



ZBW

Air-cooled heat exchanger type ZBW

The "Gesellschaft für **OELTECHNIK**" develops and produces apparatus for process technology.

Initially founded in 1953 as an engineering consultancy, it has grown into a medium-sized industrial enterprise with more than 10,000 square meters of production facilities and employs more than 220 employees.

The most important element of the product range is the heat transfer apparatus. In addition to these individual units, **OELTECHNIK** also supplies complete oil supply and condensation units.

## ZBW

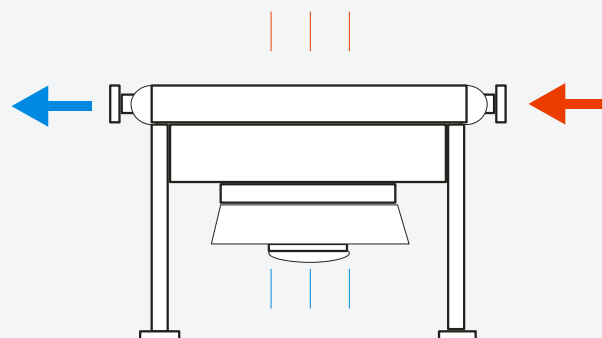
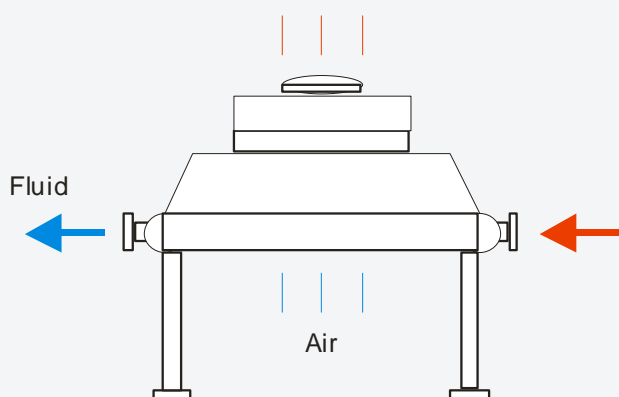
### Air-cooled heat exchanger

- ✎ Rectangular bundle design with finned or bare tubes
- ✎ Fluid: **any gas or liquid**
- ✎ Used in: **refineries, chemical plants, ..**
- ✎ Fluid side material: **CS, SS, CuNi, ...**
- ✎ Fin material : **Al, Cu, CS, SS, ...**
- ✎ **API 661** Standard or customers' specifications (**Exxon, Shell, ...**)
- ✎ Produced according to all national and international regulations (**ASME VIII Div. I + U-Stamp, AD, CODAP, STOOMWEZEN,...**)
- ✎ Technological **steel construction**
- ✎ Nationally and internationally **certified** (**China, Poland, Hungary, ...**)



**Water** as a coolant

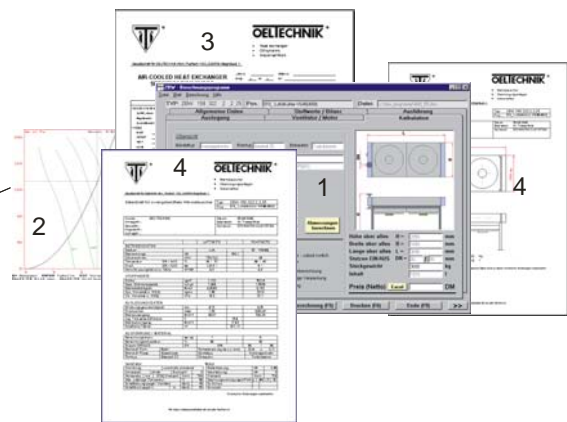
*is much too valuable...*



According to customers' requirements, **OELTECHNIK** provides its entire know-how as early as the **quotation phase**.

- ✎ Processed by competent engineers
- ✎ Application of ultra-modern computer technology with a consistent combination of data:

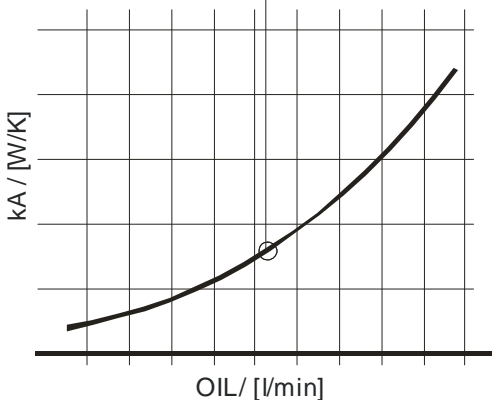
1. **Thermal and hydraulic calculation** according to the state of the art.
2. **Integrated fan design (incl. noise octave band)**.
3. **API 661 specification sheet** as a print-out or as an electronic file in PDF format.
4. **Customer data sheet incl. a dimensioned sketch** as a print-out or as an electronic file in PDF format.



