

**Q. (Reference Application, Schedule B, Appendix C)**

**Please provide the following for van Kooy:**

- a) The study terms of reference and request for proposals.**
- b) The resume for the lead consultant.**
- c) The qualifications of van Kooy Transformer Consulting Services Inc.**
- d) The cost to provide the services leading to the documentation filed under Schedule B, Appendix C.**

A. a) Newfoundland Power availed of the services referenced in this question through a standing agreement with van Kooy Transformer Consulting Services Inc. ("van Kooy") rather than through a request for proposals. The services provided by van Kooy are on an as-needed basis. This generally includes assisting with transformer specifications, reviewing vendor drawings, participating in factory acceptance testing, condition assessments and failure analysis.

In the case of power transformer MUN-T2, van Kooy was asked to complete an analysis of the failure mode using the transformer drawings, oil sampling results, internal inspection results and operational observations including the abnormal noise and temperature levels.

b) Attachment A provides the resume for van Kooy, which outlines decades of experience in the transformer industry. van Kooy has provided transformer consulting services to utility and industrial clients since 1997. These consulting services draw upon extensive experience gained through working with transformer manufacturers for 15 years, which involved a wide range of experience including transformer design, testing and failure analysis.

c) Attachment B provides the qualifications of van Kooy. van Kooy is qualified to provide a wide range of transformer related services to utility and industrial customers. For new transformers, consulting services include manufacturer factory evaluation, specifications, tender evaluation, design review, manufacturing process inspections and factory acceptance testing. For aged transformers, consulting services include repair facility evaluations, condition assessments, failure analysis and test witnessing and review.

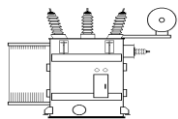
van Kooy's qualifications are demonstrated in its history of providing these services to 38 other utilities, 28 industrial companies and many other companies.

d) The cost to provide the services leading to the documentation filed under *Schedule B, Appendix C* was \$4,900.



# **ATTACHMENT A:**

## **Consultant's Resume**



**van Kooy**  
**Transformer Consulting Services Inc.**

Ph. 905 308-9888 Fax 308-9638  
E Mail john.vankooy@sympatico.ca  
web site www.vanKooy.com

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## **Sjoerd John van Kooy - BUSINESS EXPERIENCE**

**van Kooy Transformer Consulting Services Inc.**  
**Owner and Technical Principal**

**1997 -**

Drawing on over 40 years of experience in the Transformer Industry, we provide Transformer related services to Utility, Industrial and related business Clients. We roughly divide our focus between “New” and “Mature” transformer needs.

When purchasing new transformers or rewinding failed equipment, we assist Clients with detailed specifications, design reviews, quality audits, process reviews, pre-tank inspections, test witnessing, shipping inspection and maintenance recommendations.

For existing equipment, we are able to assess transformer health by reviewing Field test data such as Dissolved gas in oil, standard oil tests, insulation resistance, dissipation/power factor data, furan analysis and degree of polymerization results. With sick or failed transformers we are able to provide independent third party expertise to assist in the often difficult repair/scrap/ buy new/ buy used, decision. We perform failure investigations in situ or at Transformer repair or OEM Facilities. We have also created a transformer training seminar that provides general transformer knowledge and specific information on transformer maintenance.

**ASEA BROWN BOVERI, Guelph, Ontario**

**1993 - 1997**

**Manager of Small Power Engineering 1993 - 1997**  
**Direct Report to General Manager & VP 1995 - 1997**  
**Guide Growth of Large Power Repair Business 1997**

Had responsibility for directing the Small Power Engineering group in meeting Customer and work shop requirements for electrical and mechanical information as it pertains to the tendering and manufacture of power transformers. (Small Power at Guelph was defined as up to 50 MVA, up to 650 BIL)

In an Engineering/Marketing capacity, met with Customers and prospective Customers in Canada and the US, growing the Small Power Business and subsequently the Large Power Repair business. Participated in technical benchmarking with other ABB facilities in North America and Europe, sharing design concepts. Team member in I S O implementation / auditing (Factory achieved ISO 9001 designation in 1995).

## van Kooy Transformer Consulting Services Inc.

### **WESTINGHOUSE CANADA INC., Services Division, Burlington 1990 - 1993 Transformer Design Specialist**

Provided technical support to the Westinghouse Field and Plant operations across Canada. Redesigned and provided winding information for failed transformers ranging in size from 1500 KVA dry type Distribution to 36 MVA, 225 KV oil filled Power transformers. Failure analysis and damage assessment at Customer sites. Identified replacement parts, providing sketches for field modifications. Developed procedures, interpreted dissolved gas in oil and standard oil test results to accurately identify pending and actual failures.

