Controlling Scale In Industrial Water Systems

Scalewatcher

The National Power Corporation (NPC), the largest provider and generator of electricity in the Philippines, is saving over $350,000 a year in improved efficiency, downtime, and maintenance costs following the installation of the Scalewatcher® computerized, electronic, water-conditioner from Scalewatcher North America [1]. Installed in the company's Agus 6/7 Hydroelectric Plant Complex generator air-cooling systems, the Scalewatcher water conditioner has considerably improved both the generators' cooling efficiency and rated capacity.

Built in 1979, the Complex, located along the Maria Cristina Falls on the Agus River in Mindanao, Philippines, is comprised of two hydroelectric power plants, Agus 6 and 7. Agus 6 encompasses Units 3, 4, and 5 and produces 150MW of electricity while the smaller Agus 7 consists of Units 1 and 2 and has a rated capacity of 54MW. Between 2008 and 2011 a total of eight Scalewatcher water conditioners were installed at the Complex with a further unit planned for December 2011.

Prior to the installation of the Scalewatcher systems, one set of Air Generator Coolers was removed from the water-cooling system every planned maintenance shutdown (PMS) so that sludge could be manually removed from the copper tubing. With Scalewatcher installed, it was found that build-up was minimal—thereby dramatically reducing the time spent having to clean the generator's tubes.

"Scientific studies showed that scale build-up reduces the efficiency of the cooling system and just ¼ inch of scale formation can increase heating costs by 40 percent," said A. F. Suezo, Jr, Plant Manager at National Power Corporation's Agus 6/7 Hydroelectric Plant Complex. "Once the Scalewatcher systems were installed it was observed that the scale, sludge, and slime formation in the generator air coolers had been reduced to a point whereby during PMS the plant maintenance team decided to discontinue the dismantling of all other air coolers for cleaning".

The environmentally friendly Scalewatcher provides a permanent solution to hard water problems without the need of chemicals, salt, or maintenance. It works by producing a varying electronically applied force field, induced by a coil wrapped around the outside of the pipework, which keeps the minerals in suspension and thus prevents limescale from forming. The water's increased solubility enables it to dissolve existing scale which is gradually flushed away.

"Although it is hard to quantify the apparent increase in capacity as well as other benefits, we can conservatively assume that even with a very minimal increase of 1 percent, the plant will save 204MW of electricity per annum which equates to annual savings of around $350,000," concluded Suezo.

In November 2011, Scalewatcher North America was advised that although Unit 4 was rated at 50MW because of its age, the capacity had deteriorated to 30MW.

However, following the installation of the Scalewatcher system, the unit's capacity had increased by 5MW. Although their report was conservative, Suezo and his maintenance manager stated that this additional capacity was sufficient to light up as many as 5,000 homes and provide savings of $232,558 a month. Therefore during the 39 months following the Scalewatcher installation, Unit 4 had earned additional revenue amounting to $9,069,762. Hydroelectricity is far cheaper to generate than either thermal or geothermal. If Scalewatcher were used in these applications 5MW could amount to monthly savings of $280,000.

Scalewatcher North America, manufacturers of the patented computerized electronic water-conditioner, have a range of Scalewatcher systems to suit domestic, commercial, and industrial applications. Scalewatcher systems are based on continuous research and over 20 years experience and expertise as market leaders in electronic scale control with countless units sold worldwide. The system has a 5-year manufacturer's warranty and comes with a full year performance guarantee.

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