



Projekt MarineClean

Boris Mikšić, predsjednik Uprave
EcoCortec d.o.o.
Prof. dr. sc. Mladen Šercer
FSB, Zagreb

Uklanjanje morskog otpada i sprječavanje daljnjeg onečišćenja- MarineClean

Marine debris removal and preventing further litter entry



ECO-INNOVATION | 
WHEN BUSINESS MEETS THE ENVIRONMENT

CIP Eco-innovation 2010 – Contract ECO/10/277396/SI2.601543
1 studeni 2011 – 31 listopad 2012

Koordinator: TURNA d.o.o., Slovenija
Tehnološki centar PoliEko – operativni koordinator

Marine Clean

- Projekt u kojem sudjeluje međunarodni konzorcij sastavljen od 8 partnera iz Hrvatske, Slovenije i Litve
- Cilj projekta: očuvanje vodotoka, jezera i mora, sprječavanje daljnjeg onečišćenja, smanjenje štetnih utjecaja na okoliš
- Promicanje održivih i inovativnih tehnologija

Partneri:



1. Turna – Slovenija



2. NIB – Morska biološka postaja Piran, Slovenija



3. Znanstveni i tehnološki park Klaipeda, Litva



4. Sveučilište Klaipeda, Laboratorij za istraživanje onečišćenja zraka, Litva



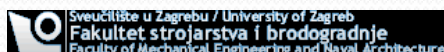
5. Drava –Ptuj, Slovenija



6. EcoCortec d.o.o., Hrvatska



7. Tehnološki center PoliEko, Slovenija



8. Fakultet Strojarstva i brodogradnje, Hrvatska

Osnovne informacije:

- Projekt je sufinanciran od strane Progama za ekološke inovacije kojeg provodi Europska agencija za kompetitivnost i inovacije, EACI
- Status projekta: započeo u studenom 2011
- Vrijeme trajanja: 3 godine
- Budžet: 1.1 mil €

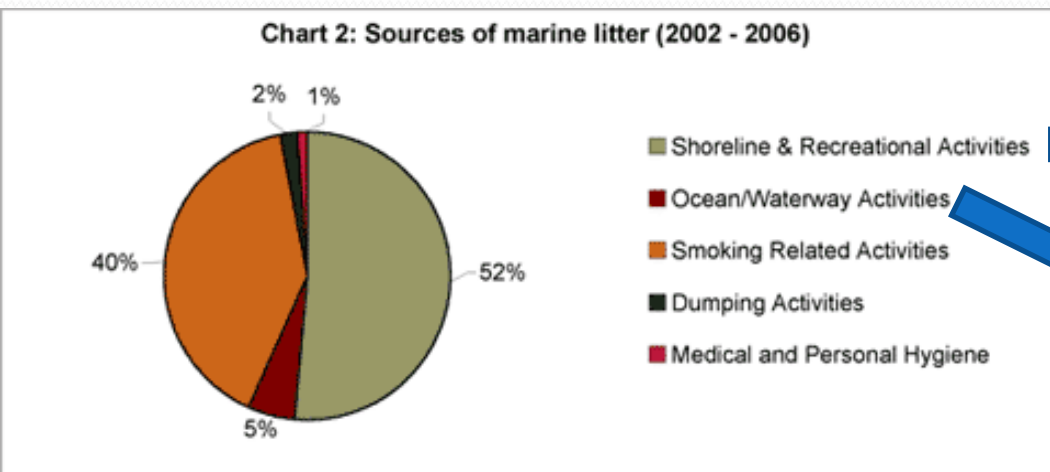
Problem



ABOVE: ROPES, OLD FISHING GEAR, AND SIMILAR DEBRIS CAN POSE AN ENTANGLEMENT DANGER TO WILDLIFE AND ALSO DAMAGE BOAT PROPELLERS.

... je svugdje
oko nas!

Izvori zagađenja Mediterana za razdoblje od 2002-2006.



Pakiranje hrane

Izgubljene
ribarske mreže

HOW LONG 'TIL IT'S GONE?