### **ONTARIO HYDRO, Toronto 1987 - 1990**

Regions Branch, Transmission Stations Department, Transformer Development Section. Provided the Operations groups with Limited Time Overload Ratings (LTR) of Station equipment. Station equipment consisted of power transformers, switchgear, bus, cables and current transformers. Analysis allowed for operation beyond Nameplate Rating with confidence based on the chosen criteria of temperature and insulation aging.

### **WESTINGHOUSE CANADA, Hamilton 1981 - 1987 Electrical Designer 1981 - 1986 Marketing Representative 1986 - 1987**

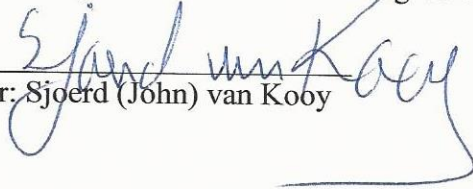
Electrical designer in the Medium Power (10 - 50 MVA, to 230 KV) Engineering Department. As an Electrical designer, played the role of project manager for the transformer from initial design through to final test. Designed to CSA, ANSI/IEEE and IEC standards.

In the Marketing Department within the Large/Medium Power transformer section duties split between Tender Preparation and Order Service.

Regards,

van Kooy Transformer Consulting Services Inc.

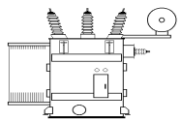
per: Sjoerd (John) van Kooy

A handwritten signature in blue ink that reads "Sjoerd van Kooy". The signature is written in a cursive style and is positioned over a horizontal line that separates it from the typed name below.



# **ATTACHMENT B:**

## **Consultant's Qualifications**



**van Kooy**  
**Transformer Consulting Services Inc.**

Ph. 905 308-9888  
E Mail john@vankooy.com  
web site www.vanKooy.com

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Updated Sep/2021

Subject: van Kooy Transformer Consulting Services Inc.  
Description of Services

We provide transformer related consulting to Utility, Industrial and Service organizations roughly divided between services for new equipment and services for mature transformers. The transformers that we have been involved with includes both Dry Type and Fluid Filled ranging from 500 kVA to 500 MVA and voltages up to 715 kV.

**New Transformers**

- **Transformer OEM/Repair Plant Evaluation**
  - Evaluate Facility for Client target requirements based on assessing critical processes and capabilities including Engineering, Quality Assurance, component suppliers, winding, dryout, assembly and testing
- **Transformer Specifications**
  - Prepare specification per Clients requirements
  - Review existing specifications with a view of evaluating non-standard requirements for value added and ensuring clarity
  - Develop specific RFQ
- **Tender Evaluation**
  - Assist in review of OEM responses to quotation requests on a technical and commercial basis
  - Provide a spreadsheet of the key technical and monetary factors for ease of comparison
- **Design Review**
  - Prior to or just after placement of a transformer order with an OEM, a design review can be performed to ensure compliance to Customers specification, jurisdiction Standard (ANSI, CSA, IEC) and transformer industry standard practice.
- **Quality Audit**
  - Review OEM compliance to Industry standard quality requirements (ISO 9000 and others)
  - The approach is from a practical insider view point focusing on key elements that lead to a reliable product as opposed to a paper chase

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**128 Glen Road, Hamilton, Ontario Canada L8S 3M9**

## van Kooy Transformer Consulting Services Inc.

- **Process Review**
  - Inspecting the transformer(s) at critical points in the manufacturing process, including the following.
    - Coil winding, winding dryout
    - Core building
    - Core and Coil assembly
    - Core and Coil assembly dryout
  - **Pre-Tank Inspection** – a typical hold point to inspect the completed assembly just prior to placing in the tank. This is also an opportune time to check that all of the necessary components (bushings, load tapchangers, cooling equipment etc.) are available for the next stage of assembly.
  - **Test Witness** – some or all of the following tests will be performed
    - Preliminary – winding resistance, turns ratio, power factor, phase relationship, CT ratios
    - Losses – load loss and impedance, no load loss, ancillary
    - Temperature rise tests at base and top MVA rating
    - **Dielectric testing** – Applied voltage, Induced voltage, Impulse (simulating lightning strike)
    - Miscellaneous tests – controls, protection devices

