Research for the Benefit of SME Associations

Title: Whey protein-coated plastic films to replace expensive polymers and increase recyclability.

Acronym: WHEYLAYER

Grant Agreement Number: 218340-2

Deliverable 6.1	Report on the demonstration activities including the evaluation and conclusions
Associated WP	6
Associated Tasks	Task 6.1: Planning of a Demonstration Programme Task 6.2: Execution of the Demonstration Programme Task 6.3: Demonstration Monitoring, evaluation and conclusions
Due Date	M36
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Partners Involved	TUBA, PIMEC, LLET, ASSORIMAP, HUPLAST, CESAP, UNIPI, FRAUNHOFER, TTZ
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Dissemination Level	PU

Contents

Publishable Executive Summary

In the final months of the WHEYLAYER project, consortium members have organized four demonstration sessions and workshops around Europe, to present projects achievements and results. Workshops were organized in Slovenia, Spain, Italy and Hungary.

Altogether, 96 effective attendees, 51 external and 46 internal, were at WHEYLAYER workshops, coming from 13 European countries. Most of them were from packaging industry but also from research institutions, food, cosmetic, machinery and automotive industry as well as from recycling industry.

Project consortium members presented all important findings and achievements of the WHEYLAYER project, keeping in mind not to reveal any confidential information that could endanger protectable project results. The demonstration sessions were oriented to presenting the development of the new material and its production process as well as the material's potential, benefits and possible ways of use. The WHEYLAYER project prototype machine built by IRIS was demonstrated to coat PET films at semi-industrial speed. Workshops presented also recyclability of the laminated WHEYLAYER material in water bath with addition of enzymes and the possibility of scaling up recycling process to met industrial requirements.

Participants acknowledged the interest of the information provided and the invaluable assets of new material especially for the cosmetic and food industries. They also asked about WHEYLAYER materials properties for special applications that had not been tested during this project. The responses will be used as ideas for possible further development and applications of WHEYLAYER technology.

Project consortium estimates that the realized workshops reached the widest possible audience from many different sectors and wide geographical origins.

1. Introduction

The WHEYLAYER project is ending on October 31st 2011 and therefore project consortium organized a few demonstrations of project results and achievements to public enduring the last 2 months of the project. Demonstration sessions were held in several countries across EU to gain maximum spreading of knowledge generated during the project. Project achievements were disseminated using presentations and guided tours through the project partners' facilities and developed WHEYLAYER process prototype.

2. Report on Demonstrations activities

Project WHEYLAYER had four demonstration sessions hosted at four project partners in four EU countries. Each demonstration session is described in details below. The general introduction to the project repeated in each event, although each demonstration was partly adapted for specific audience.

Table 1: WHEYLAYER demonstration sessions

Where	When	Who		What – the content
		Host	Audience	
Spain, Castelldefels	22nd September 2011	IRIS, PIMEC and LLET	Packaging producers and users	workshop regarding the WHEYLAYER project including a practical demonstration of the process prototype
Slovenia, Ljubljana	11th October 2011	PCS and TUBA	Plastic and Packaging producers and users. Food, cosmetic industry	workshop regarding the WHEYLAYER project including a practical demonstration of the process prototype
Italy, Bergamo	28th October 2011	ASSORIMAP, CESAP and UNIPI	Plastic recyclers	Workshop regarding the WHEYLAYER project followed by a practical demonstration of the recycling process for WHEYLAYER-based multilayer

				films
Hungary, Budapest	26th October 2011	HUPLAST and FRAUNHOFER	Plastic producers and users	workshop regarding the WHEYLAYER project

The main event was organised in Slovenia. As such its thorough description will be provided below. The other events generally followed a similar structure and as such fewer details will be provided.

2.1 Demonstration session in Slovenia

Plasttechnics Cluster of Slovenia (PCS) and Lajovic Tuba Embalaža d.o.o. (TUBA) hosted the major demonstration session for the project in Slovenia. Demonstration was held at October 11th 2011 in Hotel Mons and in the facilities of project partner TUBA. This demonstration session was organized for presenting new packaging material to the food industry, cosmetic industry, packaging producers and others interested stakeholders from the supply and value chain.

Members of the project consortium invited to this demonstration session everyone, who expressed interest in the project results at different occasions when presenting the project to public (e.g. booth at the Interpack fair in Düsseldorf, May 2011 and other dissemination events) or via internet. Besides, the hosts, PCS and TUBA, invited their members and business partners, respectively. The agenda for this event (Annex I) was distributed together with formal invitations.

The event started at 8.30 with registration, there were 62 effective attendees (vs. 71 people who had registered). Attendees (picture 1) were from 13 European countries: Belgium, Bulgaria, Croatia, Finland, Great Britain, Germany, Hungary, Italy, Serbia, Slovenia, Spain, Switzerland and The Netherlands.

Picture 1: attendees to the demonstration session

Half of the attendees (31) were members of the consortium and others were from:

- food industry (1 company),
- cosmetic industry (3 companies),

- packaging industry (8 companies
- automotive industry (1 company);
- research organisations (7 institutions), and
- others (2 institutions).

Project consortium members tried to present all important findings and achievements of the WHEYLAYER project, but keeping in mind not to reveal any confidential information that could endanger patentability of project results. The demonstration session was oriented to presenting the development of the new material and its production process as well as the material's potential, benefits and possible ways of use. Laminated materials including WHEYLAYER technology are in the final development stage and two project members have already included this technology in their business strategy.

The demonstration session started with short welcome speeches of the hosts: Janez Navodnik, PCS, and Jože Ban, TUBA, as well as of a representative from the Slovenian Chamber of Commerce and Industry, Alenka Avberšek. All of them pointed out importance of plastic industry in Slovenia and Europe, and development of new degradable and sustainable packaging materials.
Research results of the WHEYLAYER project were presented by responsible R&D partners using PowerPoint presentations. Elodie Bugnicourt, IRIS (technical coordinator), presented the structure and objectives of the project "Introduction to the WHEYLAYER project". Then 2 industrial partners presented the context of the WHEYLAYER project: Matt Breen, DUNREIDY, presented an "Introduction to the whey market and isolation process" on behalf of Holmer Woehlk, MLANG and Girolamo Dagostino, ASSORIMAP, who presented "Introduction to the recycling of plastics and plastics packaging". The RTDs then gave an overview of the development carried out in the project: Klaus Noller, FRAUNHOFER IVV, presented "Development of barrier layer based on whey"; Patrizia Cinelli, UNIPI, presented "Recycling and environmental benefits of WHEYLAYER"; Jessica Wildner, ttz Bremerhaven, presented "Results of packaging of food stuffs with WHEYLAYER-based films"; and Ismael Almazan, IRIS, presented "Principle of the WHEYLAYER process". Pictures of each speaker from the consortium can be found below.

