

**THE INDUSTRY IS INCREASINGLY CONSIDERING DRY TYPE TRANSFORMERS RATHER THAN THEIR OIL EQUIVALENTS.**



*Figure 1: Outdoor dry type Transformer 3750 kVA, Winnipeg, 2017.*

**Dry-type transformers use air as the dielectric medium rather than oil. They have proven to be an excellent alternative for outdoor installations. Here are some advantages of using dry type transformers for indoor and outdoor uses.**

**Delta Transformers Inc.**  
Stéphane Bolduc, March 2022.

**BUILT FOR THE OUTDOORS**

For dry transformers to operate optimally in our harsh Canadian outdoor weather, few accessories have been added.

Transformer housing is equipped with an insulating thermal barrier which prevents the formation of condensation that can be formed on the surface of the components. Internal energized components such as magnetic steel cores and windings are vacuum impregnated with a special flexible epoxy coating that



*Figure 2: Dry type Transformer 2 000 kVA, Vancouver 2016.*

protects them from environmental contaminants and moisture (the EVI© process). This non-brittle special epoxy formulation is flexible. It allows the coating to follow the thermal expansion / contraction movements generated by temperature variations without cracking.

Heating elements could be added to facilitate start-ups in cold weather. If needed, the heating elements provide the necessary heat at the time of energization when the temperature is colder than  $-30^{\circ}\text{C}$ . Once energized, the natural warmth produced by the transformer prevent the formation of humidity.

Metal filters are also added to block the insertion of external objects. These filters prevent as well airborne particles brought by the wind to get inside, such as snow, debris, etc.

### **AN ECONOMICAL SOLUTION**

Although oil transformers may look cheaper by comparing the purchase of their dry equivalent, we must also consider the additional costs related to their installation and operation.

Oil transformers would require more expensive infrastructures such as the erection of anti-blast walls and retention basins in the event of oil leaks.

The installation has to be at a certain distance from the buildings. The cost of insurance is higher to operate oil transformers due to the risk of flammability and the explosive potential they represent. Higher insurance costs must be calculated by the owner.

The maintenance costs associated to the operation of oil transformers are also added to the bill over the years. Oil tests are required

periodically every 4 years by external specialized firms. Periodic oil changes and the management of hazardous materials due to used oils is necessary. Dry-type transformers, on the other hand, only require periodic dusting and visual inspection.

The alternative of dry-type transformers then appears to be an interesting economical option.

### **FASTER AVAILABILITY**

Delivery times are generally much shorter for dry type transformers. Faster delivery is an advantage with the new reality of supply chain challenges all industries have experienced in recent years. Dry type transformers appear to be a more reliable choice in terms of meeting your project timelines.



*Figure 3: Outdoor Sept Up Transformer ( 4,160 to 24,440 V), Vancouver airport 2018.*

### ENVIRONMENT-FRIENDLY

Dry-type transformers use air as the dielectric. As a result, they do not contain oil, where it can represent a potential risk for the environment. Dry-type transformers offer here a solution along with the protection of the environment because they do not contain harmful toxic fluids inside.

### WISE CHOICE

All advantages considered: A lower operating cost (combining the cost of acquisition, cost of installation and maintenance), speed of delivery and better respect for the environment, dry-type transformers represent a wise choice for your outdoor and indoor energy projects.



Figure 4: Dry type transformer, 10000kVA, British Columbia 2015.



Figure 5: Existing oil type transformer updated by a dry type equivalent 3 000kVA, Montreal airport QC 2009.

**At Delta Transformers, we have expertise in dry-type transformer projects, including on-site service, measurement and technical assistance. We can assist you with your projects for new installations and replacements of existing transformers. Everything is completed considering the economical, environmental, reliability and long-term performance aspects of your projects.**