



Barmera Visitor Information Centre

Barwell Avenue
Barmera 5345
South Australia



Phone (08) 8588 2289
Fax (08) 8588 2777
Email vic@barmeratourism.com.au
www.barmeratourism.com.au
Open Mon– Fri 9am to 4pm
Sat & Sun 10am—1pm
Public Holidays 10am – 1pm

Disclaimer: Information in this brochure is given by way of a guide only and is believed to be correct at the time of printing (October 2008). However you should verify details direct with relevant organizations



Cobdogla Irrigation & Steam Museum

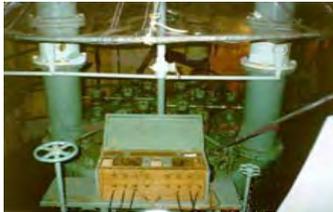
Discover the Secrets of theRiverland South Australia

laymans description of the humphrey pump operation

The system was considered to be the best available for large volume low lifts of water. The pump and engine was based on water oscillating in a huge water filled "U" tube, with a combustion head at one end and a water overflow at the other. The unit operated as a 4-stroke engine, with the water acting as the piston. On each firing stroke, water is propelled out the overflow, with remainder of the water than oscillating back therefore creating the exhaust stroke. It then oscillated again to create the intake stroke when water and gas is drawn into the combustion chamber. It then oscillates again providing the compression stroke which results in ignition, occurring propelling water out again.

The volume held within the 150 foot "U" tube is 300 tons of water which ejects approximately 2,600 gallons on the firing stroke. The 2 pumps once located at Cobdogla had the capacity to pump 2,857,000 gallons of water per hour.

The pumps purchase price was recorded at 10,940 pound sterling or \$1300,000 in current values. The importation costs added a further 5%. The final costs after installation totaled almost 50,000 pound sterling or approximately \$6000,000.00 in current values.



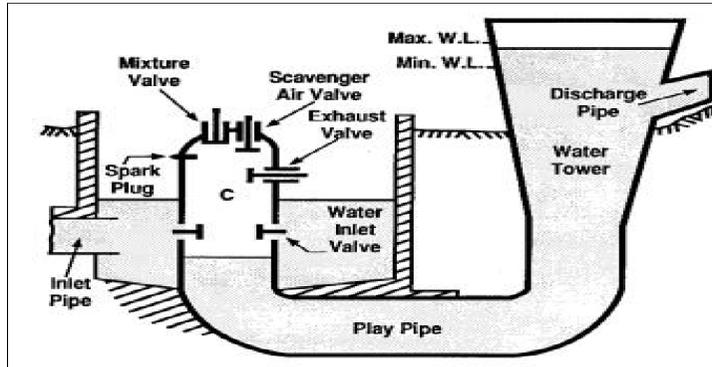
Left: Top of the Humphrey Pump showing switching gear and valves

preparation for the humphrey pump

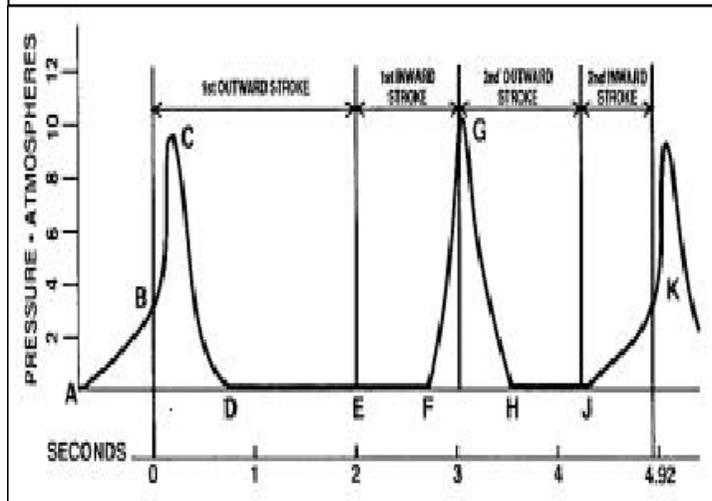
Preparation began in 1914 for the installation of the Humphrey Pumps with the excavation of a canal which became known as Joyner's Inlet. The water supply was plagued with problems due to the unpredictability of the Murray River levels. At times during drought situations the inlet would dry up and at the gradual rise of the river, stagnant water would create unpleasant odors and saline seepage problems throughout the system. The installation of the Lock System 3, downstream on the Murray in 1925 solved these problems, providing a steady flow of water. The project also met with problems due to lack of high ground available in the vicinity. The pump station itself required a more lofty situation which led to an embankment being created with the digging of the outlet resulting in the pump station to be built at a higher level thus allowing the pumped water to be fed through a gravity system into the channels supplying irrigation water to properties. Joyner's inlet had the capacity of supplying 3,000,000 gph of water to the pump.

preparation of the site

In September of 1921, works proceeded in digging an enormous hole, about 50 feet deep, 118 feet long and 45 feet wide to house the pumps. This was excavated using only scoops, manpower and a large sheerlegs. The excavation was then sheetpiled with 330 interlocking steel piles 12 inches wide and 45 feet long. It was braced with a large lattice work of oregon shoring timbers. Total excavation amounted to 8,200 cubic yards.



Above: Showing the operational components of the Humphrey Pump. Below: Indicator diagram shown on a time basis. AB is the compression period of combustible charge which is fired at C. CD is the expansion curve during which work is expended on the water column. The end of the stroke is E, scavenger air and new water take the place of that discharged during the previous cycle, being admitted between D and E. At F the exhaust valves close and the cushion reaches a maximum pressure at C. The second stroke then commences, the gas charge being taken in between H & J where the second return begins to compress the new mixture, the explosion again taking place at K, to start a new cycle of events.



installation of the humphrey pumps

Installation of the Humphrey Pumps spanned the years of 1920-1925. These pumps located at Cobdogla are unique as there were only ever 12 working units installed worldwide. By 1922 the main parts of the pump were onsite at Cobdogla and construction began. Construction was completed on April 30th 1925 when trail runs commenced. The Humphrey Pumps were confounded with ongoing problems culminating in the bursting of the 18 ton combustion head on the 15th October 1928. Following this cast iron heads were replaced with cast steel combustion heads. The pumps were rebuilt in 1930 and continued on successfully from this time. The pumps at Cobdogla are the second largest ever built and the only ones ever used in the Southern Hemisphere. They are also of an improved design. Their main feature was their low operating costs. Originally designed in London, these pumps were highly successful in that they never ceased to run due to engine failure, wear or operating problems, but only because of difficulty in providing their fuel which was producer gas. The region suffered an ever increasing shortage of suitable local wood which was required in extremely large amounts to fire the gas retorts. Cartage of timber also became a problem as the availability became sparse.

Right: Burning and pumping charcoal gas into storage tank in rear



the beginning of the end

In 1943, 2 factors brought change to water requirements. One being the Loveday Internment Camps and the other being I increased vegetable production. The answer to these changes was the Installation of an Electric Powered Pump at Cobdogla alongside the Humphrey Pumps. In the flood of 1956, the Humphrey Pumps were inundated with flood water while the electric pumps remained dry. This flooding resulted in the loss of the Humphrey Pumps.

and now

With thanks to SA Water, Humphrey Pump was brought back to operational standard and it can be seen running on specific days each year along with other machinery of the era. A dedicated team of volunteers known as the Cobdogla Steam Friends are responsible for the operation and maintenance of the machinery incorporated within the museum. This dedicated group continue to restore engines from our past. A visit to the Cobdogla Irrigation and Steam Museum is certainly a well worth while and educational experience for both the young and the old.