

## Hero's fountain

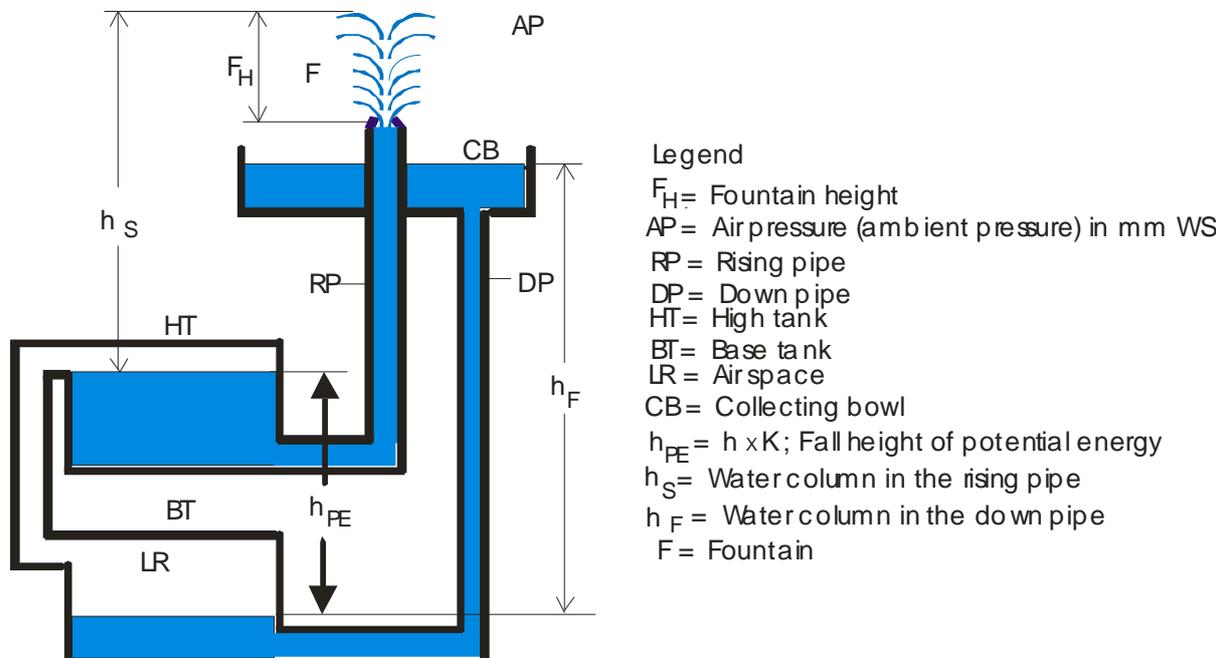
The hero's fountain is a function unit named by its inventor Hero of Alexandria in which a jet vertically leaves above the uppermost water surface to the top by system-specific energy. The hero's fountain is one of two possible function versions of the water jet candle.

The physical built-up of the hero's fountain consists of a high tank HT, a base tank BT, a rising pipe RP and a down pipe DP. This can be extended in the upper part as collecting bowl for example.

The functional layout of the hero's fountain contains an energy reservoir, that consist of a high tank HT and a BT, a coupling range, that is placed in the upper region of the down pipe, an air space AS, that effects as ambient pressure AP to the water surfaces of the rising and the down pipe, and the equilibrium of all pressure columns.

The characteristic dimension of the energy reservoir is the potential energy, which effects by the height difference between the water surfaces of the high tank HT and the base tank BT a potential energy.

The coupling range consists of the collecting bowl that is connected with the base tanks BT as a part of the down pipe DP, the upper end of the rising pipe RP and the ambient pressure. The water reservoir of the collecting bowl is neither the energy reservoir nor part of it.



Principle representation of the hero's fountain

The potential energy is worked off by the water that flows from the high tank HT over the higher placed coupling range into the base tank BT.

The highest water surface in the higher placed coupling range is at the upper end of the rising pipe RP, that ends in a diminution (nozzle), from which a fountain leaves, so that at this place potential energy is visibly converted into kinetical energy.

In this theoretical case the jet height FH can reach at maximum the height of hPE.

Pratically it is smaller by the value of all resisting forces of all pressure columns, that means FH is equal or less than hPE.

The fountain height FH becomes smaller with decreasing height of the potential energy hPE until it is finally exhausted  $hPE = 0$ .

The readiness of operation of the hero's fountain built up is realized, by filling of the mentioned tanks in the proper sequence and all air and are water columns are brought into a statical equilibrium.

The commissioning can be ensued by transferring this static equilibrium of the resting pressure columns into an equivalent dynamic equilibrium.  
From this point of time the jet sprinkles.

The pressure of the air column included by the surfaces of the water columns in the high tank HT and base tank BT breakes down and all water of the function unit accumulates in the lowest point of the function unit according to the principle of the communicating vessels.

The system-specific energy reservoir hPE becomes zero and the active phase of the Hero's fountain ends.

A new cycle can be started, after the depleting of the deepest points of the function unit, as mentioned above.

