

# Ressource Efficient and Cost Effective Construction

*...through innovative and advanced  
building services*

Klaus Kogler / CES clean energy solutions GmbH

# Sheikh Zayed Desert Learning Centre, Al Ain

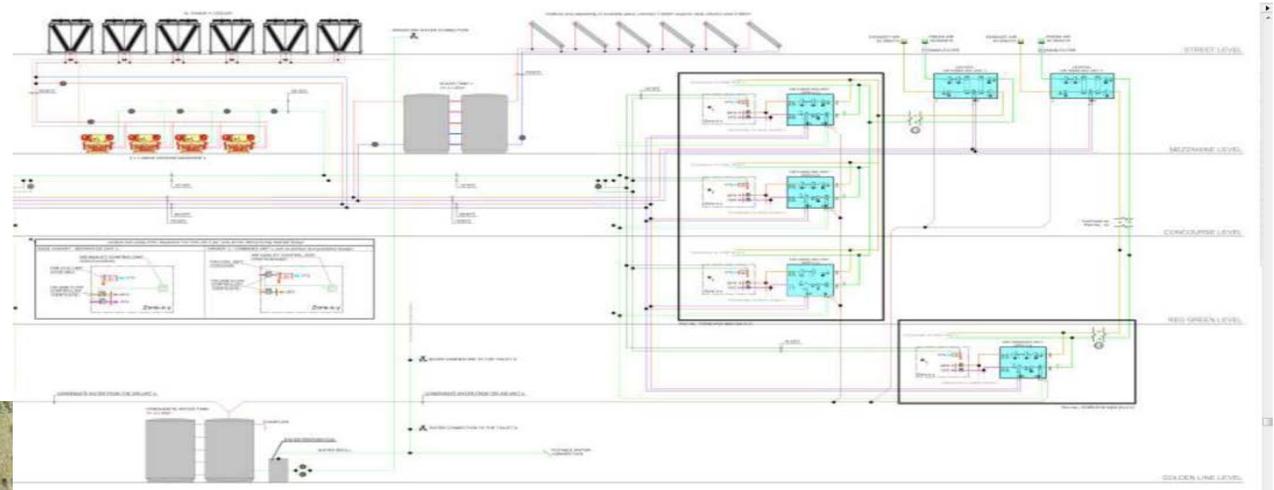


- ✓ 80 % less potable water consumption
- ✓ 40 % less energy consumption
- ✓ 20 % to 30 % renewable energy coverage under part load condition

- Estidama 5 Pearls, LEED Platinum MEP design
- Specialised consultancy services
- First time above 1000 m<sup>2</sup> concrete core activation in the UAE
- First time adiabatic coolers 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 m<sup>3</sup> / 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

