



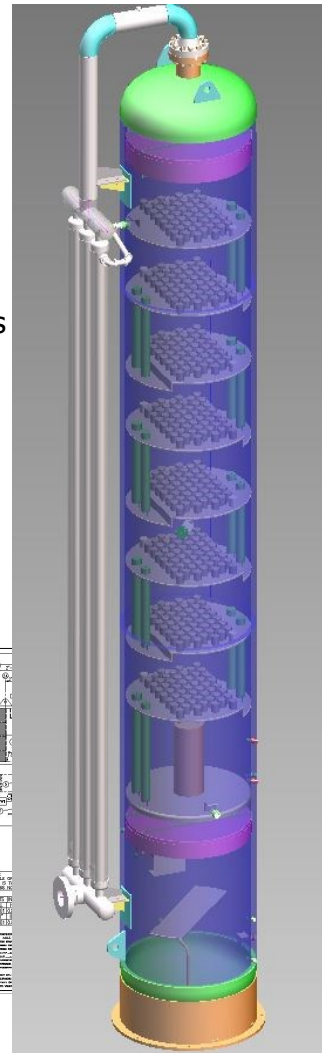
Pressure Vessel Design ASME Section VIII, Div. 1 & 2

Overview

IMAGE offers a broad range of Engineering Services to the energy gathering, distribution and refining industries. For well over 10 years one particular area of strength has been ASME Section VIII pressure vessel engineering and design. With many decades of accumulated pressure vessel engineering and design experience, the IMAGE team can help you avoid the common pitfalls and provide a repeatable path to success. From calculation development in support of estimating and proposal development, to the tedious design and fabrication details required to fabricate a high quality vessel with economical construction, IMAGE has the experience to deliver quality designs, on time - every time. As always, we leverage cutting EDGE technologies to provide better deliverables faster than our competition while also maintaining a competitive price.

Advanced 3D Modeling

Shortly after project kickoff, IMAGE will provide ASME VIII code calculations in either COMPRESS or PV Elite. This calculation will provide the basis for the preliminary Bill of Materials development which allows our customers to quickly procure long lead items well before the design is fully complete. Heads, shells, large nozzles and special internals are quickly vetted and a vessel design summary sheet (VDS), is created from the calculations and passed on to the vessel designer. This summary information provides guidance to our staff regarding the design requirements around ASME code compliance and basic material selections. The designer then uses a combination of industry leading software (CADWorx Plant), in conjunction with our own custom developed applications, to develop an accurate 3D model of the highest quality with the least amount of effort. Every relevant component is accurately modeled into the 3D environment so that careful consideration of interference and fitment can be properly evaluated. This means that we virtually fabricate the vessel before you actually fabricate it. Careful attention to detail ensures appropriate placement of long seams provides clearance of nozzles, efficient use of internal and external projections, judicious use of long weld necks balanced against the labor associated with repads, and careful evaluation of the constructability of internals and their installation. Many pieces of information such as weights, center of gravity calculations, bills of materials, etc. are just the natural by-products of our 3D models.



