

# BALANCE

NEWS FROM BALA CONSULTING ENGINEERS, INC.

*Practicing the Art of Engineering*

SUMMER, 1998 • VOL. 1

## Awards IN THE BALANCE



Illustration provided by Ballinger

### BALA AWARDED SMITHKLINE BEECHAM'S HEADQUARTERS TENANT IMPROVEMENTS

Bala will be SmithKline Beecham's engineer for tenant improvements for their expanded U.S. Headquarters. The eight story, 220,000 s.f. facility, the first new building to be built in Philadelphia in 5 years, will house SB's general and executive offices, video teleconferencing rooms and a parking garage.

RHM Associates is providing interior design.

The fast tracked project is currently under construction with an expected completion date of December, 1999.

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### BALA'S VALIDATION DEPARTMENT OFFERS CERTIFICATION SERVICES

The Design Firm Management & Administration Report's May 1998 issue mentions commissioning may become the latest new service for design firms to offer. Bala saw the value of commissioning well ahead of the competition. Its Validation/Certification Department was formally initiated in 1993 and, almost since its inception, has been providing certification services to clients who require highly reliable facilities.

Headed by Daniel J. Tisak, the Validation/Certification Department provides a diverse range of consulting services in the pharmaceutical, biotech, government, higher education and commercial markets.

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) defines commissioning as the "process of ensuring that the systems are designed, installed, functionally tested, and capable of being operated and maintained to perform in conformity with the design intent." Certification takes commissioning a step further by ensuring intersystem reliability. Bala has combined commissioning with the validation procedures set forth by the Food and Drug Administration requirements in the pharmaceutical and biotech industries and certification programs to provide a comprehensive approach for sustainable design, construction administration and system maintainability.

As buildings are being designed today with more complex systems or designed to operate without a shut down, commissioning and intersystem reliability becomes even more essential. Regardless of complexity, owners want assurance that their facilities will operate as intended. On a non-adversarial basis, Bala provides a full range of services from reviewing existing documentation, to developing written procedures for factory and field testing of equipment to a complete test of the entire facility to witness how the building systems interact when subjected to controlled system failure.

Surprisingly, many owners have never conducted a final

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## LOOKING FOR HVAC FLEXIBILITY? Bala designs the FIRST ductless VAV System

Cendant Mortgage had a great engineering challenge. The firm was (and still is) faced with tackling a 100 person per month growth, technically advanced workstation requirements and, because of a project team corporate philosophy, an annual internal reconfiguration rate approaching 40 percent.

Bala's solution was to combine a proven flexible HVAC solution, variable air volume (VAV) diffusers with a relatively new concept, under floor plenum distribution. The result is a ductless, under floor VAV system which provides Cendant with a virtual limitless office configuration with lower

energy and operating costs. The mechanical system, a reported first in the Real Estate Community, will be installed in Cendant's new 375,000 s.f. corporate headquarters.

In partnership with the design team of Cathers & Associates Architects and Interspace Interior Design, Bala is providing mechanical, electrical, plumbing and structural engineering. Trammell Crow Company is providing program management services. Construction is underway by Blue Rock Construction, Trammell Crow's construction management subsidiary.

The engineering solution provides Cendant with a number of benefits:

**Total work station flexibility.** Work stations, enclosed offices and conference / meeting room configurations are only limited by the physical dimensions of the building. All HVAC, temperature control devices, power and telephone/data requirements can be relocated within the raised floor 2' x 2' grid.

**Lower first costs.** There is almost no ductwork to contend with, providing easier design documentation and less time to construct.

**Lower utility bills.** The VAV system provides low velocity, conditioned air directly to the occupied zone. The under floor system allows supply air to be distributed at 63

degrees; effectively 8 to 11 degrees warmer than traditional above ceiling systems.

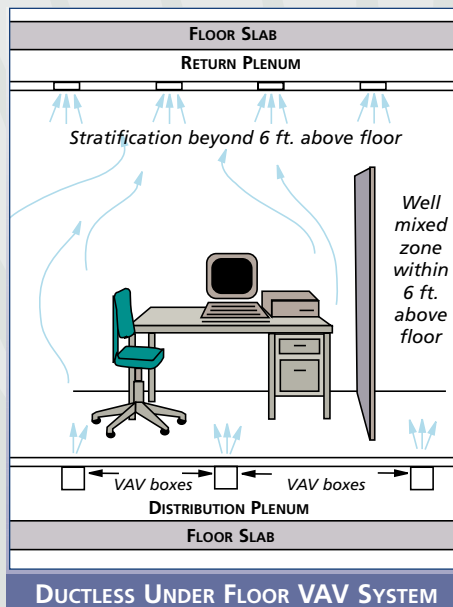
**Lower client operating costs.** As individuals and teams move, simple floor tile reconfigurations are required to meet the client's changing business needs.

**Improved Air Quality.** Ductless, locally controlled, supply air furnished directly to the individual work sta-

tion provides the occupant with greater control and the facility manager with fewer maintenance headaches. The upward flow of supply air plus the efficient removal of heat from ceiling mounted light fixtures noticeably improves IAQ and reduces cooling loads.

