



# Lumber Industry Case Study



## Opportunity:

**Location:** Europe - Latvia - Līvāni  
- Eko Nams, SIA

**Industry:** Scandinavian style log building manufacturer



**Energy Source:** Log home manufacturing produces significant amounts of wood chip waste.

**Challenge:** Tons of waste had to be shipped and tipping fees paid for disposal. Along with high electrical rates that include 7.5% tax/fee for excess consumption.

## Costs (representative):

Wood chips: (3 MWh/tonne<sup>i</sup>)  
Tipping rate: (60\$/ton<sup>ii</sup>)  
Shipping rate: (100\$/2ton load<sup>iii</sup>)  
Utility cost rate: (0.25\$/kWh<sup>iv</sup>)  
Utility purchase rate: (90€/MWh<sup>v</sup>)

## Solution:

The selected solution was to burn the wood chips in a biomass boiler to eliminate the transportation and tipping fees and use this heat to treat/process the raw lumber at the facility. Then the remaining heat is sent to produce electricity with 2 CETY CCIIIs. The majority of the power will be used internally to reduce the utility costs and the excess consumption fee. Additional power produced will be sold to the utility at wholesale green energy production rates.

Financial incentives identified in the Euro Fund provided 50% of project costs in the form of a grant. The rest of the project was funded internally. CCIIIs costs ~350,000\$ for this project.

The customer with their EPC chose and procured the biomass boiler and set up the pressurized hot water system that would treat the lumber and direct the flow between the treatment facility and the 2 CCII generators. CETY coordinated with the EPC in the design. The EPC built the plant, and we collaborated on commissioning the CCII units after the wood treatment portion of the project was completed. The CCIIIs were commissioned in September 2022.

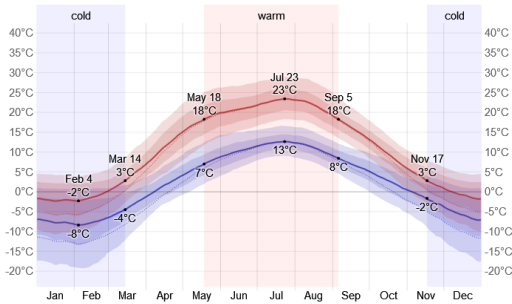


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## Performance:

In the first ~10 months, the units have run a combined 12,270 h and produced (1,227 MWh @ average of 100 kW) of electricity, directly consuming 409 tonnes of wood chips. This has been limited because the customer still awaits final utility approval to export power. They have operated through a full Latvian winter with temperature reached  $-20^{\circ}\text{C}^{\text{vi}}$ , and reduced the excessive power use fee.



With 2 units running full time for a year at 95% uptime, these numbers will increase to 16,640 hours and 1664 MWh @ and average of 100 kW and eliminate ~554 tonnes of wood chips.

<sup>i</sup> Energy per tonne of wood chips:

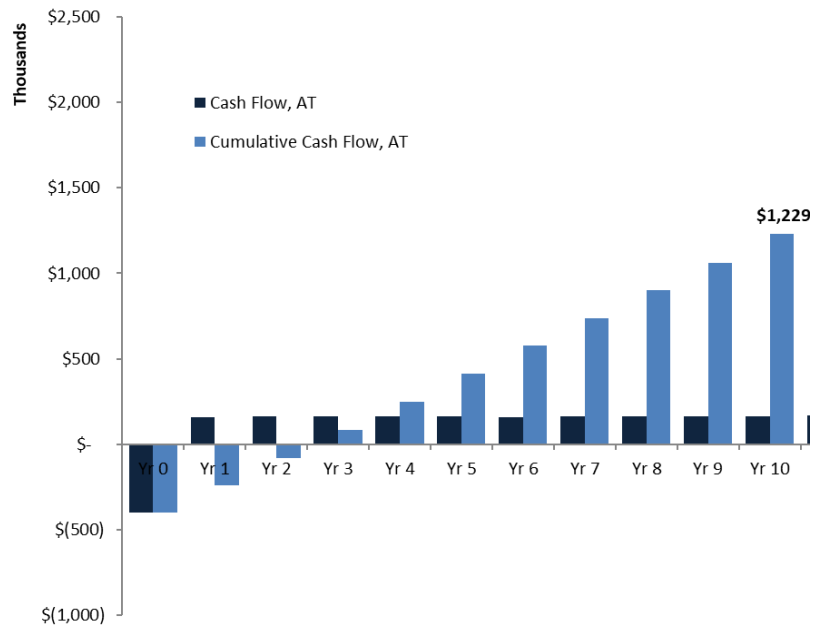
[https://www.engineeringtoolbox.com/bio-mass-energy-d\\_1183.html](https://www.engineeringtoolbox.com/bio-mass-energy-d_1183.html)

<sup>ii</sup> <https://www.cdrecycler.com/news/eref-release-study-on-msw-tip-fees/>

<sup>iii</sup> For 7.5 yards bobtail dump truck at 100\$/hour and 550 lbs / yard or 2 tons in one load and 1 hour roundtrip to landfill.

## Economics:

With basic loan inputs of 10% and 5 year term, the 50% install incentive, 400,000\$ install, 0.25\$/kWh electric rate, 95% operating rate, and 20% taxes, plus 200,000\$ additional costs for project completion, the 10 year financials of the project are estimated in the graph below.



This does not include the benefit of avoided transport and tipping fees on the wood chips which contribute an additional 240,000\$ and 200,000\$ per year in avoided expenses.

<https://proaggregate.com/pages/delivery-trucking>

<sup>iv</sup> 2021 rates. Rates increased in 2022 and then reduced in 2023.

<https://www.ceicdata.com/en/latvia/environmental-environmental-policy-taxes-and-transfers-oecd-member-annual/lv-industry-electricity-price-usd-per-kwh>

<sup>v</sup> After a 450€/MWh rate in fall of 2022.

<https://www.statista.com/statistics/1314542/latvia-monthly-wholesale-electricity-price/>

<sup>vi</sup> <https://weatherspark.com/y/94088/Average-Weather-in-L%C4%ABv%C4%81ni-Latvia-Year-Round>