Picture 2: Janez Navodnik, PCS

Picture 3: Jože Ban, TUBA

Picture 4: Matt Breen, DUN

Picture 5: Girolamo Dagostino, ASSORIMAP

Picture 6: Klaus Noller, FRAUNHOFER

Picture 7: Patrizia Cinelli, UNIPI

Picture 8: Mona Popa

Picture 9: Elodie Bugnicourt, IRIS

Picture 10: Ismael Almazan, IRIS

Picture 11: Alenka Avberšek, Slovenian Chamber of Commerce and Industry

After the presentations of the project consortium members, invited speaker: Prof. Mona Popa, from Biotechnology Faculty, University of Bucharest, gave lecture on "Sustainable packaging" and emphasized in this context the need for the development of sustainable materials such as WHEYLAYER.

This part of demonstration session was concluded with questions from the audience and thorough answers and explanations of the project R&D members. The picture on the right show all the speakers during the feedback session.

Picture 12: speakers during the feedback session

Some of the questions are listed here:

- What can be done with the hydrolysed protein solution? WHEYLAYER consortium has to check if it could be uses in soil fertilization to profit the Nitrogen content.
- What limiting factor for the speed of production as we are comparing with EVOH that can be coextruded at really high speeds? WHEYLAYER consortium said the process here would be more comparable with the coating of PVDC. It was also said that basically the speed depends on scaling up the size of the drying section.
- What is the variation of OTR vs. humidity and if as bad as for EVOH? WHEYLAYER consortium: it is not expected to vary a lot; those results will be available and published at the end of the project.
- Will the LCA results be peer-reviewed? WHEYLAYER consortium: we will get in touch with 2Be, the company which manage the Sigma Pro software in Italy, but it will not be an official review.
- What was the nature of the material used for cheese storage and how was it chosen? WHEYLAYER consortium: this is the reference materials used by the cheese manufacturer which roughly had identical OTR (but it does not include EVOH); tests with laminate including EVOH would be made by the end of the project and published then; another interesting element is that the reference optimised material was over 100 microns thick and was compared with 40 microns of WHEYLAYER based laminates showing a potential for weigh reduction.

- Can WHEYLAYER be extruded? WHEYLAYER consortium: it is not possible due to the crosslinking of the proteins during the process and this could be the object of further research work as it was a completely different technology.
- Can WHEYLAYER be used on the top layer? WHEYLAYER consortium: the WHEYLAYER was developed to be an interim barrier layer that would allow the recycling of multilayer laminates. There are various limits for that: i) if the product to be packed has significant moisture content, then the WHEYLAYER may tend to partially dissolve with time; ii) it is not thermosealable as top layer thus limits some applications.
- In relation to the crosslinking of the proteins during the process, does that translate into an issue for post forming? WHEYLAYER consortium: it does for some process as we are talking about a thermoset and not a thermoplastic.
- Can WHEYLAYER replace the adhesive in the laminate configuration? WHEYLAYER consortium: WHEYLAYER needs to go through a drying process to acquire its properties and then laminated. As such it is not possible.

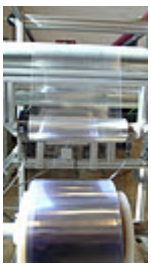
Many people asked for samples and were indicated that although the patent is filled, it will not be public until January 2013 but that avenues for collaboration would be investigated based on the set up of NDAs.
Afterwards, all attendees were transferred to TUBA facilities.

Picture 13: attendees of the demonstration session in front of the entrance of the company TUBA

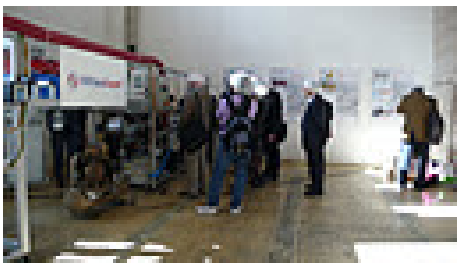
There the prototype machine for application of the whey coating on the base material was presented.

Picture 14: WHEYLAYER prototype

The machine was running at speed of 10 m/min during the demonstration. This is not the end production speed, but it was intentionally slowed, so that the application process and its different stages could be more clearly presented and explained by Ismael Almazan from IRIS. More details about the prototype can be found in *D5.1- Industrial process and user manual.*

Picture 15: prototype coating and winding section



Picture 16: attendees in front of the prototype

A small scale simulation of the recycling process of the WHEYLAYER material was also prepared using water solution with enzyme addition (Terg-a-zyme at 4%) in a heated magnetic stirrer to remove the WHEYLAYER coating in a few minutes.

The different raw materials for producing the WHEYLAYER coating were presented, as well as different samples of coated and laminated WHEYLAYER material.



Picture 17: demonstrated WHEYLAYER samples and raw materials

Guided tour through the production at TUBA was organised as well and the attendees could see the production of plastic, laminated, and aluminium tubes.




Picture 18: pictures from the guided tour in TUBA

At the end of the demonstration session all external attendees were asked to fulfil the feedback form (Annex III). 20 written answers were received from attendees of different skills and interest. Most of them found the session very useful (16), others think it was of average use to them (4). The technology was reported of higher interest to the industry than to R&D sector. Half of the questionnaires were filled by attendees

from industry; others were from R&D and education. Only 5 attendees believed that the technology meets the need of their organisations, others were still unsure. Most of the attendees are interested in using the WHEYLAYER packaging material. One participant expressed interest that his company would be interested in installing the WHEYLAYER process. Some of them find interest elsewhere: i.e. proposing new material to costumers or further recommendations, for teaching.

As the most important reason for using/investing in WHEYLAYER technology was found increased recyclability and sustainability of multilayer packaging. This reason was followed by:

2. costumers/consumers demand for innovations in packaging
3. valorisation of whey (as a solution for a sub-product or as a marketing tool)
4. not satisfied with the current available barrier plastics
5. costs

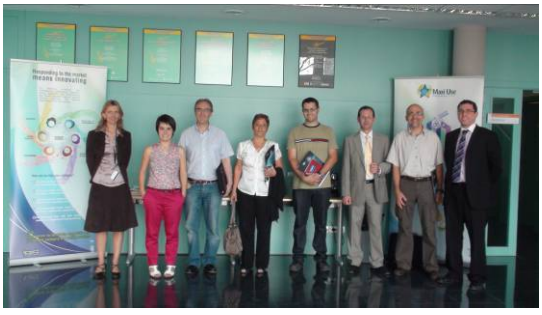
As a feedback we also gained some comments:

- hope that tubes will be developed as soon as possible.
- It would be interesting to process the whey material by extrusion (co-extrusion) (2 respondents)
- The fully biodegradable solution is very interesting. The process should be combined with the project results of the FP5 project WHEYPOL (production of PHA from lactose).

