

IEEE Honours Historical Achievement in Electrical Engineering

The Institute of Electrical and Electronic Engineers (IEEE) is pleased to recognize the DeCew Falls Hydroelectric Generating Station as a pioneering project in distance transmission of electrical energy. The Power Generation Station, located in St. Catharines, Ontario, was the site of a Milestone Dedication Ceremony on May 2nd 2004. Members of the IEEE Hamilton Section, in co-operation with Ontario Power Generation, unveiled a commemorative plaque which reads:

IEEE Milestone In Electrical Engineering And Computing

DeCew Falls Hydro-Electric Plant, 1898

The DeCew Falls Hydro-Electric Development was a pioneering project in the generation and transmission of electrical energy at higher voltages and greater distances in Canada. On 25 August 1898 this station transmitted power at 22.5 kV, 66 2/3 Hz, two-phase, a distance of 56 km to Hamilton, Ontario. Using the higher voltage permitted efficient transmission over that distance.

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Prior to this significant achievement, transmission lines were no longer than 16 km and operated at much lower voltages. These lower voltages typically meant higher current, much lower efficiency and higher operating costs. The hydroelectric power, generated at DeCew Falls, terminated approximately one mile inside the eastern city limits of Hamilton. It provided electricity to the Hamilton Electric Light &



Photo above: Outside view of the DeCew Falls power plant.

Photo right: Inside view of the generating hall.

For more pictures see the website:

<http://ieeesb.mcmaster.ca/~hamilton/milestone/decew.htm>



by Ron Potts, Bob Barnett, Dave Hepburn, Alan Jex, Ed Shaded and Ted Winch, IEEE Life Members Chapter
Pictures by Eric Harrison



The IEEE plaque (left) will be placed alongside the original Ontario Hydro plaque (right) placed in 1998 to commemorate the 100th anniversary of the power plant.

Power Company. This power was used for streetlights, factory operation and within a short time supplied the various electric railways in and around Hamilton.

On July 9, 1896, five prominent local citizens known as the “Five Johns”, pooled less than \$100,000 to form the Cataract Power Company of Hamilton. The idea to harness the power of DeCew Falls and transmit power to Hamilton was proposed by John Patterson. Patterson was one of the first to recognize and implement Nikola Tesla’s 1888 invention, “Polyphase Alternating Current”. The DeCew Falls Power plant was the first development that provided polyphase power for commercial use over transmission lines to loads in Hamilton 56 km away from the Niagara area. The intake block and part of the original building remain at the original site.

The original four generators (two were installed in 1898 and two in 1903) operated at 66 2/3 Hz. At that time there was no frequency standard. Between 1911 and 1918, six more units were added. The plant output at its peak was 52,000 HP. Presently six units numbered 4 through 9 are on site and units 5 through 8 are operating at 60 Hz.

DeCew Falls plant was the earliest major plant on the Canadian side of the Niagara River diverting water from Lake Erie via the Welland Canal by constructing a 7.6 km canal to the Niagara escarpment just east of DeCew Falls.

Until Sir Adam Beck Plant No.1 was built in 1916, the DeCew Falls plant was operating with the highest head of 83 metres. This is almost the full drop between Lake Erie and Lake Ontario of 100 metres.

The basic design of the plant using a forebay and penstock design with the turbines and generators at the same elevation has endured as distinct from the “dead end” wheel pit design. The DeCew Falls plant remains in operation today whereas all its contemporaries on both sides of the Niagara River generating at 25 Hz have been decommissioned and in most cases demolished.

The milestone proposal and research was accomplished by the Hamilton Life Members Chapter with the support of the Hamilton Section and assistance of Ontario Power Generation personnel.