Bill of Materials Report

ITEM NO.	DESCRIPTION	QTY	UNIT	REMARKS
1	HEAD	1	EA	
2	SHELL	1	EA	
3	NOZZLE	1	EA	
4	TRAY	10	EA	
5	LEG	4	EA	
6	WELD NECK	2	EA	
7	FLANGE	2	EA	
8	GASKET	2	EA	
9	SCREW	100	EA	
10	WASHER	100	EA	
11	NUT	100	EA	
12	PIPE	10	EA	
13	ELBOW	2	EA	
14	TEE	1	EA	
15	FLANGE	1	EA	
16	GASKET	1	EA	
17	SCREW	10	EA	
18	WASHER	10	EA	
19	NUT	10	EA	
20	PIPE	5	EA	
21	ELBOW	1	EA	
22	TEE	1	EA	
23	FLANGE	1	EA	
24	GASKET	1	EA	
25	SCREW	10	EA	
26	WASHER	10	EA	
27	NUT	10	EA	
28	PIPE	5	EA	
29	ELBOW	1	EA	
30	TEE	1	EA	
31	FLANGE	1	EA	
32	GASKET	1	EA	
33	SCREW	10	EA	
34	WASHER	10	EA	
35	NUT	10	EA	
36	PIPE	5	EA	
37	ELBOW	1	EA	
38	TEE	1	EA	
39	FLANGE	1	EA	
40	GASKET	1	EA	
41	SCREW	10	EA	
42	WASHER	10	EA	
43	NUT	10	EA	
44	PIPE	5	EA	
45	ELBOW	1	EA	
46	TEE	1	EA	
47	FLANGE	1	EA	
48	GASKET	1	EA	
49	SCREW	10	EA	
50	WASHER	10	EA	
51	NUT	10	EA	
52	PIPE	5	EA	
53	ELBOW	1	EA	
54	TEE	1	EA	
55	FLANGE	1	EA	
56	GASKET	1	EA	
57	SCREW	10	EA	
58	WASHER	10	EA	
59	NUT	10	EA	
60	PIPE	5	EA	
61	ELBOW	1	EA	
62	TEE	1	EA	
63	FLANGE	1	EA	
64	GASKET	1	EA	
65	SCREW	10	EA	
66	WASHER	10	EA	
67	NUT	10	EA	
68	PIPE	5	EA	
69	ELBOW	1	EA	
70	TEE	1	EA	
71	FLANGE	1	EA	
72	GASKET	1	EA	
73	SCREW	10	EA	
74	WASHER	10	EA	
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84	PIPE	5	EA	
85	ELBOW	1	EA	
86	TEE	1	EA	
87	FLANGE	1	EA	
88	GASKET	1	EA	
89	SCREW	10	EA	
90	WASHER	10	EA	
91	NUT	10	EA	
92	PIPE	5	EA	
93	ELBOW	1	EA	
94	TEE	1	EA	
95	FLANGE	1	EA	
96	GASKET	1	EA	
97	SCREW	10	EA	
98	WASHER	10	EA	
99	NUT	10	EA	
100	PIPE	5	EA	

Typical Deliverables

- ASME Section VIII Div. 1 (or 2) Pressure Vessel Calculation
- General Arrangement Drawing
- Vessel Internals and Support Details
- Enhanced Weight and CG Calculation
- 3D model (with Smart Design Review via EDGE 360)
- Detailed Bill of Materials delivered in Excel
- Structural Steel Skid Base and Misc. Steel
- Ladders and Platform Fabrication Details

