

# Nordic Upstream for LSJH

---

PROJECT CODE: “6Aika: ILPO – A75909”

PROJECT MANAGER: Mikko Rajala

DATE OF REPORT: 26.11.2021

PERIOD COVERED: 1.4.-30.11.2021

PROJECTED DATE OF COMPLETION: 30.11.2021

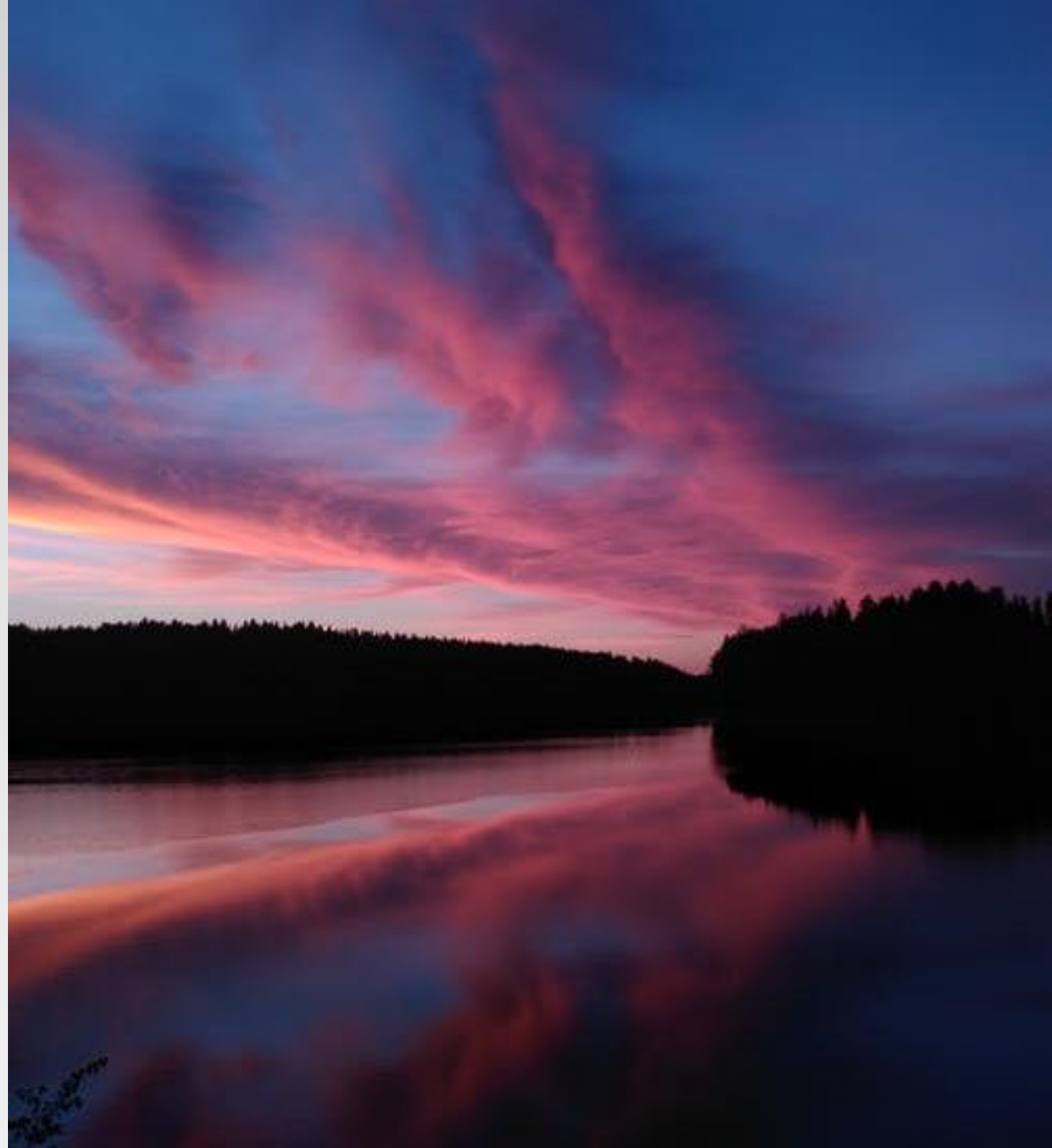
OVERALL PROJECT STATUS: Ready, Finished and products delivered 26.11.2021