**OELTECHNIK** also provides **API 661 air-cooled oil coolers** to match its **API 614 standard oil supply units**



American Petroleum Institute

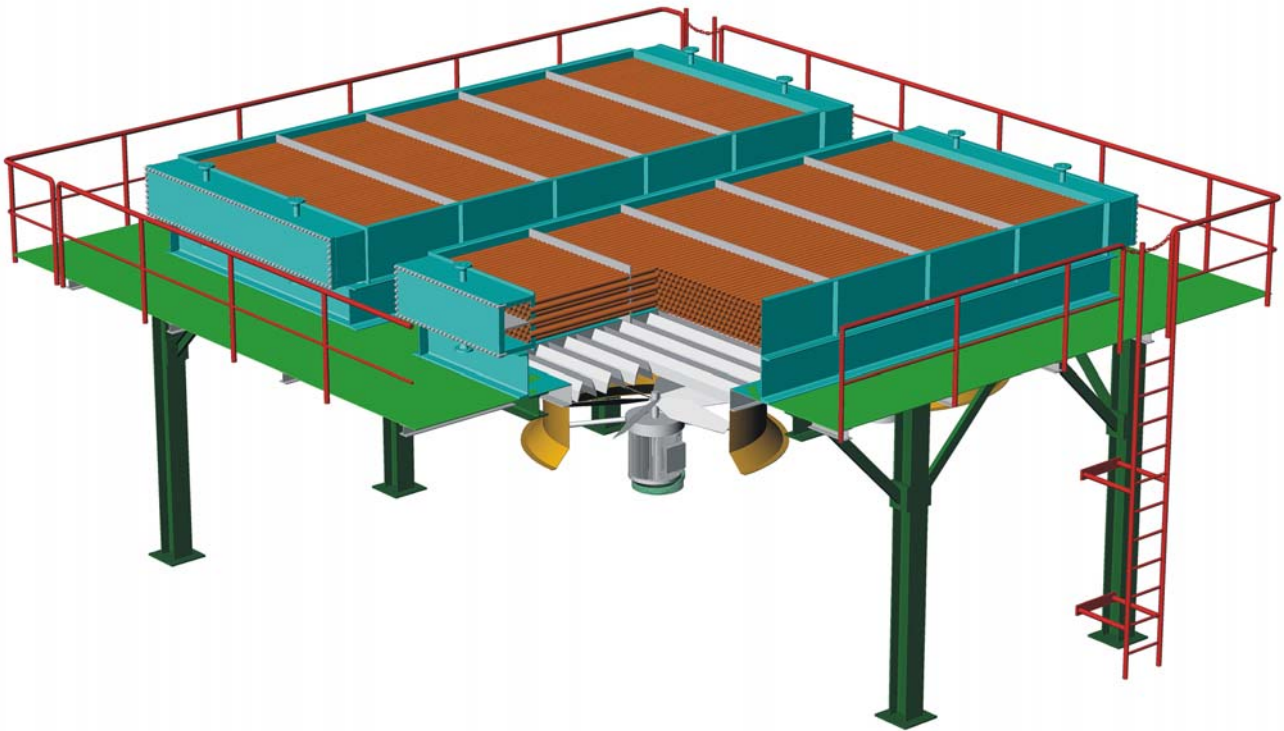


### ZBW range:

- ✎ **Planning, construction and manufacture** of air-cooled heat exchangers, complete with cooling element, supporting structure, fans and electric motors.
- ✎ Further accessories on request (louvers, vibration cut-out switches, ...).

**OELTECHNIK** excels with high **product quality** at a **favourable price**, combined with short delivery periods and compliance with deadlines.