Almost all respondents wished to receive further information about the WHEYLAYER technology.

2.2 Demonstration session in Spain

The first demonstration session for the WHEYLAYER project was held in IRIS on September 22nd. It was particularly targeted at the members of the Catalan associations LLET and PIMEC. Presentations were given in Catalan and Castellan to 6 external attendees and 8 consortium members. External attendees were from the academic, packaging, cosmetic and machinery sectors.



Picture 19: attendees of the demonstration session in Spain

The agenda is reported in Annex 1. Although shorter, it generally follows the same structure as the event reported in the previous paragraph. Robert Carroll (PIMEC), Montserrat Balcells (LLET) started by a presentation of their associations and

respective interest for their members respectively in producing/using new packaging solutions or supplying whey to improve their income. Elodie Bugnicourt, Edurne Gaston, Alejandro Rosales (IRIS), then reported the development of the WHEYLAYER project on behalf of IRIS and the other RTDs in the project.

Picture 20: Presentation during the demonstration in Spain

Furthermore, various packaging items and samples based on WHEYLAYER were exhibited as well as the recycling process at lab scale (picture below). The WHEYLAYER project prototype machine built at IRIS was demonstrated to coat PET films at semi-industrial speed.

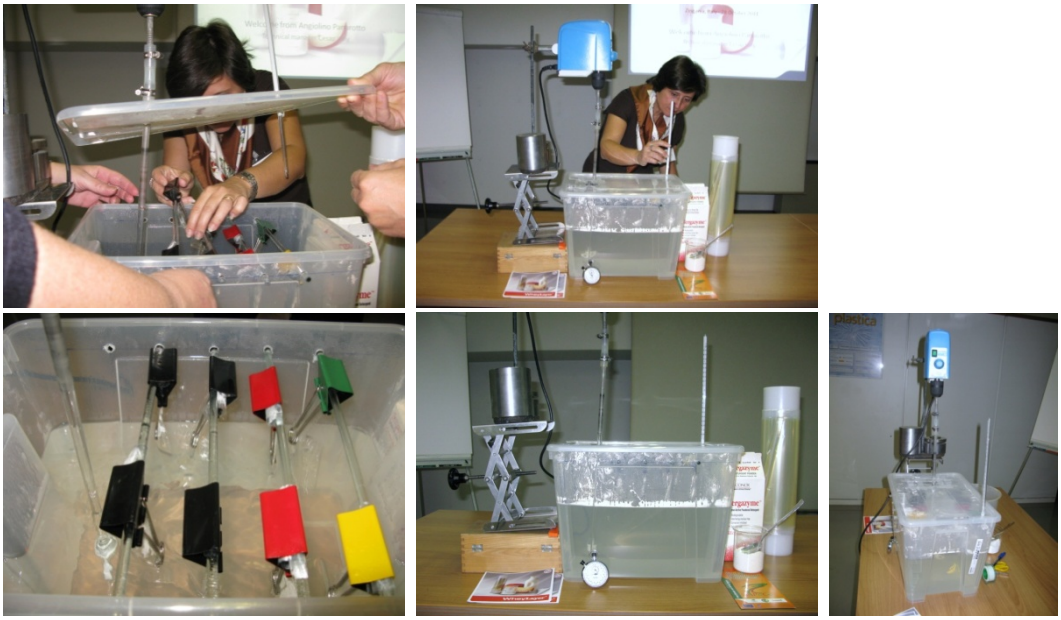
Picture 21: Prototype demonstration in Spain

Participants acknowledged the interest of the information provided and the invaluable assets of new material especially for the cosmetic industry. One of the participants, from the machinery sector, also gave recommendations on the process improvements. A question arose as if WHEYLAYER improved UV barrier of coated film. It was answered that data are available as it was not part of the targets of the project but tests could be done post project as it would be a good added claim for the Unique Selling Points. Some attendees suggested other application for Whey-based materials.

2.3 Workshop in Italy

CESAP hosted a workshop regarding WHEYLAYER in Italy. The event was held on 28th October 2011 at CESAP facilities in Verdellino/Zingonia, Bergamo, Italy. It was organized by CESAP, ASSORIMAP, and UNIPI for presenting the new packaging material and its recyclability to the food industry, packaging producers, recyclers and

others interested stakeholders from the supply and value chain. In total, 13 effective attendees were at this event, 9 external and 4 from organizing institutions. The attendees were invited to this demonstration session were contacts from organising partners and companies who expressed interest in the project results at different occasions when presenting the project to public (e.g. booth at the Interpack fair in Düsseldorf, May 2011, PLASTiCE International Launch Conference: Europe for Sustainable Plastics, 24th – 25th October 2011, Bologna, Italy) or via the project website. CESAP and ASSORIMAP invited their members and business partners, respectively. The invitation to for this event (Annex I) were distributed mainly by e-mails.
UNIPI reached CESAP the day before the demonstration and UNIPI and CESAP members set the equipments for showing to the attendees the removal of the WHEYLAYER from the multilayer film based on coated polyethylene terephtalate (PET) laminated with polyethylene (PE).



Picture 22: Prototype for wheylayer removal by washing with enzymatic detergents

The event hosted 9 external attendees. More contacts were made with attendees of other event ran at CESAP in the mean time, and further contacts derived after the workshop.

Picture 23: Room hosting the demonstration organized by CESAP and UNIPI

Attendees (picture 24) were from Italy and presentations were given in Italian, some of them were representatives of association and research consultants, therefore offering a wide possibility of spreading the information acquired at the demonstration event.

Picture 24: Attendees at the Demonstration in Italy

Members of WHEYLAYER consortium presented the main findings and achievements of the WHEYLAYER project, but keeping in mind not to reveal any confidential information. The main slides used for the event in Slovenia were presented. The demonstration session was oriented to presenting the development of the new material and its production process but mainly the possibility to recycle the multi layer film after removal of the WHEYLAYER by using washing with enzymatic detergents.
The demonstration section started with welcome to CESAP by Luca Garlini and an overview of WHEYLAYER project and of the materials used for food packaging held by Angiolino Panarotto of CESAP. Dr. Patrizia Cinelli from UNIPI showed the main achievement of the WHEYLAYER project and explained the washing process by use of enzymatic detergents.

