



APACHE
STAINLESS EQUIPMENT

A ROAD MAP TO CUSTOM MANUFACTURED ASME VESSELS



Gain Planning Insight and Knowledge to Acquire Custom ASME Vessels

ROAD MAP: Design to ASME Submission

As a manufacturer of custom vessels for pharmaceutical, life sciences, and health industries, Apache works with integrators who add their process technology to equipment, as well as end-users who know their process and need a solution.

In this white paper, Apache outlines the stages for custom vessel development and design for compliance regulated industries. Whether you are a beginning or experienced engineer, or a purchasing professional, this detailed road map will give you planning insight and knowledge to acquire custom-designed and manufactured ASME and other certified vessels.

In this white paper, discover:

- Stages of custom vessel and compliance engineering
- Detailed specification development list
- Evaluation criteria for a custom vessel manufacturing partner



CONCEPT REVIEW

In the initial project discussion, Apache provides a consultative review to learn:

- Overall expectations
- Interpretation of drawings/sketches
- Understanding customer's processing goals for the vessel
- Compliance and certifications required
- Engineering consultation if needed

The outcome of the design review is a clear understanding by both parties of the project expectations. Part of this technical review includes in-depth communications around the ASME and other compliance criteria for the vessel. Understanding these details in the concept review stage helps discover design details early-on to avoid late-stage adders or scope change, which affects cost and timing.

Depending on the project's complexity, the review may include engineering team support to determine that the concept is viable.



SPEC DEFINITION

Whether via phone, email communications, or web conference, the development of specifications is a back-and-forth collaboration between the customer, sales, and ASME engineers. The engineering team is formally involved at this stage to define the exact details of the vessel. Specification development includes physical component identification, construction details, finishing requirements, and defined attachments and instruments. Depending on the project, engineering may perform calculations to confirm the design and process goals. See next page for a detailed specification discovery list.

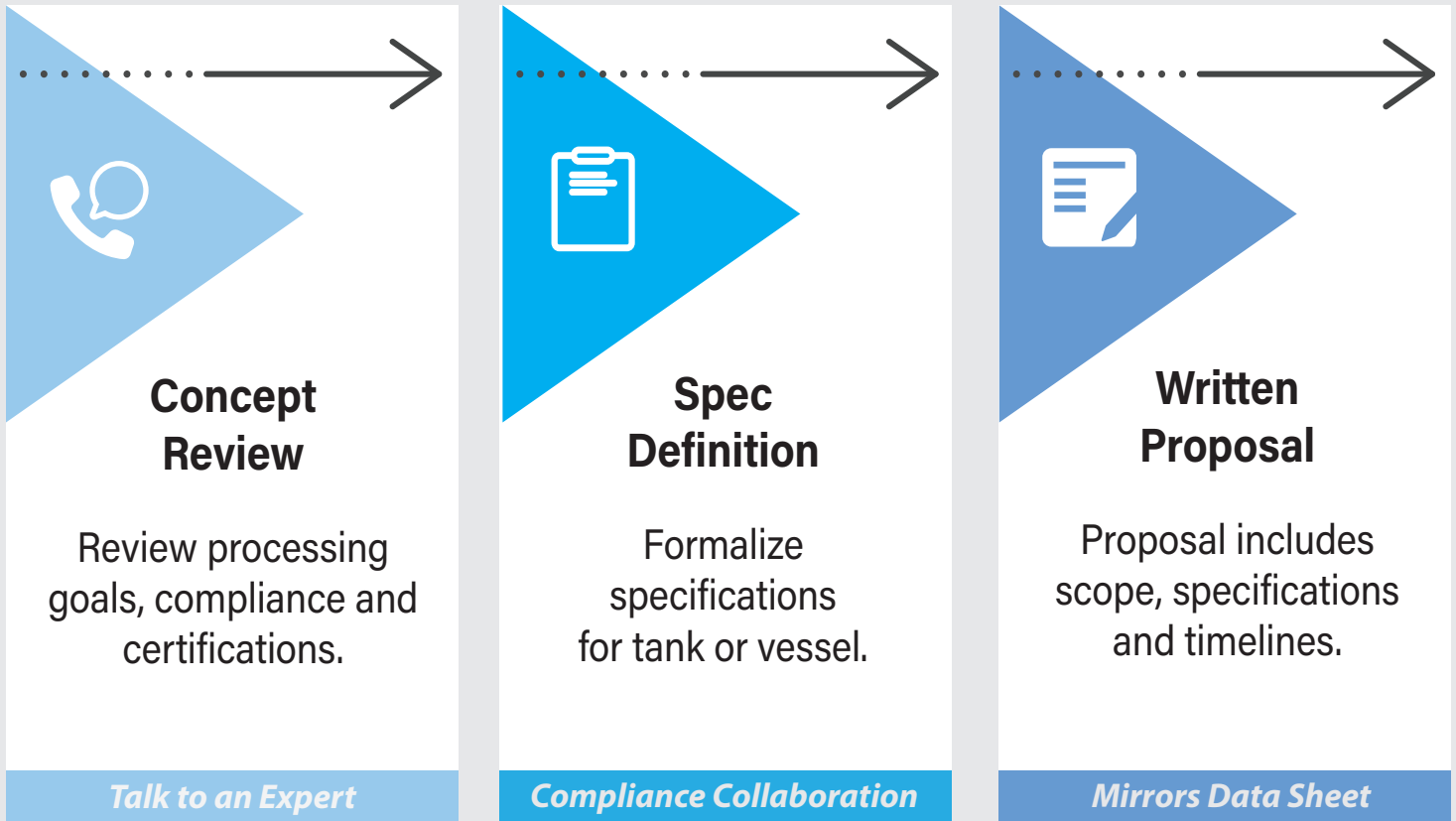
The Concept Review and the Spec Definition will give the customer and the manufacturer a thorough examination of the requirements for design, material, fabrication, and components to meet production goals, compliance certifications, and testing.

