

# “Environmental technology verification (ETV)”

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<b>Author</b>	<b>Dominik Jasinski</b>
<b>Co Author</b>	<b>Markku Vilkki, Emilie Bossanne</b>
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## **Executive Summary**

This deliverable is an outcome of Subtask 7.2.3, the aim of which is to validate the environmental performance and claims of ECOBULK solutions through the Environmental Technology Verification (ETV) scheme. The objective of ETV is to promote environmental technologies by providing technology developers, manufacturers and investors access to third-party validation of the performance of innovative environmental technologies.

This deliverable will be provided in two versions, the initial version at M32 and final version by M45. The initial version introduces the ETV tool and verification process, Accredited ETV Verification Bodies and the process of selecting them for ECOBULK, as well as the main characteristics of the ECOBULK technology being proposed for ETV. The verification process, including the eligibility assessment, Verification Protocol, the Statement of Verification and Verification Report will be presented in the next version of this deliverable in M45.

Technology proposed for ETV is Conenor's Agglomeration process for manufacturing raw materials from recycled and waste feedstock materials; and extruded single- and multilayer products (e.g. planks and panels) thereof for the construction industry. The technology has been proposed for ETV due to its ability of recycling complex polymeric waste e.g. fibre reinforced composites (GFRP) and construction & demolition waste (wood, wool insulations) by manufacturing into new circular raw materials to improve the materials efficiency, as well as their sustainability. It is likely that other technologies and solution developed in ECOBULK will be also subject to ETV. This will depend on the preliminary results coming from the Life Cycle Assessment studies in WP7, as well as the willingness of technology owners to participate in the EU ETV scheme.

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## **1. Introduction**

This deliverable is an outcome of Subtask 7.2.3, the aim of which is to validate the environmental performance and claims of ECOBULK solutions through the Environmental Technology Verification (ETV) scheme. The objective of ETV is to promote environmental technologies by providing technology developers, manufacturers and investors access to third-party validation of the performance of innovative environmental technologies. This helps manufacturers prove the reliability of their claims and helps technology purchasers identify innovations that suit their needs. The expected impact on technology markets is acceleration of the acceptance and diffusion of innovative environmental technologies. This verification must be performed by an independent ETV tester to ensure reliability to the final user and that the technologies developed will effectively operate under the defined criteria and also facilitates the use of these new technologies among the European level.<sup>1</sup>

This deliverable will be provided in two versions, the initial version at M32 and final version by M45. The initial version will include: an introduction to the ETV tool and verification process, the presentation of the technology that will be subject of the assessment and presentation of the selection process of the company in charge of the verification. The final version (due in M45) will include results of the eligibility assessment, verification Protocol, statement of verification report and final conclusions.

## **2. Introduction to Environmental Technology Verification (ETV) tool**

The problem of innovative technologies providing solutions to environmental problems can face difficulties in penetrating the market due to lack of independent and credible evidence of its advantages. On the other hand, technology purchasers or investors committed to finding the best solution for their situation are often faced with non-comparable, incomplete or non-trustworthy performance information when assessing the available choices on the market.<sup>2</sup>

The concept of the Environmental Technology Verification programme is to offer a verification procedure to cutting edge environmental technologies that may otherwise find it difficult to establish their environmental added value. The verification procedure allows for an independent assessment and validation of the manufacturer's claims on the performance and environmental benefits of their technology. The information produced by the verification is public and can be used to compare performance parameters and therefore becomes an extremely useful tool to convince third-parties of

