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RENOVATE EUROPE

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

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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

1994 – Founded

2000 – First ESCO project in Croatia – Uljanik shipyard

2012 – Our headquarters building – 1st passive house commercial building in Croatia

2013 – Approx. 50 employees and growing

2014

2015 – Energy efficiency renovation, Križine hospital, Split

2016 – Energy efficiency renovation, General hospital, Karlovac

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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

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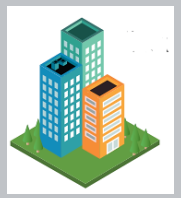
2014-2016 energy renovation subsidies in Croatia (w/o VAT)
Contracted / Finished projects

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

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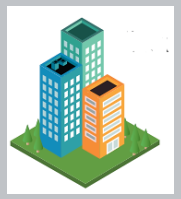
Structural EU funds for EE projects in Croatia by 2020

family houses
€ 30 mil



multiunit buildings
€ 70 mil

public buildings
€ 211 mil

commercial buildings
€100 mil

Total € 411 mil

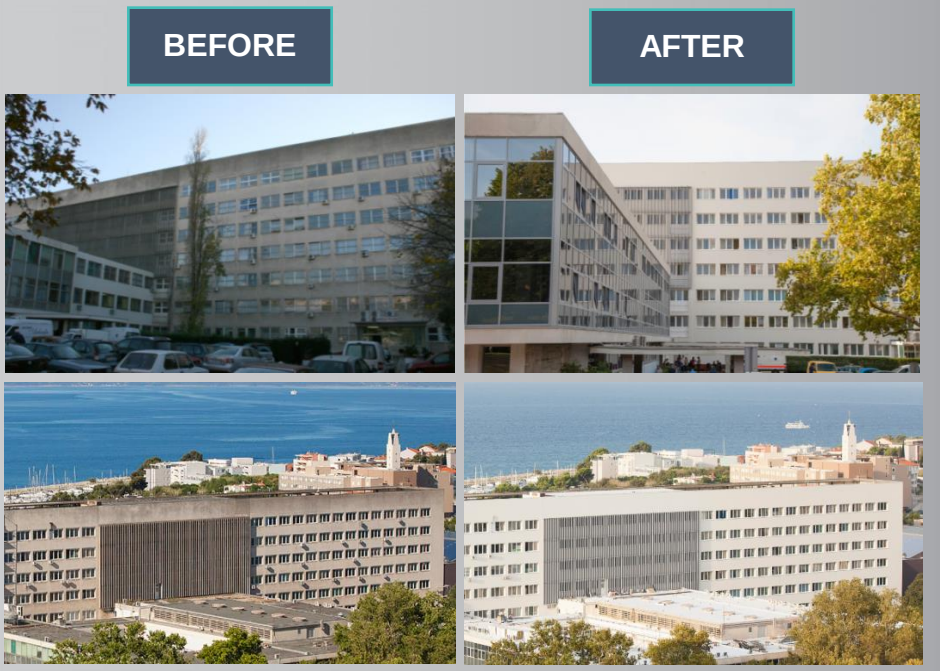
Renovation of Clinical hospital in Split in 2015

- 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

Building / construction measures

- Thermal, fire-safe and acoustic insulation of façade
- Windows and doors replacement
- Thermal and hydro insulation of flat and pitched roofs

Thermo-technical measures

- Change of primary energy source (transition from oil fuel to natural gas)
- Condensing boiler system technology
- Improvement in heat distribution, heat emission and control
- Air-conditioning technology
- Centralized cooling system
- Solar thermal technology for hot water
- Renewable energy sources
- Heat pumps for domestic hot water