SPECIFICATION DISCOVERY



APPLICATION	DESCRIBE	INDUSTRY
What is the purpose of the vessel?		
CONSTRUCTION	DESCRIBE	NUMBER/QUAN/CAPACITY
Capacity		
Design Pressure		
Vacuum		
Temperature		
Material		
Top Head Type		
Top Head Fittings		
Bottom Head Type		
Bottom Head Fittings		
Supports		
FUNCTION	DESCRIBE	
Heating or Cooling		
Insulation and cladding		
AGITATION		
Pneumatic / Electric		
Product Viscosity		
Desired mixing action		
Presence of Solids		
Preferred impeller Style		
Motor Voltage / Classification		
Seal Type		
FINISH	DESCRIBE	RA
Interior Material		
Interior Welds		
Exterior Material		
Exterior Welds		

ROAD MAP



WRITTEN PROPOSAL

The written proposal includes the scope, specifications, and timeline for the vessel project. Some customers are required to seek RFPs (Request for Proposal) from multiple vendors, so Apache's proposals are compiled to mirror customer requirements and data sheets to allow for easier review.

While it may require a few days to complete, a detailed quote reduces ambiguity and variables that can lead to misunderstandings in the projects. Using language that serves the customer also helps bridge communication gaps to solidify the project expectations.