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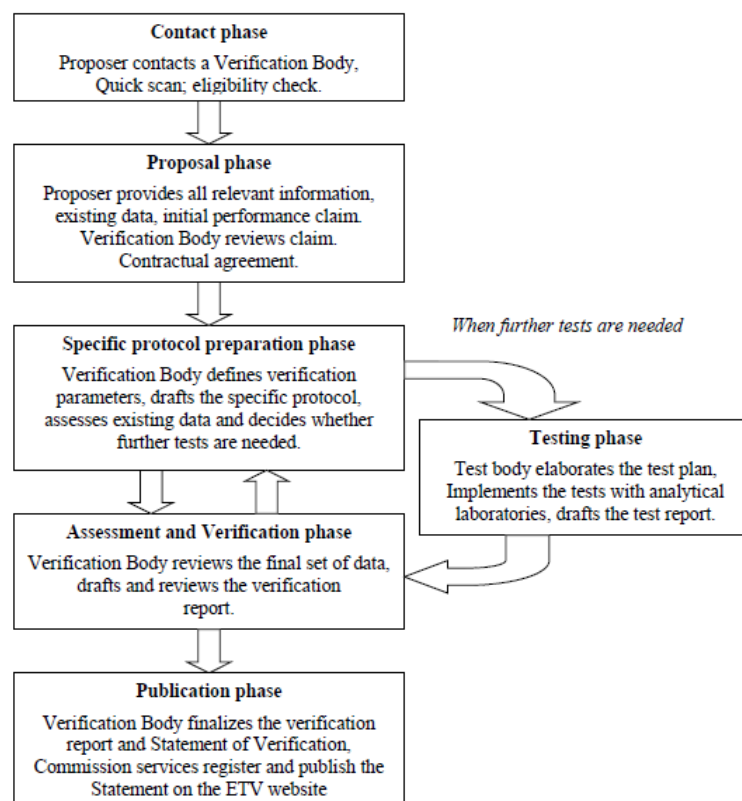
<sup>1</sup> European Commission, 2018. Environmental Technology Verification pilot programme – Version 1.3, available at: [https://ec.europa.eu/environment/ecoap/etv/publications\\_en](https://ec.europa.eu/environment/ecoap/etv/publications_en)

<sup>2</sup> [https://ec.europa.eu/environment/ecoap/etv/about-etv\\_en](https://ec.europa.eu/environment/ecoap/etv/about-etv_en)

the merits of a technology, potentially enhancing its market value and acceptance.

ETV is neither a label nor a certification scheme; it ensures that the claims are as structured and complete as possible so as to present a clear assessment of the entire technology's potential and value, but it does not evaluate the technology's performance against standard or pre-defined criteria. The information provided, in the form of a Statement of Verification, gives the possibility for direct and objective comparison between different technologies reducing the risk on adopting new technologies and encouraging informed and sound investments. ETV results could be used to prove compliance with any relevant legislation, to underpin a bid in public tendering, to convince investors or customers of the reliability of performance claims and to avoid having to repeat demonstrations for different users.

The verification process incorporates the key procedures of the ETV provided in Clause 5 of ISO 14034 and follows the general principles and requirements provided in Clause 4 of ISO 14034. The process itself is divided in a few (sequential) steps or phases, which is shown in Figure 1.



**Figure 1** Steps of ETV verification procedure<sup>3</sup>

<sup>3</sup> European Commission, 2014. EU Environmental Technology Verification pilot programme Version 1.1 – July 7th, 2014 General Verification Protocol, available at: [https://ec.europa.eu/environment/ecoap/etv/publications\\_en](https://ec.europa.eu/environment/ecoap/etv/publications_en)

**Contact phase:** The starting point for verification is a contact between the proposer and a Verification Body. Before sending a full proposal for verification, the proposer first provides a quick scan document outlining the main characteristics of the technology to be verified, following the template provided in Appendix 3 in the European Commission guiding document<sup>4</sup>. The aim of the quick scan is to enable the Verification Body to make an initial assessment of the eligibility of the technology for verification under EU ETV Pilot Programme and to give an early indication of the complexity and potential range of costs of a full verification. Where appropriate, the Verification Body provides advice on the drafting and completeness of the quick scan.

**Proposal phase:** After the contact phase, if the technology is potentially eligible and if the proposer decides to perform the verification, the second step is the proposal phase. The proposer provides the information needed by the Verification Body to conclude a verification contract and, under the following step, draft the specific verification protocol. The proposer submits a proposal for verification to the Verification Body, following the template provided in Appendix 4 in the European Commission guiding document<sup>4</sup>. At this stage, if the proposer decides to proceed, the Verification Body provides a detailed cost estimate for the verification procedure (excluding tests) together with a list of potential tests and/or analyses to be performed

**Specific verification protocol phase:** Upon successful completion of the contact phase and proposal phase the next steps in the process are related to the establishment of the specific verification protocol. The specific verification protocol explains how the verification is to be conducted, including a definition of the parameters covered by the verification and all relevant requirements on tests and test data (e.g. test method selection, test design, test data quality, test data assessment, etc.).

**Testing including test plan:** After completion of the specific verification protocol preparation phase and if additional tests are needed, the testing phase is entered into. The testing phase corresponds to and complements ISO 14034, Section 5.4.3 'Generation of additional test data'. Steps to be undertaken as part of the testing phase are: test site selection, test plan, testing and test report.

