



HEALTHCARE



Optimized **ENERGY**
management

OUR WORLWIDE ACTIVITIES: 48 COUNTRIES

94 M
PEOPLE
supplied with
drinking water

62 M
PEOPLE
connected to
wastewater
collection
system



WATER

4,532
drinking water
production
PLANTS
managed

3,442
wastewater
treatment
PLANTS
managed



ENERGY

54 M
MWh
produced

2.4 M
collective
HOUSING
served

2,000
industrial
SITES
managed

450
urban
and local
heating
and cooling
NETWORKS

WASTE



51 M
PEOPLE provided
with collection
services
on behalf of local
communities

38 M
TONS
OF WASTE
transformed into
matter and energy

570,000
CORPORATE CUSTOMERS
(not including industrial
maintenance)

Reliable Energy Operation and Maintenance



- Multi-technical services and maintenance of buildings (systems, equipment and property)
- Management of all building installations, incl. electricity, gas, water, heating facilities, ventilation, climate control, ...
- 24 / 7 Control and Monitoring of all technical equipment
- Commitment on the quality and availability of utilities

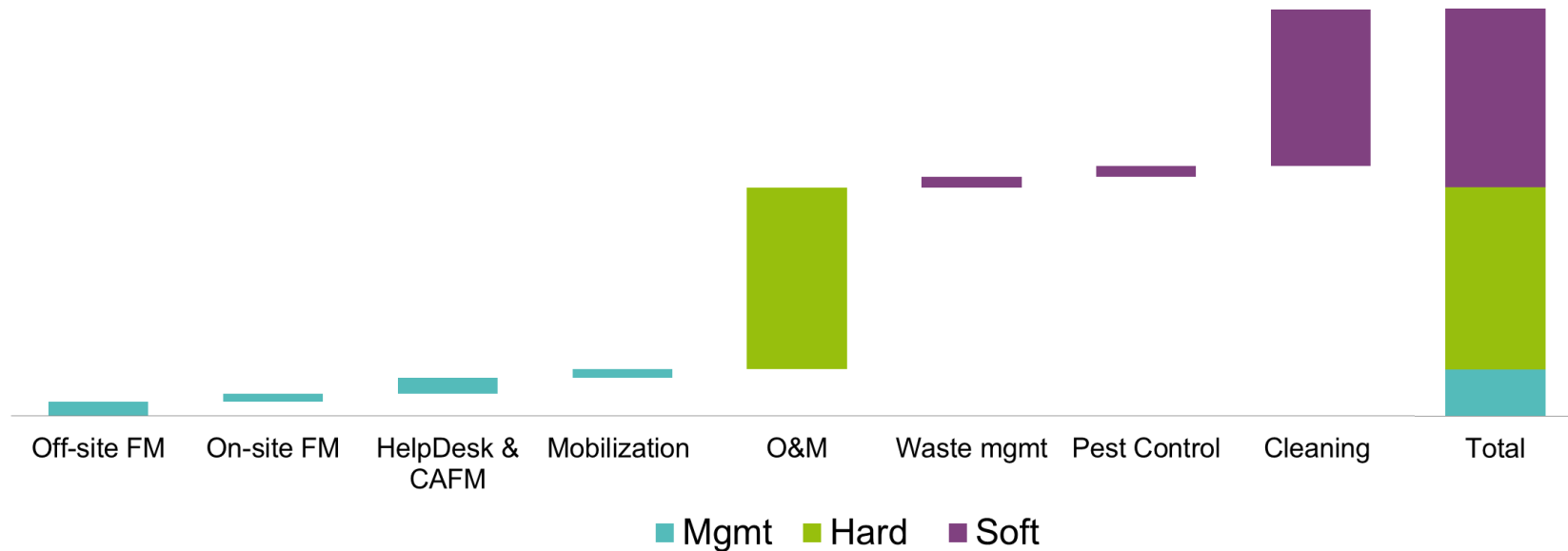
Energy Performance Contracts / ESCO



- Guaranteed energy savings (10% - ...) from the baseline
- EPC / ESCO contract structures (covering 100% of investments)
- Energy Monitoring and Sub-metering for transparency and billing
- Overall energy performance of the site (certification LEED, BREEAM, DGNB, HQE,...)