Estimated decomposition rates of common marine debris items

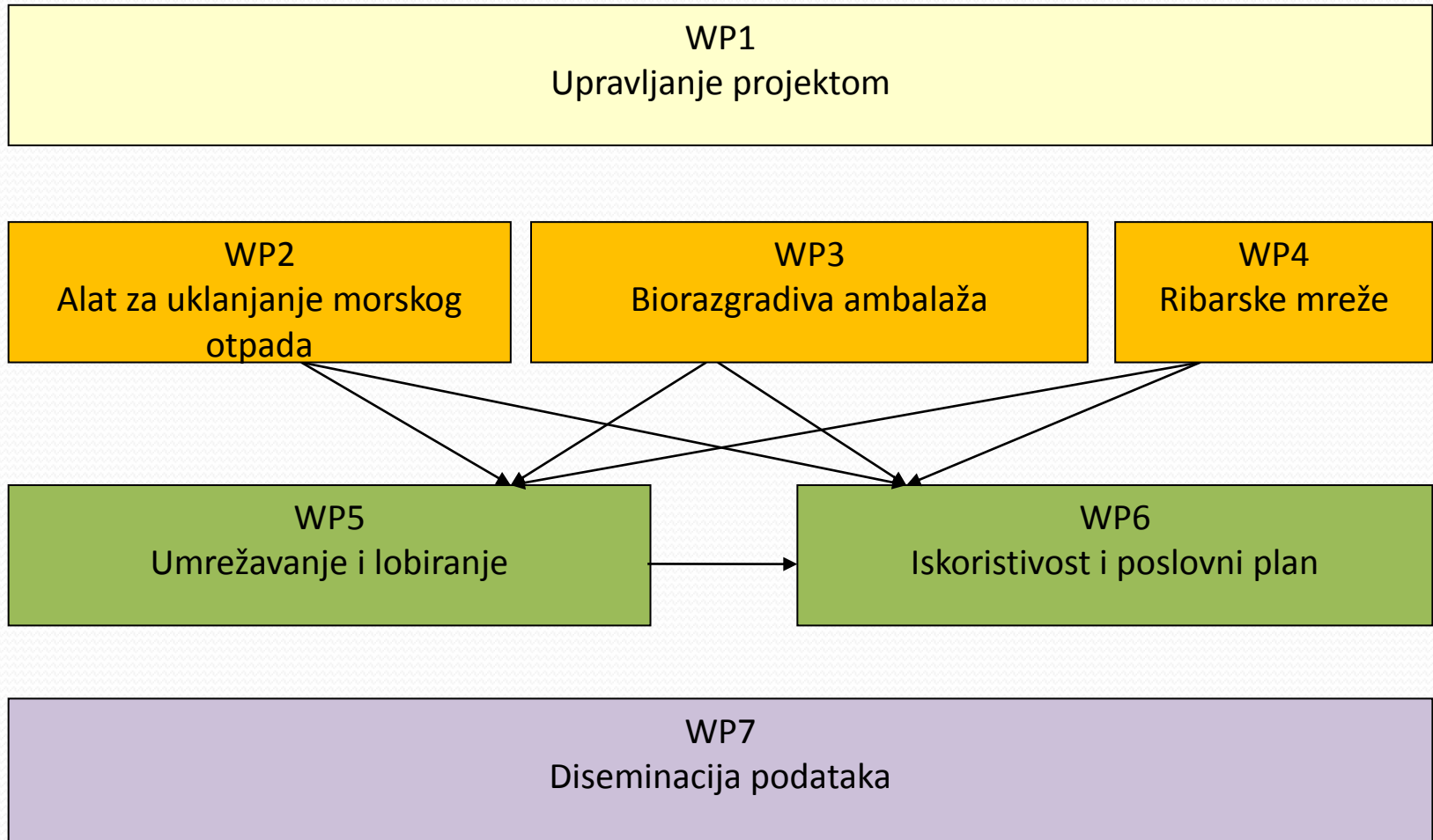


NOTE: Estimated individual item timelines depend on product composition and environmental conditions.
Source: South Carolina Sea Grant Consortium, South Carolina Department of Health & Environmental Control (DHEC)—Ocean and Coastal Resource Management, Centers for Ocean Sciences Education Excellence (COSEE)—Southeast and NOAA 2008.

Koliko godina treba da bi se otpad razgradio u moru?

Staklena boca	1 milijun
Plastična boca	450
Aluminijska ambalaža	80-200
Gumena čizma	50-80
Plastični poklopac	50
Limenka	50
Plastična vrećica	10-20
Filter od cigarete	1-5
Vunena odjeća	1-5
Drvo	1-3
Dio jabuke	2 mjeseca
Novine	6 tjedana
Kora od naranče	2-5 tjedana
Papirnati ubrus	2-4 tjedna

MarineClean – Radne grupe



MarineClean

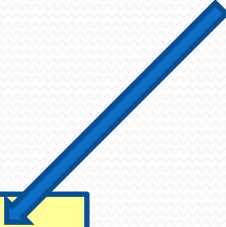
```
graph TD; MC[MarineClean] --> A[Alat za uklanjanje otpada]; MC --> B[Biorazgradiva ambalaža]; MC --> C["Pametna" oprema za ribolov/mreže];
```