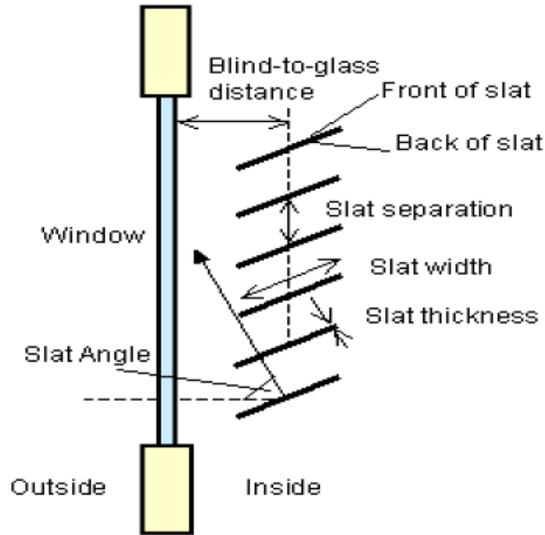
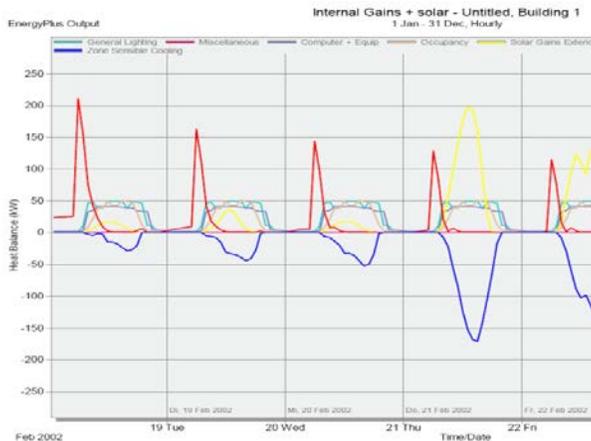
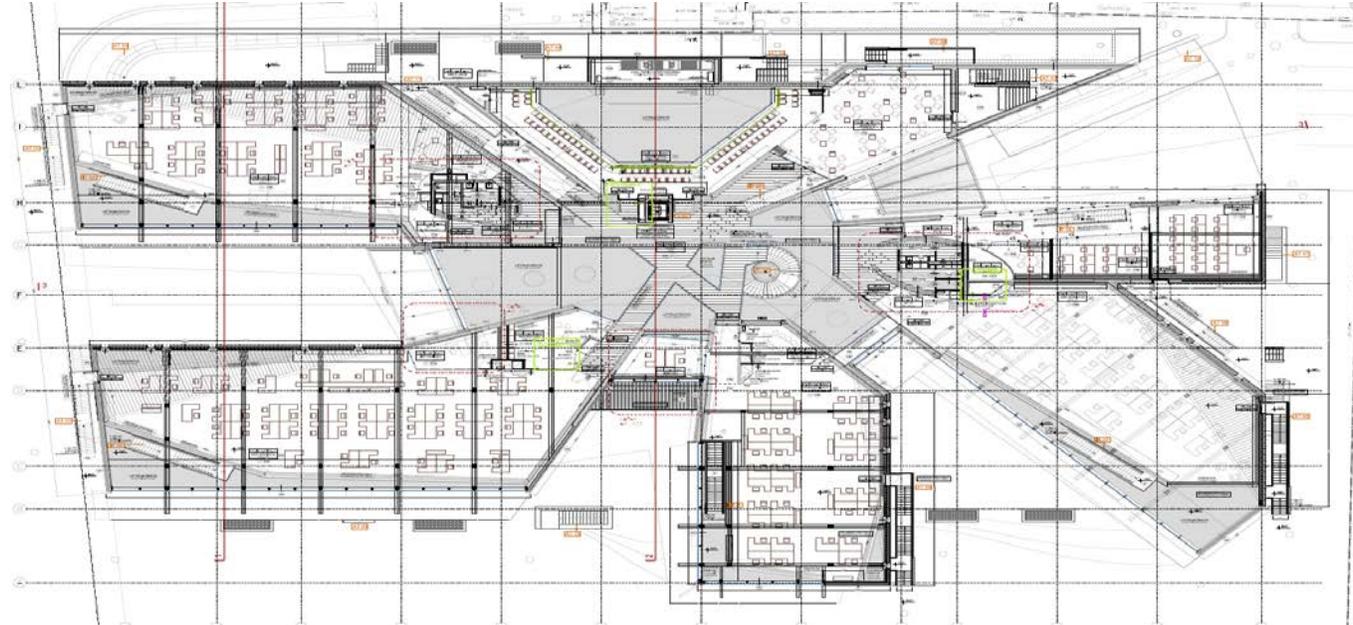


