





BEST PRACTICE IDENTIFIED

Section	Indicator of Content
1 Title	Municipal Indoor Pool Heating with Biomass in Medina Sidonia.
2 Theme	Heat production based on biomass pellet boilers in an indoor pool.
3 Objetives	To provide the municipal indoor pool with a heating system based on renewable energy (biomass), sustainable and environmentally friendly.
4 Location	Municipal Indoor Pool (Av. de Azocarrem, s/n. 11170 Medina Sidonia, Spain).
5 Detailed description	<p>Time-scale</p> <p>The biomass heating system was installed in approximately 2 months. It becomes operational in September 2009.</p> <p>Bodies involved/implementation</p> <ul style="list-style-type: none"> · Municipality of Medina Sidonia, promoter and owner of the indoor pool. · PRODEGEMSA - Promoción, Desarrollo y Gestión Municipal SA., a public company currently responsible for managing the municipal facility. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  Ayuntamiento de Medina Sidonia </div> <div style="text-align: center;">  prodegemsa <small>empresa municipal</small> </div> </div>
	<p>Process and detailed content of the practice</p> <p>Two 300kW biomass boilers OSBY P500 have been installed in the municipal indoor pool of Medina Sidonia. They can provide 114.500kWh per month to meet the following consumptions:</p> <ul style="list-style-type: none"> · Heating the indoor pool water. · Heating locker rooms, offices and common areas. · Sanitary hot water production. <p>The boilers are fed with wood pellets, with a monthly consumption of 23.368kg. The fuel is stored in an 88 m³ ground silo near the boiler, with two worm gears for fuel feeding.</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  Indoor pool </div> <div style="text-align: center;">  Triangular fuel silo </div> </div>

	<p>Legal framework Mainly, the laws and regulations concerning energy efficiency on buildings and indoor heating systems (e.g. the Thermal Installations in Buildings Regulations "RITE").</p> <p>Financial framework The total budget for planning and installing the biomass heating system was 345.272,39 €. The project had financial support from the Order of Incentives for Sustainable Energy Development of Andalusia.</p>
<p>6 Evaluation</p>	<p>Results With this indoor pool (and its heating biomass system) the municipality of Medina Sidonia has a new sustainable facility, and its citizen can enjoy the benefits of this public service throughout the year. The energy consumed by the indoor pool is supplied by a clean and renewable source (114.500kWh/month from pellets) and without GHG emissions (saving 69 tones of CO₂ emissions per month compared to a similar system fed with diesel). This contributes to achieve the emissions reduction targets establish in the Covenant of Majors. It's also a profitable activity because the fuel prices are relatively small.</p> <p>CO₂ Reduction As biomass is considered a "carbon-neutral" energy, the heating system installed in the indoor pool has 0 CO₂ emissions. Anyway, if the thermal demand of the facility would be met with a diesel heating system the CO₂ emissions would be around 69 tones/month.</p> <p>Energy Production The biomass boilers will produce 114.500kWh per month with a pellets consumption of 23.368 kg/month.</p>

	<p>Main Barriers and Threads</p> <p>After the installation, during the first months of operation, the pellet consumption was higher than expected (40kg/hour). The staff responsible for the heating system management decided to study it and propose several optimization measures (adjusting operation times, managing boilers starts and stops frequency, etc.). After this optimization the fuel consumption (and also operating cost) was significantly reduced (31 kg/hour).</p> <p style="text-align: center;">Incomes-Fuel Consumption per hour</p> <table border="1"> <thead> <tr> <th>Month</th> <th>Fuel (€)</th> <th>Incomes (€)</th> <th>%</th> </tr> </thead> <tbody> <tr> <td>March</td> <td>6,84</td> <td>31,00</td> <td>22%</td> </tr> <tr> <td>April</td> <td>6,84</td> <td>32,00</td> <td>21%</td> </tr> <tr> <td>May</td> <td>4,31</td> <td>31,06</td> <td>14%</td> </tr> <tr> <td>June</td> <td>4,31</td> <td>30,17</td> <td>14%</td> </tr> <tr> <td>October</td> <td>5,20</td> <td>47,16</td> <td>11%</td> </tr> <tr> <td>November</td> <td>5,20</td> <td>46,98</td> <td>11%</td> </tr> </tbody> </table>	Month	Fuel (€)	Incomes (€)	%	March	6,84	31,00	22%	April	6,84	32,00	21%	May	4,31	31,06	14%	June	4,31	30,17	14%	October	5,20	47,16	11%	November	5,20	46,98	11%
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<p>7 Lessons learnt</p>	<ul style="list-style-type: none"> · To install biomass heating systems in indoor pools is profitable, even for public local entities. · Once implemented it's necessary to optimize the operation of these facilities: adjusting operation times, managing boilers starts and stops frequency, etc. This optimization is very important to achieve higher energy and economical savings. · It's important to invest on good equipments and material, but also in well-trained professionals to manage the installations. 																												
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