The main difference between fire tube and water tube boiler are, fire tube boiler are internally fired and water tube boiler are externally fired boiler.

This is the most comprehensive guide on comparison or differences Between Fire Tube Boiler and Water Tube Boiler.

In short: If you understand these differences you can easily score maximum out of it either it may be an exam or Interview.

Let’s get started.

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Boiler:

A Boiler is a closed vessel in which steam is generated (Water to steam) with the help of coal-burning or other fuel substances.

Basically, there are two types of Boiler.

1. Fire Tube Boiler
2. Water Tube Boiler

Fire Tube Boiler:

The fire-tube boiler is the boiler in which fire (hot flue gases) is inside the tube and water is surrounded by them.

Some example of Fire Tube Boiler are:
• **Cochran Boiler**
• Cornish Boiler
• Locomotive Boiler
• Velcon Boiler
• Simple Vertical and
• Scotch Marine Boiler.

**Water Tube Boiler:**
The **Water-tube boiler** is the boiler in which Water is inside the tube and fire (hot flue gases) is surrounded by them.

Some example of **Water Tube Boiler** are:

• Benson Boiler
Differences between Fire Tube and Water Tube Boiler with PDF

I have listed *17 points on the difference between Fire Tube and Water Tube boiler* which is the following:

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<td>1.</td>
<td>The <em>Hot flue gases</em> flow inside the tube and <em>water</em> has surrounded the tube.</td>
<td>The <em>water</em> flow inside the tube and the <em>hot flue gases</em> have surrounded the tube.</td>
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2. This is heavy in weight. This is light in weight.

3. This is also called as internally fire tube boiler and This one is called an Externally Fire-tube boiler.

4. Here the pressure is limited up to only 20 bar but In the water tube boiler the pressure around to 100 bar and more.

5. The rate of Steam generation is Lower. Why? because the pressure is limited to only 20 bar. The rate of Steam generation is High. Why? because the pressure is limited to 100 bar and more.

6. The explosion chances are less in a fire tube boiler because of low pressure. Here explosion chances are more because of high pressure.

7. The overall efficiency is around 75 percent. In the water tube, the overall efficiency is around 90 percent.

8. Efficiency is less compared to the water tube. Efficiency is more.

9. Load fluctuations cannot be handled. Load fluctuations can be handled easily.

10. The direction of water circulation is not well defined in this boiler. The direction of water circulation in a water tube boiler is well defined. A definite path is provided for the circulation of water.

11. This is not suitable for a large Power Plant. It is used for the process industry. But It is suitable for Large Power Plant.

12. It is simple in design. It is complex in design.

13. A less skilled operator can work on this boiler. But here it requires a more skilled operator.

14. This is having a low maintenance cost. But the Water tube boiler has High maintenance cost.
15. Fire Tube Boiler example: 
- Cochran Boiler
- Cornish Boiler
- Locomotive Boiler
- Velcon Boiler
- Simple Vertical and Scotch Marine Boiler.

Water Tube boiler example: 
- Benson Boiler
- Lamont Boiler
- Babcock and Wilcox Boiler
- Lomont Boiler
- Loeffler boiler and Yarrow boiler.

16. A fire-tube boiler requires more floor area for a given output.

The water-tube boiler requires less floor area for a given output.

17. The fire-tube boiler is bulky and difficult to transport. But

These (Water Tube Boiler) are light in weight, hence transportation is not a problem.

Now we have studied 17 Points on Differences between them.

I guess these 17 points have enough data to understand the differences between them.

If you want a PDF? You can easily download PDF by scrolling down.

Let me know if you understand or not? with the use of the comment box below.

If you are reading these lines then I must sure that you liked the articles. Thank you so much. Keep Visiting for other great articles.
Question and Answers:
Which is a better fire tube boiler or water tube boiler?
The answer is a water tube boiler, because of more efficiency.

What is a fire tube boiler and water tube boiler?
Fire-tube boiler: In a fire tube boiler the flue gases passing inside the tube and water surrounded them but
In the water tube boiler: The water passes inside the tube and flue gases surround them.

Why water tube boiler is more efficient than the fire tube boiler?
The production rate of steam generation is much higher than the water tube boiler.

What is a smoke tube boiler?
The flue gases (from the combustion process) pass through the smoke tube.