Platform

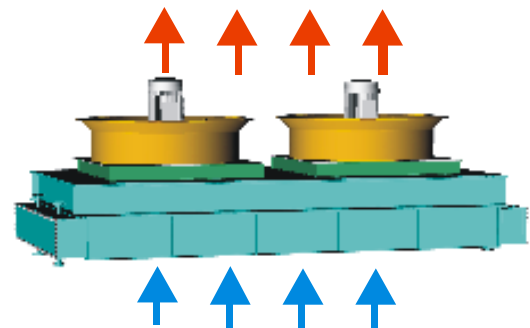
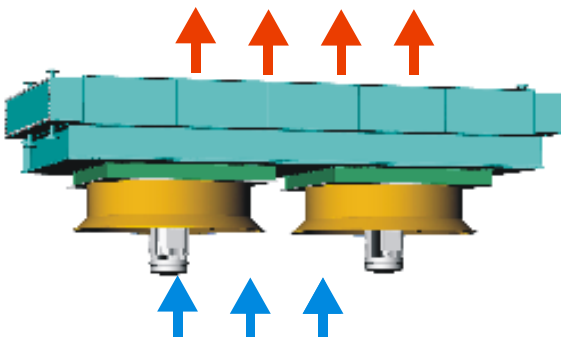


Supporting structure

Header

Axial fan with driver

Louver



This arrangement, where air is pushed across the bundle, meets **API 661 "forced draft"**.

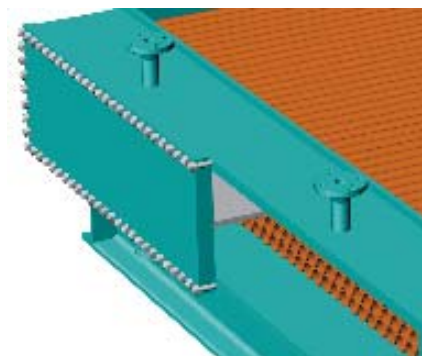
Advantages:

- ✍ Fans are easily accessible.
- ✍ Lower operating costs
- ✍ Better thermal performance of the heat exchanger

This arrangement, where air is pulled through the bundle, meets **API 661 "induced draft"**.

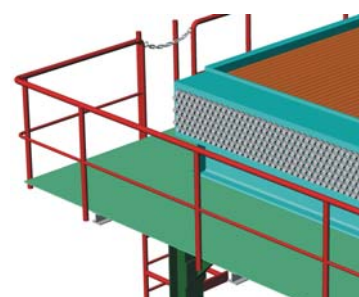
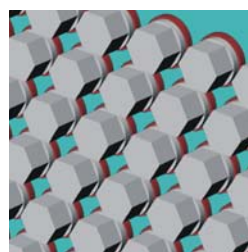
Advantages:

- ✍ Provides more uniform air distribution across the bundle
- ✍ Protection from adverse weather (direct sun-shine, hail, heavy rain, snow).



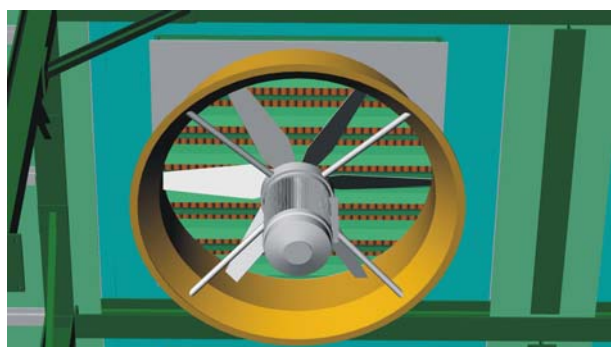
This header design, with a flanged cover-plate, meets **API 661 "removable cover-plate header"**.

Use:  
Highly soiled fluids with frequent tube cleaning intervals on the inside of the tubes.





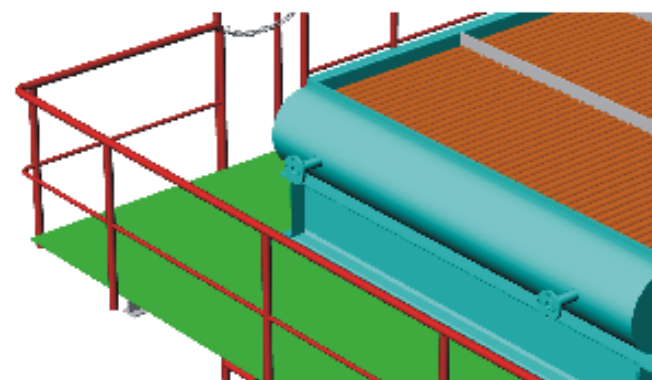
This header design, with a shoulder plug opposite each tube end, meets **API 661 "plug header"**.

Use:  
Fluids under high pressure on the tube side (e.g. gases).  
If the plug has been removed, the tubes behind it can be cleaned, re-rolled or closed.



