Differentiate, distinguishes, compare and explain what the main difference between air chamber and surge tank. Comparison and Differences.
Air chambers and surge tanks are normally installed in watermain to ease the stress on the system when valves or pumps suddenly start up and shut down.

Surge Tank

A surge tank is a chamber containing fluid which is in direct contact with the atmosphere. For positive surge, the tank can store excess water, thus preventing the water pipes from expansion and water from compression. In case of downsurge, the surge tank could supply fluid to prevent the formation of vapour column separation. However, if the surge pressure to be relieved is very large, the height of surge tank has to be designed to be excessively large and sometimes it is not cost-effective to build such a chamber.

Air Chamber

On the contrary, a air chamber can be adopted in this case because air chamber is a enclosed chamber with pressurized gases inside. The pressure head of gas inside the air chamber is the component to combat the hydraulic transient. However, air chamber has the demerits that regular maintenance has to be carried out and proper design of pressure level of gas has to be conducted.