

Identification of the beneficiary				
Organisation full name:	PHASE CHANGE MATERIAL PRODUCTS LTD			
Participant Identity Code (PIC)	985884333			
Department carrying out the work:	R&D			
Web site:	www.pcmproducts.net			
Role in the project and contribution to the project:	Search, explore and develop suitable PCM materials and come up with a technically & commercially acceptable option			

Brief description of the Organisation and Department/Laboratory profiles

Our company provides PCM technologies and applications from initial concept, research and development stages to production and distribution from our office and manufacturing facility in the UK and our Licensed outlets around the world which offer bespoke products to meet unique customer requirements.

For more than a decade and a half we have been involved in the development of Phase Change Materials (PCMs). With unrivalled experience in designing and advising on PCM installations and applications, we continue to push the boundaries in PCM usage for the benefit of our evergrowing customer base.

In addition to our technical expertise, we offer (under the PlusICE branding) what we believe to be the most comprehensive range of PCM solutions currently available commercially (-100°C (-148°F) to +885°C (+1,625°F)).

From initial concept, research and development to production and distribution, our office and manufacturing facility in the UK and our Licensed outlets around the world offer bespoke products to meet unique customer and application requirements.

Scientific Leader	Zafer Ure			
Qualifications, experience and knowledge in brief				

KING'S COLLEGE LONDON (UNIVERSITY OF LONDON) M.Sc.(Dist.) Air Conditioning & Refrigeration. as well as UNIVERSITY OF ISPARTA B.Sc.(Hons.) Mechanical

Engineering and for the last 30 years practicing design and developments of energy saving technologies for refrigerationa nd air conditioning appications.

Since 1996 Mr. Ure is the Managing Director of PCM Products Ltd. and together with our design team we have been working on many different products and applications, including the International Space Station & Mars Mission, Automotive Direct / Indirect Passive Cooling, Temperature Controlled Packaging & Shipping, Military Backpack Battery Cooling, Medical Application, Integrated Domestic Solar Cooling & Heating, Dynamic PCM Modules or Thermal Barrier Applications.

We developed the widest range of PCM solutions commercially available on the market under PlusICE trade name and our range of encapsulated products includes FlatICE, BallICE, TubeICE, Eutectic Plates and Pouches enables us to develop and apply both organic and hydrated salt based PCMs for a variety of applications around the world.

We have many licencees using our PlusICE product range, either as raw material or manufactured product. Some of the applications are initiated by our organisation, but the majority of non-standard applications come from the minds of the end-user or developer. See attached personal background details.

Key achievements in line with the project scope



PCM will be developing the required PCM solutions and associated products applicable to the project aims. Although we are based in the UK, much of our business is throughout the world and we are currently active in Europe, the Americas, Africa and the Middle and Far East. These activities are involved in both the installation of our products and through our international network.

PCM Products Ltd. is actively involved on R&D and new product development projects with many Industrial and Academic institutions around the World in the past and have already carried out with many UK and EEC funded projects have been undertaken either as a lead partner or supporting partner;

<pre>@PCM</pre>				
No	Project Name	Financed by	Project No	
1	ELATION	FP6	FP6-508404	An
2	TECHNOLOGY PROGRAMME	DTI	TP/J3504	
3		TSB	Q3082A	
4	HESTOR	FP7	262285	D
5	LINK	DEFRA	AFM 280	Int
6		DECC		
7	SAM.SSA	FP7	296006	
8	HERB	FP7	314283	
9	NANOPCM	FP7	200056	



We are specialise in Phase Change Material (PCM) technologies and offer specialised design, prototype and final production development services for more than 17 years and developed many ineteresting products and applications which base seen in our web site www.pcmproducts.net and we offer full confidentiality from conception to completion and helped many partners to commercisialise the concept and manufacture the product for them.



We have full scale in-house laboratory complete with DSC machines (-150 \sim +1,200C range) which can produce both Latent Heat and Specific Heat.







Although we have an extensive range of both organic and hydrated salt based standard commercially available PCM solutions which cover a wide range of applications, quite often we have to modify the PCM solutions to suit new and challenging uses required by the application and our in-house team built a vast database and experience to achieve this.



We have multiple reactor vessels with various capacities (2 x 1,500 Lt / 1x 1,200 Lt. / 1x300Lt.) capabale of producing 10 Ton/day PCM complete with various type pumps and dosing pumps to handle any type of PCM production and accurate filling Our process. production machinery also various sealing covers machine which are used to seal the PCM containers.



We have acquired unmatched experience in altering and modifying the PCM solutions, of course within limits, to match a specific application such as altering the freezing and melting profile / temperature range to match the heat transfer surface area available for the products, thickening the solution so that the leakage risk could be minimised or even convert the PCM into powder, granule or even rubber forms so that it can be exposed to air and moulded to take any shape to suit the application.

Utilising this production facility in the UK we produce PlusICE range of products including FlatICE, BallICE, TubeICE, Eutectic Plates and Pouches (details can be seen at **www.pcmproducts.net**) enables us to develop and apply both organic and hydrated salt based PCMs for a variety of applications around the world. Should it be required a custom-made PCM solution for a specific application we have in-house capability to produce to match the application.





Finally, PCM Products Ltd. have been providing full CONSULTANCY and PRODUCT DEVELOPMENT services for more than two decades whereby we looked into a) Performance b) Practicality c) Economical aspects of many design ideas using PCM material and came up with the best performance with the most economical design solution for the project and we would be more happy to pass on / transfer these experiences and know-how to support this project concept.



Key staff members to support the project				
Zafer Ure	Managing Director			
Geoff Burton	Chemist (Technical Director)			
Hollie Mason	Chemist			
Adam Dicken	Chemical Engineer			
Samuel Gledhill	Chemical Engineer			
Shirley Revely	Administrator			
Sami Ure	Marketing Executive (Marketing)			
Andrew Knight	Production Engineer			
Kristian Houghton	Production Engineer			
Benjamin Cummings	Production Engineer			
Theresa Jinks	Administration			
Monica Ure	Finance			



Background for the key personnel involved

Zafer Ure (Managing Director)

Studied at King's Collge LOndon (UNIVERSITY OF LONDON) with M.Sc.(Dist.) Air Conditioning & Refrigeration. as well as UNIVERSITY OF ISPARTA B.Sc.(Hons.) Mechanical Engineering and for the last 30 years practicing design and developments of energy saving technologies for refrigerationa nd air conditioning appications.

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Geoff Burton (Technical Manager)

Stuied at 1984-88 UNIVERSITY OF NEWCASTLE with B.Sc.in Applied Chemistry. As part of teh PCM Products provide technical research & development of a wide range of Phase Change Materials and development of novel manners of their incorporation. Technical support and production of innovative low temperature secondary refrigerants. Development of a corrosion/stabilisation additive package for, and production of, glycol-based secondary refrigerants. Development of novel corrosion inhibitor solution for the cooling system of a highly sensitive particle analyser. Provide solutions to a wide range of customer related problems with process cooling and heating systems by the application of water chemistry and advising treatments most suited to the problem.

Specialised in low temperature secondary refrigerants, technical support for a range of process water treatment chemicals used in cooling water systems, boilers, wastewater treatment, and in the paper industry as well as analytical support to a team of research chemists working in the field of chemicals used in the paper industry. Provide feedback to enable the improvement of existing products, and the development of new ones. Provide technical support for paper mills to enable optimum production conditions.