Picture 25: Presentations by Angiolino Panarotto, CESAP and Patrizia Cinelli, UNIPI

At the end of the oral presentation, the films were showed to the attendees evidencing the differences between the starting WHEYLAYER film and the film that was immersed in the water bath with addition of enzymatic detergent, under stirring at room temperature. The separation of the film in the two layers PET and PE was demonstrated. The attendees were impressed and strongly interested.

Picture 26: Film separated in the two layers of PET and PE.

Attendees questioned about:

- The quality that the whey protein must have in order to be considered for application as layer on films.
- Possibility to use WHEYLAYER on board packaging and if there were prepared films with polyvinyl chloride (PVC) as a substrate.

The members of the consortium directed all attendees to consult the project website and to address specific questions that may raise conflict with the patent application to the project coordinator.

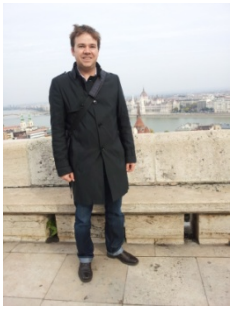
Further, inquires via e-mail were received from a few industrial companies, asking:

- about the possibility to apply the WHEYLAYER with a technology similar to that used with solvents, such as flex technology
- if WHEYLAYER products are available on the market
- if application of WHEYLAYER is possible on some commercially available materials from specific large film producer.

2.4 Workshop in Hungary

The fourth workshop on the WHEYLAYER project was organized in Budapest, Hungary, on 26th October 2011. This event was hosted by the SME-AG partner HUPLAST with organizational support of RTD partner FRAUHOFER.
Five companies, producers of plastic packaging materials, from Hungary, members of HUPLAST, attended this workshop. First, a welcome speech was given by Peter Ollar, the director of the hosting organization. Achievements and the main findings of the WHEYLAYER project were presented to the audience by Florian Wild, FRAUNHOFER mainly using slides that were prepared for the event in Slovenia. The demonstration session was oriented to presenting the development of the new material and its production process and raised high interest among the audience. The length of the session was about 3 hours followed by questions and explanations. No new questions different to those asked during the events in Spain, Italy and Slovenia, were raised.
The representatives of attending companies stated at the end of this demonstration session that the event was very useful to all of them. If anybody will have some new

question, they will contact the office of HUPLAST that will redirect their question to the project coordinator in case it will not be able to respond by themselves or in case of possible conflict of IPR.
After the workshop, the whole group took a walk across the Budapest to strengthen their contacts between project consortium members and possible users of WHEYLAYER material in Hungary (Picture 27).



Picture 27: Florian Wild, FRAUNHOFER, during the post workshop social event

3. Conclusions

In the final months of the WHEYLAYER project, consortium members have organized four events around the Europe, to present projects achievements and results to the widest possible audience. Workshops were organized in Slovenia, Spain, Italy and Hungary. Invitations to events were sent to contacts raised during the project duration via internet, e-mail, presentations of WHEYLAYER projects at conferences, seminars and at last, but not least, also at trade fairs. The most important among them was certainly INTERPACK 2011. At this occasion the WHEYLAYER was proudly presented to the industry and raised great interest also among big producers of plastic packaging. Besides, invitations were also send to all members of SME-AG partners (PIMEC, PCS, HUPLAST, ASSORIMAP, LLET), current business partners of SME partners (TUBA, SERVIPLAST, DUN, MLANG, CESAP) as well as to possible new partners – end-users.

Altogether, 96 effective attendees, 51 external and 45 internal, were at WHEYLAYER workshops, coming from 13 European countries. Most of them were from packaging industry, research institutions, but also from food, cosmetic, machinery and automotive industry as well as from recycling industry.

Project consortium members presented all important findings and achievements of the WHEYLAYER project, but keeping in mind not to reveal any confidential information that could endanger patentability of project results. The demonstration sessions were oriented to presenting the development of the new material and its production process as well as the material's potential, benefits and possible ways of use.

Demonstration sessions in Slovenia and Spain had special emphasis on production of WHEYLAYER coated materials. The WHEYLAYER project prototype machine built at IRIS was demonstrated to coat PET films at semi-industrial speed. The machine was transferred after the event in Spain form IRIS to TUBA, where it is at present. During these sessions, a short demonstration of recycling process was also made.

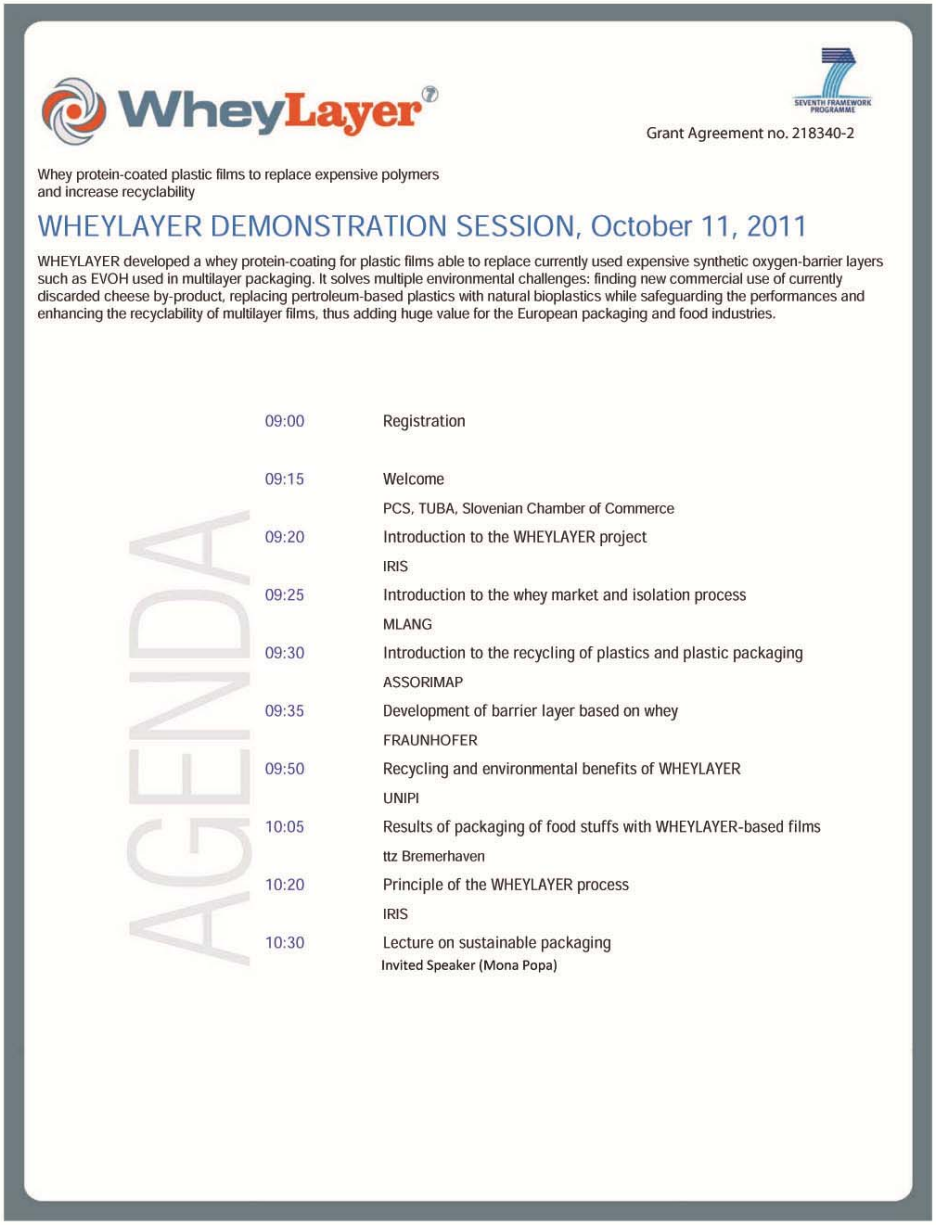
Workshop in Italy was especially dedicated to in depth presentation of the recyclability of the laminated WHEYLAYER material in water bath with addition of enzymes and possibility of scaling up recycling process to meet industrial requirements. At all workshops, samples of WHEYLAYER material were presented.