**Assessment of all data and verification of performance:** Upon completion of the testing phase and the collection of all relevant data, the verification body proceeds with the assessment and verification phase. The assessment and verification phase corresponds to and complements ISO 14034, Section 5.4.4 'Confirmation of performance'. This consists of several steps: test report review, conclusion of the test system assessment; assessment of all test data and verification.

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<sup>4</sup> European Commission, 2018. Environmental Technology Verification pilot programme – Version 1.3, available at: [https://ec.europa.eu/environment/ecoap/etv/publications\\_en](https://ec.europa.eu/environment/ecoap/etv/publications_en)

**Reporting and publication phase:** Based on the outcome of the assessment of test data and verification, and provided that the verification procedure is not interrupted by the proposer or the Verification Body, the next phase includes drafting the Verification report, drafting the Statement of Verification and publication of the Statement of Verification.

### 3. Selection of verification body for ECOBULK project

A Verification Body is an organisation accredited as fulfilling the requirements of ISO 17020 to perform verifications under the EU ETV Pilot Programme and complying to the requirements specified in the General Verification Protocol document. Each Verification Body is accredited for at least one subset of the specific technological areas included in the ETV pilot programme: "Water Treatment and Monitoring", "Energy Technologies" or "Materials, Waste and Resources". The list of accredited verification bodies is in Table 1.

**Table 1** Accredited verification bodies for the ETV programme

Title	Status	Accreditation Scope	Contact
<a href="#">BRE Global (GB)</a>	<b>Accredited</b> by The United Kingdom Accreditation Service (UKAS)	<ul style="list-style-type: none"> <li>Materials, Waste &amp; Resources</li> <li>Energy Technologies</li> </ul>	John Holden <a href="mailto:etv@bregroup.com">etv@bregroup.com</a>
<a href="#">Certiquality (IT)</a>	<b>Accredited</b> by Accredia - Italian Accreditation Body	<ul style="list-style-type: none"> <li>Energy Technologies</li> <li>Materials, Waste &amp; Resources</li> <li>Water Treatment &amp; Monitoring</li> </ul>	Sabrina Melandri <a href="mailto:S.Melandri@certiquality.it">S.Melandri@certiquality.it</a>
<a href="#">CSTB (FR)</a>	<b>Accredited</b> by French Accreditation Committee (COFRAC) on 15/03/2018	<ul style="list-style-type: none"> <li>Energy Technologies</li> <li>Water Treatment &amp; Monitoring</li> </ul>	NGUYEN Coralie <a href="mailto:etv@cstb.fr">etv@cstb.fr</a>
<a href="#">Environmental Technology Verification Body - Institute for Ecology of Industrial Areas (PL)</a>	<b>Accredited</b> by Polish Centre for Accreditation (PCA)	<ul style="list-style-type: none"> <li>Water Treatment &amp; Monitoring</li> </ul>	Izabela Ratman - Kłosińska <a href="mailto:i.ratman-klosinska@ietu.pl">i.ratman-klosinska@ietu.pl</a>
<a href="#">ETA-Danmark (DK)</a>	<b>Accredited</b> by DANAK - The Danish Accreditation and Metrology Fund	<ul style="list-style-type: none"> <li>Energy Technologies</li> <li>Materials, Waste &amp; Resources</li> <li>Water Treatment &amp; Monitoring</li> </ul>	Thomas Bruun <a href="mailto:tb@etadanmark.dk">tb@etadanmark.dk</a>
<a href="#">EUROFINS EXPERT SERVICES OY (formerly VTT) (FI)</a>	<b>Accredited</b> by FINAS - Finnish Accreditation Service	<ul style="list-style-type: none"> <li>Energy Technologies</li> <li>Materials, Waste &amp; Resources</li> <li>Water Treatment &amp; Monitoring</li> </ul>	Matti Lanu <a href="mailto:MattiLanu@eurofins.fi">MattiLanu@eurofins.fi</a>