# ONE TO SHARE

from  
Nordic Upstream Oy,  
Finland

No waste for the future generations





# Company profile

## Nordic Upstream Oy

Address: Inkereentie 566  
FIN – 24280 Salo

VAT number: FI28829814

Family company, international work experience

Office: Finland – in Salo

Facility: Finland – in Salo

Certificate



**AAA**<sup>®</sup>

Nordic Upstream Oy

28829814

LOCAL BUSINESS ID

368559982

DUNS® NUMBER

belongs to the highest class in the Rating Classification AAA®.

# Industry waste



Over 2 billion tonnes of waste are generated in the European Union every year, approximately half of which is produced by the construction industry (Ferguson et al, 1995).

[This Photo](#) by Unknown Author is licensed under [CC BY-SA-NC](#)

# Commercial and consumer waste

By 2030, we are expected as a whole to be discarding more than **134 million tonnes of textiles a year.**



[This Photo](#) by Unknown Author is licensed under [CC BY-SA-NC](#)

## SUMMARY

- Summary:
  - Project included testing of LSJH materials like textile and concrete for upcycling process.
  - Upcycling crushed concrete and recycled textile material were the key starting points for the project. Upcycling process in 2-D and 3-D forming and finding the right bio binders for the raw materials were the biggest challenges for the project.
  - Using right production techniques it was found that also 3-D could be done to the extreme.
- Project Schedule: 1.4.-30.11.2021

# What was done and how?

## • What was done?

- Products include 2 chairs, a table and a artwork - all made from old materials/left-overs/recycled materials
- **2 chairs**, from local recycling centre Ekotori, Turku
  - With textile matt (airflow, needle punched)
- **Table**, concrete top from LSJH materials, metal frames from upcycled material display units
  - Crushing of the materials down to 0-8 mm grain size
  - Welding existing displays into one single framework
- **Artwork**, textile-wood-recycled LSJH materials upcycled into artwork

## • How products were done?

- Material sourcing
  - Locally sourced in Turku area
  - LSJH, Ekotori, closed retail store business
  - Materials were crushed and made ready for pressing cycle and forming.
- Production process in pressing, forming, milling and welding
  - Done locally in Salo, Nordic Upstream factory and with local metal working partners
  - Forming was done following old designs and welding to fit a 600 x 600 mm table top
- Product tolerances
  - Were accepted bigger than ordinary production tolerances as the products are prototypes and artwork.