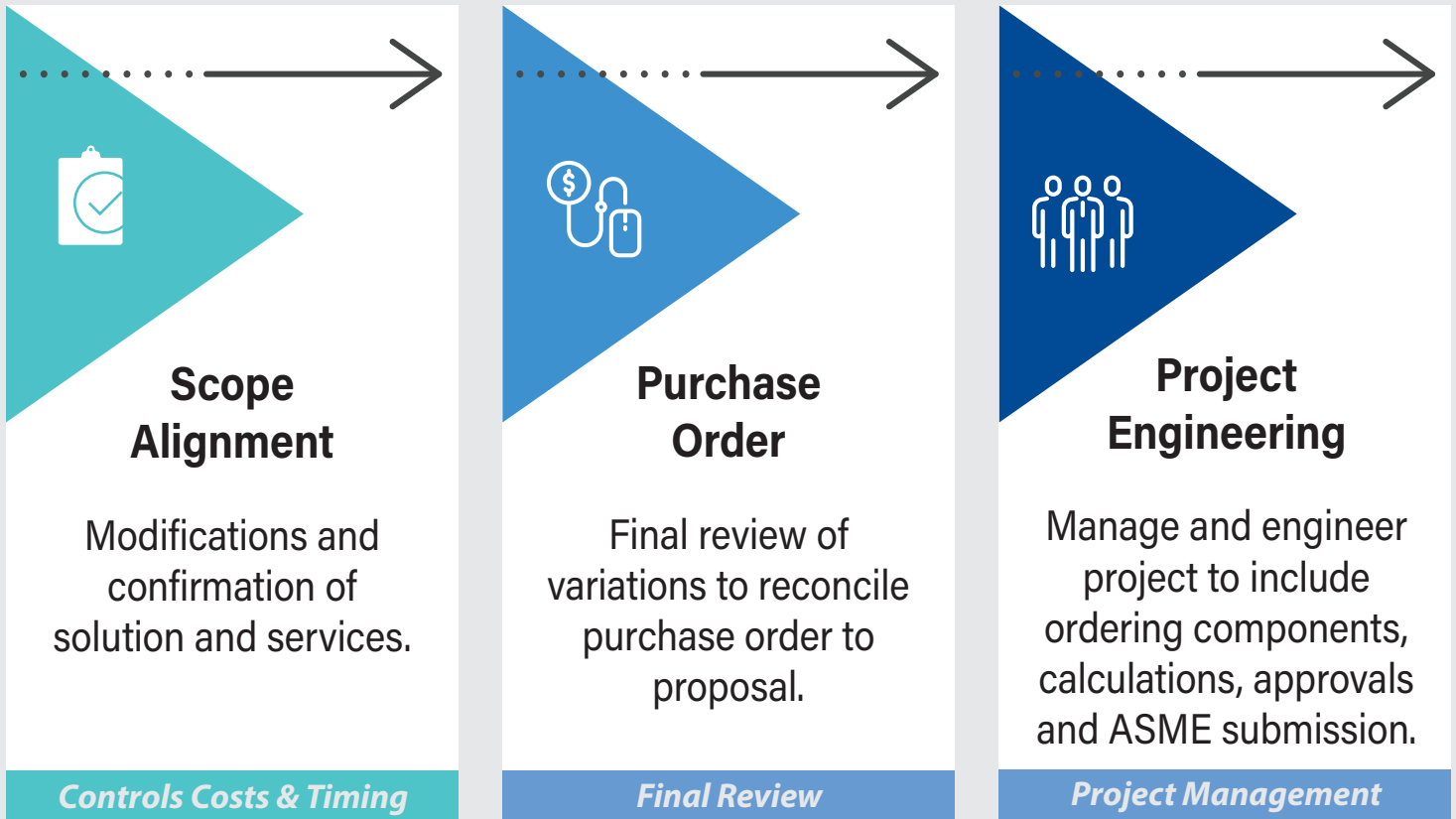
In some more complex projects, Apache may provide a formal concept drawing with the written proposal. This visual helps to resolve the design direction and compliance, as well as emulate the proposal.



SCOPE ALIGNMENT

The scope alignment process allows for confirmation of the proposal and services included in the project and to clarify items out of scope. Some proposals require minor changes after scope review, and some require more significant variations. During scope alignment, these tasks occur:

- Modify quote to revisions/changes
- Verify manufacturing capacity
- Confirm due dates and delivery, including milestones or project schedule
- Review component pricing
- Discover component lead-times
- Review of customer approval process and timeliness
- Review project engineering expectations
- Provide ASME / certification time-lines
- Confirm deliverables
- Review terms and conditions



ORDER

After the customer has chosen the preferred partner as Apache Stainless, we receive the PO (Purchase Order). We also review variations and changes to reconcile the purchase order to the proposal.