Building Services (project example)

... and what about energy?



Energy performance is the best way to obtain savings while guaranteeing quality!



Hubgrade

Our COMMITMENT for YOUR savings



Smart center to monitor, control and optimize the resource efficiency in real-time



**EPCs are
easy to
implement**
contractually and
operationally



**Guaranteed
and
transparent
results**

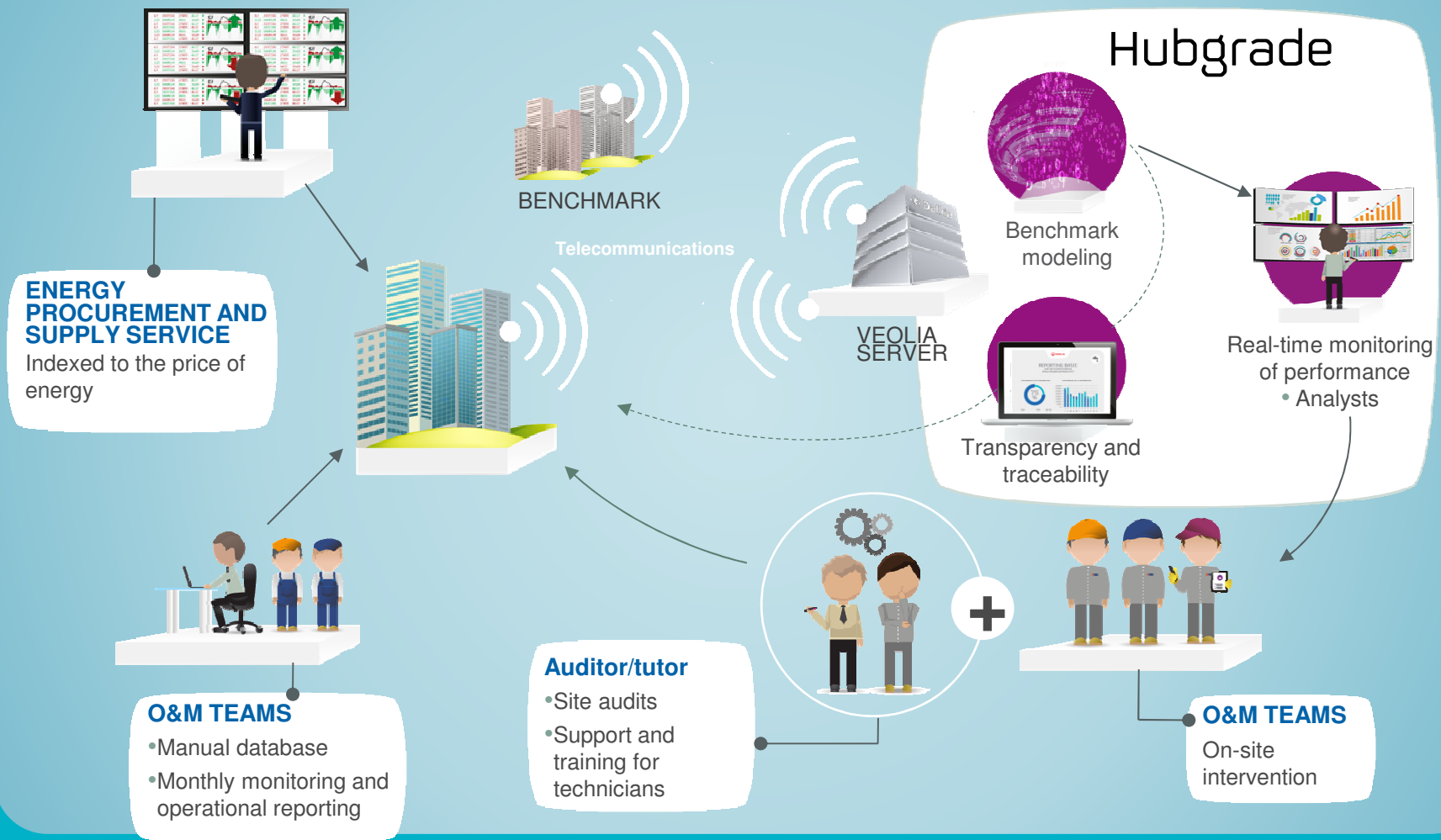


**More energy
savings**
(Light capex solutions
providing 10 % savings
on average)



**Risks are
managed by
integrating
intervention of
operational teams**

How to obtain additional resource savings?



