

C.A.S.H. 23rd Annual Conference
“DOWNTOWN...EVERYTHING’S
WAITING FOR YOU”

**Building Commissioning and Energy Conservation:
Can Your Maintenance Department Gear Up and Cut Back?**

Tuesday, February 26, 2002

2:00 P.M. – 3:20 P.M.

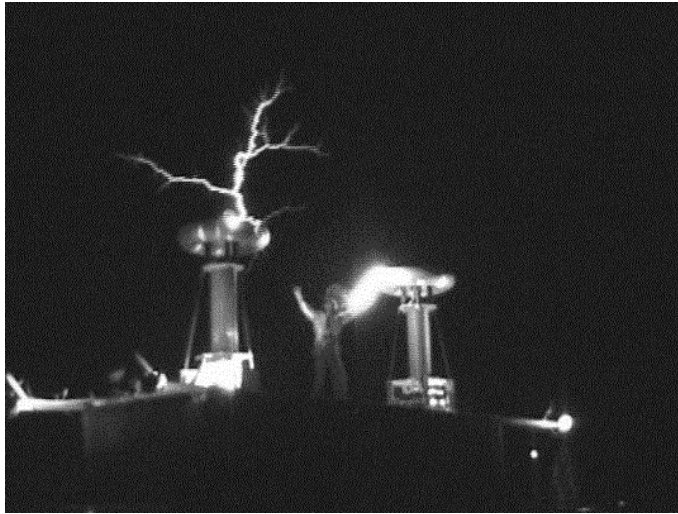
Moderator: Rob Williams
Franklin-McKinley School District

Panelist: Joe Olivier
Syserco Inc.
David Schwed
Romero Management Associates

**Building Commissioning and Energy
Conservation:
The Contractor’s Point of View**

- Top Ten Deficiencies
- EMS Action Plan
- Conservation as everybody’s job

Commissioning won't kill you!



Top Ten Deficiencies Discovered by Commissioning New and Existing Buildings

1. Incorrect scheduling of lighting and HVAC equipment
2. Incorrect cooling and heating sequences of operation
3. Incorrect calibration of sensors and instrumentation

Top Ten Deficiencies Discovered by Commissioning New and Existing Buildings

4. Lack of control strategies for optimum comfort and efficient operation
5. Malfunctioning air and water side economizers
6. Underutilized computer based control systems

Top Ten Deficiencies Discovered by Commissioning New and Existing Buildings

7. Short cycling of HVAC equipment
8. Lack of design intent and building documentation
9. Lack of training for building operators on complex systems

Top Ten Deficiencies Discovered by Commissioning New and Existing Buildings

10. Missing specified and paid-for
equipment.

Source: Portland Energy Conservation, Inc.

EMS Action Plan

- Do It!
- Who is responsible for energy conservation?
- How do you measure it?



EMS Action Plan

Before the contractor leaves

- Review documentation
 - Plans, specifications, equipment lists
- Review sequences of operation with designer and contractor together
- Inquire about future service and training

EMS Action Plan



Before classes start:

- Establish occupied schedules and procedures for “events”
- Define the “range of comfort”
- Verify correct operation
 - Mechanical verses control problems

EMS Action Plan

- Establish service request protocol
 - Who handles?
 - Priority assessment
 - Feedback loop/Process Improvement



EMS Action Plan

- Training, Training, Training



EMS Action Plan

- Every user should be able to:
 - Review and edit schedules
 - Review and adjust set points
 - Review and set up trend logs
 - Acknowledge alarms

Conservation As Everybody's Job

- Promote conservation along with school spirit
- Review results with the teachers and student body
- Greater involvement = Greater savings

Syserco Inc.

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Life Cycle Costing

- Initial Cost + Cost over equipment life including any savings
- Operational Savings (smoke and mirrors)
- Some items are “Labor Intensive”
- Some items require long lead times for replacement

Lighting

- Electronic Ballasts and T-8 Lamps (700 series and 800 series)
- Exterior Lighting (HPS and CFL)
- Occupancy Sensors
- Skylights (passive vs. active systems)

HVAC

- EMS (Time savings but requires commitment)
- The effect of cycling equipment
- Variable Speed Drives
- Central Plants vs. Package Units
- Precoolers, Evaporative Cooling
- Thermal Energy Storage

Envelope

- Roofing
- Windows
- Exterior Walls
- Siting
- Shading

Staffing

- Service Contracts (negotiate up front)
- Trades People- Electrician,
HVAC/Controls
- Systems

Generation of Electricity/Heat

- Cogeneration
- Gas Turbines
- Wind Energy Systems
- Solar Hot Water
- Solar P.V.

RMA- Energy Consultants

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