2.1 Introduction:

There are more than one study talks about developed thermal power plant (steam turbine), in our case we just need to speak about condenser and there study about it:

2.1.1 Improve The Performance of The Condenser in The Thermal Power Station:

- **By:**

  Ibrahim Omar Hassan Mohammad

  And others.

- **Objectives:**

- Improve the performance of the condenser in the thermal power station.

- **Results:**

We reach in this research to improve the performance of condenser by taking attention to the following:

1. Control the pressure of steam by back pressure system and unloading system.

2. Control the temperature by using cleaning mechanic system, and chemical cleaning system.

3. Increase the surface area of heat transfer by using fins.

2.1.2 Design of Steam Condenser:

- **By:**

Ali Bilal Elamien Babiker

And other.

- **Objectives:**

1. To find laboratories unit in college beside plant in workshop.
2. To learn the classification, and selection procedure for condensers.
3. To review the thermal and mechanical design.
4. To learn the installation, operation and maintenance procedure.

- **Result:**

This project is considered as an integrated engineering work, so it's recommended to have the participation of other branches of steam power plant.

To complete this project must be considering two parts; and they are:

1. Air ejector:

After calculate actual value of vacuum.

2. Condensate pump.

2.1.3 Cooling Tower Problems in Sudan:

- **By:**

Mustafa Maher Ahmed Takrony

Yasser Abd Allah Ahmed Soyee

- **Objectives:**

1. Performance evaluation of cooling tower in Sudanese industry.

2. Study of cooling tower design in Sudanese industry.

3. Research problems of using and maintenance in Sudanese industry.

4. Give suggestion to improve and refresh cooling tower in Sudanese industry.

- **Result:**

1. The study has evaluate the performance cooling tower in Sudanese industry and it found intermediate performance for many reason at highlight the wrong select of tower spot.

2. The study has announced the using design in cooling tower and it found it satiable for Sudanese atmosphere.

3. There are different problems in Sudanese section facing cooling tower, from the highlight the untreated cooling water.

4. The study has give a solution to developed and refresh the cooling tower in Sudanese industry.

2.1.4 The Effect of Steam Pressure In The Performance of BAHRI Thermal Station and How To Control It:

- **By:**

Omer Abd Alwahab Hashem

And others.

- **Objectives:**

1. Know the way of electricity generation and their different kind.
2. Study of how steam power station work by their different parts.
3. Known the parts of Bahri thermal station and their components.
4. The theoretical study of steam pressure effect in steam cycle components.
5. Known the method and mechanism control in steam pressure from general view.

- **Result:**

1- Rise the condenser pressure lead to reduce in outer power by 0.4368 MW.

2- Reduce the pressure of makeup boiler water lead to economizing in required power for makeup pump by 0.07 MW.

3- Rise the pressure steam inlet into the turbine lead to rise in outer power.

2.1.5 Effect of Turbine Backpressure on Steam Cycle Efficiency:

- **By:**

Ahmed Ibrahim Saeed Mohammed Ahmed

And other.

- **Objectives:**

1. Study the effect of the turbine backpressure on the cycle efficiency.
2. Determine all factor, this may cause any change in backpressure (vacuum).
3. Show the results and the consequence on the cycle operation when any change occur.
4. Figure out the action in response to the changes in vacuum.
5. Know the component of the Khartoum North power Station (KNPS).

- **Result :**

1. The unit efficiency is directly proportional to the power generated, in the other hand; this efficiency is inversely proportional to backpressure (vacuum).
2. The thermal efficiency is reduced even if the condenser pressure increase is so small and the full generator output can be maintained.
3. There are several components in the unit (auxiliary steam, boiler type, air ejector and the Deaerator) which have considerable positive effect on the cycle efficiency.

2.2 Relation Between literature Review& our Research:

We notice that from all this literature review they are agree on effect of backpressure on steam turbine efficiency and they are give many problems for this cause but they don’t give there solution.

We decide in our research to give full analysis for many problems faces condenser and there solution and also study the effect of these problems in the cycle efficiency.