Using ESCO Model to Renovate Public Buildings and Create Jobs in Croatia

Danijel Benčić, B.Sc.Mech.Eng
Board Member and Energy Efficiency Project Manager
Rudan d.o.o.
Market leader in water & energy saving projects in Croatia

- our dynamic performance has been driven by continuous investment in people, their knowledge and new technologies

- operates on Croatian market with headquarters in Žminj (Istria) and branch offices in Rijeka, Split and Zagreb

- We plan expansion on the regional market
First to use ESCO model in Croatia

- Founded
- 1994
- First ESCO project in Croatia – Uljanik shipyard
- 2000
- Approx. 50 employees and growing
- 2012
- Our headquarters building – 1st passive house commercial building in Croatia
- 2013
- 2014
- 2015
- 2016
- Energy efficiency renovation, General hospital, Karlovac
- Energy efficiency renovation, Križine hospital, Split
## Services we provide

### Water saving
- Aquacontrol – remote water monitoring system
- Water saving projects (ESCO model)
- Water leak detection

### Energy efficiency projects
- Energo Monitor – energy monitoring application compatible with ISO50001 standard

### Facility management
- Maintenance works
- Emergency interventions
- Hard facility management

### ESCO energy efficiency renovation
- Complete energy efficiency renovation of public buildings using the ESCO model
2014-2016 energy renovation subsidies in Croatia (w/o VAT)
Contracted / Finished projects

- 15,648 family houses
  - €88 mil

- 2,324 multiunit buildings
  - €37.2 mil

- 262 public buildings
  - €89.5 mil

- 80 commercial buildings
  - €6.1 mil

Total: €220.8 mil
Structural EU funds for EE projects in Croatia by 2020

- Family houses: €30 mil
- Multiunit buildings: €70 mil
- Public buildings: €211 mil
- Commercial buildings: €100 mil

Total €411 mil
Renovation of Clinical hospital in Split in 2015

- First deep energy efficiency renovation in Republic of Croatia using ESCO model

- Energy consumption before:
  - 14,002,906 kWh annually
  - 9,040,560 HRK annually (~ €1,200,000)

- Energy consumption after:
  - 6,100,000 kWh annually
  - 4,041,508 HRK annually (~ €540,000)

- Reduction of 56% in energy consumption

- Total investment of €10,4 mil:
  - 65% Rudan d.o.o.
  - 35% National Energy Efficiency Fund
General measures in deep building renovation

<table>
<thead>
<tr>
<th>Building / construction measures</th>
<th>Thermo-technical measures</th>
<th>Electrical measures</th>
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<tr>
<td>• Thermal, fire-safe and acoustic insulation of façade</td>
<td>• Change of primary energy source (transition from oil fuel to natural gas)</td>
<td>• LED technology</td>
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<td>• Windows and doors replacement</td>
<td>• Condensing boiler system technology</td>
<td>• Automatization</td>
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<td>• Thermal and hydro insulation of flat and pitched roofs</td>
<td>• Improvement in heat distribution, heat emission and control</td>
<td>• SCADA system</td>
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<td>• Air-conditioning technology</td>
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<td>• Centralized cooling system</td>
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<td>• Solar thermal technology for hot water</td>
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<td></td>
<td>• Renewable energy sources</td>
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<td>• Heat pumps for domestic hot water</td>
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Examples of public buildings renovation
2016 - GENERAL HOSPITAL KARLOVAC
Our next project

2017 - CLINICAL HOSPITAL CENTRE IN SPLIT – HOSPITAL FIRULE

• Most recent project of deep energy renovation worth € 22.3 mil
• Planned renovation start: November 2016
• Completion deadline: September 2017
ESCO model brings multiple benefits

- **Savings created immediately without additional debt of public institutions**
- **Better environmental performance**
- **Increased comfort in public buildings and better work environment for employees**
- **Boosts local economy – creates/maintains local jobs (production, construction, designing…)**
Challenges

- Hospital must be fully functional without interruption
- No possibility to relocate patients
- Patients well being is of the utmost importance
- Essential to synchronize the dynamics of all scheduled works

- Team of medical specialists formed in order to minimize the disturbance to the patients
What we have learned / challenges

Instead of each worker entering the patients’ room at different times and disturbing them on 4 occasions…
What we have learned / challenges

All 6 workers enter the patients’ room only once and at the same time, while patient is moved to another room.
Should ESCO model be accounted as public debt?

- ESCO renovation projects bring multiple benefits for the whole society
- but due to administrative decision
- it may also bring negative consequences for the society
Conclusion

• Croatia has recognized the importance and long-term benefits of energy efficiency renovation projects

• Public sector buildings benefit from in-depth experience and expertise of the ESCO companies to increase comfort and save on energy-related costs without additional investment

• Two projects presented either created or maintained local jobs for more than 500 people, involving more than 30 local companies per project

• Products used in the projects are of mainly Croatian and EU origin - ensuring jobs as well

• ESCO companies have recognized the advantage of the model
Thank you for your attention!

Danijel Benčić
danijel.bencic@rudan.com
Rudan d.o.o.
www.rudan.com