

**INSTALLATION OF SUBMERGED CENTRIFUGAL PUMP INSTEAD OF
MONO – SUB/POLDER PUMPS IN UNDERGROUND SUMPS AND DIRECTLY IN CANAL
TO GET ECONOMICALLY AND HASSLE FREE 24*7 WATER SUPPLY**

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In order to avoid hassles of HSC – CF pumps (suction limitations and cavitation) and heavy maintenance and repairing of V.T pumps, pump users are now using Mono – Sub pumps or Sub – Borewell pups (in horizontal position) in the underground sumps or directly in canals.

Mono – Sub pumps (IS 14220) are 15 – 20 % less efficient than submerged centrifugal pumps as given in table below (Table 1). No doubt Sub – CF pumps are costlier by 3-4 times but it pays back extra cost within a year, **SO IN TOLLITY IT IS ECONOMICAL** moreover mono – sub beyond 7.5 KW pumps are NOT manufactured by any reputed Company because it is not successful technically beyond 7.5 KW. The Vertical Turbine pumps require frequent maintenance & go under repair oftenly so not dependable for 24*7 water supply operation.

Sub-cf pumps have pump-efficiency at par with HSC-CF pumps & motor efficiency at par with dry air filled-motor. That is why are more efficient than V.T.pumps.

Below is a comparison Table describing the overall savings over a Pump Life Cycle (as opposed to its initial cost) and the Payback period.

Example:

- 1. Discharge (Q) : 120 m³/ Hr
- 2. Head (H) : 34 m
- 3. Speed (N) : 2900 rpm

Sr. No	Particulars	Mono - Sub Pumps (IS 14220) (a)	Sub – CF Pumps (b)
1	Water KW = Q x H / 367.2	11.11	11.11
2	Overall Eff. = Pump Eff. X Motor Eff.	50 %	65 %
3	Motor Input KW = Water KW / Motor efficiency (Power consumption)	22.22 KW	17.1 KW
4	KW saving / Hr [3(a) – 3(b)] *considering loss of motor eff. Equivalent to margin in BKW (motor KW = motor input)	–	5.12 kw/Hr
5	Cost of pump set / KW	3000/KW (SOR, P-125)	11500 /KW (SOR, P-161)
6	Initial cost of pump set	22.22 x 3000 Rs 66, 660	17.1 x 11500 Rs 1, 96, 650 Says Rs 2 lacs
7	Annual savings by opting for Sub CF pump = Daily working hrs x no. of days in a year x Difference in units x Price per unit	20 x 365 x 5.12 x 5.5 = Rs 2, 05, 567	
8	Cost difference between Sub CF & mono sub	Rs 2, 00, 000 – Rs 66, 000 ~ Rs 1, 34, 000	
9	Net Savings in 1 st yr = ₹ 2, 05, 567 - ₹ 1,34,000	Rs 71, 567	
10	Energy savings 2nd yr onwards (refer point 7)	Rs 2, 05, 567	

Pay Back Period = (Cost Difference / Energy Saved) * 12 months = 134000/205567*12
= **7.82 months**

Present value factor at 8% interest, for nine years = **5.75%**

Considering the Life cycle of a Sub – CF pump as 10 years, the Overall savings in Pump life cycle of 10 years is

$$\begin{aligned} &= \text{Rs } 71,567 \text{ (first year) + Rs } 2,05,567 * 5.75 \text{ (for next 9 years)} \\ &= \text{Rs } 11,82,010 \\ &= \text{Rs } \underline{12,53,577} \text{ says } \underline{12.5} \text{ lacs} \end{aligned}$$

This example is for small pumps which are saving Rs 2 Lacs annually. IMAGINE THE SAVINGS IN BIG SIZED PUMP SETS.

By and large, Sub – CF pumps are hassle – free in operation, maintenance and repairs. **and dependable** for 24*7 water supply project.

The list of some manufacturers for such pumps is given below:

- (1) Grundfos Pump Ltd., Chennai (M.N.C)
- (2) Flygt Pumps Ltd., Vadodara (M.N.C)
- (3) Ebara Pumps Ltd., Japan (M.N.C)
- (4) I.T.T USA
- (5) Kirloshkar Pumps, Pune
- (6) KSB, Pune
- (7) Kishore Pumps, Pune
- (8) Aqua Machinery (P) Ltd., /MBH/Joses/Pullen at Ahmedabad
- (9) And other S.S.I units in india

Such pumps are being used in Developed countries since last 50 years.

**SAVE ENERGY, CONTROL POLLUTION & GET DEPENDABLE PUMPS
INNOVATION/RENOVATION SHOULD BE CONTINUOUS ENGINEERING PROCESS**