## Circular Approach for Eco-Composite Bulky Product

**GA NUMBER: 730456**

**Start: 01/06/2017 - End: 31/05/2021**



<p><u>Institute of Environmental Protection - National Research Institute (IOS-PIB) (PL)</u></p>	<p><b>Accredited</b> by Polish Centre for Accreditation (PCA)</p>	<ul style="list-style-type: none"> <li>• Production of heat and power from renewable sources of energy: wind, hydro, geothermal, biomass, solar, biogas</li> <li>• Energy efficiency technologies: micro-turbines, hydrogen and fuel cells, heat pumps, combined heat and power, logistics, storage and recovery of energy</li> <li>• Recycling of batteries, accumulators and chemicals</li> <li>• Recycling of industrial by-products and waste into secondary materials</li> <li>• Reuse of energy from waste: fuel from waste, combustion technologies</li> <li>• Recycling of construction waste into building materials</li> <li>• Separation or sorting techniques for solid waste, materials recovery</li> </ul>	<p>Bartosz Malowaniec  <a href="mailto:bartosz.malowaniec@ios.edu.pl">bartosz.malowaniec@ios.edu.pl</a>  <a href="mailto:etv@ios.edu.pl">etv@ios.edu.pl</a></p>
<p><u>Institute of Technology and Life Sciences (ITP) (PL)</u></p>	<p><b>Accredited</b> by Polish Centre for Accreditation (PCA)</p>	<ul style="list-style-type: none"> <li>• Products made of biomass</li> <li>• Recycling of industrial by-products and waste into secondary materials</li> <li>• Separation or sorting techniques for solid waste, materials recovery</li> <li>• Recycling of construction waste into building materials</li> <li>• Production of heat and power from renewable sources of energy: wind (wind turbines), hydro (power plants and turbines), geothermal (heat pumps, ground heat exchangers, heat recovery unit), biomass, solar (collectors, accumulators, photovoltaic cells)</li> </ul>	<p>Agnieszka Wawrzyniak  <a href="mailto:a.wawrzyniak@itp.edu.pl">a.wawrzyniak@itp.edu.pl</a></p>
<p><u>PIMOT (PL)</u></p>	<p><b>Accredited</b> by Polish Centre for Accreditation (PCA)</p>	<ul style="list-style-type: none"> <li>• Materials, waste and resources: Products made from biomass (bioplastics, biofuels)</li> <li>• Energy technologies: Production of electricity and heat from renewable sources (biomass)</li> <li>• Energy technologies: The use of energy from waste (Fuel 3rd generation)</li> </ul>	<p>Roman Nadratowski  <a href="mailto:r.nadratowski@pimot.eu">r.nadratowski@pimot.eu</a></p>
<p><u>RESCOLL (FR)</u></p>	<p><b>Accredited</b> by French Accreditation Committee (COFRAC)</p>	<ul style="list-style-type: none"> <li>• Energy Technologies</li> <li>• Materials, Waste &amp; Resources</li> <li>• Water Treatment &amp; Monitoring</li> </ul>	<p>Sandrine Ausset  <a href="mailto:sandrine.ausset@rescoll.fr">sandrine.ausset@rescoll.fr</a>  <a href="mailto:etv@rescoll.eu">etv@rescoll.eu</a></p>

<a href="#"><u>RINA Services (IT)</u></a>	<b>Accredited</b> by <i>Accredia - Italian Accreditation Body</i>	<ul style="list-style-type: none"> <li>• Energy Technologies</li> <li>• Materials, Waste &amp; Resources</li> <li>• Water Treatment &amp; Monitoring</li> </ul>	Giovanni D'Angelo <a href="mailto:giovanni.dangelo@rina.org">giovanni.dangelo@rina.org</a> Laura Severino <a href="mailto:laura.severino@rina.org">laura.severino@rina.org</a>
<a href="#"><u>The Czech Environment Management Center (CEMC) (CZ)</u></a>	<b>Accredited</b> by <i>Czech Accreditation Institute (CAI)</i>	<ul style="list-style-type: none"> <li>• Materials, Waste &amp; Resources</li> <li>• Water Treatment &amp; Monitoring</li> </ul>	Vladimír Študent <a href="mailto:studentv@cemc.cz">studentv@cemc.cz</a>
<a href="#"><u>French National Laboratory for Metrology and Testing (LNE) (Accreditation expired) (FR)</u></a>		<ul style="list-style-type: none"> <li>• Energy Technologies</li> <li>• Materials, Waste &amp; Resources</li> <li>• Water Treatment &amp; Monitoring</li> </ul>	.. <a href="mailto:etv@lne.fr">etv@lne.fr</a>
<a href="#"><u>National Physical Laboratory (NPL) (Accreditation expired) (GB)</u></a>		<ul style="list-style-type: none"> <li>• Energy Technologies</li> </ul>	.. <a href="mailto:etv@npl.co.uk">etv@npl.co.uk</a>

Considering that the Verification Body cannot be part of the ECOBULK consortium, this task has been foreseen for subcontracting in the DoA. Following the rules of implementation of action tasks by subcontractors (see Art 13 of the Horizon 2020 Annotated Model Grant Agreement<sup>5</sup>), the beneficiaries must award the subcontracts ensuring the best value for money or, if appropriate, the lowest price. In doing so, they must avoid any conflict of interests.