Participants acknowledged the interest of the information provided and the invaluable assets of new material especially for the cosmetic and food industries. They asked number of questions to the consortium members, who gave answers without revealing any confidential information since the WHEYLAYER consortium had decided to protect some of the intellectual property gained during the project with patent application, eg. processing conditions, but also to keep trade secret regarding used formulations. Participants to the workshops also asked about WHEYLAYER materials with special properties of for applications that had not been tested during the project. These responses will be used as ideas for possible further development and applications of WHEYLAYER technology. Using participants' feedback gathered at all workshops on the same questionnaires project consortium collected industrial interest on the WHEYLAYER materials and technology and also gained some new contacts.

Project consortium estimates that workshops reached the widest possible audience with participants from so many different sectors and wide geographical territory.

Annex 1: Agenda of the events

Agenda of the Demonstration in Slovenia



WheyLayer®

Grant Agreement no. 218340-2

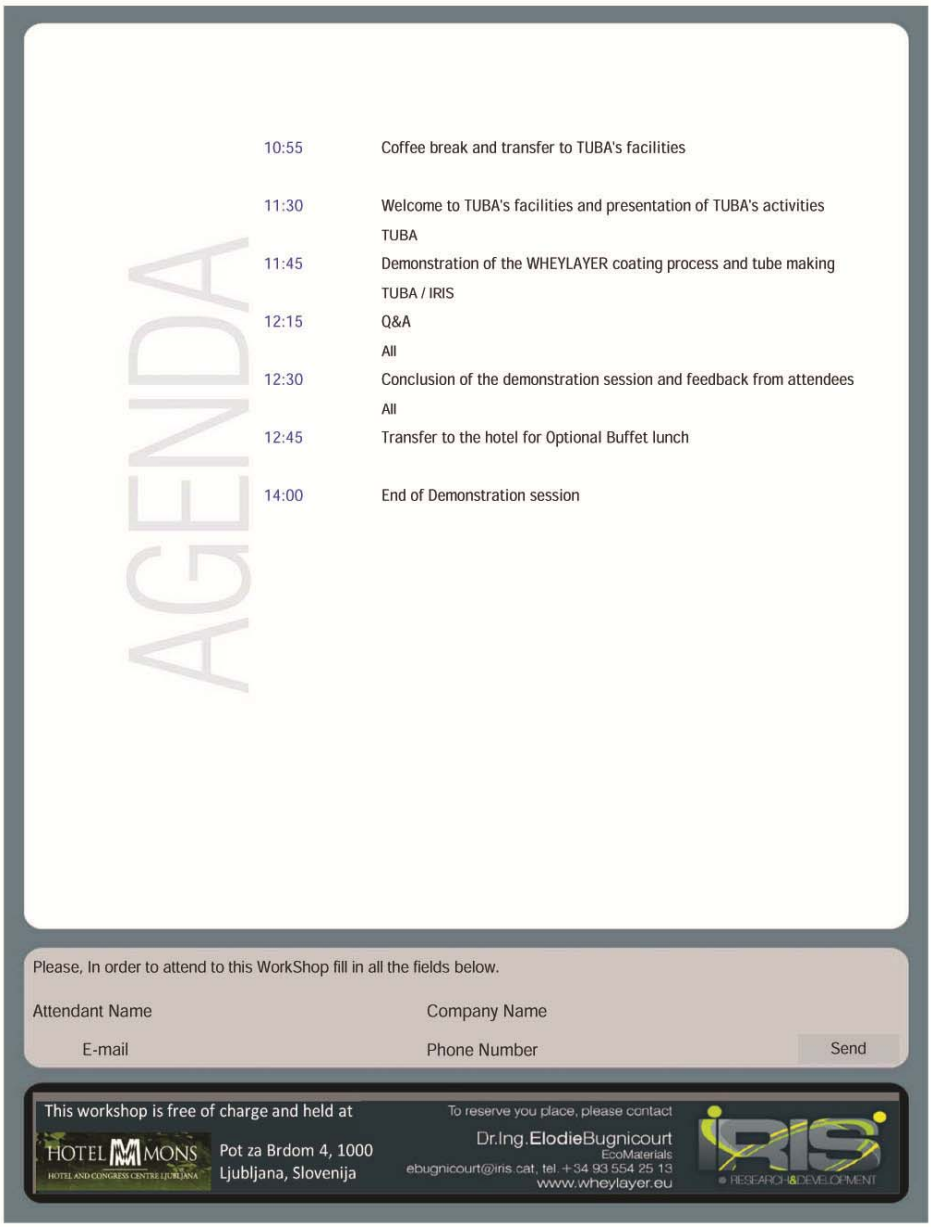
Whey protein-coated plastic films to replace expensive polymers and increase recyclability

WHEYLAYER DEMONSTRATION SESSION, October 11, 2011

WHEYLAYER developed a whey protein-coating for plastic films able to replace currently used expensive synthetic oxygen-barrier layers such as EVOH used in multilayer packaging. It solves multiple environmental challenges: finding new commercial use of currently discarded cheese by-product, replacing pertroleum-based plastics with natural bioplastics while safeguarding the performances and enhancing the recyclability of multilayer films, thus adding huge value for the European packaging and food industries.

