



## Deliverable

### WP5 – Dissemination and exploitation

#### D5.2 Project Newsletter (1)

##### Project Information

Grant Agreement n°	863227
Dates	01-12-2019 / 30-11-2022

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*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 863227.*

## Document status

### Document Information

<b>Deliverable name</b>	PULSE-COM_D5.2_Newsletter1_29092020_VF
<b>Responsible beneficiary</b>	Jean Herisson / AYMING
<b>Contributing beneficiaries</b>	N/A
<b>Contractual delivery date</b>	M10 – 30/09/2020
<b>Actual delivery date</b>	M10 – 29/09/2020
<b>Dissemination level</b>	Public

### Document approval

Name	Position in project	Organisation	Date	Visa
Lucia Petti	Coordinator	CNR	29/09/20	OK
Giuseppe Nenna	Scientific Responsible	ENEA	29/09/20	OK
Mateusz Wazło	WP5 Leader	CBRTP	29/09/20	OK

### Document history

Version	Date	Modifications	Authors
V1	28/09/20	First version	Jean Herisson / Ayming
VF	29/09/20	Modification of section 1.1	Giuseppe Nenna / ENEA

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## Executive summary

### 1 Executive summary

#### 1.1. Description of the deliverable content and purpose

Deliverable 5.2 is related to the creation of the first PULSE-COM newsletter that will be widely disseminated through different channels (website, social media, mailing list...)

The newsletter is attached to this report and also accessible through this link:  
<https://mailchi.mp/82fc9dd81669/pulse-com-newsletter-1-sept-20?e=e8145acf5e>

In particular, the following points will be illustrated in the newsletter:

- General description of the project;
- The applications to which the project aims;
- News relating to the first meetings;
- The next steps in the dissemination of results.

#### 1.2. Brief description of the state of the art and the innovation breakthroughs

N/A

#### 1.3. Corrective action (if relevant)

N/A

#### 1.4. IPR issues (if relevant)

N/A

## Deliverable report

[View this email in your browser](#)



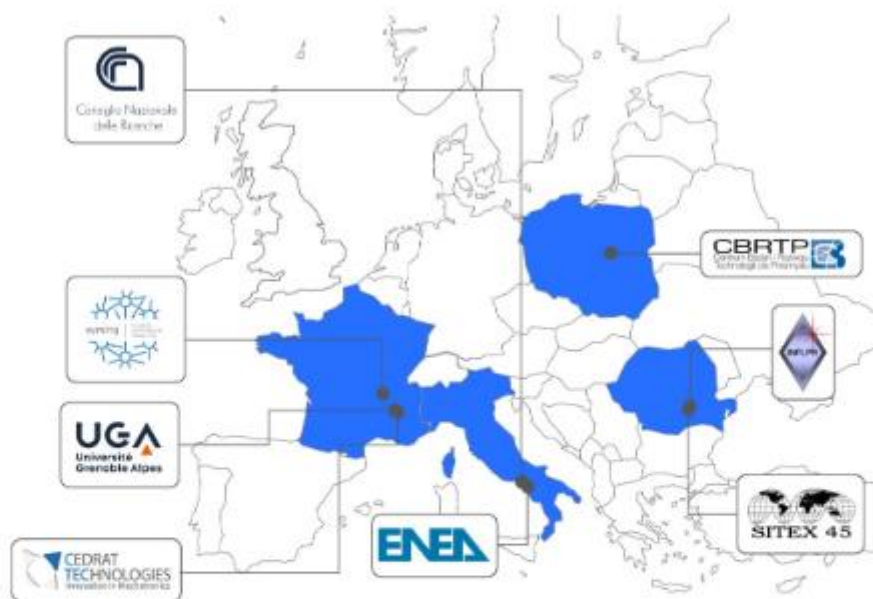
### GENERAL DESCRIPTION OF THE PROJECT

The project concerns a new type of **piezoelectric actuators** (PZL) controlled by light using low-cost **photo-mobile films** (PMP) whose movement is induced and controlled by sunlight and/or artificial light. The patent aims to create a new class of photoactivable devices that could potentially change the current paradigms in the field of optoelectronic and piezoelectric devices by creating innovative devices for a wide range of applications.

