

箱式无负压变频供水设备

Box-type non-negative pressure variable-frequency water supply equipment

箱式无负压供水设备是在原有的恒压变频供水设备与变频无负压供水设备基础上升级开发而来的第七代产品，它由不锈钢水箱、专用水泵、智能变频控制柜、无负压装置等组成，采用PLC控制变频泵以一恒定的转数运行利用自来水原有的压力能确保用户所需要的压力恒定。具有节能、环保、噪音低、供水压力恒定等优点。

The box-type non-negative pressure water supply equipment is the seventh generation upgraded and developed based on the original constant pressure variable-frequency water supply equipment and variable-frequency non-negative pressure water supply equipment. It consists of stainless steel water tank, dedicated water pump, intelligent variable-frequency control cabinet and non-negative pressure device, etc. The PLC controls the variable-frequency pump to run under a constant RPM and the original pressure of tap water can ensure the constant pressure needed by the user. It is characterized by energy conservation, environmental protection, low noise, constant supply pressure and other edges.

› 设备原理 / Equipment principle

箱式无负压供水设备的变频泵以一定的转速运行，利用自来水原有的压力实现叠加能确保用户所需的压力和压力恒定设备投入使用，自来水管网的水进入稳流调节罐，罐内空气通过真空消除器自动排除，待水充满后，真空消除器自动关闭当自来水管网压力能够满足用水要求时，系统由旁通管向用水管网直接供水，水泵不工作，充分利用了自来水管网原有压力。

当用水管网用水量不断增加，自来水管网压力不能满足用水要求时，系统压力信号由远传压力表反馈给变频控制器，水泵开始运行，并且根据用水量的大小自动调节转速恒压供水。一旦箱式无负压供水设备水泵的转速达到工频转速时，则会自动启动另一台水泵变频运转。实现了“差多少、补多少”的功能。

水泵供水时，若水泵流量小于自来水给水管网的流量，则系统保持正常供水；用水高峰时，若水泵流量大于自来水给水管网的流量，关闭稳流罐进水阀门，稳流调节罐内的水作为补充水源仍能保持一定时段的正常供水，同时开启水箱出水阀门，改为水箱用水，保证市政管网压力，又可以保证水箱的水鲜活；用水高峰过后，系统又恢复正常供水状态。

The variable-frequency pump of the box-type non-negative pressure water supply equipment runs at a certain RPM. The original pressure of tap water can realize overlay and ensure the pressure needed by the user and service of equipment at constant pressure. The water from the tap water pipeline enters the steady flow regulating tank, and the air inside the tank is automatically removed through the vacuum remover. When the water is full, the vacuum remover is automatically off. When the pressure in the tap water pipeline can meet the requirement for water use, the system directly supplies water to the pipeline through the by-pass pipe. The water pump is not working and the equipment takes full advantage of the original pressure of the tap water pipeline.

When the pressure of the tap water pipeline cannot meet the requirement for water use as the water consumption in the pipeline keeps increasing, the system pressure signal is sent back to the variable-frequency controller through the transmissible pressure gauge. The water pump starts running and auto-adjust RPM based on the water volume to supply in constant pressure. Once the water pump RPM of the tank-type non-pressure water supply equipment reaches the power frequency RPM, it will automatically start another water pump to run in variable-frequency to realize “supplementation of however much is short”.

Upon water supply, if the water pump flow is smaller than the pipeline flow, the system maintains normal water supply; at peak of water consumption, if the water pump flow is larger than the pipeline flow, normal water supply may be still enabled in a certain period by turning off the inlet valve of the steady flow tank and adjusting the water in the tank in steady flow as supplementary water source. Meanwhile, turn on the outlet valve of the tank and change it to water for tank to guarantee the municipal pipeline pressure and fresh water in the tank; after the peak, the system resumes normal water supply.

› 设备范围 / Equipment range

◆ 新建、扩建和改造的住宅楼、住宅小区、办公楼等；
New, expanded and rebuilt residential buildings, residence communities and office buildings, etc;

◆ 宾馆、酒店等；
Hotels, etc;

◆ 学校、部队、机关、集体宿舍等用水密集场合；
Schools, armies, institutions, dormitories and other water intensive places;

