

<p>Report/Document about the prototypes (CFR products).</p> <p><i>Poročilo/dokument o prototipih (izdelki CFR).</i></p>	<p>Type:          Coordination <input type="checkbox"/>          Administrative <input type="checkbox"/>          Technical <input checked="" type="checkbox"/>          Communication <input type="checkbox"/>          Steering Committee <input type="checkbox"/>          Other: <input type="checkbox"/></p>	<p>Ref. WPX_D.3.4.1          Date: 02          2025</p>
<b>Document details</b>		
<p>Project</p>	<p>RECREATE: Improving the circular economy model for collection and processing of fibre-reinforced composites, containing waste.</p> <p><i>RECREATE: Izboljšanje modela krožnega gospodarstva za zbiranje in predelavo z vlakni ojačanih kompozitov, ki vsebujejo odpadke.</i></p>	
<p>Work package</p>	<p>WP 3.4</p>	
<p>Deliverable</p>	<p>D.3.4.1</p>	
<p>Dissemination level</p>	<p>Public</p>	
<p>Dissemination target</p>	<p>Municipalities and companies producing FRC waste</p>	
<p>Authors</p>	<p>Gees recycling</p>	
<p>Due delivery</p>	<p>Period 3</p>	
<p>Version</p>	<p>Draft</p>	

<p>PREPARED BY Franco Mioni</p>	<p>GEES RECYCLING Partner</p>	
<p>SC document <input checked="" type="checkbox"/></p>	<p>Confidential document <input type="checkbox"/></p>	<p>Public document <input type="checkbox"/></p>

## 1. Preliminary activities. Preparation for the production phase of Gees Recycling circular product prototypes for the Slovenian partner Technol. *Predhodne dejavnosti. Priprava na proizvodno fazo prototipov krožnih izdelkov Gees Recycling za slovenskega partnerja Technol.*

Preliminary activities were carried out to ensure that every technical, production and regulatory aspect of the production of recycled CFR materials met the needs of the Technol project partners from both a functional and regulatory point of view.

The aim of the preliminary activities was also to search for industrially effective and replicable solutions in the area of Gees recycling technologies, in order to ensure the continuity of the Project.

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### **We list the activities carried out:**

Technical meeting with PP2 - 11th December 2023

The meeting took place at the Gees headquarters in Aviano with the aim of verifying the possibility of recycling Technol industrial waste with Gees technology (evaluation of material samples), and that of elaborating ideas on the possible fields of application of recycled materials by PP.

*Izvedene so bile predhodne dejavnosti za zagotovitev, da vsi tehnični, proizvodni in regulativni vidiki proizvodnje recikliranih materialov CFR izpolnjujejo potrebe projektnih partnerjev Technol tako s funkcionalnega kot regulativnega vidika.*

*Cilj predhodnih dejavnosti je bil tudi iskanje industrijsko učinkovitih in ponovljivih rešitev na področju tehnologij recikliranja Gees, da bi zagotovili nadaljevanje projekta.*