**Alat za uklanjanje
otpada**

**Biorazgradiva
ambalaža**

**“Pametna”
oprema za
ribolov/mreže**

MarineClean



Alat za uklanjanje otpada

- Niska potrošnja goriva
- Čvrst
- S magnetskim umetcima
- Proizvođač: Turna

1. **Turna** , Slovenija
2. **KU-APS** Laboratorij za istraživanje onečišćenja zraka, Litva
3. **Drava** , Slovenija
4. **PoliEko**, Slovenija
5. **FSB Zagreb**, Hrvatska

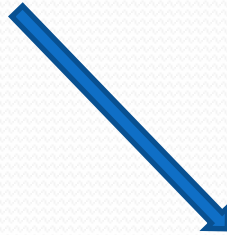
MarineClean

Biorazgradiva ambalaža

- Jestiva za živalinje
- Vodotopiva
- Proizvođač:
EcoCortec

2. NIB – Morska biološka postaja, Slovenija
3. Sveučilište Klaipeda, Litva
4. EcoCortec, Hrvatska
5. PoliEko, Slovenija
6. FSB Zagreb, Hrvatska

MarineClean



“Pametna” oprema za ribolov

- S magnetskim umetcima kako bi se spriječilo zaplitanje sisavaca i većih morskih životinja
- Proizvođač:
Turna i PoliEko

EcoCortec – Prva hrvatska tvornica bioplastike



- Tvrtka EcoCortec d.o.o. iz Belog Manastira kćerka je Cortec korporacije iz St. Paul-a, SAD
- Cortec korporacija prisutna je na hrvatskom tržištu od početka 80-tih godina
- U Zagrebu se nalazi Cortecov ured odakle se koordinira rad distributera u Europi, te ured CorteCrosa, tvrtke u mješovitom vlasništvu Cortec-a i Crosca koji obavlja logistiku i marketing za Hrvatsku i zemlje bivše Jugoslavije

EcoCortec d.o.o.

- Logistička i informatička okosnica naše distribucije u Europi
- EcoCortec je počeo sa radom u kolovozu 2007.
- Instalirani kapacitet – 5000 tona godišnje
- 95 % proizvodnje namijenjeno izvozu
- Trenutno zapošljavamo 23 djelatnika

Eko klaster

- EcoCortec – pokretač i suosnivač Eko klastera uz tvrtku Eko Vrelo i potporu grada Belog Manastira
- 16. rujna 2011 potpisana je Povelja o osnivanju
- Cilj Eko klastera pomocija je ekološki prihvatljivih tehnologija i proizvoda

EcoOcean™

Biobased Film and Bags for Marine Biodegradable and Anaerobic Digestion Markets



PRODUCT DESCRIPTION

EcoOcean film and bags are constructed from the latest biobased polymer technology on the market. Designed with the environment in mind, EcoOcean contains 77% biobased content and is fully marine biodegradable. EcoOcean is designed to biodegrade in marine environments, anaerobic digestion, natural soil and water environments, backyard composting systems, and municipal composting facilities (in areas where these facilities are available).

EcoOcean film products are durable and versatile with the added value of biodegradability in a wide range of environments. EcoOcean is also marine protective. Although we do not promote marine disposal, in the event that this product should reach the waterways it will biodegrade in months instead of remaining in the ocean for hundreds of years like ordinary plastic films. EcoOcean can help reduce the increasing and persistent problem of marine litter.

EcoOcean is heat, moisture, and chemical resistant making it an ideal film for compostable bags and many flexible film packaging applications.



FEATURES

- High renewable content: 77% biobased
- USDA BioPreferred™ certified packaging material
- BPI certified to meet ASTM D6400 for compostable plastics
- Marine biodegradable per ASTM D7081 standard specification
- 100% anaerobically digestible per ASTM D5511 standard test method

POTENTIAL APPLICATIONS

- Community composting programs
- Anaerobic digestion programs
- Organic waste diversion
- Lawn & leaf bags
- Retail packaging
- T-shirt bags
- Agricultural films

CERTIFICATIONS AND TESTING

EcoOcean is constructed from biobased resins which have the following certifications:

- Biodegradable Products Institute
- Vincate OK Compost and OK Compost Home
- Vincate OK Biodegradable Soil
- Vincate OK Biodegradable Water

EcoOcean has also been awarded USDA BioPreferred™ designation for Packaging Materials (www.biopreferred.gov). Many certifications require testing of finished films or bags. Please contact Cortec for more information on pending approvals.



