Ressource Efficient and Cost Effective Construction

...through innovative and advanced building services

Klaus Kogler / CES clean energy solutions GmbH

Workshop "Green Building & Smart Cities,, UAE + Oman 28.02. – 02.03.2016
Sheikh Zayed Desert Learning Centre, Al Ain

✓ 80 % less potable water consumption
✓ 40 % less energy consumption
✓ 20 % to 30 % renewable energy coverage under part load condition

• Estidama 5 Pearls, LEED Platinum MEP design
• Specialised consultancy services
• First time above 1000 m² concrete core activation in the UAE
• First time adiabatic recoolers in the UAE (80% water saving)
• First time pre cooling through ground source (earth heat exchanger)
• Best operational single stage solar cooling system in the world, and roof integrated PV
MEP Design Concept Metro Doha, Qatar

- 40% reduced chiller plant size
- 30% less energy consumption
- Reduced life cycle costs
- 15 m³/day of condensate water utilization

CES services:
- Third party engineer
- Innovative MEP concept and tender design
- Building and systems simulation
- Sustainability consulting
Office Building Lower Austria

- Re-engineering of all energy related MEP systems
- Transient building simulation and improvement of building physics
- 70% reduction in chiller plant capacity
- 30% less power connection capacity required

Figure 2 - External shading geometry

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Modular Villa Dubai

✓ Mold free, European quality design and construction
✓ Up to 70 % less energy consumption compared to ASHRAE Apdx. G Baseline
✓ Peak load shaving by approx. 50 %
✓ Short construction time
✓ 50 % below construction cost in Europe
✓ You do not hear it, but it is yet working

CES services:
• Innovative MEP design services, up to BIM LOD 500
• Building Physics Design and Advice
• Supervision, Quality Assurance
• Procurement support and supply chain design
Innovative Building Services

- Typically you do not see it
- Typically you do not hear it
- and typically you do not feel it (except in case of malfunction)

25 % - 40 % of the construction cost go to advanced MEP systems

Up to 80 % of the O&M costs are related to the building services and can be impacted by a high quality design
Further Selected References

Haus der Musik, Innsbruck, Close to Zero Energy Construction
- Third party engineer, value engineering
- Design review and optimisation towards energy efficiency
- Advanced dynamic simulation services
  ✓ 75 % less cooling capacity than baseline design

Garant Headquarters, Lower Austria, Close to Zero Energy Construction
- MEP consultant, specialised consultancy services, ÖGNI Gold, tender support, procurement support, supervision
  ✓ Approx. 40 % less energy consumption than baseline

Parliamentary Building, Lisbon, Portugal
✓ MEP system analysis towards energy efficiency and the integration of solar thermal cooling

Build to Zero, Burgenland
- Advanced dynamic simulation services, methodology development
  ✓ RTD project, developing strategies for the regional Energy Supply Company headquarters to achieve a net ZERO energy construction

Parliamentary Building, Praia, Kap Verde
✓ MEP system analysis towards energy efficiency and the integration of solar thermal cooling, PV

Parliamentary Building, Vienna, Austria
✓ MEP system analysis towards energy efficiency and the integration of solar thermal energy

EU GUGLE, Smart Cities in 6 countries in Europe
- RTD project, energy efficiency expert
- Advanced dynamic simulation services, methodology development
  ✓ 200.000 m² energy efficient refurbishment, passive house standard, or close to zero energy construction
CES International
Full service provider for:
✓ Energy Efficiency
✓ Renewable Energies
✓ Sustainable Development

Engineering services & consulting
From project development to project implementation in the fields of
› Solar energy, geothermal energy, wind
› Biomass, biogas, biofuels, district heating & cooling, cogeneration, trigeneration
› Energy efficiency of industrial plants and buildings (glass, paper, cement and food industries; residential, office and public buildings; shopping centres; airports etc.)
› Innovative building services engineering (zero energy buildings, plus-energy houses, self-sufficient energy systems etc.) and building certification
› Hydropower

Specialised services
› Feasibility studies, design, procurement
› Construction and contract management according to FIDIC conditions
› Programme management for international development banks
› Building certification: LEED, BREEAM, DGNB, ÖGNI, ÖGNB, Estidama, QSAS, EUREM
› Transient building simulation/ system simulation
› Revit / BIM based design services
› Energy, air-/noise, building physics monitoring and analysis
› Life cycle cost analysis
› R&D, ICT design support
› Smart cities, energy innovation consultancy services
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› Whenever!
› With you.

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