Figure 2 - External shading geometry<sup>2</sup>



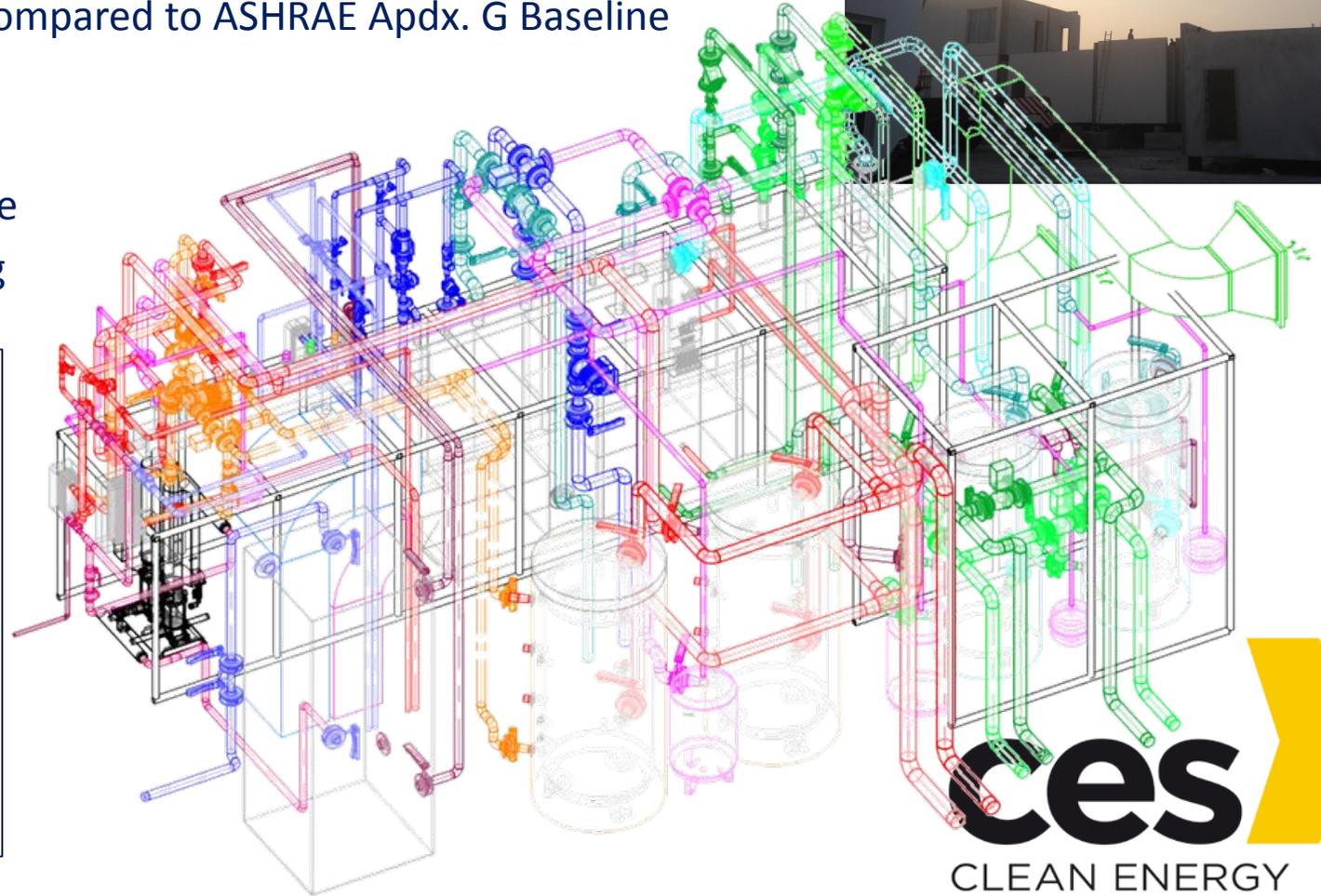
- ✓ Re-engineering of all energy related MEP systems
- ✓ Transient building simulation and improvement of building physics
- ✓ 70 % reduction in chiller plant capacity
- ✓ 30 % less power connection capacity required

# 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)



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**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**



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# 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 m<sup>2</sup> 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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**We are looking forward to the future.**

- › **Wherever!**
- › **Whenever!**
- › **With you.**

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