# Product / material pictures

- **Table**



- **Chair**

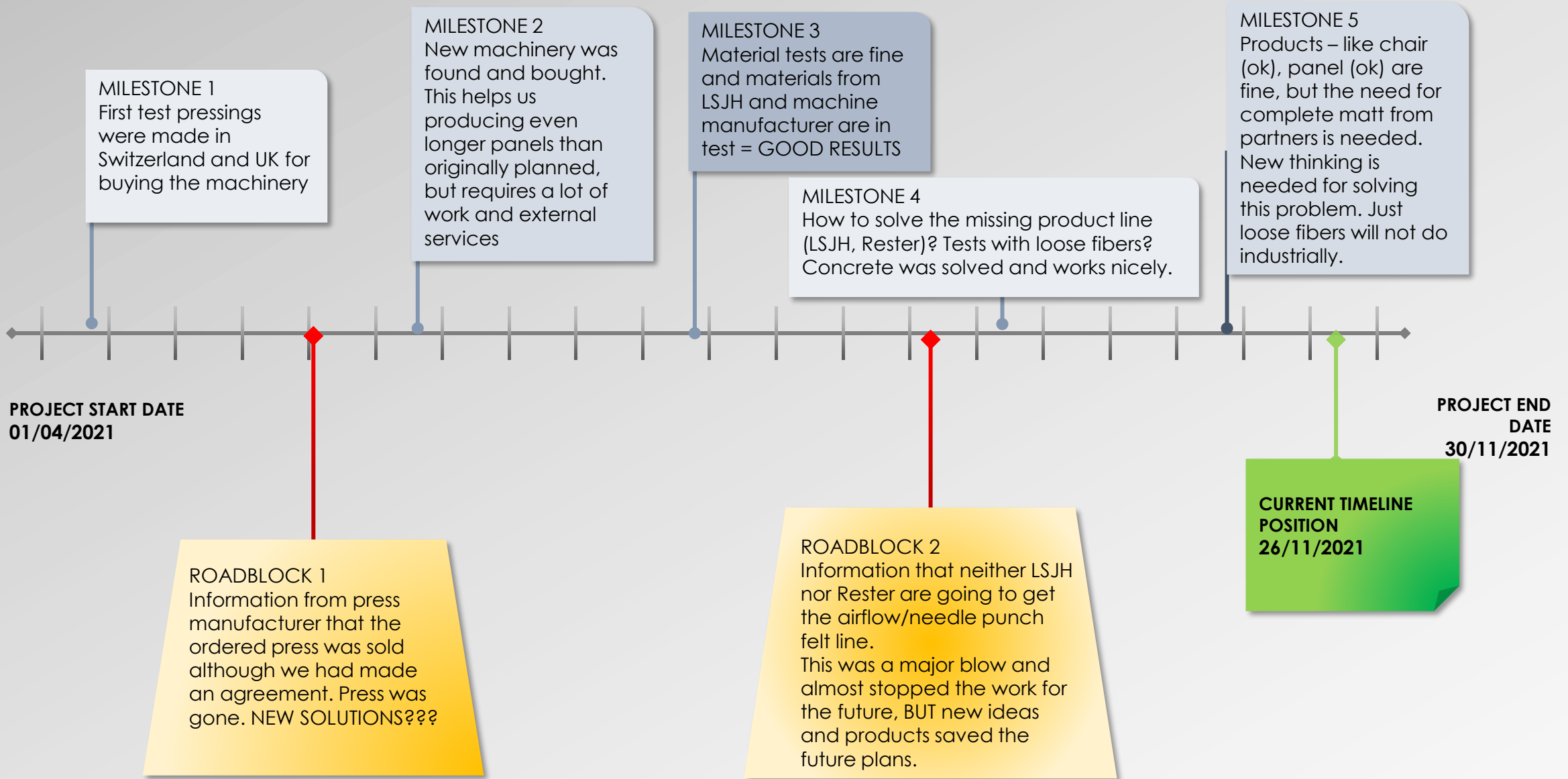


- **Artwork**



COMPONENT	STATUS	OWNER / TEAM	NOTES
<b>BUDGET</b>	<p>OVER Panel went over the budget and costs for machinery too</p> <p>UNDER Nothing – except table went under the budget</p>	Nordic Upstream Oy	Financially the project has gone over the budget as the need for testing has been so extensive due to variation in the materials in textile.
<b>RESOURCES</b>	<p>ROADBLOCK / OVERAGE Major problems with textiles</p> <p>POTENTIAL RISKS / DELAYS Some as we waited for materials to come from machine manufacturer</p>	Nordic Upstream Oy and LSJH and machine manufacturers	Quality in co-operation and material has been very good from LSJH. Rester has concentrated on their set-up and start of their own production.
<b>TIMELINE</b>	<p>ROADBLOCK / OVERAGE Material shortage - delay</p> <p>POTENTIAL RISKS / DELAYS Delay with some material</p>	Nordic Upstream Oy and sub-contractors and LSJH and machine manufacturer	On track to final launch date, <b>26.11.2021 ALL OK</b>
<b>SCOPE</b>	<p>ROADBLOCK / OVERAGE Major roadblock is the lack of needed material supply = matt</p> <p>POTENTIAL RISKS / DELAYS Risk for industrial production is big and must be taken care of somehow = team works on this</p>	Nordic Upstream Oy	Biggest problem is the supply of matt for panels. Industrial scale of production is not yet in Finland and much depends on LSJH and Rester. This is to be solved within 2022.