Shared value creation and risk management



A CONTRACTUAL commitment
for « more » savings

- Start saving from the beginning of the contract
- Veolia assumes 100% of the overconsumption costs

Human resources and technology
to achieve our commitments

- Implement, measure and act in real-time on the field
- Secure the energy supply and adapt it to the changes in the consumption profile

Benefits of a partnership with Veolia

- Guaranteed energy availability and savings:
 - *Safety - Remote monitoring and optimized operations*
 - *Savings - Improving the efficiency of the facilities and lowering costs*
 - *Sustainability – System control & User behavioral changes*
- Risk management:
 - *Ability to finance the project (CAPEX)*
 - *Commitment on achieving results (Financial liabilities)*
- Proven experience:
 - *more than 3700 healthcare establishments (225 000 beds) trusted Veolia for managing their energy facilities*



Annexes

Case studies and References

Healthcare Sector-Bulgaria



Военномедицинска Академия



Национална
здравноосигурителна
каса

- VMA Varna & Plovdiv:
 - HVAC systems
- MVR Hospital:
 - HVAC systems and Freezers
- RZOK Plovdiv & Burgas
 - HVAC systems

2

Hospital ULB Erasme - Brussels, Belgium



ULB Erasme Facts

- Total number of beds: 1,000
- Infrastructure: 130,000 square meters
- 8 buildings, up to 15 floors
- Additional university and research buildings

Facilities

- Central heating plant generating heat for the whole site
- 2 cogeneration motors (2 x 1.4 MWe)
- 15 people onsite 24/24 since 2008



Scope of the contract: Heat supply

Duration: 15 years, until 2015

Hubgrade



THE CHALLENGE

- Reducing costs associated with the infrastructure (130,000 square meters)
- Ensuring visitors' comfort
- Ensuring reliable production from energy installations
- Improving performance of the thermal power station and heat distribution



OUR SOLUTION

- Complete renovation of the heating plant with installation of 2 cogeneration motors and converting from steam heating to hot water heating
- Guaranteeing the availability of energy facilities for more than 15 years
- Funding by a financial partner
- Management, maintenance and total guarantee of the 2 motors for a 15-year period
- Commitment concerning performance of the thermal power station
- Improving performance of the central heating plant and distribution (EPC)
- Permanence onsite: 7 a.m.- 6 p.m.
- Security service 24/7



CUSTOMER'S BENEFITS

- Guarantee of the 2 motors for a 15-year period
- **18% savings on gas and electricity bills**
- Management and guarantee of the number of green certificates
- Commitments: via the contract of sales of heat, Veolia guarantees the performance of the power station and therefore the savings generated thereby
- EPC: reliability and commitment



New Cross Hospital – Wolverhampton, UK



New Cross Hospital Facts

- Owner: The Royal Wolverhampton NHS Trust
- Number of beds: 700
- One of UK's first purpose built specialist heart facility (heart and lung center since 2004)

Facilities

- 2 MWe CHP based system that recovers the heat produced as a by-product of the electrical generation process. The heat is then fed back into the system to heat up water.
- Heat recovery boiler: 1,183kWt low temperature hot water and 1,500kg/hr waste



Scope of the contract: Secure Energy Supply

Duration: 15 years from 2014



THE CHALLENGE

- To meet the NHS's carbon reduction target of 26% by 2020, the Hospital were looking to reduce the overall carbon footprint and energy costs while guaranteeing stable supplies of heat, electricity and hot water to the patient care environments in the new facilities at New Cross Hospital