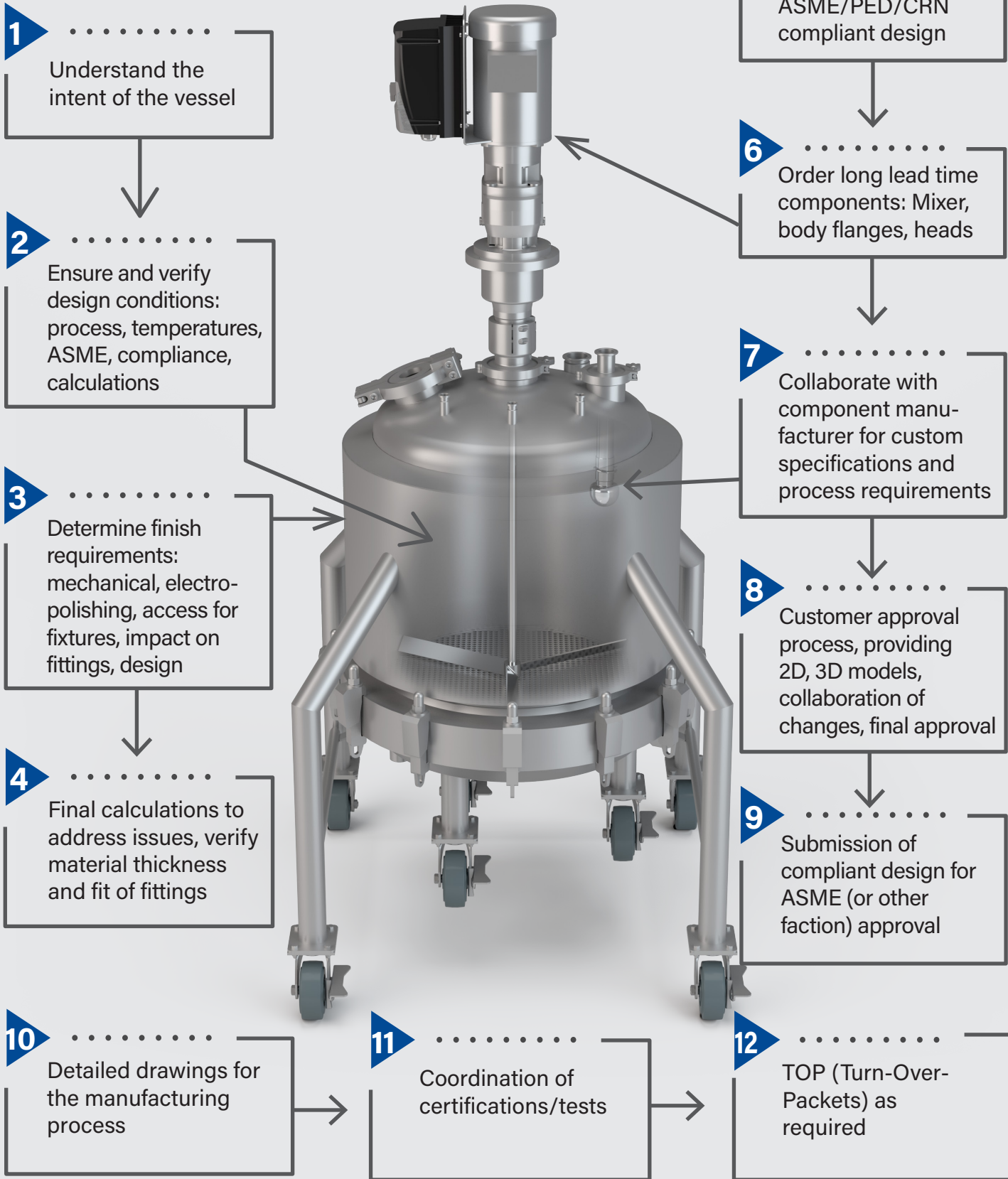
Behind the scenes, the order is entered into our scheduling and enterprise systems. A project engineer is then assigned to the project and engineering meetings are scheduled.

