



The benefits for using steam district energy

Grays Ferry Operating Assets



- Westinghouse 501D5A Combustion Turbine
- 116 MW nameplate
- MHI controlled extraction / induction / condensing steam turbine generator
- Nooter / Eriksen heat recovery steam generator
- ~ 700 kpph
- Boiler 25 - Cerrey auxiliary boiler
- ~ 700 kpph



Two Liberty Place - Case Study



Two Liberty Place - Case Study

Veolia's Challenges in District Energy (Growth)

- Architects/Developers are working around the district energy infrastructure
- Lack of education and knowledge around district energy
- Low cost of natural gas compared to the cost of district energy
- District energy is not supported by local and city government

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History:

- Located at 16th and Chestnut street
- Construction began in 1988 and was completed in 1990
- This made Two Liberty the second tallest building in the city
- Current Property Manager - CBRE

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- 847-foot-tall making it the third-tallest building in downtown Philadelphia
- 1.2M square feet of space
- 58 Floors
- Floors 37 to 57 contain about 300,000 square feet of condominium space

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Two Liberty was evaluating a couple of options:

- Installing natural gas lines and installing condensing boilers
- Replacing existing electric boilers with new electric boilers

Electric heat is a lower first cost approach, Two Liberty owners chose steam, because it is more economical to operate and more reliable

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Challenges

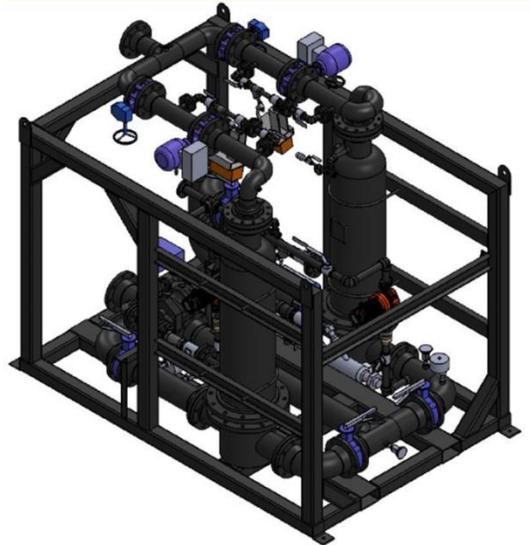
- Rapidly growing occupancy, which required more heating capacity than the existing, 20 year-old electric boilers could provide.
- Commercial/Residential tenants' steadily increasing energy needs.

Solution

- Install four separate Ultra High Efficiency water heating skids w/vertical flooded heat exchangers (Maxi-Therm units).
- Competitive pricing – steam rate comparable to the cost of electric boilers.

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Maxi-Therm equipment for Two Liberty



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Benefits

- Lower maintenance costs
- No vents/chimney
- Smaller footprint in the mechanical room (40 to 60%)
- 16% more efficient than traditional steam system
- Greater life expectancy
- Energy savings
- Stable and competitive energy rates
- Lower capital costs by eliminating the need for boilers
- Contributing to a cleaner environment by reducing emissions
- Reduction of peak electric requirements- more transformer capacity to the building.