

Research and application of integrated intelligent pump house

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Objectives

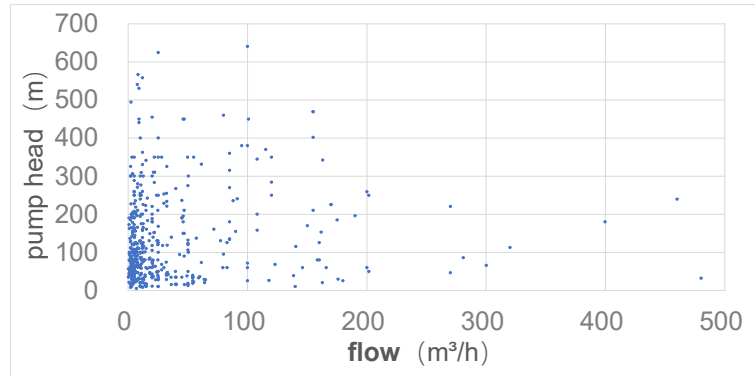
The pump stations of rural water supply security project in Yunnan province are mostly built in mountainous areas, and the transportation is inconvenient, but the flow and head are relatively different, which brings the possibility of modular design and construction. How to set up a set of standardized design, convenient construction, economic and practical pump stations is our research goal.

Methods

- 1. Statistics and summary of lifting pump stations in more than 100 counties in Yunnan Province were made, including the use of head and flow range, water intake and transportation methods of pumping stations, automatic control types of pumping stations, architectural design and safety, etc.
- 2. According to the summary results, the flow rate is mainly distributed in the range of 50-10000m³/d, and the head is distributed in the range of 20-400m. Through statistical analysis of hundreds of pump functions of several famous domestic pump manufacturers, the combination of 6 45kW vertical centrifugal pumps can cover various operating requirements. It also laid the basic form of the pump house.
- 3. In terms of automation control, superimposed standard joint control mode is formed through economic and technological comparison.
- 4. In terms of the appearance of the pump room, comprehensive consideration of factors such as 30-year design life and on-site protection level, combined with aesthetic elements such as water culture and corporate culture, finally formed a highly integrated, safe, stable, economic and reasonable overall solution.

Results

- 1. Form a general atlas of integrated superposition pumping stations for rural water supply projects in Yunnan Province
- 2. Form an integrated superposition pump station appearance design scheme



Conclusions

- 1. This integrated superposition pumping station atlas can cover about 80% of rural water supply project pumping station design
- 2. The superimposed pumping station can save about 5% of operating costs
- 3. The integrated superposition pump station can effectively reduce the design difficulty and speed up the construction progress
- Finally, the goal of standardized design, convenient construction and economical and practical pumping station is realized.