WEEK NO.	STATUS	DETAILS
<b>14 - 17</b>	START AND AGREEMENT	CO-WORKING SPACE AND MOVING
<b>18 - 21</b>	PROJECT MATERIALS	GATHERING MATERIALS AND TESTING SMALL SCALE
<b>22 - 25</b>	MOVING INTO NEW FACILITY	MACHINERY, WAREHOUSE AND MATERIALS MOVED TO NEW FACILITY, PREPARING FOR INDUSTRIAL TESTING
<b>26 - 30</b>	SUMMER VACATION	SOME PREPARATORY WORK AND LABORATORY TESTING WITH CONCRETE AND TEXTILES / VACATION
<b>31 - 34</b>	INDUSTRIAL SET-UP AND LAB TESTING	PRESSES ARRIVE AND INDUSTRIAL TESTS START, FINAL LAB TESTS ARE DONE / VACATION PARTLY
<b>35 - 39</b>	INTENSE TESTING	INDUSTRIAL TESTING AND BIO BINDER TESTS AT EXTERNAL LAB
<b>40 - 43</b>	RESULTS AND PROTOTYPES	RESULTS FROM THE LAB ARRIVE AND TESTING INDUSTRIALLY, MAKING OF PROTOTYPES
<b>44 - 47/48</b>	FINAL PRODUCTS AND CONCLUSIONS	FINAL COMPOSITION FOUND, RECIPE FOR PRODUCTS CLARIFIED, CHANGE OF BIO BINDER AND IMPROVING UPCYCLING



# CARBON FOOTPRINT CO2 analysis













Analysis was done with information from the LUT University.

Presumed starting point is that a raw material coefficient taken into upcycling has a negative impact on CO2 emissions.

This needs more detailed work and academic study. Selected international Universities have been contacted and work has started with these.

Transportation costs are now being checked and this preliminary table will be changed.

CARBON FOOTPRINT - product A							
Nordic Upstream product A							
Emission type	Quantity	Unit	Emission factor	Unit	Carbon Footprint	Unit	
Electricity	67,2	MWh	141	kg CO2e/MWh	9475	kg CO2e	
Concrete waste	100000	kg	-0,668	kg CO2e/kg	-66800	kg CO2e	50 %
Textile waste	15000	kg	-0,23	kg CO2e/kg	-3450	kg CO2e	7,5 %
Wood waste	25000	kg	-0,75	kg CO2e/kg	-18750	kg CO2e	12,5 %
Bio-binder	50000	kg	0,600	kg CO2e/kg	30020	kg CO2e	25,0 %
Bio-hardener	10000	kg	1,6	kg CO2e/kg	16000	kg CO2e	5,0 %
Oil	0	kg	5	kg CO2e/kg	0	kg CO2e	
Lacquer	0	kg	19	kg CO2e/kg	0	kg CO2e	
Total per year					-33505	kg CO2e	

PROJECT REPORT CARD	BUDGET	RESOURCES	RISKS	QUALITY
<b>PROJECT / CHAIR</b>				
<b>PROJECT / PANEL</b>				
<b>PROJECT / TABLE (as extra)</b>				

# Conclusions and next steps

- What is needed?
  - Secure material safety
  - Textile matt (airflow, needle punched)
  - Crushing of the materials down to 0-8 mm grain size
- What has to be developed?
  - Traceability
  - Production processes
  - Tolerances
- Next steps
  - Coding and traceability
  - Production process in the forming
  - Production process in the milling
  - Product tolerances
- Absolute need
  - Textile matt - airflow and/or needle punched felt like material is needed
  - If no traceability, then certification

# Recycled concrete and plaster board