TYPICAL PROPERTIES

Property		Test Method	Units	Typical Values
Caliper		ASTM D6988	mil	1.75
Breaking Factor	MD	ASTM D882-02	lbs/in	3.98
	TD			3.58
Tensile Strength at Break	MD	ASTM D882-02	psi	2317.69
	TD			2021.16
Elongation at Break	MD	ASTM D882-02	%	594.26
	TD			567.84
Yield Strength	MD	ASTM D882-02	psi	1284.02
	CD			1657.47
Tear Strength	MD	ASTM D1922-06a	mN	5944.86
	CD			11065.68
Drop Impact Resistance		ASTM D1709-04, Test Method A	grams	147.29
Puncture Resistance		MIL-STD-3010, TM 2065	lbf	1.5

*Typical properties represent average laboratory values and are not intended as specifications but as guides only.

PACKAGING

EcoOcean is available in various sizes and constructions. Please contact a Cortec customer service representative for additional information.



FOR INDUSTRIAL USE ONLY

KEEP OUT OF REACH OF CHILDREN

KEEP CONTAINER TIGHTLY SEALED

NOT FOR INTERNAL CONSUMPTION

CONSULT MATERIAL SAFETY DATA SHEET FOR MORE INFORMATION

LIMITED WARRANTY

BEFORE USING, USER MUST ASSUME THE RESPONSIBILITY FOR ITS INTENDED USE, AND USER ASSUMES ALL RISK AND LIABILITY WHATSOEVER IN CONNECTION THEREWITH. THE MANUFACTURER MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

THE EXCLUSIVE WARRANTY IS TO BE GIVEN AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE USER SHALL CONTACT THE MANUFACTURER FOR INFORMATION ON CONSEQUENTIAL DAMAGES.



4119 White Bear Parkway, St. Paul, MN 55116 USA
Phone (651) 429-1100, Fax (651) 429-1122
Toll Free (800) 4-CORTEC, E-mail info@cortecva.com
Internet <http://www.CortecVC.com>

printed on recycled paper 100% post consumer
Recycled Fiber 100% Green Certified Ink 100% Recycled Paper
Manufactured in a facility of 100% renewable energy
©2011 Cortec Corporation. All rights reserved. Design and/or construction may
vary without notice. Cortec Corporation, 4119 White Bear Parkway, St. Paul, MN 55116
USA. All other trademarks are the property of their respective owners.

Distributed by:



t = 0



t = 15 days



t = 30 days



t = 43 days



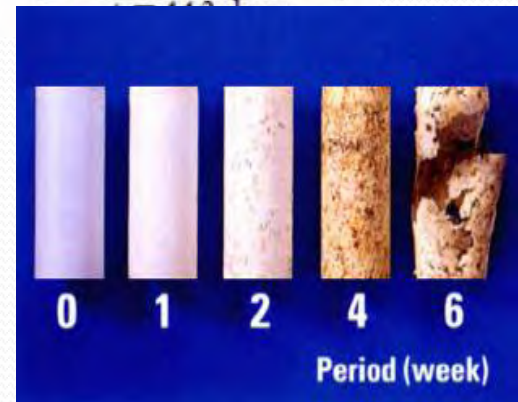
t = 62 days



t = 76 days



t = 93 days



FSB

90

Sveučilište u Zagrebu
90 godina Fakulteta strojarstva
i brodogradnje

University of Zagreb
90 Years of Faculty of Mechanical
Engineering and Naval Architecture



Katedra za preradu polimera

- Prerada polimera proučava se više od 60 godina na FSB-u u Zagrebu
- Studij obuhvaća preradu polimera i drva, a sve je započelo 1971. s preradom nemetala. Danas je to prerada polimera

Projekti

- MZOS

Povišenje efikasnosti razvoja proizvodnje polimernih dijelova – dio programa Brza proizvodnja – Od vizije do stvarnosti

Međunarodni projekti

- E! 2819 - FACTORY ECOPLAST (EUREKA, 2002- 2005)
- E! 3611 - EUROAGRI+BIOPUR (EUREKA, 2005- 2008)
- CEXIM-Plast (CIR-CE projekt, 2006-2007)
- E! 4960 - Next Generation Molding (EUREKA, 2010- 2012)
- MarineClean (CIP-EIP-Eco-Innovation-2010)
- Knowledge Based Process Planning and Design for Additive Layer Manufacturing - KARMA (243631) (FP7, 2010-2012)



HVALA NA PAŽNJI!