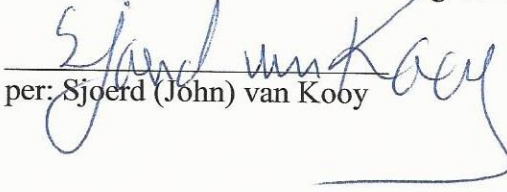
### Mature Transformers

- **Condition Assessment**
  - A broad term used to describe the evaluation of a transformer based on several factors including the following.
    - Dissolved Gas in Oil Analysis
    - Power/Dissipation Factor
    - Standard Oil Testing (Dielectric Strength, Interfacial Tension, Power Factor, Neutralization no., Water Content)
    - Furans
    - Degree of Polymerization
    - Application, Age, Loading
    - Component – bushings, load tapchangers, de-energized tapchangers, cooling equipment, monitoring gauges, protection devices, etc.

## van Kooy Transformer Consulting Services Inc.

- **Failure Analysis**
  - Review the results of transformer failures in situ or at an OEM/Repair facility with the view of determining root cause. Can provide direction for continued dismantling to search for contributing failure factors.
  - Our experience is limited to the failure of the transformer itself and does not extend into System studies.
  - We also perform inspections in cases of suspected damage during transport
  
- **Transformer Replacement**
  - Provide a knowledgeable, independent third party expertise for assessing the factors around the scrap/repair/replace scenarios.
  - We have developed a methodology for evaluating Used transformer options
  
- **Field Service Support**
  - Transformer overload capability assessment
  - Cooling assessment, calculations and recommendations to add radiators/fans
  - Source replacement transformer components including radiators gauges, instruments, silica gel breathers, bushings, etc.
  - Provide Field supervision for bushing replacement, certain load tapchanger inspections, re-gasketing, miscellaneous modifications
  - Internal inspections, we have confined space training

Regards,

van Kooy Transformer Consulting Services Inc.  
  
per: Sjoerd (John) van Kooy

Attachments:  
Client List  
Visited Transformer OEM/Repair Facilities



## van Kooy Transformer Consulting Services Inc.

### CLIENT LIST

#### Utilities and Power Producers

AES, Hawaii  
Algonquin Power Systems Inc., Ontario  
AltaLink (formally TransAlta, Transmission), Alberta  
ATCO Electric Ltd. (Alberta Power Limited), Alberta  
ATCO Power, Alberta  
Austin Energy, Texas  
Belize Electricity Limited, Belize  
Brookfield, various locations  
Canadian Hydro Developers Inc., Alberta  
Capital Power, Alberta  
Caribbean Utilities Company Ltd., Cayman Islands  
Enel Green Power North America, Inc., California  
ENMAX (City of Calgary), Alberta  
Fortis Ontario  
Fortis BC  
Hydro One (formally Ontario Hydro, Transmission)  
INNERGEX, Quebec  
Kingston Cogen (formally AES Kinston) Kingston, Ontario  
Kitchener Wilmot Hydro, Ontario  
Louisiana Generating LLC, Louisiana  
Maritime Electric, Prince Edward Island  
Newfoundland Power Inc.  
Newfoundland and Labrador Hydro, Nalcor  
NYPA, Astoria, New York  
North Bay Hydro, Ontario  
Northland Power, Ontario  
Northland Utilities Ltd., Northwest Territories  
NRG Energy, Minnesota  
Ontario Hydro, Generation, Ontario  
Oakville Hydro, Ontario  
PowerStream Inc., Vaughan, Ontario  
Toronto Hydro, Ontario  
TransAlta Utilities Corporation, Alberta  
SNC-Lavalin ATP Inc., Calgary, Alberta  
Societe en Commandite Hydroelectrique Manicouagan, Baie-Comeau, Quebec  
Veridian, Ontario  
Waterloo North Hydro, Ontario  
Wellhead, California  
Yukon Electric Corporation, Yukon

