

## Case Study

John Muir Medical Center  
– Concord, California

# ELITE ENERGY

## Hospital Reduces Energy Costs, Carbon Footprint with Combined Heat and Power

*Elite Energy Systems helps John Muir Medical Center go green with a 900-kilowatt CHP application.*



**EnviroGen® Energy Modules provide low-emission, high-efficiency heating and power solutions to this 259-bed acute care facility.**

**W**ith construction underway on a major expansion project, John Muir Medical Center in Concord, California was seeking to incorporate green building technologies as a way to save on energy costs while becoming more environmentally responsible.

Their solution was an innovative combined heat and power (CHP) system from Elite Energy Systems. By simultaneously producing electricity from in-house generators and – harnessing the waste heat from that process – hot water, John Muir significantly reduced its need to purchase electricity and natural gas. The result: a significant reduction in the hospital's ongoing energy costs and overall carbon footprint.

For this project, ELITE installed four EnviroGen® modules that run in unison to provide 900 kWe of electricity to the facility. The system runs in parallel to existing utilities, providing a constant source of power during blackouts or scheduled maintenance to the CHP system. Heat from the engine exhaust is captured with jacket water to provide hot water to the hospital, and an absorption chiller also provides seasonal chilling loads to the facility.

### Project Summary

- Location:  
Concord, California
- System Size:  
3 250 kWe modules,  
1 150 kWe module;  
Total 900 kWe
- Commissioned:  
Summer 2010
- Power Source:  
3 Caterpillar 3412 naturally aspirated engines and  
1 Caterpillar 3406 engine,  
all fueled by natural gas
- Overall Thermal Efficiency:  
Over 80 percent



## Benefits of CHP

- More efficient use of fuel: Greater than 80% total efficiency for CHP vs. 27% for utility
- Electricity can be displaced from the utility for similar costs with distributed generation
- Additional thermal energy is free
- Reduce power demand charges from the utility
- Enhanced power quality and reliability
- Eligible for energy efficiency grant programs
- Provides redundancy for electrical and thermal energy
- Lowers greenhouse gas emissions and carbon footprint

## ELITE's EnviroGen® Modules power John Muir Medical Center



- Caterpillar natural gas engines
- Synchronous or inductive generators
- High energy efficiency
- Seismic isolation
- Sound attenuated
- Ultra-low emissions
- Sound-eliminating air ducts
- Integrated design
- Stainless exhaust
- Rain-tight construction
- Removable door and roof sections for maximum serviceability
- On-board primary containment
- Separated controls cabinet
- Battery charger
- Stored energy breaker
- Internet connection for remote system monitoring

*To see how the John Muir project evolved from design to delivery, please view our interactive slide show at [www.eliteenergysys.com](http://www.eliteenergysys.com).*

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