No specific quality criteria have been defined for the selection of Verification Body; therefore, the subcontract will be awarded to the company that meets the conditions and quotes the lowest price. Three companies in the area of "Materials, Waste and Resources" were contacted (RINA Services, EUROFINS EXPERT SERVICES OY, RESCOLL) to initiate the process. At the time of completing this deliverable no decision has been made yet about the subcontracted company for ETV yet. Quotes from all three companies were still pending. The appointed Verification Body will be presented in the next version of this Deliverable in M45.

#### **4. ECOBULK technology selected for ETV**

Conenor, with the cooperation with Virol (wind turbine blade recycling company), has developed a new composite material made of wind turbine blade Glass Fibre Reinforced Polymer (GFRP) waste. This is a first time ever when GFRP-waste is being recycled and used as reinforcing material fraction in manufacturing circular thermoplastic composites. Complex polymeric waste, such as fibre reinforced composites (GFRP) and construction &

<sup>5</sup> European Commission, 2018. H2020 Programme AGA – Annotated Model Grant Agreement – Version 5.1



demolition waste (wood, wool insulations) are first shredded down mechanically into smaller particle and thereafter used in Conenor's invented and patent pending agglomeration technique into new circular raw materials together with recycled thermoplastics PE and PP (see Figure 2 for agglomerated material formulations).



**Figure 2** Agglomerated material formulations in plastic bags

The developed material is used in the production of multi-extrusion boards, panels and decks (see Figure 3 for example), which offer an alternative to wooden planks and pillars in outdoor use, with the core layer containing GFRP waste and the surface layer being primary scrap and recycled material (e.g. recycled HDPE- or PP-plastic from consumer packaging). This new weather resistant composite material is new with no market uptake as so far; however, it's performance will be tested in ECOBULK in various outdoor furniture and structural construction applications, examples of which are presented in Figure 4.



**Figure 3** Example of multi-extrusion board with the core being coarse and cascaded material and surface primary scrap and recycled material.



**Figure 4** Examples of construction applications of Conenor's multi-extrusion boards and panels

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Conenor's technology is proposed for ETV due to its ability of recycling complex polymeric waste e.g. fibre reinforced composites (GFRP) and construction & demolition waste (wood, wool insulations) by manufacturing into new circular raw materials to improve the materials efficiency, as well as their sustainability.

## **5. Results of the eligibility assessment**

The Quick Scan document for Conenor's technology has been partly completed to provide the main characteristics of the technology to the ETV Verification Bodies (see Appendix 1), which is a starting point of the verification process. However, the eligibility assessment could not be performed at the time of completing this report considering that the preliminary results from Life Cycle Assessment of Conenor's technology were not yet available. Hence, whether the technology is eligible for the verification under the EU ETV Programme is still to be confirmed by the Verification Bodies in the next version of the report.

## **6. Verification protocol applied**

The Verification Protocol applied, as well as Statement of Verification and Verification Report will be appended to this deliverable by M45, upon completion of the verification process.

## **7. Conclusions and next steps**

This initial version of D7.3 introduces the ETV tool and verification process, Accredited ETV Verification Bodies and the process of selecting them for ECOBULK, as well as the main characteristics of the ECOBULK technology being proposed for ETV. The verification process, including the eligibility assessment, Verification Protocol, the Statement of Verification and Verification Report will be presented in the next version of this deliverable in M45.

Technology proposed for ETV so far is Conenor's Agglomeration process for manufacturing raw materials from recycled and waste feedstock materials; and extruded single- and multilayer products (e.g. planks and panels) thereof for the construction industry. The technology has been proposed for ETV due to its ability of recycling complex polymeric waste e.g. fibre reinforced composites (GFRP) and construction & demolition waste (wood, wool insulations) by manufacturing into new circular raw materials to improve the materials efficiency, as well as their sustainability. It is likely that other technologies and solution developed in ECOBULK will be also subject to ETV. This will depend on the preliminary results coming from the Life Cycle Assessment studies in WP7, as well as the willingness of technology owners to participate in the EU ETV scheme.