The axial fan with driver

-  Optionally available **Ex-proof**
-  Drive by **IEC** or **NEMA** standard motors
  - a) **Direct drive**
  - b) **Geared motor**
  - c) **Motor with belt drive**



The bonnet header with a half pipe end construction.

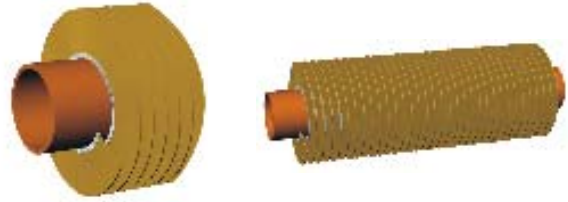
Use:  
With clean products on the inside of the tube and/or with a low leakage requirement.

**BIMETAL**  
High finned tubes



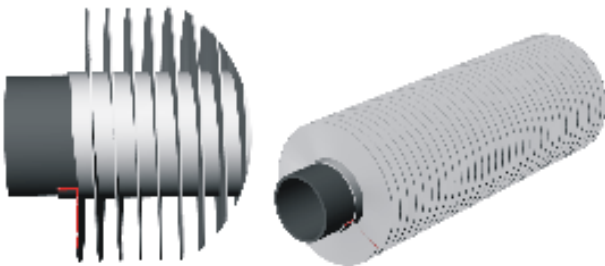
The fins are formed by extrusion from an aluminium outer tube onto the host tube. This results in a very good contact between the host tube and the fin ( $T_{max} = 250^{\circ}\text{C}$ ).

**I - FIN**  
Medium high finned tubes



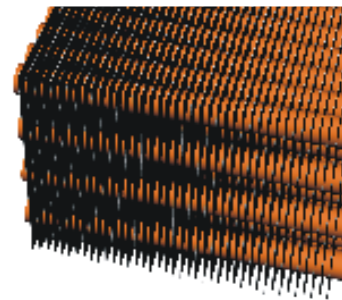
A band is spirally wrapped under tension over the outside surface of a tube. The special thing here is the corrugated fin foot, which enlarges the contact area between the fin and the tube. In addition, the fin is soldered onto the tube for efficient heat transfer ( $T_{max} = 180^{\circ}\text{C}$ ).

**L - FIN**  
High finned tubes



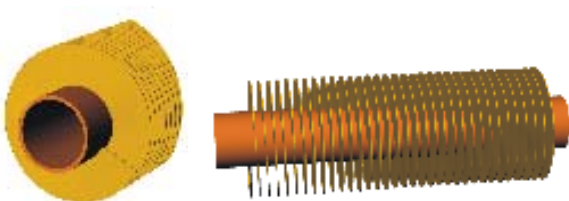
An L-shaped band is spirally wrapped under tension over the outside surface of a tube. This results in a large contact area between the fin and the tube ( $T_{max} = 120^{\circ}\text{C}$ ).

**PLATE - FIN**  
Plate finned tubes



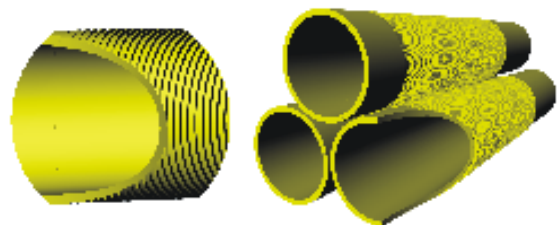
The tubes are pushed into the pre-stamped holes of the plates. A variable cutting tool and insertion system of the plates makes it possible that any size of bundles can be produced ( $T_{max} = 180^{\circ}\text{C}$ ).

