

ABB's MK4 High Accuracy Water Level Measurement System

by

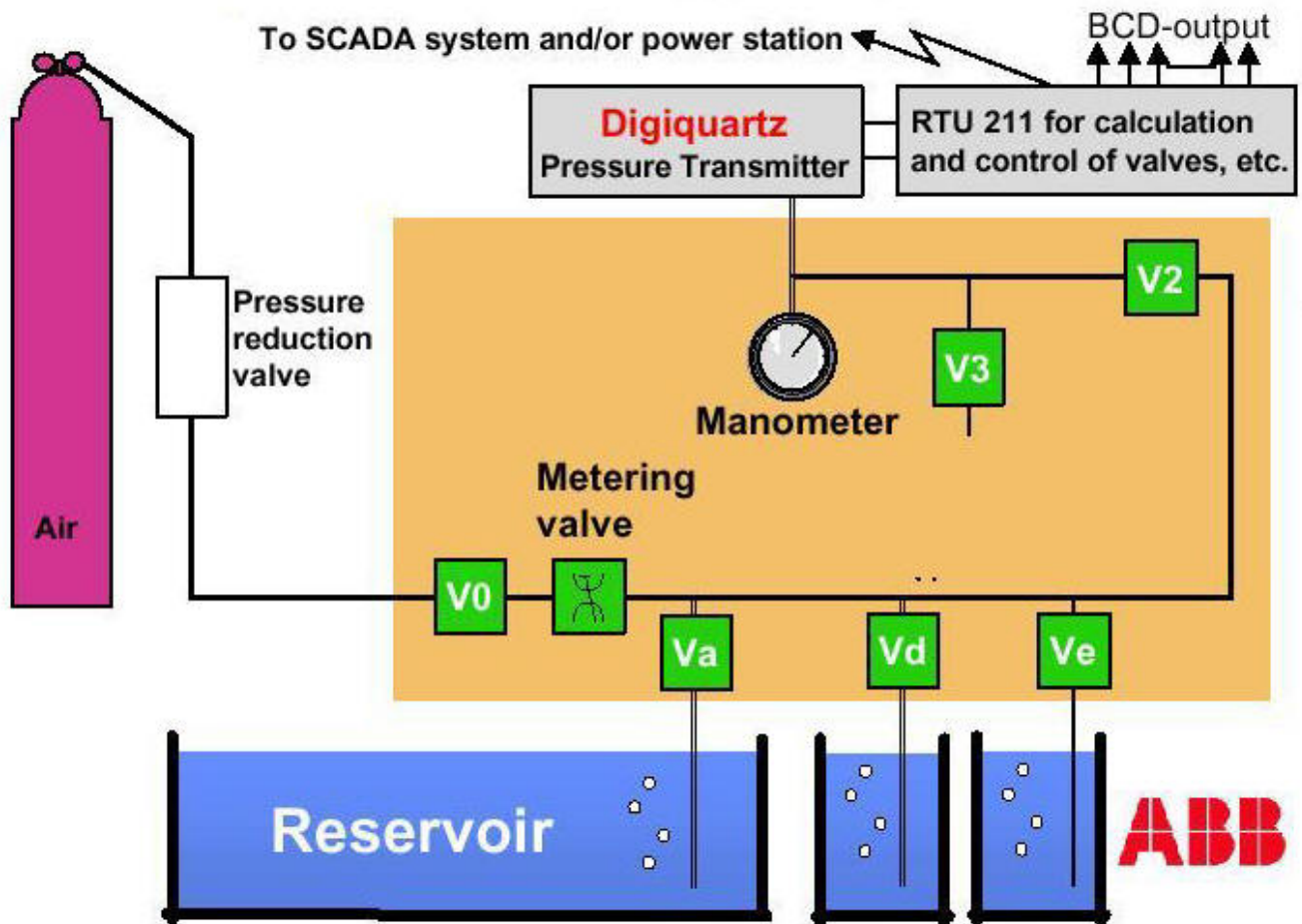
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Green, renewable energy is becoming increasingly important. Not only do we have oil prices which threaten the global economy, scientists are now concerned that global warming is the reason why we experience more extreme weather conditions such as hurricanes, storms, drought etc.

ABB, an international company with more than 120,000 employees, has focused on Energy and Automation for more than 25 years. ABB Norway has installed water level monitoring equipment in more than 150 of the largest water reservoirs in Scandinavia. Norway and Switzerland produce more than 90% of their total electric energy from hydro power. Several other European countries produce more than 50% of their energy needs from hydro power.

Hydro power is the largest contributor of renewable energy and its potential has not peaked yet.

