be utilized when the products being stored are corrosive to the submerged aluminum parts of the roof. This hybrid design is made up of the same structural framing and details as our Aluminum Skin & Pontoon IFR.
- A fully stainless-steel option is available when the product stored is too corrosive in gas or liquid form for aluminum applications.
- The hybrid option minimizes weight and cost as compared to fully stainless IFRs.

CONTACT US

Please feel free to reach out to us using the information below. We would be happy to help answer any questions you have regarding our full line of quality aluminum tank products.

 7102 North Sam Houston Pkwy W
Suite 320 Houston, TX 77064

 281-724-8313

 info@elem13.com

 elem13.com