**Built in redundancy.** Because of the under floor air plenum, individual Air Handling Units (AHU) can be sized to handle the HVAC loads should one or more units need to be serviced or become incapacitated. The low velocity distribution design effectively allows for a self balancing HVAC system.

*Gary Cohen, P.E., Bala's senior project manager and lead designer of the ductless VAV system has more than 30 years of mechanical and electrical engineering experience. For more information contact Gary at gc@bala.com*



### Validation/Commissioning continued from page one

comprehensive test of their most critical facilities. A recent client who had not gone through such rigorous testing commented "Bala provides an organized approach to find out what we don't know about our computer center."

Every industry realizes they have facilities that must operate as intended. Bala's clients vary greatly: Some want to finally get their procedures written down in a well defined, working document. Some clients are required by federal regulations to conduct tests and record their results. Others realize the monetary implications of any down time could be financially catastrophic. Whatever the needs, Bala's Validation/Certification Department's approach to system verification allows many of its clients to sleep peacefully at night. The Department's diverse experience includes:

**Pharmaceutical:** Validation Master Plan, Design Qualification (DQ) Installation/ Operation Qualifications (IQ/OQ) Performance Qualification (PQ) Standard Operating Procedures (SOP's) and training to assist in the FDA approval process. International regulatory expertise, including the translation into English and implementation of China's Good Manufacturing Practices (cGMP).

**Biotech:** Validation Master Plans, IQ/OQ/PQ protocols for specific equipment and HVAC systems for classified and non-classified clean rooms and laboratories.

**Higher Education:** Campus procedures manual for construction inspection, testing and turn over of new buildings or major renovations. Operations, trouble shooting and preventative maintenance procedures for university science and research facilities.

**Commercial:** Individual component and intrasystem testing of the UPS, emergency generator, electrical distribution and other critical systems for major operations centers for numerous financial institutions. Factory and site testing of equipment for a manufacturer of computerized systems.

**Computer:** Factory and Site Acceptance Tests (FAT,SAT) of software and equipment for computerized systems, Functional Requirements Specification (FRS), and Software Development Plan for control system manufacturers.

For more information contact Daniel J. Tisak at djt@bala.com

## CONCRETE ADVICE



As more municipalities adopt Building Officials & Code Administrators International, Inc.(BOCA) Codes 1993 or 1996 versions, owners are finding out, sometimes the "hard way", structural concrete requirements have increased.

Concrete Section 1907.1.2 Water-cementitious material ratio and strength states: "All concrete exposed to freezing and thawing in a moist condition shall have a maximum water-cement ratio of 0.45 and a minimum compressive strength of 4,500 psi, except for buildings in Use Groups R-2 and R-3 (less than four stories).

If your projects are not designed to the new standards, you could face project delays and increased costs in rectifying the problem. Please take note since many trade contractors are not aware of the change. For more information contact Mike Hayko at [msh@bala.com](mailto:msh@bala.com)

## FIRE PROTECTION: NEW CODES MAY AFFECT YOU!



With the focus on safer buildings, plan on Fire Protection Code requirements to be uniformly upgraded in the future. Hydraulic sprinkler systems require a specific water density to cover a specific minimum area. Clients and owners should consider certain design issues at the beginning of a project to avoid costly changes in the future.

**Base Building Sprinkler Systems should be designed for future capacities.** If a system is designed for light hazard open office space, chances are future partitioned offices will not be allowed without replacing the sprinkler system. A potentially difficult and disruptive event!

**Remote sprinkler heads should be spaced conservatively.** In light hazard design, the most remote located sprinkler heads should be spaced at 120-130 square feet per head, not at the allowable maximum spacing. This design approach will ensure the fire protection main(s) and branches are sized for future accommodations.

**Save the original sprinkler shop drawings and calculations.** The drawings and calculations contain specific computer program output and information on existing water pressures, flow tests and water service.

**Keep "As-built" drawings on file.** A plan of the actual existing system is worth several days of field surveying above your ceiling and behind your walls – an unnecessary expense if you save a few documents.

For more information contact Dave Holst at [dnh@bala.com](mailto:dnh@bala.com)

## Awards IN THE BALANCE

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### CENDANT

New Corporate Headquarters (see VAV article page 2), Day Care Center and Dining Facility

### Biomatrix

New R&D Laboratory, Vivarium Labs and 4-story Office Building

### McNeil Consumer Products Company

Tylenol Manufacturing Facility—Shanghai, China

### One Drexel Plaza

Renovation Bulletin Building to house Drexel University's night school, plus retail space.

