

The FAN-EPT's friendly approach to data presentations not only gives the user a graphic presentation of the PD source and aids in assessing its severity. This is a dedicated system for monitoring the health of a transformer *on-line* but having personnel monitoring the transformer *off-site*, far away from the harms-way.

Each FAN-EPT system includes simple to use Windows based software. It incorporates full color high-resolution displays, graphical user interface (GUI) and Digital Signal Processing (DSP) algorithms that utilize the new Wavelet Transform (WT) techniques for better *accuracy*.

FAN-EPT is flexible depending on the needs of each user. As a multi-channel system, it can be configured to match the size of the task. FAN-EPT utilizes suitable data acquisition card with 10 MHz sampling speed, and 16-bit accuracy. In addition, with each FAN-EPT system, DDI supplies the appropriate acoustic sensors with magnetic hold-downs; cables and suitable industrial computer with Pentium IV processor and HW control box in a *client-server* configuration.

Latest customer for 6-channel system and on-line monitoring/testing service: GE/Prolec, Apodaca, Mexico. Continuous 24/7 on-line monitoring of 180 MVA, 525kV, GSUs at Pacific Klamath Energy, Klamath Falls, OR.

FAN-EPT has the following advantages:

- ▶ Real-time on-line, off-site diagnostics;
- ▶ Most Accurate;
- ▶ Minimal monitoring cost;
- ▶ 24/7 monitoring;
- ▶ NEMA-4 enclosure & IP-55 ingress protection.
- ▶ Mounting inside the control box of the transformer or on the wall at site.
- ▶ Internal/external modems or cellular;
- ▶ Audio alarms, On-line, off-site

To receive information tear and mail the portion below to us

Diagnostic Devices Inc. Tel: (860) 651-6583

94 Wolcott Road, Simsbury, CT 06070

We are interested in your product FAN-EPT; please send us more information ASAP. Our purchase decision will be taken over the next:

6 mos. 6-12mos. 1 yr. 2 yrs.

Name

Title:

Company:

Address:

Visit us at:

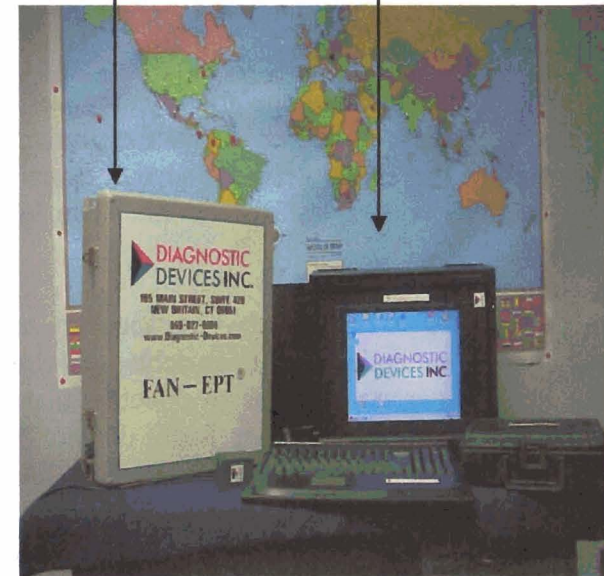
www.Diagnostic-Devices.com

**DIAGNOSTIC
DEVICES INC.**

FAN-EPT

CLIENT
SITE

SERVER
REMOTE



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DIAGNOSTIC DEVICES Inc manufactures and sells Fault Area Network for Electrical Power Transformers (**FAN-EPT**). This device is less costly and field tests have proven it to be much more reliable than existing diagnostic devices. Its accuracy is attributed to the utilization of an acoustical method encompassing supersonic sensors, Wideband Correlation techniques and Wavelet Transform (**WT**) methods to improve accuracy.

Less precise diagnostic devices cost much more and use triangulation techniques, which do not accurately locate the source, nor do they accurately define the spatial coordinates of a transformer fault due to PD.

FAN-EPT is a product whose accuracy has been tested and proven in an actual real-time utility environment. It is so effective that it can pinpoint transformer faults due to PD within six to eight inches of the fault location centroid - far more precise than any other diagnostic system! Utility companies can substantially reduce costs associated with defects in operating transformers by early detection of PD.

Unlike most diagnostic techniques, **FAN-EPT** can be easily installed and is extremely portable and compact in size. As a result, utility companies can reduce costs and detect incipient faults due to PD, which could escalate into catastrophic failures in the future using this instant on-line, off-site, 24/7

monitoring scheme. **DDI** offers **FAN-EPT** at a cost that is, in most cases, twenty-five percent (25%) less than competing products.