**Navajamo seznam izvedenih dejavnosti:**

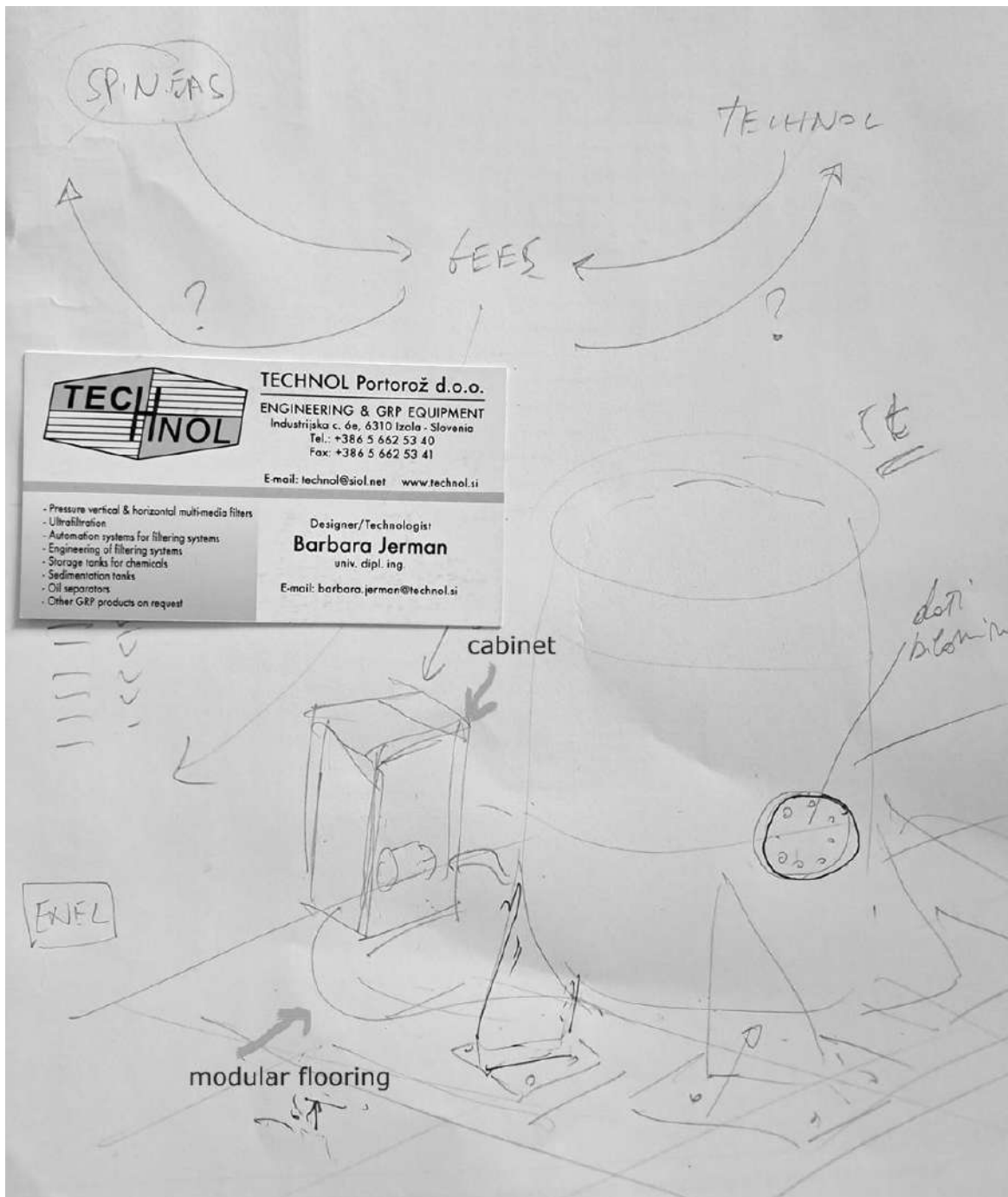
*Tehnični sestanek s PP2 - 11. december 2023*

*Srečanje je potekalo na sedežu družbe Gees v Avianu z namenom preverjanja možnosti recikliranja industrijskih odpadkov družbe Technol s tehnologijo Gees (ocena vzorcev materiala) in oblikovanja zamisli o možnih področjih uporabe recikliranih materialov s strani družbe PP.*



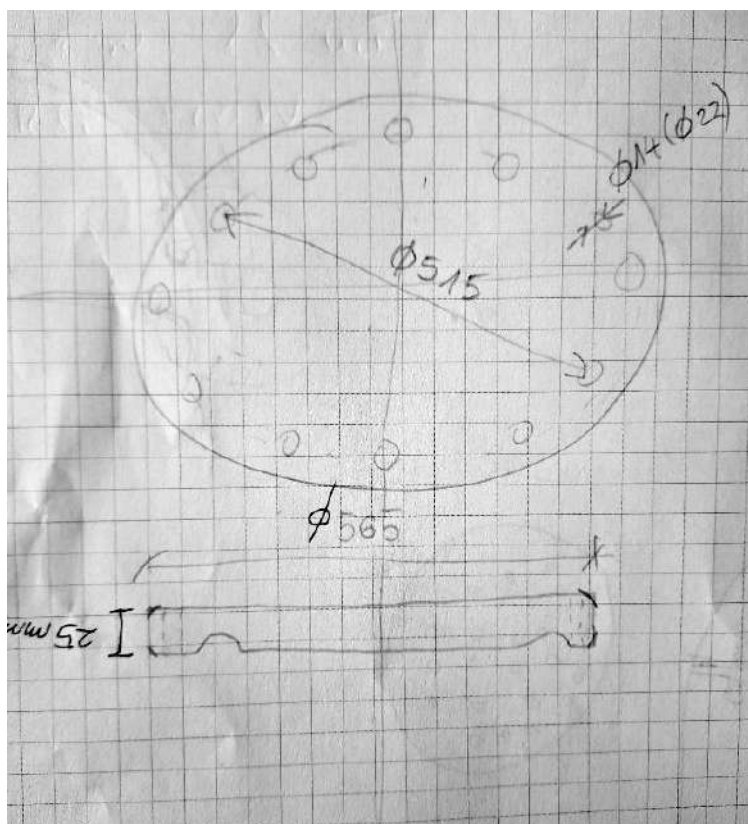
Technol industrial waste samples analysed during the meeting

*Technol vzorci industrijskih odpadkov, analizirani na srečanju*



Draft material application ideas: tank cap, filtration pump cabinet, flooring.