## **van Kooy Transformer Consulting Services Inc.**

### **Industrial**

Alcan - Kitimat, British Columbia  
Alcoa, Wenatchee, Washington  
Algoma Steel, Sault Ste. Marie, Ontario  
Canfor, British Columbia  
Chemtrade Pulp Chemicals LP, British Columbia  
Domtar - NorKraft Quevillon Inc., Quebec  
E.B. Eddy Forest Product Ltd., Ontario  
Express Pipeline, Calgary, Alberta  
Gerdau Steel, Cambridge, Ontario  
General Motors, Oshawa, Ontario  
Glencore, Onaping, Ontario  
Goldcorp, Ontario  
Hamilton Specialty Bar, Hamilton, Ontario  
Honda, Alliston, Ontario  
KGHM, Sudbury, Ontario  
Lafarge Canada, Ontario  
Noranda Inc. – Brunswick Mine, Bathurst, New Brunswick  
Petro-Canada Oil and Gas, Ontario, Alberta  
Prince George Pulp and Paper, Prince George, British Columbia  
RES Americas, various locations  
Sifto Canada Inc., Goderich, Ontario  
Stillwater Mining, Billings, Montana  
Syncrude, Fort McMurray, Alberta  
Tembec, Temiscaming, Quebec  
ThyssenKrupp, Calvert, Alabama  
Washington Mills, Niagara Falls, Ontario  
Weldwood of Canada Ltd., British Columbia  
Wescast, Wingham, Ontario

## **van Kooy Transformer Consulting Services Inc.**

### **Others**

ABB Service - Milton, & Sudbury Ontario  
ABB Motor & Machines Division, Milton Ontario  
AECON Industrial, Cambridge Ontario  
Ansaldo Ross Hill, Houston, Texas  
Aviva Canada Inc.  
balancingpool, Calgary, Alberta  
Beaver Electrical Machinery Ltd., Prince George, British Columbia  
Black and McDonald, Toronto, Ontario  
Blattner, Minneapolis, Minnesota  
BluEarth Renewables Inc., Alberta  
Canadian Hydro Developers, Inc., Calgary, Alberta  
Chemtrade Pulp Chemicals. Prince George, British Columbia  
Cunningham Lindsey Canada Inc., Guelph, Ontario  
Eaton, Cutler-Hammer Engineering Services, Canada and USA  
Enel Green Power, California  
Delta Hudson Engineering - Calgary, Alberta  
EMC Engineering - Emerald Park, Saskatchewan  
GE Canada Inc.  
Georgian College, Barrie, Ontario  
Giffels Associates Limited, Toronto, Ontario  
Gryphon International Engineering Service Inc., St. Catharines, Ontario  
Hatch, Canada  
High Time Industries Ltd., Calgary, Alberta  
Honeywell, Oakville, Ontario  
JATECH, Saskatoon, Saskatchewan  
Jones Lockwood Greene, Atlanta, Georgia  
Kinectrics Inc., Toronto, Ontario  
M.A. Mortenson Company, Minneapolis, Minnesota  
McClaren Insurance, Ontario  
Morgan Schaffer, Montreal, Quebec, Canada  
National Research Council Canada, Ottawa, Ontario  
OmniTRAX, Winnipeg, Manitoba  
Origis Energy, San Diego, California  
ORTECH Consulting Inc., Mississauga, Ontario  
Ozark Services Limited, St. Johns, Newfoundland  
Padoma Wind Power, California  
Pattern Energy, California  
P.B.W. High Voltage Ltd., Mississauga, Ontario  
Pennecon, St. Johns, Newfoundland  
PGSC, Calgary, Alberta  
Potentia Renewables, Ontario  
Power System Solutions, Thunder Bay, Ontario  
Public Works and Government Services Canada, Ottawa, Ontario  
Q Group Inc., Punta Gorda, Florida  
Reid Crowther, Winnipeg, Manitoba

## **van Kooy Transformer Consulting Services Inc.**

S & C Electric, Canada and US  
Siemens/Westinghouse Service  
Schneider Canada Services  
Southern Power Systems Inc., Baton Rouge, Louisiana  
Sunnybrook Hospital, Toronto, Ontario  
University of Saskatchewan  
VA TECH Hydro, Burlington, Ontario  
Wismer & Rawlings, Prince George, BC

## **van Kooy Transformer Consulting Services Inc.**

### **New Transformer (OEM) and Repair Facilities** **Where We Have Visited and Inspected, and/or Test Witnessed Equipment** **on Behalf of Clients Around the World**