FAN-EPT installation therefore offers significantly more reliable detection at a price that is lower than historical costs associated with transformer fault diagnostics.

DDI also offers on-site testing service both to utilities and transformer manufacturers. Preliminary test reports are made available to customers on site and a complete test report is mailed to the customer within three to four days.

We also provide yearly contracts for on-line monitoring and testing services to reduce hassles of emergency testing needs to utilities and manufacturers.

"...**DDI** - Helping ease California's *energy crisis*..." Scott Whipple, Staff Writer, New Britain Herald, June 17, 2001.

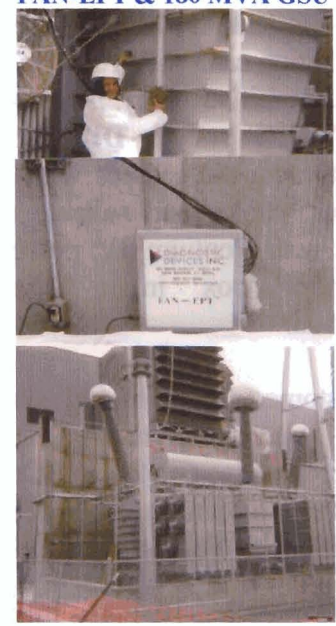
"... The world is getting smaller and that New Britain is becoming a player in the international market place.... Dr. Edward Rybczyk, Executive Director, IIET, New Britain, CT, USA, New Britain Herald, June 17, 2001.

DDI will offer a four-channel FAN-EPT system at a minimal monitoring cost or/plus rent of \$7,500 for continuous use for three months for performance evaluation.

New Products

- ▶ **DAM- CBS - Damage Area Monitor for Concrete Bridges and Structures**
- ▶ **DAM-AFS - Damage Area Monitor for Aircraft Fuselage**
- ▶ **DAM-SS - Damage Area Monitor for Submarine Structure**
- ▶ **DAM-PTS - Damage Area Monitor for Petroleum Tanks**
- ▶ **CADSCAN - Cardiac Artery Diagnostics Using Signal Characteristic Analysis**

FAN-EPT & 180 MVA GSU



FAULT AREA NETWORK FOR ELECTRICAL POWER TRANSFORMERS

FAN-EPT SYSTEM for ON-LINE MONITORING OF PD

DESCRIPTION

FAN-EPT is an on-line monitoring system to monitor partial discharges in electrical power transformers with a capability of remote monitoring/control via modem and audio alert system. Our on-line monitoring system has a control box to be mounted near the transformer with a remote computer acting as a host through a modem. The control box and remote computer can be configured in a master/slave operation. The sensors are mounted on the transformers either temporarily with magnetic hold-downs or permanently and the co-ax cables/leads led to this control box. The remote computer is a lunch box industrial computer.

The hardware for **FAN-EPT** can be later used to do location with the additional upgrade of the location algorithms at extra cost. The sensors can be mounted when the transformer is energized, therefore it is not necessary to take an power outage. The power to our control box (115V ac OR 220 V ac) can be provided from a local control box on the transformer or from the local site power outlets or suitable power supplies.

FAN-EPT system is only an on-line system for monitoring the detection of PD. It does not perform location analysis of the PD. The location of PD for a six-channel **FAN-EPT** system can be done with our software **HMSGHAT2000** or **WTPDDDI2000**. This will also do a 3-D location. Also, the **FAN-EPT** system, which is only for detection purposes, will also alert the operator of the existence of a PD.

The delivery time for such a system **FAN-EPT** is less than sixty days.