MK4 – measuring principle



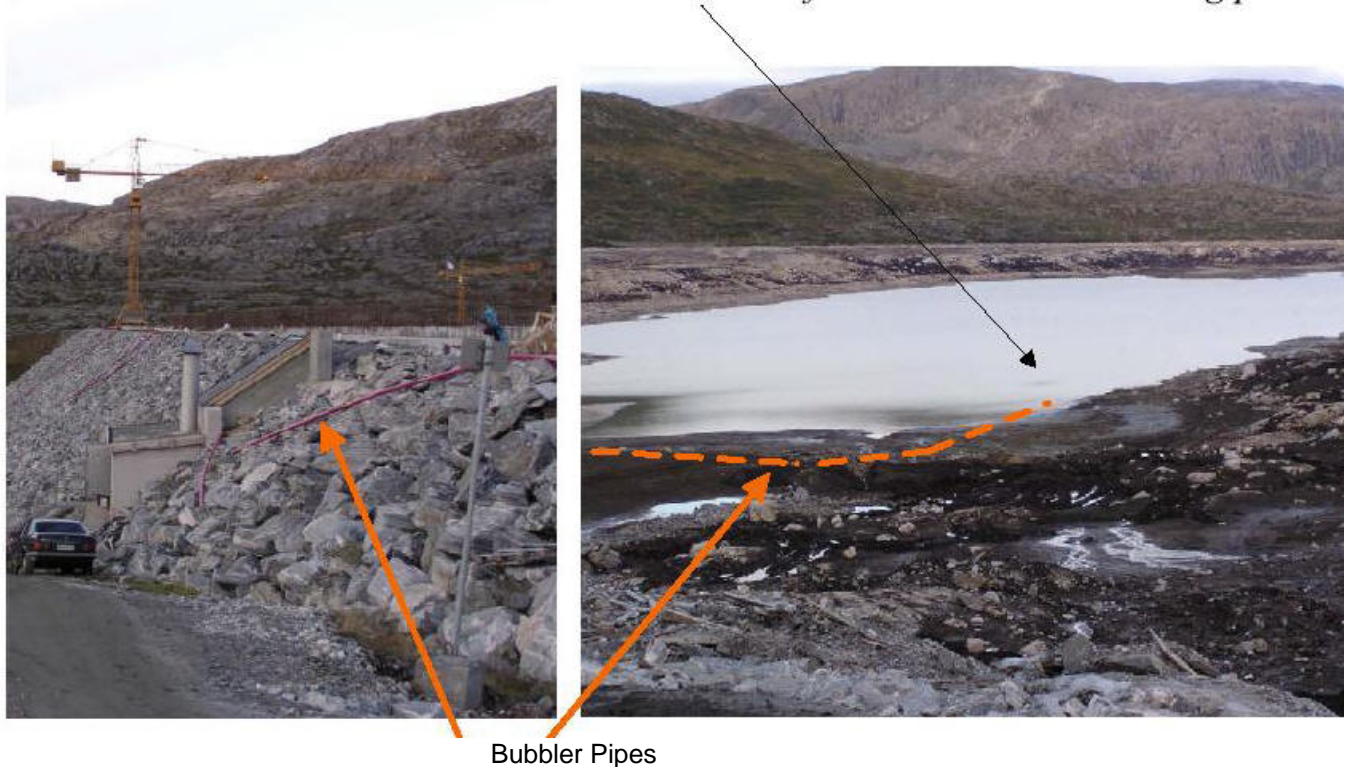
However, monitoring the level of water in a reservoir is like watching your bank account. You want as much as possible as in reserve. Stable and reliable supply is vital, especially in countries where there are

seasonal changes from winter to dry seasons.

ABB has chosen Digiquartz® for their water level systems. The MK4 has proven to overcome the challenging and stringent government requirements in the Scandinavian countries.

The MK4 system uses Digiquartz® Transmitters that are capable of achieving ± 1 cm accuracy at 100 meter depth. This was not possible with other existing sensing technologies. ABB chose Digiquartz® for its accuracy, resolution, long term stability and reliability. More than 150 MK4 systems have been delivered so far and the system has proven to be accurate, reliable and easy to maintain.

Bubbles on the surface shown the measuring point.



MK4 can measure up to five different pressures sequentially, e.g. water level in the reservoir, pressure drop over a trash rack (to monitor and plan when it has to be cleaned) as well as minimum water flow downstream and leakage water of a filler dam. Up to 500 meter long bubbler tubes can be hooked up to the system. The air supply in most installations comes from a 50 liter 200 bar air bottle which lasts 2 to 5 years depending on the system layout.

The picture above shows parts of the MK4 bubbler system at a large dam under construction in Norway. When in operation the regulation height will be approximately 40 meters.

This article was submitted by [ABB](#)