AGENDA

09:00	Registration
09:15	Welcome PCS, TUBA, Slovenian Chamber of Commerce
09:20	Introduction to the WHEYLAYER project IRIS
09:25	Introduction to the whey market and isolation process MLANG
09:30	Introduction to the recycling of plastics and plastic packaging ASSORIMAP
09:35	Development of barrier layer based on whey FRAUNHOFER
09:50	Recycling and environmental benefits of WHEYLAYER UNIPI
10:05	Results of packaging of food stuffs with WHEYLAYER-based films ttz Bremerhaven
10:20	Principle of the WHEYLAYER process IRIS
10:30	Lecture on sustainable packaging Invited Speaker (Mona Popa)


AGENDA
10:55 Coffee break and transfer to TUBA's facilities
11:30 Welcome to TUBA's facilities and presentation of TUBA's activities
TUBA
11:45 Demonstration of the WHEYLAYER coating process and tube making
TUBA / IRIS
12:15 Q&A
All
12:30 Conclusion of the demonstration session and feedback from attendees
All
12:45 Transfer to the hotel for Optional Buffet lunch
14:00 End of Demonstration session
Please, In order to attend to this WorkShop fill in all the fields below.
Attendant Name
Company Name
E-mail
Phone Number
Send
This workshop is free of charge and held at
HOTEL MONS
HOTEL AND CONGRESS CENTRE LJUBLJANA
Pot za Brdom 4, 1000
Ljubljana, Slovenija
To reserve you place, please contact
Dr.Ing.ElodieBugnicourt
EcoMaterials
ebugnicourt@iris.cat, tel.+34 93 554 25 13
www.wheylayer.eu
IRIS
RESEARCH&DEVELOPMENT

Agenda of the Demonstration in Spain (Catalan)

WheyLayer

Grant Agreement no. 218340-2

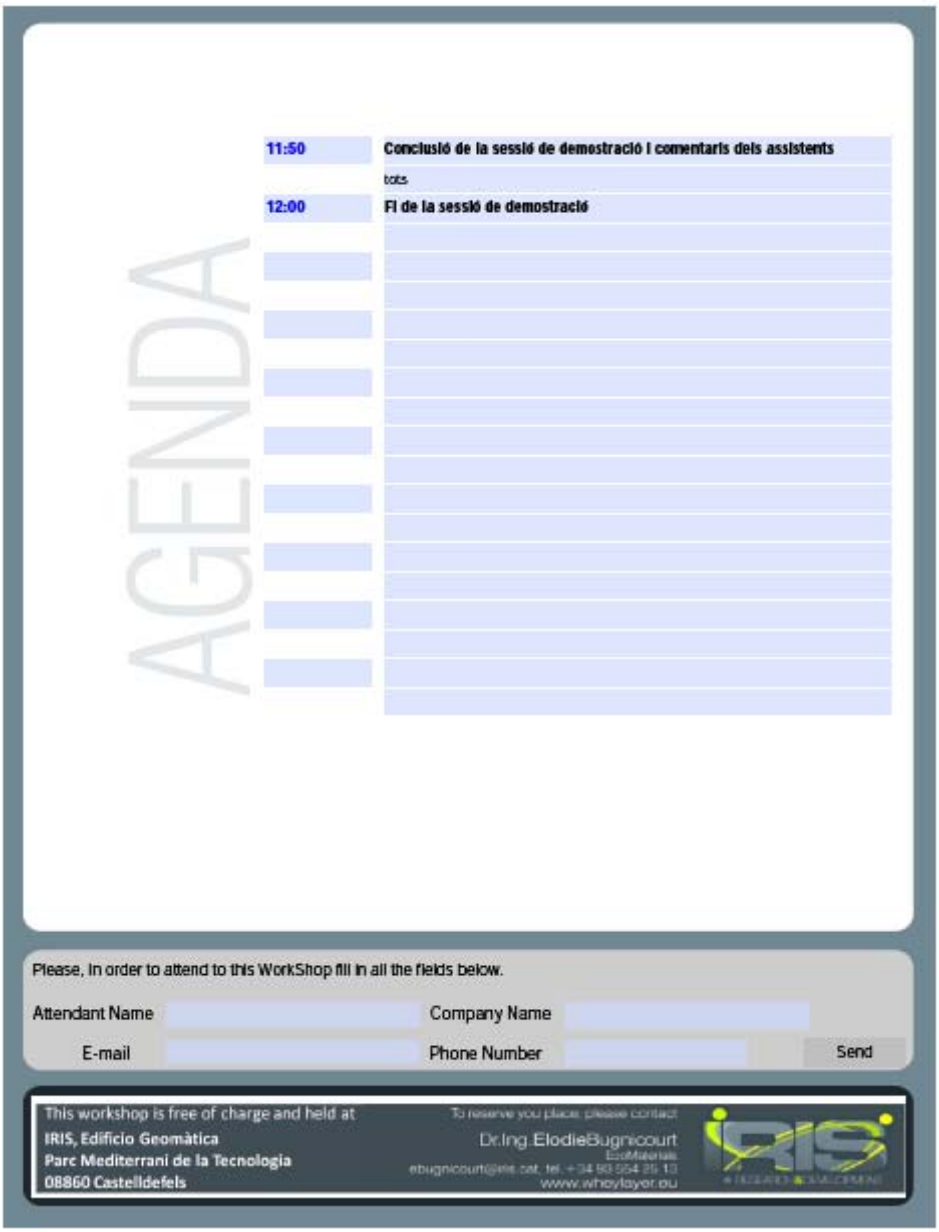
Recobriments barrera de proteïna de sèrum de llet per a films de plàstic per augmentar la reciclabilitat dels embalatges

Sessió de demostració Wheylayer, 22 setembre 2011

Wheylayer ha desenvolupat formulacions de proteïna de sèrum de llet per al recobriment de làmines de plàstic capaç de reemplaçar els plàstics cars que s'utilitzen com a capa barrera d'oxigen, com ara el EVOH utilitzat en els envasos multicapa. Wheylayer resol múltiples desafiaments ambientals com la recerca de noves formes de valoritzar a aquest subproducte del formatge, en l'actualitat descartat, en substitució de plàstics sintètics amb bioplàstics naturals conservant les prestacions i millorant la reciclabilitat dels films