## Appendix 1 Quick Scan document for Conenor's technology

### Template for the Quick Scan



## EU Environmental Technology Verification

### Quick-Scan

**Purpose:** This form intends to collect sufficient information about the technology you would like to propose for verification in order to evaluate whether your technology is eligible for verification under the EU ETV Programme and to provide you with a first indication of the costs involved. This Quick Scan is to be completed by the proposer and assessed by the Verification Body. The boxes for responses, in grey, may be extended but the responses should remain brief (no more than one half-page each).

Verification Body	Proposer
Name: Eurofins Expert Services Oy Contact person: Mr. Matti LANU Address: P.O Box 47 FI-02151 ESPOO FINLAND Telephone: +358 400 813 611 Telefax: Email: MattiLanu@eurofins.fi Date Quick Scan:	Name: Conenor Oy Contact person: Markku Vilkki Address: Kaitilantie 30A FI-16300 Orimattila Code NACE: Number of employees:3 Telephone: +358407534605 Telefax: n/a Email: markku.vilkki@conenor.com

**Quick-Scan date:** 03.02.2020



Previous Quick Scan performed:  No  Yes, date:

*Indicate if you have already submitted a quick-scan on the same or similar technology to be evaluated by this Verification Body*

### Identification of the Technology

Name of the Technology: 1) Agglomeration process for manufacturing raw materials from recycled and waste feedstock materials; and 2) extruded single- and multilayer products (e.g. planks and panels) thereof for the construction industry

*NB : A technology can be a product, a process or a service*

Technology Area:

Water Treatment and Monitoring

Materials, Waste and Resources

Energy Technologies

Other:

*If the technology could fit in more than one area, please signal this and insert a clarification in the comment section.*

Comments: Technology includes recycling of thermoset glass fibre plastic (GFRP) waste e.g. from EoL wind turbine blades and boats as reinforcements

### Market readiness

Is the technology already on the market?

No  Yes, number years:

If no, is there a prototype or a demonstration unit available?

No  Yes  Pilot scale  Full-scale

When transforming the prototype/ demonstration unit into a marketable product, will any changes affect the technology's performance?

No reason: only scale-up needed in a bigger volume manufacturing equipment

Yes How substantial will the changes be?

*A verification will check whether the technology matches the claimed performance. Ideally this verification should only be done once the product is finished, so as to reduce costs of new verifications with changes or upgrades to the technology.*

*The intention is to determine if the technology is ready to market: "is it available on the market or at least available at a stage where no substantial change affecting its performance will be implemented before introducing the technology on the market (e.g. full-scale or pilot scale with direct and clear scale-up instructions)".*

Comments:

### General description of the Technology

Introduction or context: Recycling of complex polymeric waste e.g. fibre reinforced composites (GFRP) and construction & demolition waste (wood, wool insulations) by manufacturing into new circular raw materials to improve materials efficiency and sustainability

Briefly explain the specific problem(s) or opportunities your technology wishes to address

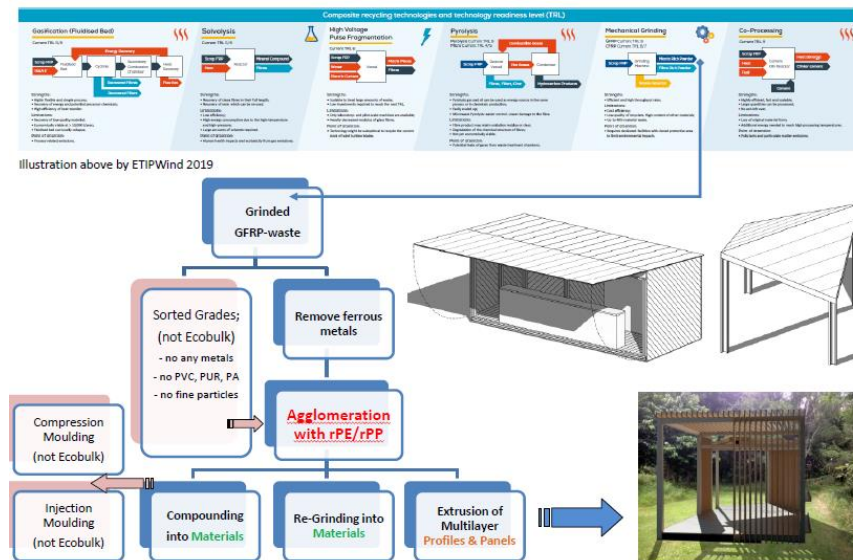
Main purpose of the technology: Complex polymeric waste e.g. fibre reinforced composites (GFRP) and construction & demolition waste (wood, wool insulations) can be easily and at low cost first shredded down mechanically into smaller particle and thereafter used in Conenor invented and patent pending agglomeration technique into new circular raw materials together with recycled thermoplastics PE and PP.

