

ANCONEWS

ENERGY, SYSTEMS, & STRUCTURES

Volume 4, No. 2, March 1994

"Desktop" Seismic Testing of Power Plant Equipment *Servo-electric Triaxial Shake Table Offers Utilities and Suppliers an Affordable Alternative*

ANCO now offers a compact servo-electric independent triaxial shake table to perform seismic qualification of lightweight equipment to IEEE-344 standards. ANCO's President, Paul Ibanez stated, "The R-100E is as close to desktop qualification as one is likely to get. It complements our larger servo-hydraulic tables. Many utilities and equipment suppliers want to control costs and improve turnaround by performing seismic testing on site. If you perform about 20 or more seismic tests per year, the cost effectiveness of buying a large capacity servo-hydraulic shake table can be demonstrated. Previously, the only option for users with fewer tests was to use outside facilities. At \$100,000-\$200,000 installed, depending on options, users performing as few as 5 tests per year will find the R-100E attractive."

Because the R-100E table uses servo-electric rather than servo-hydraulic actuators it provides the user several benefits:

No Hydraulics

The R-100E eliminates servo-hydraulic issues of pump noise, high pressure lines, leaks, cooling, hydraulic oil storage and disposal, and learning hydraulic operation and maintenance skills.

Easy Hook Up

The R-100E is driven by 10 kW of 220 VAC, 3-phase power, normally found in any laboratory.

No Special Foundation Required

The R-100E can be mounted on any common industrial concrete ground floor 5 inches or thicker, no need for large mass foundations or pits.

Cost Effective

The fixed price includes installation, training, instrumentation, data acquisition, and all software required for IEEE-344 testing. Servo-electric systems are simple and highly reliable. Maintenance costs and efforts are estimated at 1% and 20 hours per year. The simplicity of the R-100E operation also eliminates the need for dedicated trained staff to operate and maintain the table.

Compact Design

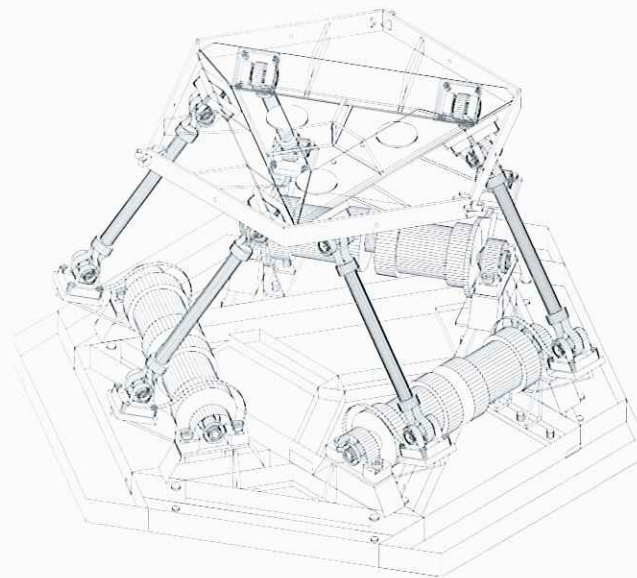
The R-100E and its drive equipment will fit into a 10 ft x 10 ft laboratory space.

Fast Triaxial Testing

Independent triaxial testing requires no equipment rotation, re-instrumentation, and retesting. The test software supplied is in an easy to learn, PC based, integrated Windows environment.

Continued ... See Desktop Testing

Pitch, Roll, and Yaw Inputs (6DOF) are also Possible



A wire frame 3-D view of the ANCO R-100E independent triaxial shake table

Trade Allies Key to Meeting DSM Program Goals

Demand Side Management (DSM) programs are conducted by utilities to assist their customers in conserving energy (kWh) and reducing demand (kW). DSM programs can be designed to reach any sector of a utility's customer base, commercial/industrial, residential, new construction, etc. A major component of these programs involves the installation (either as original equipment or retrofitted) of more efficient equipment such as HVAC, refrigeration, lighting, electric motors, controls, and process improvements. Most programs feature rebates to the end-user as an incentive for participation.

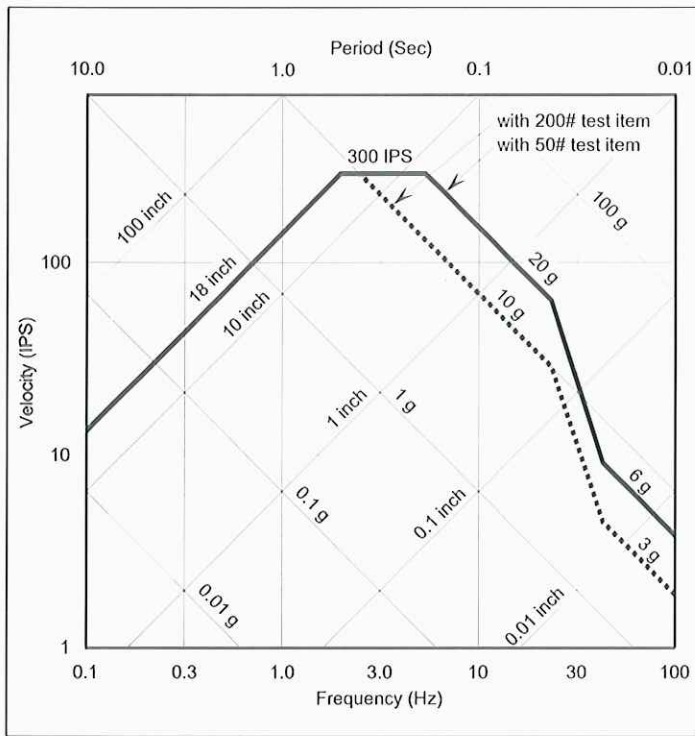
ANCO has implemented several major DSM programs for utilities such as Michigan's Consumers Power Company (CPCo), Consolidated Edison Company of New York and Wisconsin Electric Power Company. Over a period of more than a decade, we have discovered that a conscious and enlightened utilization of equipment