Electrical measures

- LED technology
- Automatization
- SCADA system

Examples of public buildings renovation

2016 - GENERAL HOSPITAL KARLOVAC

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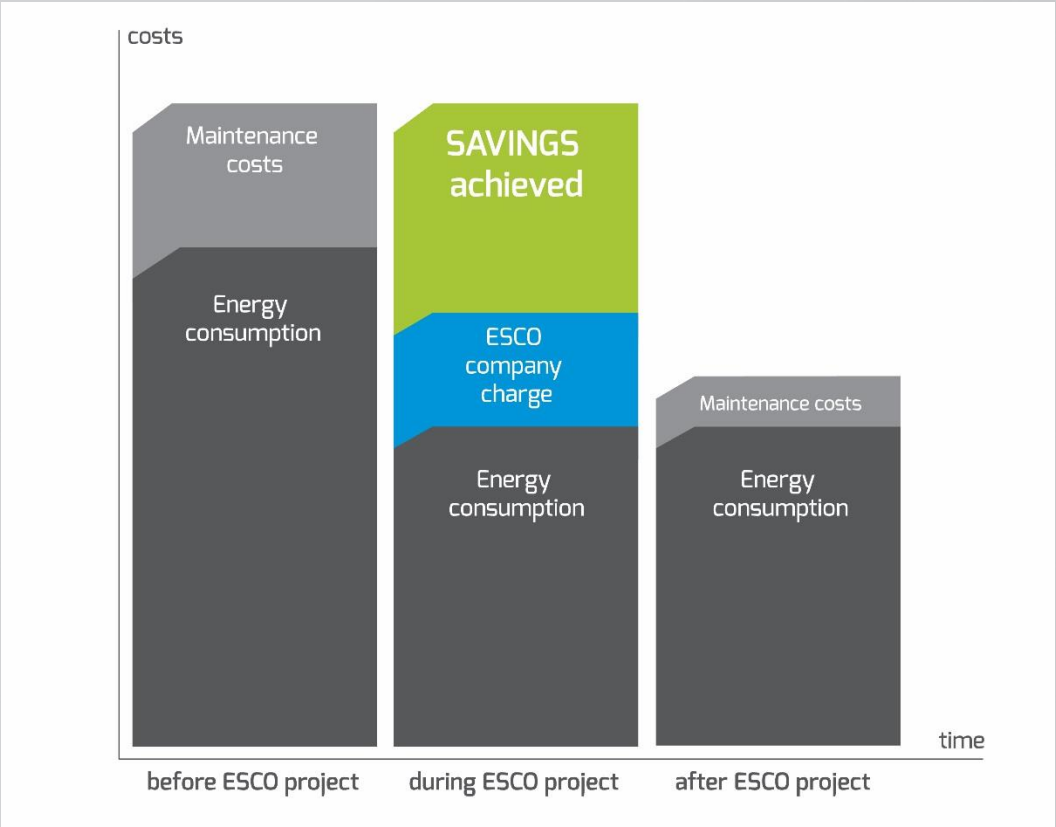
Our next project

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



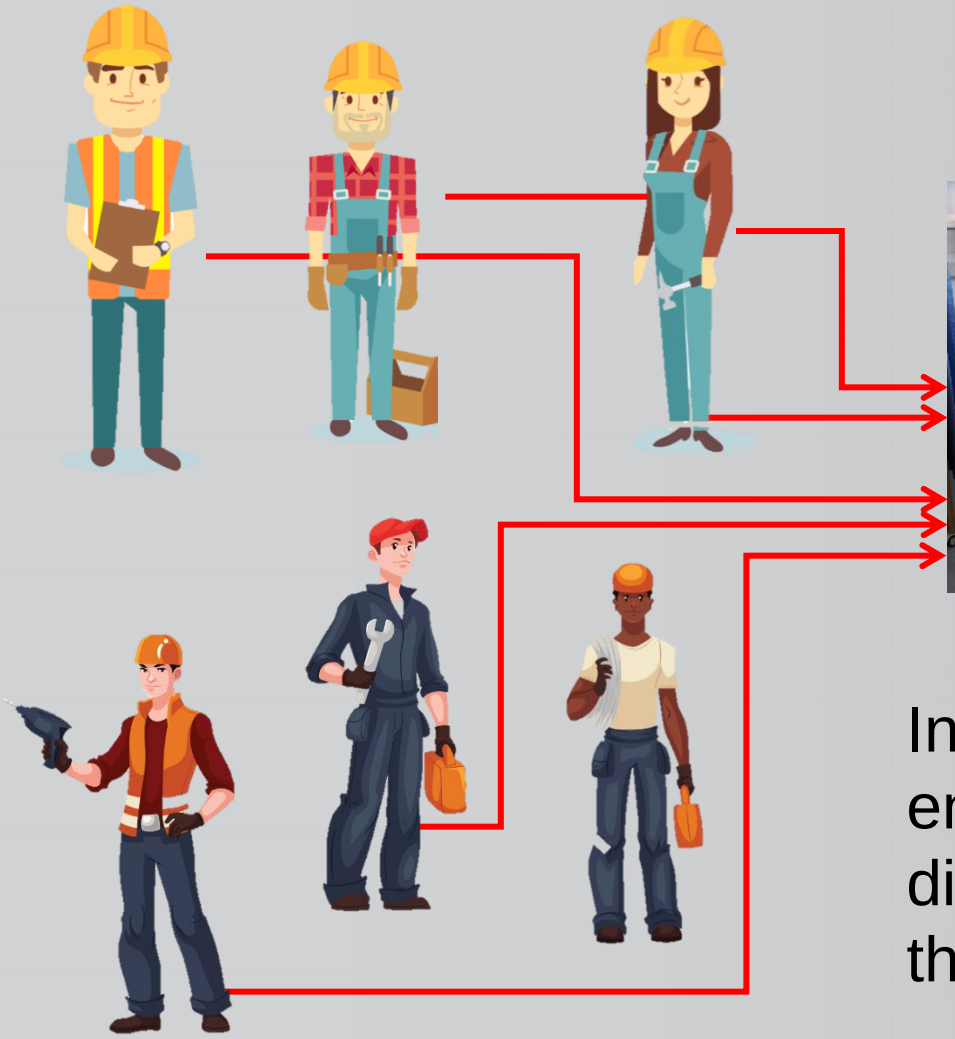
- WIN — Savings created immediately without additional debt of public institutions
- WIN — Better environmental performance
- WIN — Increased comfort in public buildings and better work environment for employees
- WIN — Boosts local economy – creates/maintains local jobs (production, construction, designing…)