OUR SOLUTION

- Design and installation of a 2MWe CHP based system that incorporates a heat recovery boiler to ensure delivery of power, hot water and steam services to the hospital
- Installation of a SCADA system to monitor the plate heat exchangers
- Production of a flexible configuration to include the existing incinerator. The system uses the incinerator waste heat boiler as the lead boiler followed by the CHP and finally the conventional boilers to retain the energy savings from the incinerator before any are claimed from the CHP
- Comprehensive lighting scheme containing over 1,400 low energy fittings



CUSTOMER'S BENEFITS

- With the new CHP based energy system:
 - Maximization of energy security to support patient care
 - Carbon savings :1,500 tons of CO₂ / year
 - Reduced exposure to electricity price changes
- **Guaranteed cost saving of £960,000 per year**

The CHP plant covers approximately 40% of the hospital's entire heating and water requirements and 75% of its electrical demand.

5 Leighton Hospital – Crewe, UK



Leighton Hospital Facts

- Owner: Mid Cheshire NHS Trust
- Number of beds: 700
- Part of CHKS 40 Top Hospitals in UK (safety, clinical effectiveness, health outcomes, efficiency, patient experience and quality of care)

Facilities

- Existing 225kWe unit with an absorption chiller (trigeneration: electricity, heating and cooling)
- New 600kWe CHP

Local mobile service teams on a 24/7 basis



Scope of the contract: Secure Energy Supply; DBFOM

Duration: 10 + 5 years



THE CHALLENGE

- To meet the NHS's carbon reduction target of 26% by 2020, the Hospital were looking to reduce the overall carbon footprint and secure supplies of heat, electricity and hot water to the patient care environments at the Hospital. The Trust also wanted to make significant energy cost savings.



OUR SOLUTION

- 2002: design, installation and financing of a 600kWe CHP (through Eco2Synergy model, a CHP financing scheme which eliminates upfront capital costs)
- O&M: remote monitoring from Cogenco's Horsham head office.
- 2006: O&M of existing 225kWe unit on the site
 - 1st phase: adding a new control system onto the unit to link it to the Horsham helpdesk
 - 2nd phase: monitoring and service of this CHP under a separate agreement.
- 2013: replacement of Cogenco's initial CHP unit for a better performance: increased energy and carbon savings under a 10 year agreement



CUSTOMER'S BENEFITS

- Maximized energy security for the hospital
- Carbon savings :857 tons of CO2 per year

The contract delivers the energy security needed to support patient care, reduces exposure to electricity price changes and **delivers cost savings of around £165,000 per year.**

6 Locum - Stockholm, Sweden



Locum AB Facts

- One of Sweden's largest property managers
- Portfolio: 2.1 million square meters of buildings in the Stockholm region
- Owner: Stockholm City Council

Facilities

- 1.2 million square meters
- 3 large hospitals and several health centers
 - Karolinska University Hospital (450 000 m²)
 - Danderyds hospital (223 000 m²)
 - Sabbatsbergs hospital (83 000 m²)



Scope of the contract: O&M and property management



THE CHALLENGE

- Finding an operational contractor with the competence and experience to offer support for day-to-day activities and capable of managing the buildings and technical installations without affecting the tenants' activities to proceed with minimal interruptions and damage
- Manage the undertaking with a focus on energy rationalization
- Consideration for the environment must permeate the business



OUR SOLUTION

- Property management: ensure that buildings, premises and equipment provide maximum support for activities at these hospitals and health centers
- Energy consumption reduction
- Corrective maintenance of buildings
- Operation and maintenance: heating and ventilation installations, heating, ventilation, sanitation (HVAC), electrical power systems, backup power plants, sprinklers and fire alarms and elevators.



CUSTOMER'S BENEFITS

- Professional support organization for the daily medical operations in sensitive environments
- Energy optimization: **reduction of the hospitals' environmental impact and energy consumption: up to 7% for one hospital**
- Reliable property management: local organizations with good technical competence and quality awareness
- Reliability and improved safety in the hospital's energy management system: Veolia's operational surveillance service