manufacturers, distributors, installers and architects (aka "Trade Allies") can be a major factor in achieving the goals of a DSM program. By securing the cooperation and active participation of the Trade Allies (TAs), ANCO was able to exceed CPCo's 170 million kWh energy conservation goal for 1993 by 70%. To a significant degree, this was a result of ANCO's appreciation for the importance of TAs.

TAs are ideally situated to influence DSM programs positively. Whether providing services or products, each TA must be in close touch with his customer's requirements and preferences. He or she must also understand the product

Continued ... See Trade Allies

ANCO Engineers, Inc.
Culver City, CA
(800) 932-5515



Desktop Testing ... Continued

Meets Current Testing Requirements

The figure at left and the table below show typical achievable test response spectra (5% damped) and related specifications.

Table Size:	2 ft x 3 ft
Maximum test object weight:	200 pounds
Maximum Input Displacement:	+/- 5 inches
Maximum Input Velocity:	+/- 80 inches/sec.
Maximum Input Acceleration (ZPA)	
- with 200 pound test object:	3 g's
- with 50 pound test object:	6 g's

ANCO's Steve Keowen, table designer, noted that "the R-100E is capable of performing most of the qualification testing required by nuclear utilities. Today's testing usually involves small replacement and commercial grade components. For example, the SQRSTS utility and EPRI consortium has not been called on to qualify any item over 200 pounds after more than one year of testing. Using the R-100E, you can maintain total control of the test and QA process, have results immediately rather than in weeks or months, and reduce travel by key staff. The R-100E and in-house testing is a useful complement to other seismic qualification options for equipment dedication such as outside laboratories, analysis, SQUG GIP, STERI, and SQRSTS."

For more information, contact
Steve Keowen or Paul Ibanez, Los Angeles

Trade Allies ... Continued

or service thoroughly. Accordingly, a TA is often a credible authority on the market for a particular DSM product and the best ways to utilize it.

In 1991, ANCO conducted a series of surveys for two large utilities to examine TA potential. The surveys, part of a larger DSM market segmentation study, were undertaken to develop a better understanding of the interactions among the diverse elements of the "Distribution Channel," through which energy-efficient products travel on their way from manufacturer to end user. We used the technique of loosely scripted open-ended questions posed in lengthy telephone calls to hundreds of TAs; as a result we were able to qualitatively characterize TAs as a resource of significant proportions.

But these surveys also disclosed certain barriers to using this resource to effectively promote DSM projects. The major problem was poor communications between the sponsoring utility and TA. The survey revealed a common thread of TAs appearing ill-informed to clients, or even suffering financial loss through a utility's failure to communicate some essential aspects of a DSM rebate program.

With these concerns in mind, ANCO embarked in 1992 as implementation contractor on CPCo's Reduce the U\$e program. We were determined to effectively motivate TAs. To this end, we took the following actions:

Rollout Meetings

At the beginning of the program, meetings with the local TAs were held in various segments of CPCo's service territory. The purpose was to develop a common understanding of DSM, and what CPCo's goals and motivations were. Specific features and requirements of the Reduce the U\$e program and how a TA would be involved in the rebate process were outlined; and brochures and application forms were distributed to permit promotional activities to begin.

Telephone Support Line

This inbound Watts line provided statewide response to questions and requests for program materials in a timely fashion.

Trade Show Presentations

To sustain a high level of contact with the TA, ANCO personnel joined Trade Associations, attended their meetings, and presented the Reduce the U\$e program at a variety of trade shows. In addition to expanding the base of those who

were acquainted with the program, these forums provided a timely opportunity to answer the questions of those already involved.

Newsletter

ANCO developed and published a periodic newsletter in which successful case histories were highlighted along with solutions for common program problems. Any program changes, deadlines, extensions, increases or reductions in rebate levels, application qualifications, etc., were reported in the newsletter. Helpful charts, graphs, tables, and formulas were included to assist TAs.

Joint Site Visits

Under certain circumstances, ANCO representatives joined a TA for on site customer calls. ANCO was able to establish credibility, explain program details and assure customer eligibility, while supporting the vendor in a timely and highly visible manner.

In Conclusion

The Trade Allies are a potent resource which can be brought to bear on a DSM program to the mutual benefit of TAs, the sponsoring utility and its customers. **The key to activating this resource is timely, relevant, ongoing, and accurate communications.**

ANCO Engineers, Inc., (800) 932-5515

Los Angeles:

9937 Jefferson Blvd., Suite 200
Culver City, CA 90232-3591
Tel: (310) 204-5050
(800) 932-5515
Fax: (310) 202-6085

Denver:

200 Union Blvd., Suite 430-0155
Denver, CO 80228
Tel: (303) 575-1358
(800) 932-5515

East Lansing:

2105 University Park Dr., Suite A
Okemos, MI 48864
Tel: (517) 349-8223
Fax: (517) 349-8253

New York:

244 Madison Ave., Suite 380
New York, NY 10016
Tel: (800) 966-8451
Fax: (800) 622-5375