Zamisli za uporabo osnutka materiala: pokrov rezervoarja, omarica črpalke za filtriranje, tla.



Sample tank cap measurements.

*Meritve vzorca pokrovčka rezervoarja.*

Subsequently, in October 2024, it was also verified that the waste classification analysis report was compatible with the Gees Recycling permits (code EER 07 02 13), defining the feasibility of the circular process also from a regulatory point of view.

*Oktobra 2024 je bilo preverjeno tudi, ali je poročilo o analizi klasifikacije odpadkov skladno z dovoljenji za recikliranje Gees (oznaka EER 07 02 13), kar opredeljuje izvedljivost krožnega postopka tudi z zakonodajnega vidika.*

***EURO CHEM 2000 S.r.l.***

*Laboratorio di Analisi e Servizi per l'Ambiente e l'Industria  
Indagini Ambientali, Rifiuti, Acque, Emissioni in atmosfera, Siti contaminati*

**ANALYSIS REPORT N° 24091591 Rev.1**

*This Test report cancels and replaces the previous one n.24091591  
Issuing the test report in English.*

**ANALYSIS REPORT**

Sample description: Waste - Glass wool our ref. 1591

Our reference n°: 24091591

Sample received on: 06/09/2024

Date of report: 31/10/2024

Client:

Technol Portoroz d.o.o.  
Zola - Isola  
6310 Slovenia

Delivered by the customer: sample received by courier

Sampling notes: Sampled: by Customer - Sampling method: by Customer (\*)

Sampling document: Not available

As reported in "Sample description"

The sample arrived at the laboratory intact and in adequate conditions for the execution of the required analysis. The temperature on arrival was 15 °C.

***EURO CHEM 2000 S.r.l.***

*Laboratorio di Analisi e Servizi per l'Ambiente e l'Industria  
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**FOLLOW ANALYSIS REPORT N° 24091591 Rev.1**

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**OPINIONS AND INTERPRETATIONS - NOT SUBJECT ACCREDITATION ACCREDIA**

Cod. E.W.C. (Decision 2014/955/UE 2014/12/18) assigned by producer: 07 02 13

**CLASSIFICATION:**

**Special waste – NON HAZARDOUS**

The parameters analysed were chosen by the customer based on the documentation provided by the producer, the type of waste and the production process that generated the waste.

Limited to the parameters analysed, there are no substances and/or preparations, scientifically and consciously pertinent, such as to attribute hazardous characteristics to the waste pursuant to Decision Comm. 2014/955/EU 18.12.2014, according to the criteria established in annex. III of Directive 2008/98/EEC (as replaced by the annex to EEC/EU Regulation 18.12.2014 n° 1357), following an assessment pursuant to Presidential Decree 254/2003 and in application of the criteria established by Regulation (EU) 997/2017.

**Il Direttore del Laboratorio**

Giuseppe Dr. Moras

Ordine dei Chimici e Fisici del FVG  
Iscriz. 13 sez. A

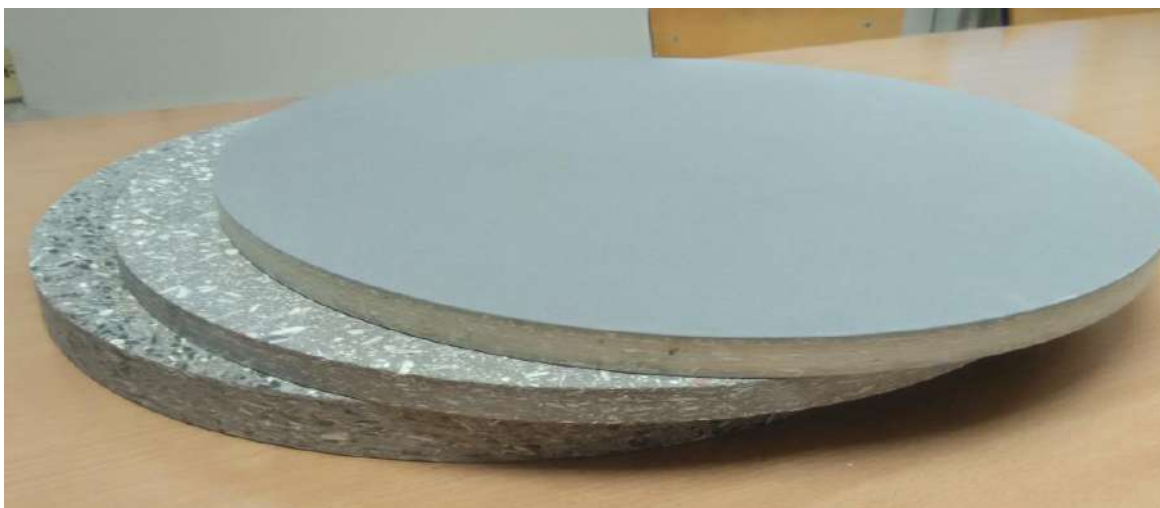
## 2. Prototyping operational phase for partner Technol. *Operativna faza izdelave prototipa za partnerja Technol.*

On the basis of drafts developed together with PP Technol, Gees produced some prototype tank caps from recycled sheets of various thicknesses.