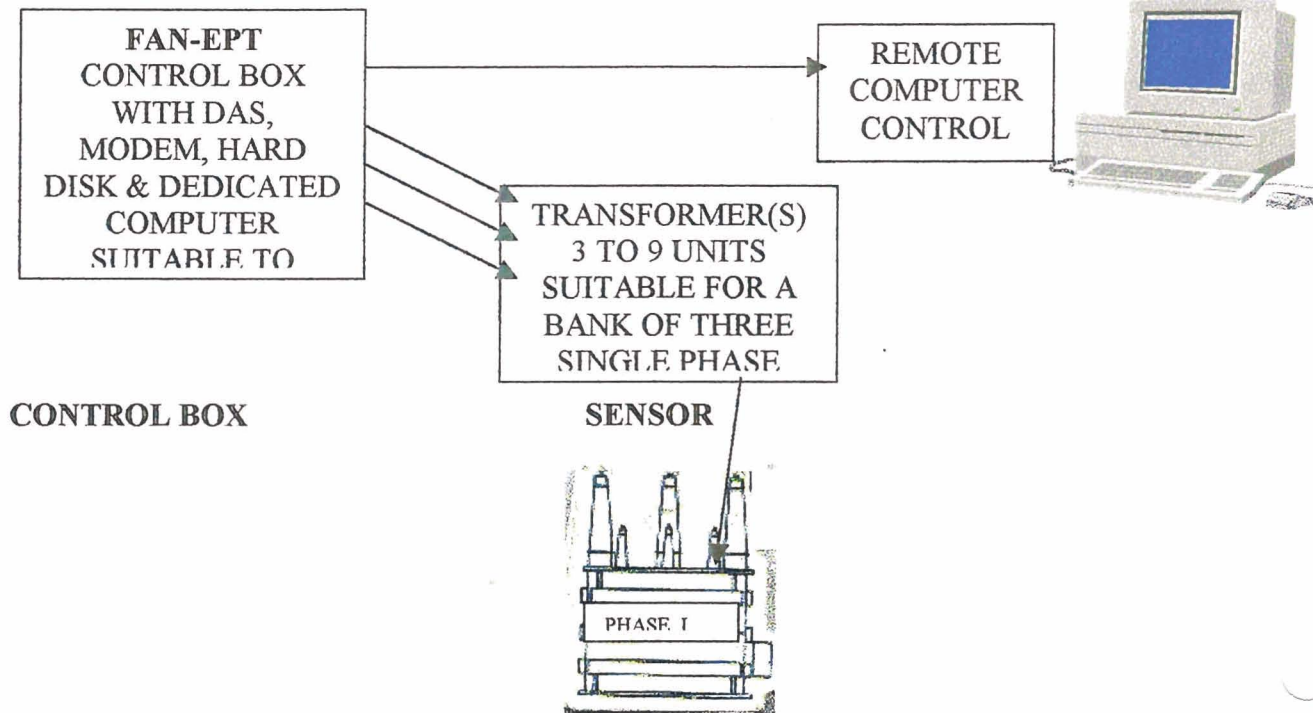
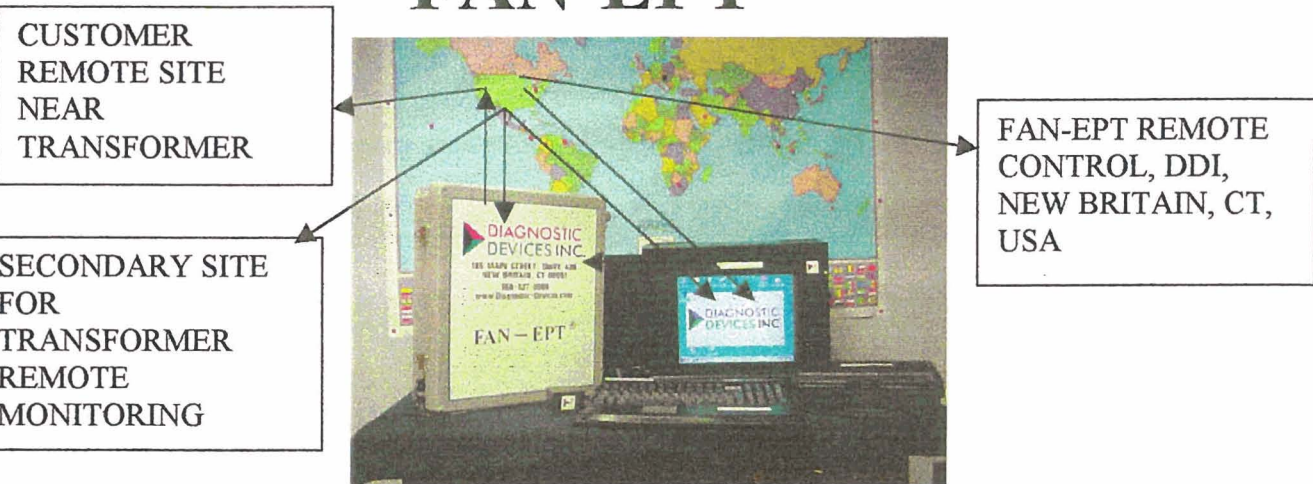


Fig. 1 Block diagram of FAN-EPT

FAN-EPT



WORLD MAP IN THE BACKGROUND