How does this technology address the problems or opportunities?

Relevant alternatives

gasification, high voltage fragmentation, co-production in cement kiln, solvolysis, pyrolysis but they all are disposal routes for GFRP-waste, not circular, lower TRL and investment intensive

The 'relevant alternative' helps to determine the environmental advantages and disadvantages of each new technology through a qualitative comparison (quantitative if data is available). It should perform an identical or similar function than the technology under verification but can correspond to different technologies working in sequence, e.g. a sorting procedure including dismantlement can be an alternative to a crusher. It should refer to a technology that is both current and commercially available, should be legal and accepted by the end-users on the specific targeted market, should also be effective in achieving a high general level of protection of the environment as a whole.



Principle used: Agglomeration at semi-molten stage of the carrier polymer PE or PP and chemical coupling using additives (g-MAH and others)

Which are the scientific or technical principles and techniques used by this technology

Which are the main claim(s) on the technology's performance that would need to be verified? (Initial performance claim)

?

Consider as much as possible verifiable, quantifiable features, expressed in absolute (i.e. not comparative) terms. Please note that the initial performance claim is starting point for the verification and may evolve during the verification process

Under which conditions is this performance(s) achieved?

?

Detail the key operational parameters and limits in order for the technology to perform as described in the claim.

Main technical standards, regulations or references applicable to this technology: ?

Are there already standards that cover (parts of) this technology? What would be the main regulations relevant for this technology? Are you aware of any guidelines that would be useful for the verification of this technology?



## Innovation level

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Description of the innovation provided by the technology, in comparison with relevant alternatives on the market:

Simple, patent pending, low cost (both CAPEX and OPEX) technology to convert GFRP-waste with minimal sorting and energy consumption into new reinforced circular composite raw materials for volume industry products (e.g. construction and furniture) with commonly existing and available equipment, all production waste can be re-manufactured back to products

*Novelty presented by the technology in terms of design, raw materials involved, production process, use, recyclability or final disposal, when compared with the alternatives identified above*

## Environmental added-value

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Please provide a short overview of the major positive and negative environmental aspects resulting from your technology in each of the four main life-cycle stages identified below:

??

*You are expected to provide as much information as possible, especially for the manufacturing and use phases. Qualitative or quantitative information may be given on emissions, waste streams, consumption or use of raw materials, energy and water. The information provided will help the Verification Body assess whether ETV is the best tool for you. If you have no detailed information you are encouraged to provide any generic information you may have useful to the evaluation.*

*In some cases you may limit the amount of information, in particular when:*

- i) the technology will lead to environmental pressures/impacts that are not significantly different than those of the relevant alternative*
- ii) those environmental pressures/impacts are negligible compared to those of the other phases*
- iii) the information cannot be obtained – please provide a short justification in this case*

## Natural resources (raw materials, energy) extraction and transformation phase:

Is this stage under your direct control?  Yes  No

Do you have information concerning environmental aspects for this stage?  Yes  No  Partial

In terms of environmental performance, are there significant differences in this stage between your technology and relevant alternatives?

Yes  No

Major positive and negative environmental aspects: ?

*Extraction, refining, processing, transformation and transport of natural resources including every aspect of all activities involved before the manufacture of the technology's equipment, sub-assemblies or products. By definition, this also includes all of the raw materials, the energy and water used and all waste or emissions released to the environment during these activities.*



**Manufacturing phase:**

Is this stage under your direct control?  Yes  No

Do you have information concerning environmental aspects for this stage?  Yes  No  Partial

In terms of environmental performance, are there significant differences in this stage between your technology and relevant alternatives?