AGENDA

10:00	**Registre** IRIS
10:10	**Benvinguda de les associacions** PIMEC, LLET
10:15	**Introducció al projecte Wheylayer** IRIS
10:20	**Desenvolupament de la capa de barrera a base de sèrum de llet** IRIS
10:30	**Reciclaje y beneficios ambientales de Wheylayer** IRIS
10:40	**Resultats dels envasos de productes alimentaris amb Wheylayer** IRIS
10:50	**Principi del procés de Wheylayer** IRIS
11:00	**Pausa**
11:20	**Demostració** IRIS
11:40	**Preguntes** tots


AGENDA
11:50
Conclusió de la sessió de demostració i comentaris dels assistents
tots
12:00
Fi de la sessió de demostració
Please, In order to attend to this WorkShop fill in all the fields below.
Attendant Name
Company Name
E-mail
Phone Number
Send
This workshop is free of charge and held at
IRIS, Edificio Geomàtica
Parc Mediterrani de la Tecnologia
08860 Castelldefels
To reserve you place, please contact
Dr.Ing.ElodieBugnicourt
EcoMaterials
ebugnicourt@iris.cat, tel. +34 93 554 25 13
www.wheylayer.eu

Agenda of the Demonstration in Spain (Castillan)

WheyLayer

Grant Agreement no. 218340-2

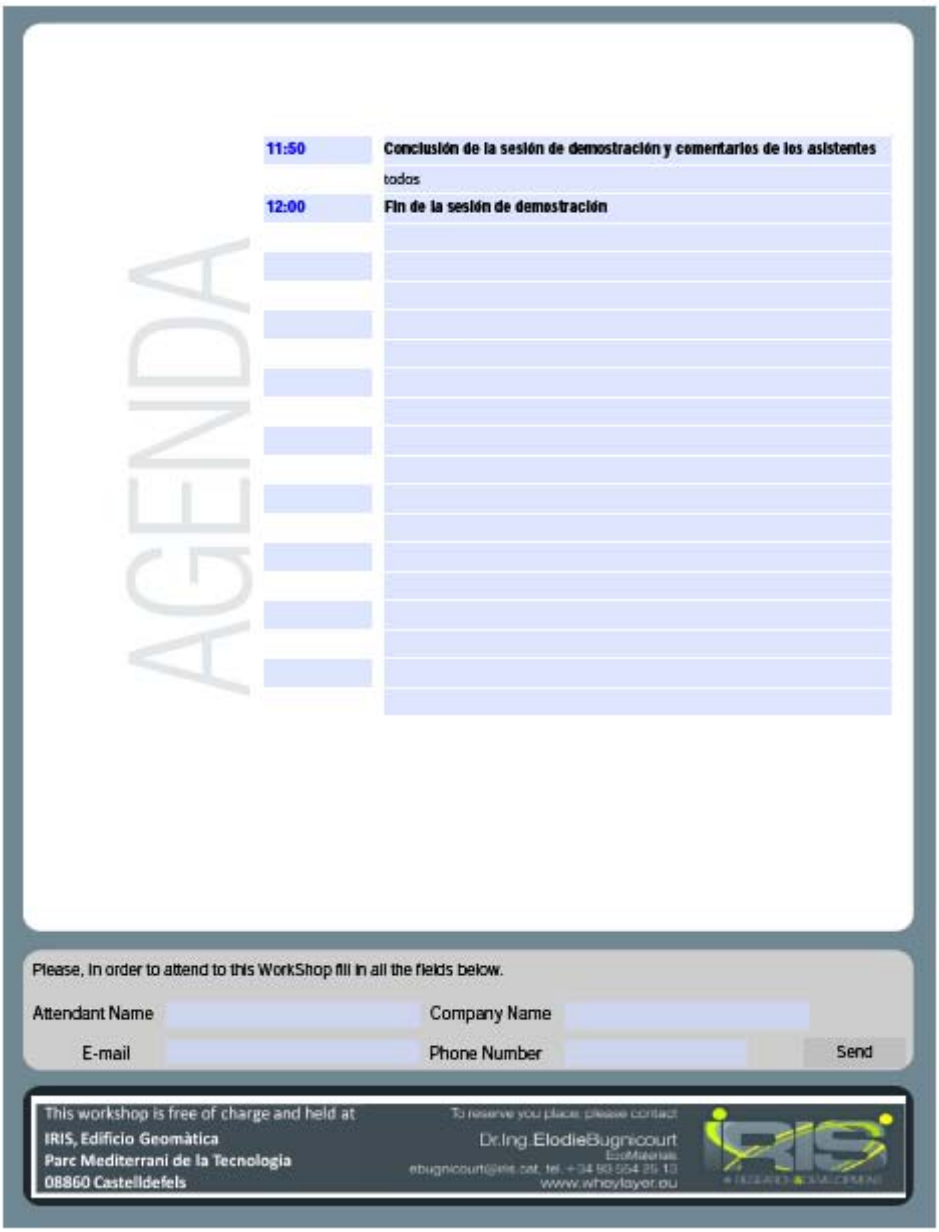
Recubrimientos barrera de proteína de suero de leche para films de plástico para aumentar la reciclabilidad de los embalajes

Sesión de demostración Wheylayer, 22 de septiembre 2011

Wheylayer ha desarrollado formulaciones de proteína de suero de leche para el recubrimiento de láminas de plástico capaz de reemplazar a los plásticos caros que se utilizan como capa barrera de oxígeno, tales como el EVOH utilizado en los envases multicapa. Wheylayer resuelve múltiples desafíos ambientales como la búsqueda de nuevas formas de valorizar a este subproducto del queso, en la actualidad descartado, en la sustitución de plásticos sintéticos con bioplásticos conservando las prestaciones y

AGENDA

10:00	**Registro**
	IRIS
10:10	**Bienvenida de las asociaciones**
	PIMEC, LLET
10:15	**Introducción al proyecto Wheylayer**
	IRIS
10:20	**Desarrollo de la capa de barrera a base de suero de leche**
	IRIS
10:30	**Reciclaje y beneficios ambientales de Wheylayer**
	IRIS
10:40	**Resultados de los envases de alimentos con Wheylayer**
	IRIS
10:50	**Principio del proceso de Wheylayer**
	IRIS
11:00	**Pausa**
11:20	**Demostración**
	IRIS
11:40	**Preguntas**
	todos


AGENDA
11:50
Conclusión de la sesión de demostración y comentarios de los asistentes
todos
12:00
Fin de la sesión de demostración
Please, In order to attend to this WorkShop fill in all the fields below.
Attendant Name
Company Name
E-mail
Phone Number
Send
This workshop is free of charge and held at
IRIS, Edificio Geomàtica
Parc Mediterrani de la Tecnologia
08860 Castelldefels
To reserve you place, please contact
Dr.Ing.ElodieBugnicourt
EcoMaterials
ebugnicourt@iris.cat, tel. +34 93 554 25 13
www.wheylayer.eu