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

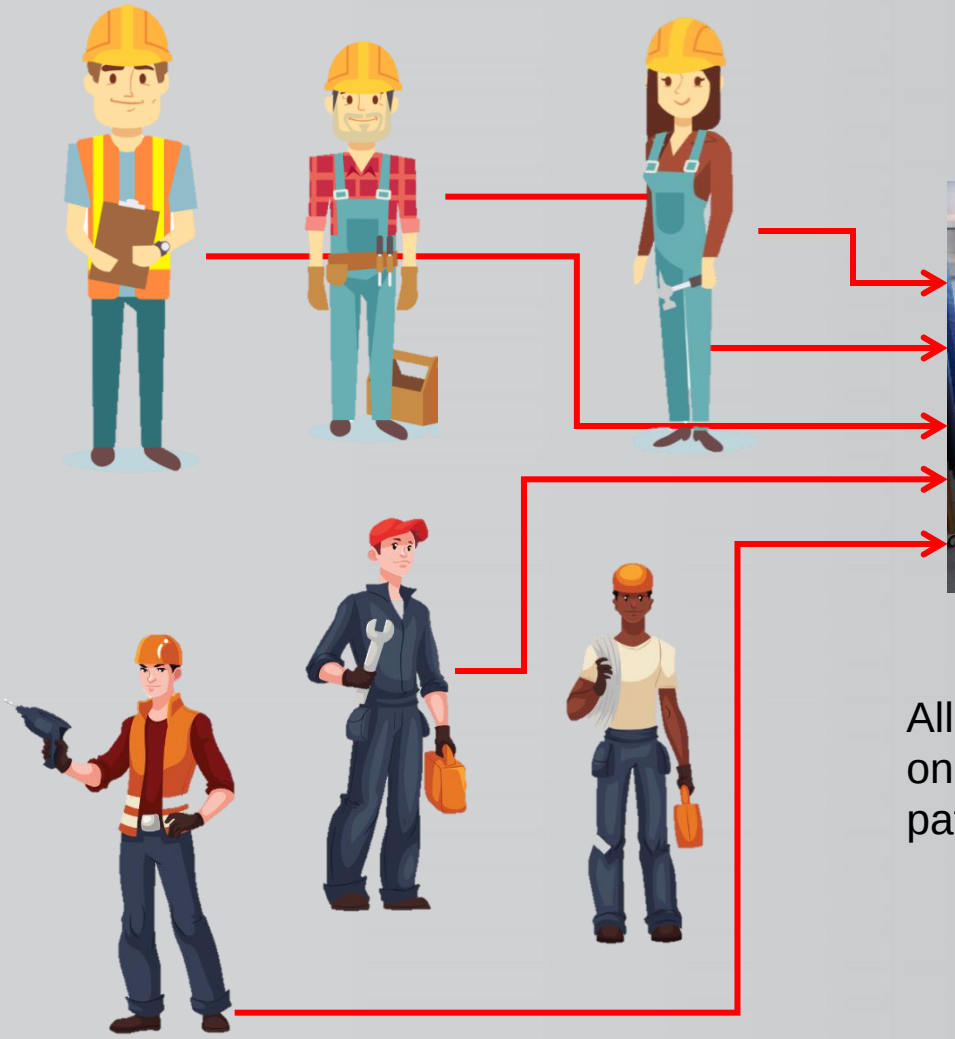
- team of medical specialists formed in order to minimize the disturbance to the patients

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

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Thank you for your attention!

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