<b>Factory</b>	<b>Location</b>
<b>ABB</b>	Drammen, Norway
<b>ABB</b>	Guelph, Ontario
<b>ABB</b>	Ludvika, Sweden
<b>ABB</b>	Jefferson City, Missouri
<b>ABB</b>	South Boston, Virginia
<b>ABB</b>	St. Louis, Missouri
<b>ABB</b>	Vaasa, Finland
<b>ABB</b>	Varenes, Quebec
<b>ABB Elta</b>	Lodz, Poland
<b>ABB PowerTran</b>	Edmonton, Alberta
<b>Atlas Transformers</b>	Mississauga, Ontario
<b>AREVA</b>	Gebze, Turkey
<b>Cam Tran Co. Ltd.</b>	Colborne, Ontario
<b>CES Transformers</b>	Markham, Ontario
<b>ELCO Industries Ltd.</b>	Ramat-Hasharon, Israel
<b>Delta Star, Inc.</b>	San Carlos, California
<b>ERMCO</b>	Dyersburg, Tennessee
<b>Fortune Electric Co., Ltd., Dist. Xfmrs</b>	Taiwan
<b>Fortune Electric Co., Ltd., Power Xfmrs</b>	Taiwan
<b>Fortune Electric Co., Ltd., Dist. Xfmrs</b>	Wuhan, China
<b>GE Canada</b>	Burlington, Ontario
<b>GE Canada</b>	Montreal, Quebec
<b>GE Canada, now ABB, now Hitachi</b>	Stoney Creek, Ontario
<b>General Electric</b>	Philadelphia, Pennsylvania
<b>Hammond Manufacturing</b>	Guelph, Ontario
<b>HICO, Hyosung Corporation</b>	Changwon, Korea
<b>HICO, Hyosung Corporation</b>	Nantong, China
<b>HITRAN</b>	Flemington, New Jersey
<b>Hyundai Heavy Industries</b>	Ulsan, Korea
<b>Howard Industries, Distribution Xfmrs</b>	Laurel, Mississippi
<b>Howard Industries, Power Xfmrs</b>	Laurel, Mississippi
<b>ILJIN</b>	Incheon, Korea
<b>InterState Transformer</b>	Lexington, Kentucky
<b>IREQ Test Facility Hydro Quebec</b>	Varenes, Quebec
<b>JSHP, Jiangsu Huapeng</b>	Nanjing, China
<b>Megatran Electric Ltee.</b>	St. Jean, Quebec
<b>Jerry's Electric</b>	Coleman, South Dakota
<b>Moloney Electric Inc.</b>	Toronto, Ontario
<b>Norsk Trafo Service AS</b>	Sarpsborg, Norway

## van Kooy Transformer Consulting Services Inc.

<b>Northern Transformers</b>	Concord (now Maple), Ontario
<b>OTC Services/SGB-SMIT (was MTC)</b>	Louisville, Ohio
<b>Pacific Crest Transformers</b>	<a href="#">Medford, Oregon</a>
<b>Partners Technology Inc. (PTI)</b>	Regina, Saskatchewan
<b>Pauwels</b>	<a href="#">Gent, Belgium</a>
<b>Pauwels Canada, then CG Power, now PTI</b>	Winnipeg, Manitoba
<b>Pauwels, USA, then CG Power, now WEG</b>	Washington, Missouri
<b>Pioneer Transformers</b>	Granby, Quebec
<b>Pennsylvania Transformer Technology Inc.</b>	Canonsburg, PA
<b>PROLEC GE, Distribution Transformers</b>	Monterrey, Mexico
<b>PROLEC GE, Power Transformers</b>	Monterrey, Mexico
<b>Polygon Transformers</b>	<a href="#">Mississauga, Ontario</a>
<b>PowerTran Co. Ltd.</b>	<a href="#">Edmonton, Alberta</a>
<b>Rex Power Magnetics</b>	Concord, Ontario
<b>Shihlin Electric</b>	Taiwan
<b>Siemens</b>	Guanajuato, Mexico
<b>Siemens</b>	Wuhan, China
<b>Southern California Edison</b>	Westminster, California
<b>SUNBELT Transformers</b>	Temple, Texas
<b>SUNBELT Transformers</b>	Sharon, Pennsylvania
<b>Surplec HV Solutions</b>	Sherbrooke, Quebec
<b>T&amp;R Electric</b>	Coleman, South Dakota
<b>U.S. Transformer</b>	<a href="#">Pocatello, Idaho</a>
<b>VA TECH Ferranti-Packard, Siemens</b>	<a href="#">St. Catharines, Ontario</a>
<b>Virginia Transformer</b>	Roanoke, Virginia
<b>Virginia Transformer</b>	<a href="#">Pocatello, Idaho</a>
<b>Virginia Transformer</b>	Chihuahua, Mexico
<b>Voltran/WEG Transformers - Distribution</b>	Tizayuca, Mexico
<b>Waukesha Electric Systems</b>	Goldsboro, North Carolina
<b>Waukesha Electric Systems</b>	Waukesha, Wisconsin
<b>WEG Transformadores</b>	Huehuetoca, Mexico
<b>Zetrak Transformadores</b>	Tultitlan, Mexico