PROJECT ENGINEERING

The final stage of the ASME design submission process is Project Engineering. At this stage, there is a kick-off and a sales-to-engineering release review. Sales works closely throughout the engineering process to coordinate and relay information to the customer. Project engineering includes:

- Order long-lead purchased components
- Technical confirmations with customer
- Run / verify calculations
- Completion of 3D ASME / PED / CRN compliant design
- Vendor component direction and collaboration
- Approval review with customer
- Submission of compliant design for ASME or other faction approval
- Detailed drawings for the manufacturing process
- Coordination of certifications / tests
- TOP (Turn-over packet) deliverables as required

12 Project Engineering Steps to Ensure Vessel Compliance



EVALUATING A CUSTOM PRESSURE VESSEL MANUFACTURING PARTNER

ACCREDITATIONS

Custom and pressure vessel manufacturers must have accreditation for ASME certification. Compliance with the National Board of Boiler and Pressure Vessel code is required. Pressure vessel manufacturers must also manufacture to ASME material specifications, certificates, and welding qualifications.

Other accreditations are also crucial in the pharmaceutical, life science, and health industries. Confirm all industry compliance standards, including:

- ASME UM
- ASME U
- FDA
- 3-A
- CRN
- PED
- BPE

QUALITY ASSURANCE & COMPLIANCE

Verify that the manufacturer has a dedicated quality assurance team. There are significant testing, certifications, and documentation requirements for all global accreditation programs. In-house inspection services are a benefit to ASME projects. Review services that should include:

- Pneumatic testing
- Hydrostatic testing
- Liquid Penetrant (Dye Penetrant) testing
- Saline testing and certificate
- Riboflavin/CIP (clean-in-place) coverage test
- Material Test Reports
- Base metal thickness certificate
- Material trace
- Welder trace
- Ferroxyl test and certificate
- Positive material identification (PMI) and certificate
- Ferrite levels and certificate
- Radiography and analysis
- UT weld testing and certificate
- Turn Over Packet (TOP) as required



EXPERIENCE

The pressure vessel manufacturer must have expertise in the type of vessel and industry experience for the use of the vessel. Critical staff, fabricators, and welders must be ASME certified. All welders must be approved for the weld procedures required to make custom pressure vessels.

Experience and reputation are also significant when developing relationships with inspectors, agencies, and governing officials to keep the compliance process moving forward smoothly.

SERVICE & SUPPORT

Above all, assess the service and support provided by the manufacturer. The vessel manufacturer should be able to articulate technical discussions and be open and honest with timelines, cost, and compliance-related issues. Consider other research and questions, such as:

- Is the proposal easy to understand and compare solutions?
- Do you have direct access to the engineer for questions?
- Does the company provide timely and accurate documentation?
- Does the company offer after-market parts and field service?



ABOUT US

The Apache Stainless Equipment Corporation employs experts and artisans in the fabrication of stainless equipment for a range of industries. Our expertise in stainless and high-alloy vessels is shown on Apache's tanks and vessels in the beverage, biotechnology, life science, pharmaceutical and food processing industries.

ASME is a leading developer of codes and standards in the mechanical engineering community. These standards enhance public safety and health as well as promote innovation. Apache has been ASME certified for over 40 years.

In addition to ASME, Apache is also accredited in many other global standards. By setting parameters for quality and compliance, we offer greater value for our equipment products.

Apache consists of four product groups: Large ASME tanks, small portable vessels, contract manufacturing and Mepaco®. With modifiable options, Mepaco's product line includes: thermal processing equipment, mixers, blenders, augers, dumpers, sanitary conveyors and material handling systems.

As a 100% employee owned company, Apache's culture exemplifies continuous improvement, efficiency, innovation and commitment to our customer.



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