

Combine Hydro Test System

In hydro test application, where, high volume high pressure is required in less time and frequency is more to carry out the test, combine hydro test system is very cost effective, quick and reliable.

Combine hydro test system consists of two or more pumps as required. Normally one pump is a filling pump and another is a high pressure pump. Some time, combine hydro test system consist of even three pumps.

- 1) Pre filling high flow low pressure pump
- 2) Medium flow medium pressure pump
- 3) Low flow very high pressure pump.



WHY COMBINE HYDRO TEST SYSTEM?

Suppose the tank volume is 10000 liters. Time available for hydro test is 10 minutes and test pressure is 500 bar.

Here, one may calculate as under

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- Pump flow rate 1100 lpm or more because tank volume is 10000 liters and time available is 10 minutes. Therefore, tank should be filled up in approx 9 minutes and 1 minute it may take to build up the pressure.
- As mentioned, test pressure is 500 bar so pump rated pressure should be at least 550 bar.

Now power required for 1100 lpm, 580 bar pump is 1700 hp. This is neither feasible, not viable.

Here, for 7 minutes, pump is being working as filling pump, therefore, high pressure is not required. Therefore, we should select any submersible or verticle turbine or any other type high flow (1400 lpm) low head (6 bar) pump to fill up necessary volume within 7 minutes. That pump may be of approx 40 hp. Let us assume that to reach up to 500 bar pressure, approx 450 liters of water is to be injected. Therefore 150 lpm, 500 bar high pressure pump is required. This pump is of 210 hp. Here, we can explore one more option.

Instead of going to 150 lpm, 500 bar, let us go for 500 lpm – 60 bar, 75 hp pump which will simultaneously act as feeding and pressurising pump. Now, high flow low pressure pump of 1400 lpm and medium flow medium pressure plunger pump of 500 lpm will feed the water for 5 minute 20 seconds approx. it comes to 10000 liters. Now, high flow (1400 liters / min) pump should be stopped and for 1 minute 500 lpm pump will feed the water and develop the pressure up to 60 bar. Now after 6 minutes, 20 seconds tank is pressurised up to 60 bar. Next, high pressure low volume i.e. 30 lpm, 500 bar 40 hp pump will start and raise the pressure up to 500 bar within 2 minutes (approx.) by feeding 60 liters of water. Therefore total time will be approx 8 minutes 20 seconds.

Here, the major benefit is that, at a time connected load is less than 120 hp. (75 hp for medium flow, medium pressure 500 lpm – 60 bar and 40 hp 1400 lpm high flow low pressure pump).

Second, total cost of all the pump is less than one 210 hp. (150 lpm, 500bar) unit.

Third, movement of three different skids, is an easy affair.