

Advantages and Limitations

Heat Exchanger Model	Construction	Advantages	Limitations
AEM BEM	Nonremovable Bundle, Fixed Tubesheet	<ol style="list-style-type: none"> 1. Less costly than removable bundle heat exchangers. 2. Provides maximum heat transfer surface per given shell and tube size. 3. Provides multi-tube-pass arrangements. 	<ol style="list-style-type: none"> 1. Shell side can be cleaned only by chemical means. 2. No provision to correct for differential thermal expansion between the shell and tubes <p>*Exception—Expansion of shellside expansion joint.</p>
AEW AEP BEW BEP CEW CEP	Removable Bundle, Packed Floating Tubesheet	<ol style="list-style-type: none"> 1. Floating end allows for differential thermal expansion between the shell and the tubes. 2. Shell side can be steam or mechanically cleaned. 3. Bundle can be easily repaired Or replaced. 4. Less costly than full, internal floating head type construction. 5. Maximum surface per given shell and tube size for removable bundle designs. 	<ol style="list-style-type: none"> 1. Shell side fluids limited to nonvolatile and/or non-toxic fluids. i.e. lube oils, hydraulic oils. 2. Tube side arrangements limited to one or two passes. 3. Tubes expand as a group, not individually (as in U-tube unit) therefore sudden shocking should be avoided. 4. Packing limits design pressure and temperature.
AET BET CET	Removable Bundle, Pull-Through Bolted Internal Floating Head Cover	<ol style="list-style-type: none"> 1. Allows for differential thermal expansion between the shell and the tubes. 2. Bundle can be removed from shell, for cleaning or repairing without removing the floating head cover. 3. Provides multi-tube pass arrangements. 4. Provides large bundle entrance area. 5. Excellent for handling flammable and/or toxic fluids. 	<ol style="list-style-type: none"> 1. For a given set of conditions, it is the most costly of all the basic types of heat exchanger design. 2. Less surface per given shell and tube size.
AES BES CES	Removable Bundle, Internal Clamp Ring Type Floating Head Cover	<ol style="list-style-type: none"> 1. Allows for differential thermal expansion between the shell and tube tubes. 2. Excellent for handling flammable and/or toxic fluids. 3. Higher surface per given shell and tube size than "T" type. 4. Provides multi-tube pass arrangements. 	<ol style="list-style-type: none"> 1. Shell cover, clamp-ring and floating head cover must be removed prior to removing the bundle. Results in higher maintenance cost. 2. More costly than fixed tube sheet or U-tube heat exchanger designs.
AEV BEV CEV	Removable Bundle, U-Tube	<ol style="list-style-type: none"> 1. Less costly than floating head or packed floating tubesheet designs. 2. Provides multi-tube pass arrangements. 3. Allows for differential thermal expansion between the shell and the tubes, as well as between individual tubes. 4. High surface per given shell and tube size. 5. Capable of withstanding thermal shock. 	<ol style="list-style-type: none"> 1. Tube side can be cleaned only by chemical means. 2. Individual tube replacement is not practical. 3. Cannot be made single pass on tube side, therefore, true counter-current flow is not possible. 4. Tube wall at U-Bend is thinner than at straight portion of the tube 5. Draining tube side difficult in vertical (head up) position.

CMS Heat Transfer Inc.

At CMS Industries we'll put our years of heat transfer "know-how" to work for you. In addition to sizing a shell & tube heat exchanger for your specific heat transfer needs, our engineers incorporate measures to insure ease of maintenance and longer equipment life - this equates to both smaller initial capital and maintenance costs over the years.

Code conformance and certification

Our products are engineered to meet rigid standards, and quality is always the first priority. Units can be provided in accordance with ASME Sect. VIII, Sect. V and Sect. IX of the Boiler and Pressure Vessel Code, TEMA, API, HEI, and 3A standards. In addition, our designs can incorporate all of your specifications to insure compliance with your plant standards.

Engineering support

It is our engineering department's primary goal to provide the best technical support required to solve your heat transfer problems. With the aid of state-of-the-art integrated software our engineers can rate and size the appropriate equipment for your application.

Mechanical design

Our products can be fabricated in a variety of materials including cupro-nickel, carbon and stainless steels and nickel alloys. Correct material selection will insure long life of the exchanger even in the most corrosive services. In addition, our engineers will incorporate the appropriate configuration in the design of your unit to insure ease of maintenance and the ability to withstand the most vigorous thermal and mechanical demands.

Process design

At CMS we have the expertise to solve all of your process heat transfer needs. With the use of state-of-the-art software, we can size and rate a shell and tube heat exchanger to your exact specifications. Single and two-phase-flows, liquid-to-liquid, single and multiple condensable in the presence of or absence of non-condensables, no process is too complex. Our engineers will provide the technical support to insure a proper design. It's like having a process engineer on staff.

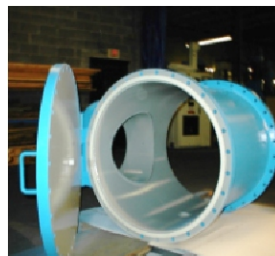
Service beyond the expected



Experienced in all phases of heat exchange technologies

Shell and Tube Heat Exchangers

- Oil Coolers
- Fuel Oil Pre-Heaters
- Aftercoolers
- Steam Converters
- Condensers
- Kettles
- Thermo-Syphon Reboilers
- Falling Film Evaporators



For "Those Problems That Won't Go Away"

- Custom Design
- Process Design Support
- Design of All TEMA Configurations



For "Old Reliable"

- Replacement Bundles
- XLE Units
- Generator Coolers
- OEM Replacement Units
- Retubing & Reconditioning