The prototypes were tested at Technol. These preliminary tests revealed the need to work on the formulation of the recycled sheets to improve their mechanical performance. With respect to the other application hypotheses (cabinets and flooring), Technol would carry out feasibility tests, but at the moment Gees does not have sufficient quantities of Technol scrap to carry out further tests.

*Družba Gees je na podlagi osnutkov, ki jih je razvila skupaj s podjetjem PP Technol, izdelala nekaj prototipov pokrovov rezervoarjev iz recikliranih plošč različnih debelin.*

*Prototipi so bili preizkušeni v podjetju Technol. Ti predhodni preskusi so pokazali, da je treba izboljšati sestavo recikliranih plošč, da bi izboljšali njihovo mehansko zmogljivost. V zvezi z drugimi hipotezami uporabe (omare in talne obloge) bi družba Technol izvedla preskuse izvedljivosti, vendar družba Gees trenutno nima zadostnih količin odpadnih plošč Technol za izvedbo nadaljnjih preskusov.*



Photos of tank cap prototypes of various thicknesses

*Fotografije prototipov pokrovov rezervoarjev različnih debelin*

### 3. Preliminary activities. Preparation for the production phase of Gees Recycling circular product prototypes for the Italian partner Municipality of Spinea. *Predhodne dejavnosti. Priprava na fazo proizvodnje prototipov krožnih izdelkov Gees Recycling za italijansko partnersko občino Spinea*

Preliminary activities were carried out to ensure that every aspect of Gees recycled FRC products met the requirements of the Spinea Project Partner, both from a creative and functional point of view, and from the point of view of the regulations governing the acquisition of products by the Public Administration (Minimum Environmental Criteria).

The graphic designs of the first 'Catalogue of FRC circular products' (WP3.1 - D.3.1) developed by Gees Recycling offered the PP Municipality of Spinea an initial broad view of the multiple proposals of articles that could be realised for the Municipality of Spinea within the scope of the Project; street furniture, school furniture, educational articles.

*Izvedene so bile predhodne dejavnosti za zagotovitev, da vsak vidik izdelkov iz recikliranih FRC podjetja Gees izpolnjuje potrebe projektnega partnerja Spinea, tako z ustvarjalnega in funkcionalnega vidika kot tudi z vidika predpisov, ki urejajo nabavo izdelkov v javni upravi (minimalna okoljska merila).*

*Grafične zasnove prvega „Kataloga krožnih izdelkov FRC“ (WP3.1 - D.3.1), ki ga je razvilo podjetje Gees Recycling, so PP Občina Spinea ponudile začetni širši pogled na številne predloge izdelkov, ki bi jih bilo mogoče realizirati za Občino Spinea v okviru projekta; ulično pohištvo, šolsko pohištvo, izobraževalni izdelki.*

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**Tavoli e panche per refettorio scolastico e comunità**  
Sono realizzate su misura con lastre di composti riciclati e una struttura tubolare metallica di supporto. Le superfici sono trattate con protettivo antibatterico.

**Tables and benches for school and community refectories**  
They are custom made with recycled composite sheets and a tubular metal support structure. The surfaces are treated with anti-bacterial protective.



**Moduli prefabbricati per eventi temporanei o info point permanenti**  
Sono realizzati su misura con lastre di composti riciclati fissati su intelaiatura metallica. Queste strutture possono essere fisse oppure removibili.

**Prefabricated modules for temporary events or permanent info points**  
They are custom made with recycled composite sheets fixed to a metal frame. These structures can be fixed or removable.



**Panche da interni**  
Sono realizzate su misura con lastre di composti riciclati con intelaiatura metallica. Queste strutture possono essere da due o più sedute.

**Indoor benches**  
They are custom made from recycled composite sheets with a metal frame. These structures can have two or more seats.



**Dissuasore-seduta**  
Struttura monoblocco realizzata su misura con lastre di composti riciclati. Boccole di fissaggio per il collegamento di catene o per sollevamento. Superficie trattata con protettivo anti-macchia.

