



# A New Approach to Power Delivery: High Voltage Padmount Transformer

BY GERRY GEALL

In the late 1990s, a major utility decided to carry out a review of distribution and substation design and planning to identify areas where capital costs could be reduced, while ensuring the reliability of the power source. The review unveiled that 20 per cent of the budget for distribution was tied up in substation construction.

An off the cuff remark about perhaps designing a Padmount Transformer that could handle up to 138 kV and was suitable for serving power needs of up to 10 MVA, sparked the interest of Partner Technologies Inc. of Regina, Saskatchewan. Its main purpose was to create a High Voltage Padmount Transformer (HVPT) to cut costs while maintaining reliability for the utility. The results have been extraordinary, with the utility saving millions on installations. Currently there have been 20 HVPT installations with 16 more slated to be in service by 2012. The HVPT can be and is also used for large industrial or commercial customers.

With its unique design, the HVPT eliminates the need for the traditional substation, including the large structure, station yard and fencing allowing for a number of benefits.

**Cost:** The number one benefit of the HVPT is the reduced cost over traditional substations. The cost in a single installation could reach a 50 per cent saving over conventional designs mostly due to savings in property costs, the elimination of foundations and fencing, and reduced transformer costs. To date, 20 installations have provided an average saving of approximately 1 million dollars.

**Space Requirement:** While the traditional substation may take acres of land to support the infrastructure, the HVPT's small footprint (as small as 30m x 30m) and modular design, permits this station to be placed almost anywhere and

everywhere, and particularly, closer to the power requirements of customers.

**Aesthetically Attractive:** The aesthetic design of the HVPT allows for additional urban or suburban applications.

**A More Reliable Power Source:** Due to the modular design, the HVPT stands up against extreme weather conditions adding reliability to the power source for customers.

**Security and Safety:** The enclosed live parts that are protected under a lock and key allowing a fenceless power source, provide safety to the community and employees as well as protects against the theft of valuable metals found in conventional substations, such as copper.

There are several installations that exemplify the potential uses of the HVPT Padmount Transformer, which have saved the utility and the private sector millions of dollars collectively.

The first installation came about when an industrial customer needed to double their plant capacity which required a substantial increase in the power requirement. Instead of spending millions on new traditional infrastructure, the utility decided to use the Padmount Transformer to supply the additional power requirement, which saved money for the utility and took up less of the customer's property area.

The second installation of the HVPT was to feed a new electrically heated school in Northern Canada. The installation of the HVPT now provides heat for the new school and for the surrounding community.

Two customer-owned installations included a Pollution Control Centre and a new Water Treatment Plant. The HVPT was used for the Pollution Control Centre to provide power to a growing industrial customer. The installation for the Water Treatment Plant was recently commissioned. ■

...when you can have this!

Why this...?



- Voltages to 138 KV
- Standard Configuration to 10 MVA
- No Onsite Erection or Oil Processing
- Savings up to 50% Over Conventional Designs

## HIGH VOLTAGE PADMOUNT SUBSTATION

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