Yes  No

Major positive and negative environmental aspects: ?

*Manufacturing of parts, components, machinery and of products including every aspect of the production of the technology. In general, it is expected that this will include the production of most if not all sub-assemblies. This also includes all of the water, energy and consumables used, together with all of the emissions and all of the products and wastes. This will generally occur on production sites under control of the proposer.*

**Use phase:**

Is this stage under your direct control?  Yes  No

Do you have information concerning environmental aspects for this stage?  Yes  No  Partial

In terms of environmental performance, are there significant differences in this stage between your technology and relevant alternatives?

Yes  No

Major positive and negative environmental aspects: ?

*Use and maintenance phase of a product, a process or a service including estimates of its use by the client/end-user refers to consumables, maintenance, and all raw materials, energy and water used for its functioning, as well as all the emissions, products and waste streams.*

**End of life phase:**

Is this stage under your direct control?  Yes  No

Do you have information concerning environmental aspects for this stage?  Yes  No  Partial

In terms of environmental performance, are there significant differences in this stage between your technology and relevant alternatives?

Yes  No

Major positive and negative environmental aspects: ?

*End of life of a technology including every aspect of all activities involved in the 'End of Life' of a product or an equipment, when it is discarded by the client/end-user, including its recycling, dismantling and/or disposal of all components. This also includes all of the water, energy and consumables used, together with all types of emissions, all of the products and wastes.*

**Potential to meet user needs**

Does the technology have the potential to meet user needs?

Yes  No

What specific user needs is the technology addressing? How does this technology meet the user needs?

*Does this technology address a need in the market? Are the advantages provided a real advantage to the user? If the technology is already on the market provide general information on its success in addressing user needs.*

Recyclable, does not absorb moisture, does not swell nor promote bacteria growth, maintains original properties in use, does not split nor splinter, no harmful substances to environment (e.g. formaldehyde), no leaching, can be worked with normal standard tools in the field and in all weather conditions, colored online thus no need for painting or maintenance

### Fulfilment of legal requirements

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What is the target market for this technology?

EU  Specific country/countries:

Other: worldwide

Does the technology fulfil the legal requirements in the targeted market(s)?

Yes  No

Comments: ?

what are legal requirements for such new recycled raw material ?

### Intellectual Property Rights (IPR)

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Are you the sole and full owner of the technology?  Yes  No

If no, do you detain intellectual property or other rights on the technology?

Yes

Description of the license or other contractual arrangement giving you the legal right to ask for the technology to be subject to a verification procedure:

No

Are there any Intellectual Property issues in respect of this technology or any part or aspect of the technology that might prevent its development and/or which could result in any legal or other issues for the ETV Programme?

Yes  No

Comments:

### Existing test results

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Are there available test results to back-up the technology's performance?

Yes

No

*Please include in our comments, if a test plan was followed, if standard methods were used, if testing was done by accredited testing bodies, i.e. ISO 17025 or ISO 9001.*

Comments:

*If test results are not available, please indicate if you have a test plan prepared and/or if there are test methods available, including standard methods.*

material and product test report from CNR, UEF and Muovipoli

Assessment of Quick-scan (for the Verification Body)

**Assessment of the technology description**

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The technology fits within the scope of the EU ETV programme?

Yes  No

Comments:

Description/principles clear?

Yes  No

Comments:

Clear and verifiable performance claim(s)?

Yes  No

Comments:

Ready-to-market?

Yes  No

Comments:

Prototype in advanced stage of development?

Yes  No

Comments:

Technology shows innovative characteristics?

Yes  No

Comments:

Potential to meet user needs?

Yes  No

Comments:

Fulfilling legal requirements (limited to VB's expertise)?

Yes  No

Comments:

Technology shows environmental benefits?

Yes  No

Comments:

Life-cycle aspects described?

Yes  No

Comments:

Test results are available?

Yes  No

Comments:

Further testing would/could be necessary?

Yes  No

Comments:

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**Conclusions of quick scan by the Verification Body**

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Enough information is provided to conclude?  Yes  No

If no, indicate the information that needs to be provided:

If yes, is the technology recommended for ETV?  Yes  No

Why?

Technology in the scope of VB ?  Yes  No

Comments / remarks / recommendations:

Estimated cost range for a verification:

**Proposer:**

Name:

Date:

Signature:

**Verification body:** Eurofins Expert Services Oy

Name:

Date:

Signature: