Spring 2004

Volume 1, Issue 1

2685 Milscott Drive
Decatur, GA 30033
P.O. Box 1048
Decatur, GA 30031

Phone: 404-296-5990
Fax: 404-299-3542
Email: sales@pd-engineers.com
www.pd-engineers.com

Inside this issue:

Proudly serving electric utility, cooperative & municipal clients since 1945

Another Newsletter?

Yes, another newsletter, but this one from a different source. Patterson & Dewar Engineers has never had a newsletter for their electric utility clients, so this is a first for P&D. In fact, P&D has never spent much time or effort marketing services to the utility business, focusing instead on providing professional, high quality engineering services. We don't give away a lot of "freebies" at the shows and we don't have someone who comes by monthly or weekly, saying how great P&D is. What we have done is let our quality service speak for itself, counting on individual referrals to provide us with new clients.

However, it has come to our attention that within the last few years, there are many new faces in the industry, many who may have never heard of us. In fact, many of our existing clients who we have served for many years really don't know the range of services offered. So, as a means of disseminating information, we are going to publish a quarterly newsletter, directed at the electric utility industry, an industry we have served for over 50 years.

Howard M. Patterson founded an engineering consulting firm in 1945 that became Patterson and Dewar Engineers when he was joined by Harry Dewar in 1947. Throughout its history the company has served the electric utility industry. Both Mr. Patterson and Mr. Dewar are now deceased, but their philosophy of offering conservative, honest engineering services at a reasonable cost, continues

(Continued on page 2)

Name Our Newsletter Contest

We don't have a name for our newsletter, and we would like to get ideas from our clients, friends, and associates for a good name for our newsletter. We really want your input, and we're willing to put our money where our mouth is. We are having a contest to name our newsletter.

Please submit your idea via email to sales@pd-engineers.com or via fax at 404-296-3542. If we select your name (or a close derivative), we will provide you with a $25 gift certificate. We look forward to hearing from you.

P&D Newsletter

P&D works for approximately sixty municipal and cooperative clients in the southeast.

today.

Presently the company works for approximately sixty municipal and cooperative clients in the southeast. Its services have expanded to include communications, SCADA and load management, system engineering and electric utility software development, in addition to the traditional engineering functions of line staking, system planning and substation design. The civil engineering section provides site design and land surveying services, and Hood-Patterson & Dewar, the testing department of the company, provides a broad base of electrical testing services.

In addition to administrative and clerical staff, the company employs twenty electrical engineers and three civil engineers, three land surveyors, four drafters, five CAD operators, five technicians and six staking technicians. The civil department maintains at least five field survey crews.

The firm operates as a closed corporation with stock ownership offered by invitation only. The organization is majority owned by the key personnel of P&D and the stock ownership is spread among fifty active employees.

PDMap Developments

PDMapGIS 2.2 is an electric utility mapping solution introduced in 1998

It has been a great year for our PDMap Sales and Services. Thanks to the support of our PDMap users we have grown by nearly 60%. The word is out about PDMap. Our goal of providing a quality ESRI based mapping system with the best support in the industry has become reality. Our latest new users include:

Planters EMC	GA
Yazoo Valley EPA	MS
Taylor County RECC	KY
Canoochee EMC	GA
Ocmulgee EMC	GA
Maquoketa Valley REC	IA

It is our hope that all our clients are excited about the growth in this area because each installation brings more knowledge into our user community.

Some new tools available from within PDMap include the following:

- **Set Custom Snap Settings- improved tool gives expanded capability to set, save and retrieve snap settings.**
- **Change Phase Down line- new tool that allows user to change the phase of all network features down line from a set flag. Used primarily for changing single phase taps to a different phase. Tool will update primary, primary equipment, transformers, and consumers.**
- **Update Downstream Consumer Count- new tool that counts the number of connected consumers downstream from selected device(s). The count value is placed in a "cust_conn" field in the Device table. The tool can also run outside of ArcMap as a batch routine.**
- **Copy Point Feature- tool copies a selected point feature and all**

P&D People

This issue's focus on people will be on a new face, that really isn't new to P&D, but may be new to a lot of you. His name is J.B. Franklin. J.B. became the new head of our electrical department, effective January 1, 2004. J.B. replaces J.W. Porter, who retired at the end of 2003. J.W. had been at P&D nearly 25 years when he retired, having come here from Savannah Power. J.B. (are the initials getting you confused?), although new to this position, has been with P&D over 21 years, having started and worked in the electrical department for most of his career here. For the last 8 years, J.B. had served as the head of our testing department (Hood-Patterson & Dewar) performing testing, commissioning, and power system studies.

J.B. came to P&D from Ebasco Services where he had done power plant design. J.B. has a B.S. and an M.S. in electrical engineering from Purdue University. He actually took a lot of courses and met all of the requirements for a Ph.D. from Georgia Tech, except for the dissertation, so he is A.B.D. (all but dissertation). J.B. has been married to his wife, Gayle, for 27 years and has four children, ranging in age from 15 to 25.