**Bollard-seat**  
Monobloc structure made to measure with recycled composite sheets. Fixing bushes for connecting chains or for lifting. Surface treated with anti-stain protector.



school educational items



**IL LABIRINTO IN SCATOLA**  
Questa esperienza insegna ai bambini come tutti gli esseri viventi abbiano bisogno di luce, ma è anche un bel allenamento alla pazienza. Dopo alcuni giorni vedremo la pianta uscire dal buco e alzando il coperchio scopriremo che ha seguito il labirinto realizzato in lastre di composti riciclati.

**THE LABYRINTH IN A BOX**  
This experience teaches children how all living things need light, but it's also a nice training in patience. After a few days we will see the plant come out of the hole and by lifting the lid we will discover that it has followed the labyrinth made of recycled composite plates.



**Pattumiera pubblica**  
Sono realizzate su misura con lastre di composti riciclati e coperchio removibile. Abbinamento per raccolta differenziata. La superficie è trattata con protettivo anti-macchia.

**Public dustbin**  
They are custom made with recycled composite sheets and a removable lid. Combination for separate waste collection. The surface is treated with an anti-stain protectant.

We list the activities carried out:

### Workshop 'THE INVENTION MATTER'.

In order to expand the collection of creative ideas about the application of circular materials in the INTERREG RECREATE project, in November 2023 Gees Recycling sponsored a Workshop coordinated by Materially. In this intensive workshop, Materially involved a group of students from the Brera Academy of Fine Arts selected from the courses of Artistic Design for Business, Product Design, Decoration, New Technologies of Art and Photography, to discover, learn and put into practice the Materials Driven Design method, an approach that places the choice and use of materials at the centre of the creative process. Gees Recycling participated as a sponsor by proposing the INTERREG RECREATE project, and inviting students to develop designs and proposals for street furniture, made with circular composite materials collected from local ecocentres.

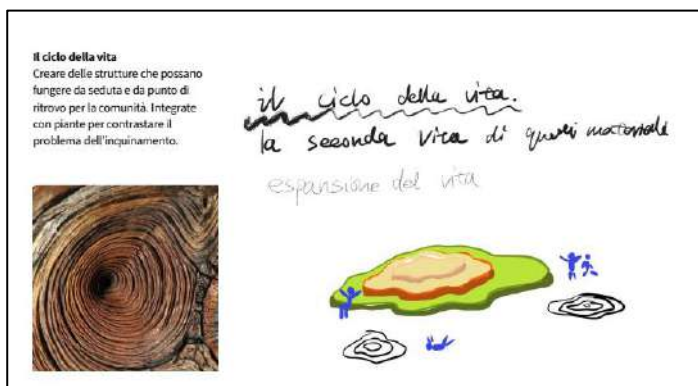
The selected designs were shared with the Municipality of Spinea.

### *Navedli smo opravljene dejavnosti:*

#### *Delavnica „POMEN IZUMOV“.*

*Da bi razširili zbirko ustvarjalnih idej o uporabi krožnih materialov v projektu INTERREG RECREATE, je družba Gees Recycling novembra 2023 sponzorirala delavnico, ki jo je koordinirala družba Materially. V to intenzivno delavnico je Materially vključil skupino študentov Akademije za likovno umetnost Brera, izbranih s študijskih programov Umetniško oblikovanje za podjetja, Oblikovanje izdelkov, Dekoraterstvo, Nove tehnologije v umetnosti in Fotografija, da bi odkrili, spoznali in v praksi uporabili metodo Materials Driven Design, pristop, ki izbiro in uporabo materialov postavlja v središče ustvarjalnega procesa. Podjetje Gees Recycling je sodelovalo kot sponzor, in sicer je predlagalo projekt INTERREG RECREATE ter povabilo študente, da razvijejo modele in predloge za ulično pohištvo, izdelano iz krožnih kompozitnih materialov, zbranih v lokalnih ekocentrih.*