Invitation to the Demonstration Section in Italy

PROGETTO EUROPEO "WHEYLAYER": PRESENTAZIONE DEI RISULTATI
al CESAP di Verdellino-Zingonia, venerdì 28 ottobre 2011 dalle 10.30 alle 12.30

CESAP, nell'ambito dei suoi programmi formativi, propone l'opportunità di partecipare a un seminario informativo sui risultati finali del progetto europeo denominato Wheylayer (www.wheylayer.eu).
Tale progetto, che giunge al suo termine dopo tre anni di ricerche e sperimentazioni, è stato finanziato nell'ambito del Settimo Programma Quadro e ha coinvolto 13 soggetti in rappresentanza di Associazioni di categoria, Piccole e Medie Imprese e Centri di Ricerca, con il fine di produrre un imballaggio innovativo per alimenti e cosmesi utilizzando per l'accoppiamento del film un derivato dalle proteine del siero del latte, in modo da garantire le necessarie proprietà barriera offerte, ad esempio, dall'EVOH, ma migliorando e ottimizzando le possibilità di recupero e riciclo da film post-consumo.
Infatti, il film prodotto dalla polimerizzazione delle proteine del siero del latte si separa facilmente dal substrato di film tradizionale permettendone la riciclabilità; le funzionalità assicurate dal nuovo polimero sono confrontabili con quelle di altri film interattivi.

ORARI DEL SEMINARIO
Il seminario avrà inizio alle 10.30 (registrazione partecipanti alle 10.15) e terminerà alle 12.30 circa. Al termine del seminario viene offerto un buffet agli intervenuti.
La partecipazione è gratuita.

A CHI È RIVOLTO
Il corso è rivolto a quanti già utilizzano film accoppiati con diverse funzionalità (dalla barriera alla cessione controllata) e che desiderano allargare le possibilità offerte da un nuovo polimero di origine naturale (proteine del siero del latte) e facilmente degradabile.

ARGOMENTI
1. descrizione delle tipologie di film accoppiati con polimeri tradizionali: funzionalità richieste (funzione passiva: barriera o permeabilità selettiva; film che interagiscono con il contenuto: cessione controllata);
2. produzione di film a base di proteine del siero del latte: caratteristiche fisiche e meccaniche del film;
3. caratteristiche di alcuni tipi di film accoppiati con un film a base di proteine del siero del latte: vantaggi, svantaggi e nuovi ambiti applicativi;
4. processo di riciclaggio;
5. discussione su casi concreti proposti dai partecipanti.

TERMINI DI ISCRIZIONE
Per evidenti ragioni organizzative, si chiede la cortesia di farci pervenire eventuali iscrizioni **entro e non oltre martedì 25 ottobre.**

Per eventuali ulteriori informazioni in merito, gli interessati possono contattarci allo 035 884600 o per e-mail: info@cesap.com.

Cordialmente.

Angiolino Panarotto
Direttore Tecnico

CESAP ATTIVITÀ E NOTIZIE: www.cesap.com

P.S. – CESAP si raggiunge dal casello di Capriate dell'autostrada Milano-Venezia, seguendo dapprima le indicazioni per Zingonia e, raggiunto il centro abitato, i cartelli segnaletici industriali con fondo nero e scritta gialla con l'indicazione CESAP. Per gli utenti dei navigatori satellitari, digitare, come località: Verdellino.

SCHEDA DI ADESIONE

DA RESTITUIRE VIA FAX (035 884431) O E-MAIL (info@cesap.com)
A CESAP ENTRO IL 25 OTTOBRE 2011

PROGETTO EUROPEO "WHEYLAYER": PRESENTAZIONE DEI RISULTATI
al CESAP di Verdellino-Zingonia, venerdì 28 ottobre 2011 dalle 10.30 alle 12.30

Il sottoscritto: _____referente aziendale per il seminario

iscrive il/i signor/i: _____

_____

n° telefono cellulare del partecipante (solo per eventualità eccezionali): _____

ANAGRAFE DITTA	ditta:	
	via:	
	CAP/città:	provincia:
	partita IVA:	codice fiscale:
	telefono:	telefax:
	e-mail:	

che conferma/confermano la propria partecipazione, a titolo gratuito, al seminario in oggetto.

data ..... firma leggibile .....

N.B.: L'indirizzo e i dati da noi forniti a CESAP possono essere utilizzati per l'inoltro di informazioni su corsi e iniziative di CESAP stesso e di nostro interesse. Ai sensi dell'art. 7 del DLgs 196/03 è nostro diritto chiedere la cessazione dell'invio di tali informazioni e/o l'aggiornamento dei nostri dati in vostro possesso.

data ..... firma leggibile .....

Annex 2: feedback form

Note: only the location and date was modified for each session

Whey protein-coated plastic films to replace expensive polymers and increase recyclability
WHEYLAYER
Grant agreement no.: 218340-2

Sesión de demostración – 22 de Septiembre del 2011

IRIS, Innovació i Recerca Industrial i Sostenible, Edificio Institut de Geomàtica, Parc Mediterrani de la Tecnologia, Avda. Carl Friedrich Gauss nº 11, 08860 Castelldefels, Barcelona, Spain

Feedback form

1. **Was the content of the session useful for you?**

☐ Very useful

☐ Average

☐ Not very useful

2. **What is your business?**

_____

3. **Does the WHEYLAYER technology meet the needs of your organization?**

☐ Yes

☐ Maybe

☐ No

4. What are your overall impressions of the WHEYLAYER technology?

☐ I would be interested in installing the WHEYLAYER process in my facilities

☐ I would be interested in using the WHEYLAYER packaging material

☐ No interest

☐ Other, please specify: _____

Rank the motivations for investing in/using the WHEYLAYER technology (1: most important -5: least important)?

☐ Increased recyclability and sustainability of multilayer packaging

☐ Valorisation of whey (as a solution for a sub-product or as a marketing tool)

☐ Costumers/consumers demands for innovations in packaging

☐ Not satisfied with the currently available barrier plastics

☐ Other, please specify:_____

Do you have any other comment or question? Do you have recommendations of improvements for the WHEYLAYER material and / or process ?

If you would like to be kept up-to-date with WHEYLAYER developments, please enter optional information below:

Name: _____ Email: _____
Company: _____

THANKS A LOT FOR YOUR COLLABORATION!