### Campbell Soup Company

New Corporate Headquarters for Vlasic Division — FDA rated testing kitchens and offices

### Matrix Realty

Total renovation and reskin of 750,000 square foot CECOM office building

### Bell Atlantic

Numerous switchgear station upgrades as part of the preferred design vendor agreement

### Wawa

Providing ongoing HVAC, electric and plumbing engineering services for retail store expansion program

### GMAC Mortgage

Provide engineering service for the design of the new data and print center, complete with UPS systems and emergency power generating systems

### Princeton University

Renovation of engineering systems for the New South Building

### Ingersoll Rand Co.

Engineering services for the new Business Development Center

### Astra Merck

Continuing Engineering Services

### Therics, Inc.

Provide engineering services for their Tissue Lab

### Merck & Co. Inc.

Multiple phase condensate line upgrade at Rahway Campus

### Quaker Construction

Provided complete structural engineering services for the Visiting Nurse Service Systems, Inc. new Alzheimer/Assisted Living Facility



*Although our name might not always be penned/recognized in the paper, our clients, projects, and people have made an impact locally and nationally.*

- The May 3, 1998 Sunday's *Inquirer* Business Section highlights how the Greater Philadelphia Region has become a major financial services hub. The article mentions six Bala clients: GMAC Commercial Mortgage Corp., Fleet/Advanta, Cendant, First Union, Chase Manhattan and Merrill Lynch.
- The *Philadelphia Inquirer* profiled 3-Dimensional Pharmaceuticals, Exton, PA as a hot new company helping major pharmaceuticals devise better products. Bala Consulting Engineers designed existing laboratories and offices for this faster growing company and is completing an expansion of a building this summer.
- The *Philadelphia Inquirer* reported that Vlastic Foods International will become a new subsidiary of Campbell's Soup Company. Bala is working on design of the new FDA rated testing kitchens and office space to house this new venture.
- The *Philadelphia Business Journal* reported that the 202/Valley Forge corridor is booming. Bala has participated in this growth working in the following buildings: Cedar Hollow Road, 100 Chesterfield Blvd., 650 and 680 Swedesford Road, 52 Swedesford Road, 60 and 50 Morehall Road, 20 Moores Road, Southpoint, Croton Road, the Westlakes Campus.
- The *Wall Street Journal* honored the graduates from Rutgers Executive MBA program. Kudos for Gregory DeMarco being mentioned.
- Michael and Mary Lou Hayko have been profiled in the paper and the news for their work with Breast Cancer. MaryLou has designed a Survivors Charm Bracelet that has been gaining both local, national and international recognition.
- Dan Tisak has been busy publishing and lecturing. Dan's article on Validation Commissioning Documents: A Checklist Approach for Facility Validation has appeared in the Journal of Validation Technology. He has also lectured for the International Society of Pharmaceutical Engineers on Computer Validation and Validation Requirements Overseas.
- Walt Subers, Chuck Kensky, and Ed Lynch taught the AIA Philadelphia Chapter's engineering review course for architects going for licensing. Siskel and Ebert gave the class two thumbs up. We'll see if the class gives the lecturers thumbs up if they pass the engineering section. We're thinking about taking the course on the road.

Please send comments to [smt@bala.com](mailto:smt@bala.com) .

- The *Philadelphia Inquirer* ran a series dealing with the Free Library System in Philadelphia. Bala is proud to help this exciting effort of upgrading the branch libraries. Our boiler and air conditioning replacements have helped provide a more comfortable environment for the patrons and staff.
- Ed Luckiewicz directed the CENTER for PROFESSIONAL ADVANCEMENT's Elements of Applied Process Engineering continuing education class July 13-16 at the Hyatt in New Brunswick, New Jersey . The four day course focused on Process Equipment, sizing and specifying of piping systems and various types of Process Diagrams. Ed taught the same course in Amsterdam earlier this year.  
Ed is an adjunct professor of Chemical Engineering and the coordinator of the P.E. Review Program at Drexel University.

## NEW EMPLOYEES / PROMOTIONS

### Mike Oliver promoted to Director of New Technology

To remain current with the fast paced changes happening in the field of Mechanical Engineering, Michael W. Oliver, P.E., has been promoted to the newly created position of Director of New Technology.

Mike will be responsible for evaluating practical applications for new, state-of-the-art technology in Bala's core areas of business: Computer Facilities, Call Centers, Commercial buildings, Healthcare institutions and Higher Education campuses.

With over 20 years of consulting engineering experience and 7 years as Head of Bala's Mechanical Department, Mike will conduct third party documentation, peer reviews, research and educational seminars for clients and Bala's internal operations and provide mechanical oversight.

**Mark J. Tellier, PE:** Bala's new Director of Operations for Process Engineering. Mark brings nearly 20 years of experience in process/mechanical engineering experience in biopharmaceutical manufacturing.

**Robert H. Craemer, PE:** A senior Electrical Project Engineer with more than 30 years experience ranging from engineering of manufacturing facilities to microelectronics and large capital equipment.

**Beth Lorenz, PE:** Bala's new Project Manager for pharmaceutical and corporate engineering projects.

**Bruce G. Stratten:** Bala's new Manager of Computer Services. Bruce was hired to improve technology production through automation and implementation of connectivity between all offices.

**Gary L. Umbenhouer, PE:** As a senior HVAC Engineer, Gary brings over 20 years of experience, in HVAC and Instrumentation, to our mechanical engineering team.