**G - FIN**  
High finned tubes



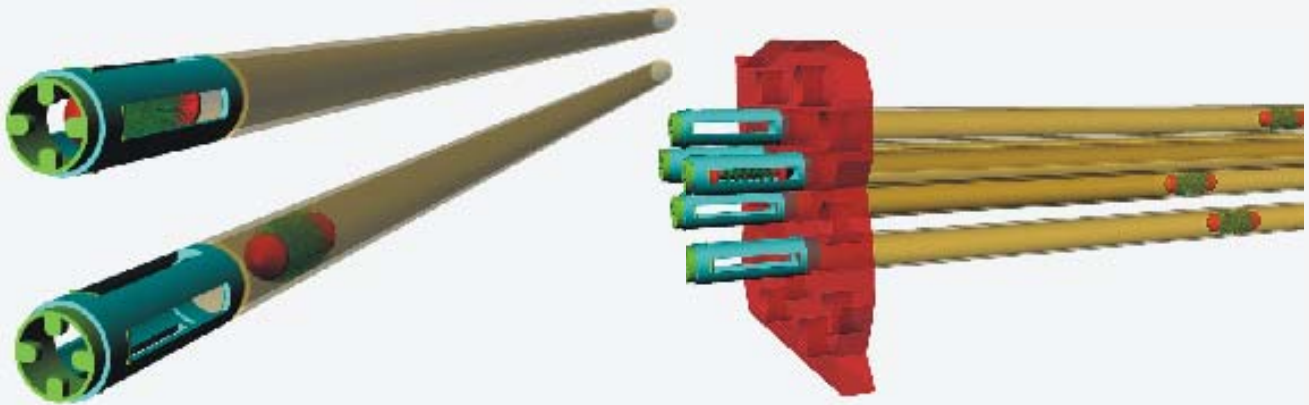
The fin is wrapped under tension and mechanically embedded in a groove, which was spirally cut into the outside surface of the tube. This results in a good, permanent contact between the fin and the tube ( $T_{max} = 300^{\circ}\text{C}$ ).

**LOW - FIN**  
Low finned tubes



The fin is rolled out from the material of the base tube. As the fin and the tube consist of the same material, this construction can also be used under extreme mechanical and thermal conditions ( $T_{max} = 500^{\circ}\text{C}$ ).

### Tube cleaning systems with brushes



Layers of fouling in the tubes of heat exchangers have a negative effect on the thermal performance of the heat exchanger. In order to reduce the fouling resistance inside the tubes, various mechanical cleaning methods are used. In practice, **automatic brush cleaning** has proven to be a good and economical method to clean heat exchanger tubes **flowed through by liquids**. The brushes are pushed through the tubes by the flow. The direction of flow is normally reversed for about 1 min. every 8 hrs by automatically controlled valves. Protecting screens on both sides of the tube hold the brushes back.

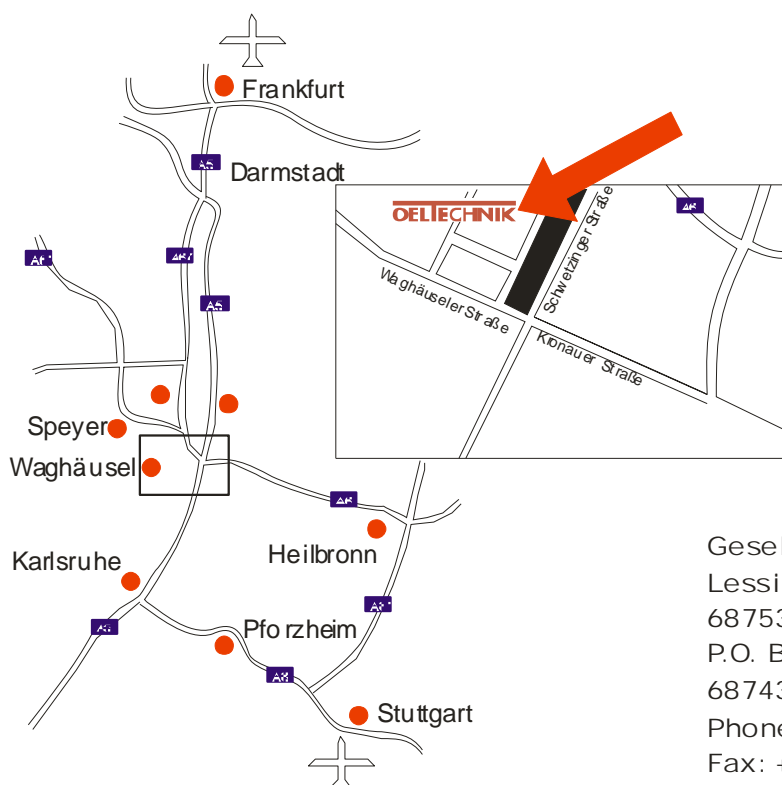
### Turbulence promotors



In the **laminar** flow of **highly viscous** liquids through heat exchangers, the overall heat transfer coefficient is often controlled by the inner heat transfer coefficient. The main resistance is to be found in the Prandtl's boundary layer. The use of **turbulence promotors** generates a radial mixing of the boundary layer and thus a distinctly better inner heat transfer. Further, the heat exchanger shows a lower tendency to fouling due to the resultant secondary flow. Although the tube side pressure drop rises strongly, a compact, favourably priced heat exchanger is obtained by the use of the turbulence promotors.

# How to reach us

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