*Izbrani modeli so bili posredovani občini Spinea.*



Example of the students' presentation in the Materially contest

*Primer predstavitve učencev na tekmovanju Materially*

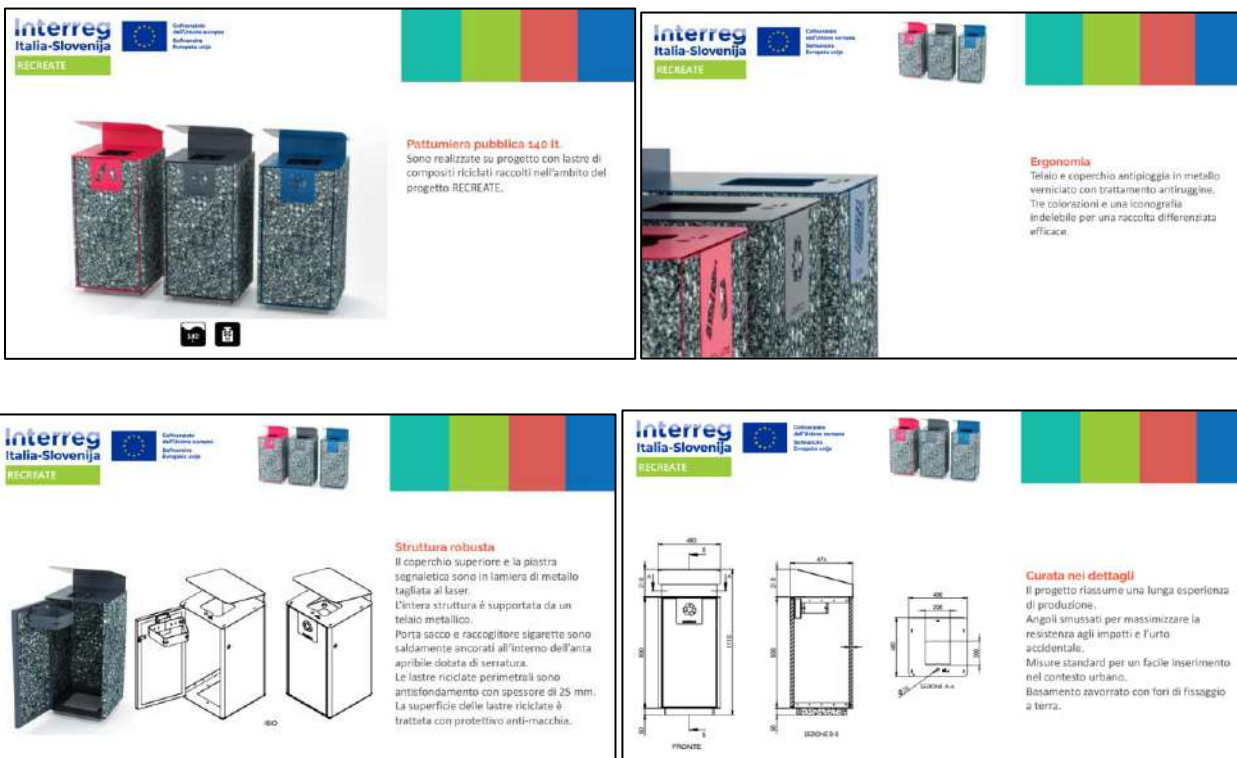
### Meeting presentation and project discussion with the Spinea Municipality

At the Gees-Spinea technical meetings (December 2023 and February 2024), the preference of the Spinea Municipality for the article 'street litter bins' was consolidated. This choice was

finally approved during the Spinea-Gees meeting on 8 August 2024. During the meeting, Gees presented more detailed layouts of the ‘street litter bins’ project on which the typology and functionality as well as some general regulatory characteristics began to be defined.

### ***Predstavitev sestanka in razprava o projektu z občino Spinea***

*Na tehničnih sestankih Gees-Spinea (decembra 2023 in februarja 2024) je bila potrjena preferenca občine Spinea glede člena „ulični koši za smeti“. Ta izbira je bila dokončno potrjena na sestanku Spinea-Gees 8. avgusta 2024. Na sestanku je družba Gees predstavila podrobnejše načrte projekta „ulični koši za smeti“, na podlagi katerih so se začeli opredeljevati tipologija in funkcionalnost ter nekatere splošne regulativne značilnosti.*



At the end of the technical meeting, the partners expressed satisfaction with the progress of the project and agreed to continue development with the realisation of prototypes.

*Ob koncu tehničnega sestanka so partnerji izrazili zadovoljstvo z napredkom projekta in se dogovorili, da bodo nadaljevali razvoj z izdelavo prototipov.*

### Realisation of technical and construction drawings of prototypes.

Between September and December 2024, Gees Recycling produced technical construction drawings and visuals, involving external suppliers for the concrete and metal components. At the same time, Gees started drafting the technical-operating manual, necessary to provide the correct methods of use and maintenance to the operator appointed by the municipality to manage the products in the area.

### *Izvedba tehničnih in konstrukcijskih risb prototipov.*

*Družba Gees Recycling je med septembrom in decembrom 2024 izdelala tehnične konstrukcijske risbe in vizualizacije, pri čemer so sodelovali zunanji dobavitelji za betonske in kovinske komponente. Hkrati je družba Gees začela pripravljati tehnično-operativni priročnik, ki je potreben za zagotovitev pravih načinov uporabe in vzdrževanja upravljavcu, ki ga je občina imenovala za upravljanje izdelkov na tem območju.*







Il progetto RECREATE è co-finanziato dall'Unione europea nell'ambito del Programma Interreg VI-A Italia-Slovenia.  
Projekt RECREATE sofinancira Evropska unija v okviru Programa Interreg VI-A Italija-Slovenija.