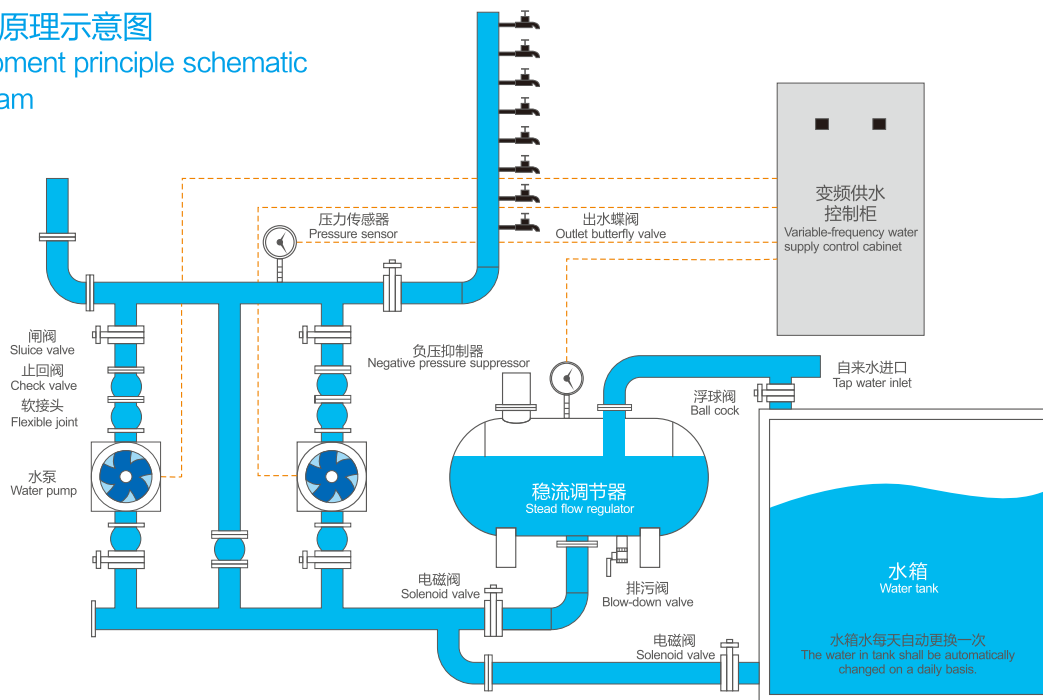
◆ 医院、商场、会展中心、体育馆、公共浴室等公共场合；
Hospitals, malls, convention centers, gyms, public bathrooms and other public places;

◆ 大型工厂、开发区等大流量集中供水；
Large factories, development zones and other large flow centralized water supplies;

◆ 工矿企业的生产、生活用水；
Production and domestic water for industrial and mining enterprises;

◆ 各类型循环水系统。
Various types of circulating water systems.

► 设备原理示意图
Equipment principle schematic diagram



► 设备特点 / Device characteristics

◆ 卫生无污染 / Sanitary and Pollution Free

变频给水设备为全密封结构，细菌和粉尘不会进入系统；避免了藻类的滋生，防止了水源二次污染及供水水质污染问题，用户使用的是符合国家卫生标准的自来水。

The variable-frequency water supply equipment is a seal structure that prevents bacteria and dust from coming in; it avoids multiplication of algae and prevents secondary pollution of water source and water supply pollution. Users are using the tap water that complies with the national health standards.

◆ 高效节能，运行成本低，保护功能齐全

Efficient and Energy-saving at Low Cost and with Complete Protective Functions

可充分利用市政管网供水压力，差多少，补多少，不产生负压，与传统水池（水箱）式变频供水设备相比可节能30%~70%，具有完美的过载、短路、过压、欠压、缺相、过流、水源缺水等自动保护功能。在异常情况下能进行信号报警、自检、故障判断等。

It can take full advantage of the water pressure of the municipal pipeline to supplement however much is short without generating any negative pressure. It can save 30%~70% energy as compared to traditional pool (tank) type variable-frequency water supply equipment, and has a complete automatic protective function against overload, short circuit, overvoltage, undervoltage, default phase, overcurrent and water shortage, etc. It is able to perform signal alarm, self-inspection and troubleshooting, etc. when abnormality occurs.

◆ 双模式供水

Dual-mode water supply

具有水池（水箱）式变频供水设备和无负压管网叠压变频供水设备两种模式供水，可根据自来水进水压力及流量自动切换，此种运行方式不但避免了市政管网负压的产生，并且保证了供水的连续性，这个功能是通用型无负压供水设备无法做到的。

It has two modes of water supply, including pool (tank) type variable-frequency water supply equipment and non-negative pressure pipeline overlay variable-frequency water supply equipment. It can automatically switch between the two modes based on the inlet pressure and flow of the tap water. This running mode not only avoids negative pressure in the municipal pipeline, but also guarantees continuity of water supply. This function is impossible for general non-negative pressure water supply equipment.

◆ 叠压运行，节省费用 / Running in overlay to save cost

系统保证管道恒压是根据用水量的变化调整投入台数和运转速度，用水量小时投入功率大，用水量小时投入功率小。小用水量时（如夜间）系统由小功率泵变频调速恒压供水系统一直在高效率点运行。因而大大降低了运行费用。可节约能源60%以上。

The system guarantees constant pressure of pipeline by adjusting the number of input sets and RPM based on the water volume changes. In high water consumption, high power is input; in low water consumption, low power is input. When the water consumption is low (such as night time), the frequency control of the system is managed by the low power pump, and the constant pressure water supply system keeps running at high efficiency point. Therefore the running cost is largely reduced and more than 60% energy may be saved.

◆ 延长设备的使用寿命 / Extending service life of equipment

对泵组均能可靠的实现软启动，使电网和管网免冲击，并且轮流运转，大大延长了水泵及电机的使用寿命。设备寿命比传统水池（水箱）变频供水设备大大提高。

The pump groups are able to reliably realize soft start to free the grid and pipeline from shock. They run in turn to largely extend the service life of pumps and motors. The service life is much higher than traditional pool (tank) type variable-frequency water supply equipment.