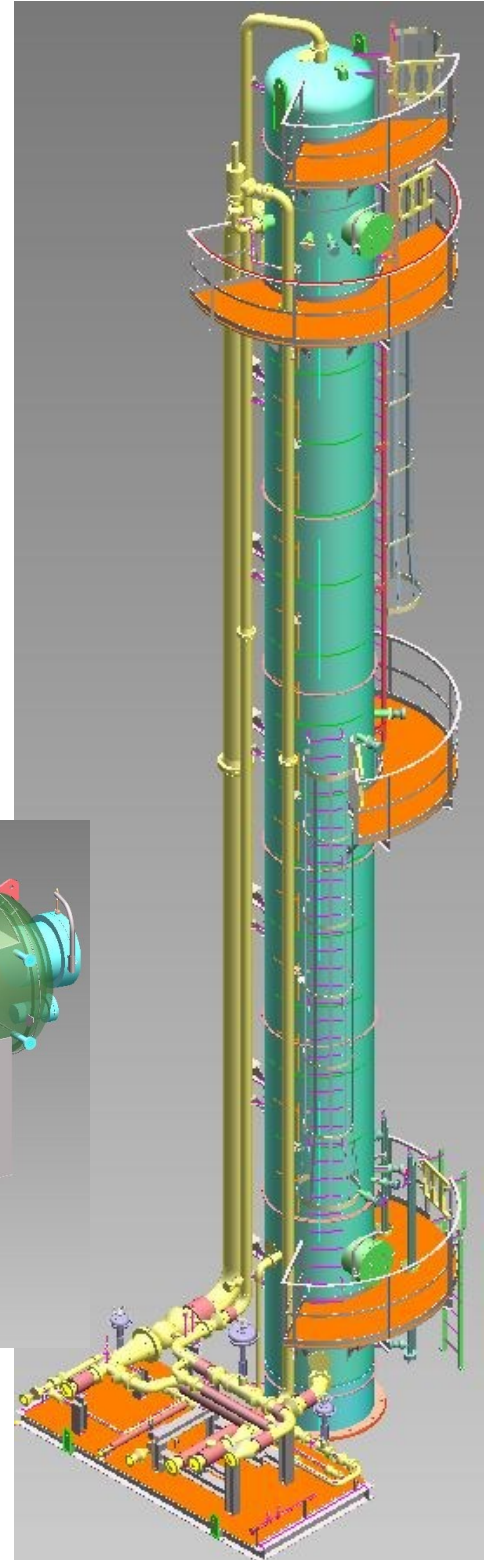
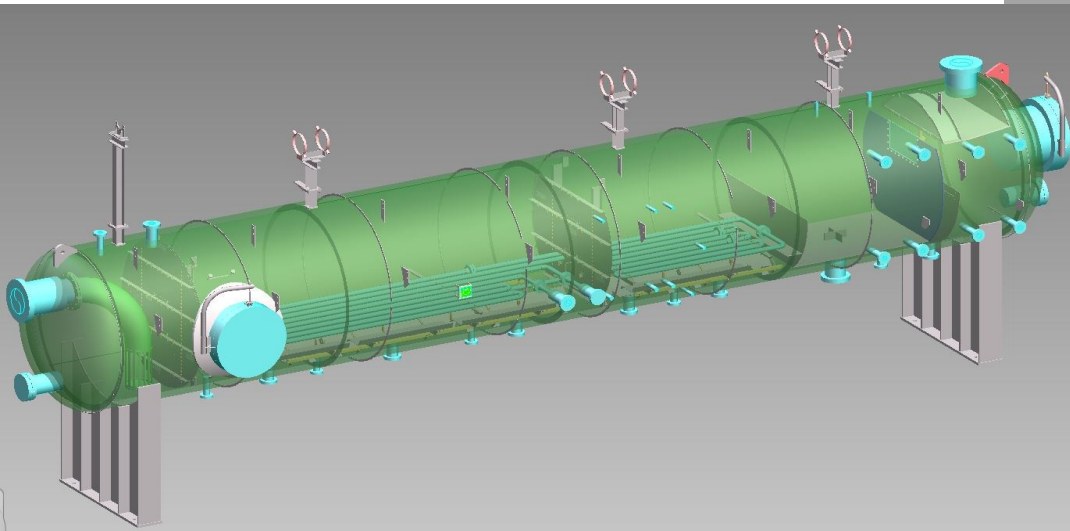
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Enhanced Design Team Collaboration

To further assist our customers and enhance design visualization, all project information such as calculations, drawings, bills of materials, etc., are delivered through our proprietary, industry leading collaboration platform EDGE 360. Within EDGE 360 our customers can access 3D models where they can interrogate the model by hiding the shell, making it transparent, slicing a section view, or even pullings dimensions of components. This 3D model is fully intelligent and allows the user to review materials, view component descriptions, search tags, etc. – all long before the detailed fabrication drawings are ready for review and approval! Furthermore, this 3D model is fully integrated with the 2D drawings when complete, to allow all users a completely revolutionary review platform to further enhance their understanding of the design. Clicking any item bubble or nozzle call out tag allows the user to zoom to the 3D model and then highlight the selected item. Similarly, selecting any item in the 3D model allows the users to locate said item on the 2D drawings. And upon selection from either form, the Bill of Materials information is readily visible to the user. Coupled with internal markup tracking capabilities and previous version history, EDGE 360 brings the essence of the design to our customers in an immersive and user friendly environment. While adding value by increasing visibility, safety, and collaboration EDGE 360 also delivers secure, traceable, and accountable knowledge management - all just a mouse click away.



And We Can Handle the Rest.....

Not only does IMAGE provide all the Engineering and Design necessary to deliver a quality pressure vessel design, we can also package that vessel into complete skidded modules or plant facilities including all ancillary supporting equipment and foundations. IMAGE regularly provides detailed Engineering & Design support for almost any kind of equipment required in up-stream production, mid-stream processing, down-stream refining, and all points in between.