## Official presentation of the first prototype

On 20 December 2024 Gees was able to officially present the prototype to the Spinea PP coordinators and the relevant municipal authorities. The presentation of the prototypes allowed us to ‘touch with our hands’ the aesthetics and functionality of the products. The purpose of the presentation event was also to be able to compare with the suppliers of waste management services in the municipality (Veritas SpA) so that the products could guarantee practical, safe and durable use, including product replicability and project continuity in this concept.

### *Uradna predstavitev prvega prototipa*

*20. decembra 2024 je družba Gees lahko uradno predstavila prototip koordinatorjem PP Spinea in pristojnim občinskim organom.*

*Predstavitev prototipov nam je omogočila, da smo se z rokami „dotaknili“ estetike in funkcionalnosti izdelkov. Namen predstavitvenega dogodka je bil tudi ta, da bi se lahko primerjali z izvajalci storitev ravnanja z odpadki v občini (Veritas SpA), da bi izdelki lahko zagotovili praktično, varno in trajno uporabo, vključno s ponovljivostjo izdelkov in kontinuiteto projekta v tem konceptu.*



### **Modification of the project.**

On the indications of Dr. Stefano Varotto (Veritas SpA's Environmental Services West Area Management), shared with the Spinea PP coordinators, the need for some improvements on the prototype was highlighted.

The litter bin was found to be suitable for emptying operations by the operator responsible for the manual cleaning and emptying of litter bins in the municipality of Spinea. However, a number of structural aspects emerged that could lead to inconveniences, especially in relation to the places where it is placed and which expose users to potential safety risks:

- eliminating sharp edges from the structure covering the litter bin (potentially dangerous)
- The position of the bag limits its volumetric capacity; when full, it weighs down on the door, making it particularly difficult to open as it has no handle; it is therefore suggested that the use of a container with a removable grid to accommodate the bag should be considered.
- Placing the ashtray near the opening exposes it to potential fire hazards from the contents, particularly paper/cardboard.

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### **Sprememba projekta.**

*Po navedbah Dr. Stefana Varotta (vodja okoljskih storitev Veritas SpA za zahodno območje), ki jih je delil s koordinatorji PP Spinea, je bilo poudarjeno, da je treba prototip nekoliko izboljšati.*

*Izvajalec, odgovoren za ročno čiščenje in praznjenje košev za smeti v občini Spinea, je ugotovil, da je koš za smeti primeren za postopke praznjenja. Vendar so se pokazali številni strukturni vidiki, ki bi lahko povzročili nevarnosti, zlasti v zvezi s kraji, kjer je postavljen, in ki uporabnike izpostavljajo morebitnim varnostnim tveganjem:*

- *odprava ostrih robov iz konstrukcije, ki pokriva koš za smeti (potencialno nevarno)*
- *položaj vreče omejuje njeno prostorninsko zmogljivost; ko je polna, obteži vrata, ki jih je še posebej težko odpreti, saj nimajo ročaja; zato se predlaga, da se razmisli o uporabi posode z odstranljivo mrežo za namestitev vreče.*

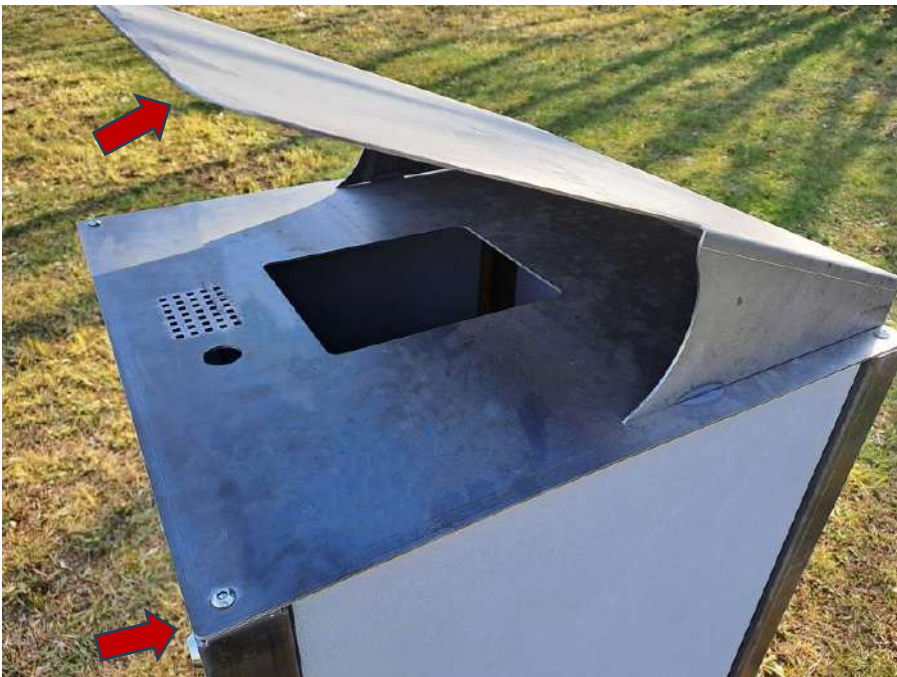
- Postavitev pepelnika v bližino odprtine ga izpostavlja potencialni nevarnosti požara zaradi vsebine, zlasti papirja/kartona.