Feel free to contact J.B. anytime by phone at 404-296-5990, ext. 245 or by email at jb.franklin@pd-engineers.com.

PDMap, *cont'd*

attributes to a new location by either a click-n-drag or by the input of an angle and distance.

- **Make Point Feature- this tool creates a new point feature via the input of an x and y coordinate. Tool will zoom to the new location.**
- **Build Network Connectivity– improved tool for updating the parent/child relationship necessary for export to EA and OMS.**
- **E&OManager- New database for maintaining transformer, OCR and other equipment maintenance records, ROW trimming and spraying, pole inspection and joint use data. The database includes custom input forms, reports and is linked to PDMapGIS so that data in both databases can be viewed in either ArcMap or E&OManager.**
- **View & Edit Attributes- enhanced tool that will allow users to view or edit records from multiple tables that are related to the record selected. For example, clicking on a transformer in the map the user would be able to view data in the transformer maintenance table, consumer records from the consumer layer and pole records from the pole layer.**
- **Insert Composite Favorite- new tool allows the user to place more than one feature into the map at a time. Useful when adding a new substation, underground cabinet or other complex multiple feature entity.**

The new tools provided with PDMap are extensive. So to help train all involved, we will be sending information soon regarding our 2nd annual PDMap User Group Meeting. Some details are still being decided but the meeting will most likely take place the week of Sept. 27th in the Atlanta area. We anticipate each year's meeting to be bigger then the last but will always be providing training to educate you on new features. Thank you all for helping PDMap be the best GIS product available. We look forward to seeing you at the User Group Meeting.

Power Quality Specifications

Patterson & Dewar Engineers

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Electronics are becoming imbedded into industrial manufacturing equipment. They promise higher productivity, greater reliability, and lower production costs. And they usually deliver as promised, but sometimes bring along some problems. The power systems to which they are attached are often the original design and not optimum for the changed character of the load.

The new electronic systems work faster and operate on much lower voltages than old control systems. That makes them susceptible to errors and failure from power system disturbances that earlier control systems ignored. These "power quality" events are natural and predictable on the electric distribution system and are not more frequent than they used to be. The customer equipment just does a better job of detecting those events.

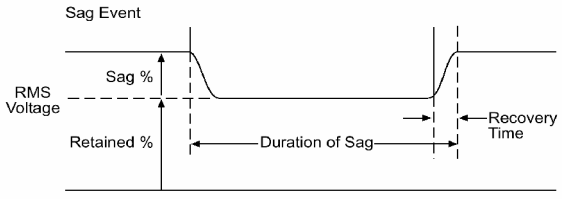
Modern manufacturing equipment need not lead to disappointing results. The equipment may deliver all of the productivity improvements promised, but the power interface must be addressed. There are a number of aspects of that interface to be addressed when specifying, ordering, and installing equipment. Those include:

- Grounding
- Service Entrance Transformer Configuration
- Voltage Ratings
- Transient Overvoltages
- Three-phase Voltage Sags
- Single-phase Voltage Sags
- Harmonic Distortion
- Steady-state Voltage Unbalance
- Common-mode Voltage
- Power-factor Correction Capacitors: Switching Transients
- Common DC-bus ASD Systems
- Electromagnetic Interference (EMI) and Radio Frequency Interference (RFI)

Each of these may be addressed in the design of the equipment, and most manufacturers have done just that. But when equipment is specified generically and purchased on low bid, the features that would make the equipment perform correctly under less-than-ideal conditions are omitted. Specifying the performance of equipment at the time of purchase insures that the equipment delivers under all conditions.

The most common power disturbance is the voltage sag, such as occurs when starting a motor. Including specification language that describes the way equipment "rides through" voltage sags requires the bidder to address the subject. The specification might include:

> The equipment shall operate continuously during a three-phase voltage sag down to 65% of nominal for a duration of 30 electrical cycles. The recovery time to nominal voltage of one cycle shall be permitted. As depicted below:



The cost of enhancing performance during adverse conditions is minimal, but specifying it is the only way that manufacturers know what is required.

Transient overvoltages are deadly to electronic systems. It's simple to specify equipment with built-in (or added-on) protection against damage. The specification might say:

> The equipment shall have a fully coordinated transient suppression scheme as demonstrated by three characteristics: 1) the let through voltage per amp of transient energy, 2) the withstand curves of the electronic components and 3) the surge rating of the internal components.

Specifying power quality performance into equipment as it is purchased is the best way to get long life and high productivity from new equipment. Each of these issues is addressed in an article in the Mar/Apr 2004 IEEE/IAS *Applications* magazine, written by our power quality guy, Bill Moncrief, P.E. For a copy of the complete article, please contact sales@pd-engineers.com.