### Implementation of modifications and construction of the second prototype

Based on these considerations, and other production-related evaluations, Gees designed the modifications and built a second prototype to be approved by Spinea and Veritas prior to series production.

### Izvedba sprememb in izdelava drugega prototipa

Na podlagi teh premislekov in drugih ocen, povezanih s proizvodnjo, je družba Gees zasnovala spremembe in izdelala drugi prototip, ki sta ga pred serijsko proizvodnjo potrdili družbi Spinea in Veritas.



Elimination of edges from the top cover

*Odstranitev robov zgornjega pokrova*



New wire mesh bag holder

*Nov imetnik žične mrežaste vrečke*



Deflector for bag isolation from removable ashtray (interior)

*Deflektor za izolacijo vrečke od odstranljivega pepelnika (notranjost)*



New front frame design to maximise visibility of recycled material

*Nova zasnova sprednjega okvirja za čim večjo vidnost recikliranega materiala*

Visual development for colour-coded bin identification (standard UNI 11686:2017 Waste visual elements) and for aesthetic consistency of the waste bin in the urban context.

*Vizualni razvoj za barvno označevanje zabojnikov (standard UNI 11686:2017 Vizualni elementi za odpadke) in za estetsko skladnost zabojnika za odpadke v urbanem okolju.*



Hypothesis A) The colouring is provided by the painting of the metal parts. All perimeter panels are neutral in colour.

*Hipoteza A) Obarvanost je posledica barvanja kovinskih delov. Vse obodne plošče so nevtralne barve.*



Hypothesis B) colour identification is given by the pigmentation of the plates (dark brown metalcolour unchanged)

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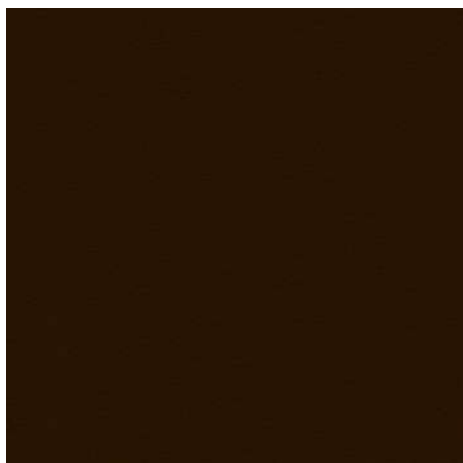
*Hipoteza B) barvna identifikacija je odvisna od pigmentacije plošč (temno rjava kovinska barva je nespremenjena)*





Paint colour proposal for assumption B (RAL 8017 MATT)

*Predlog barve za predpostavko B (RAL 8017 MATT)*





Preparation of the project name plate layout: single-colour (black) print on aluminium or plexi support. Size 17 x 11.5 cm

*Priprava postavitve tablice z imenom projekta: enobarvni (črni) tisk na aluminijast ali pleksi nosilec. Velikost 17 x 11,5 cm*

<b>Interreg</b> <b>Italia-Slovenija</b>		Cofinanziato dall'Unione europea Sofinancira Evropska unija
<b>RECREATE</b>		
<b>IL PROGETTO RECREATE È CO-FINANZIATO DALL'UNIONE EUROPEA NELL'AMBITO DEL PROGRAMMA INTERREG VI-A ITALIA-SLOVENIA.</b>		
<b>PROJEKT RECREATE SOFINANCIRA EVROPSKA UNIJA V OKVIRU PROGRAMA INTERREG VI-A ITALIJA- SLOVENIJA.</b>		
 www.gruppoveritas.it	<b><u><a href="http://www.ita-slo.eu/RECREATE">www.ita-slo.eu/RECREATE</a></u></b> Segnalazioni o reclami telefonici ai numeri: - 800.811.333 (da rete fissa) - 041.9655533 (da rete mobile) o tramite email a: <a href="mailto:ambiente@gruppoveritas.it">ambiente@gruppoveritas.it</a>	
MATRICOLA: XXXXXX		