This project has started on **December 2019** for a period of **36 months**. The financial resources mobilised by the **8 partners** of the PULSE-COM project represent a total budget and requested EU funding of **2 980 015.00 €**.

The main objective of this project is to study, simulate, fabricate and characterize **actuators, sensors & harvesters that can be driven by light** operating in the UV, VIS and NIR range to realize components and devices with different industrial goals. The project targets a novel and ambitious science and technological breakthrough as a first proof of concept in the new field of **photo-activated piezoelectricity**.

### PARTNERS



<http://www.isasi.cnr.it/>



<https://materiali.sostenibilita.enea.it/en>



<http://imep-lahc.grenoble-inp.fr/>



<https://www.cedrat-technologies.com/>



<http://www.sitex45.com/proiectrd.php>



<http://www.inflpr.ro/>



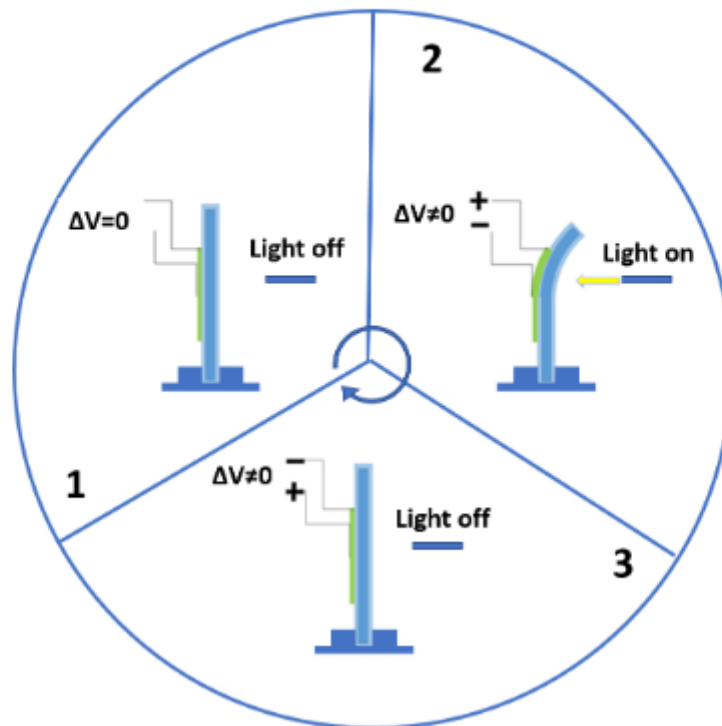
<http://www.cbrrp.pl/>



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[www.ayming.com](http://www.ayming.com)

## OPERATING PRINCIPLE OF THE PMP-PZL DEVICE



1. The device is made of two parts: the substrate (PMP) which is a material sensible to the light, leading to Micro-Actuation functions, and a piezoelectric composite layer (PZT) leading to Sensing functions;
2. Light induces movement to the photomobile substrate and the piezoelectric layer generates an electrical signal because of the mechanical induced strain with the appearance of electrical potential difference between the device electrodes.
3. A reverse electrical signal is generated by the PZL layer when the light is off and the substrate returns to its initial position.

## APPLICATIONS

### Opto-switch and Opto-valve Systems

The Opto-switch would be used to open and close an electric circuit when light is switched from on to off (or inversely).

The Opto-valve would be able to open and close a fluid circuit when light is switched from on to off (or inversely) without embedded electric power.

### Reconfigurable Optics Systems

Reconfigurable optics would be used to accomplish completely new tunable and switchable functionalities by means of optical control.

We could be able to realize a sort of photonic device with several functions like wavelength selector, de-multiplexer or even a spectrometer.



## Photoenergy Harvesting Systems

To take advantage of light energy harvesting based on PMP-PZL devices, a dedicated generator topology has to be proposed.

This last part is a completely new paradigm and the most challenging with respect to the state of the art.

## NEWS



Kick-off meeting in ISASI-CNR, Italy, gathering all partners (16th-17th of January 2020)

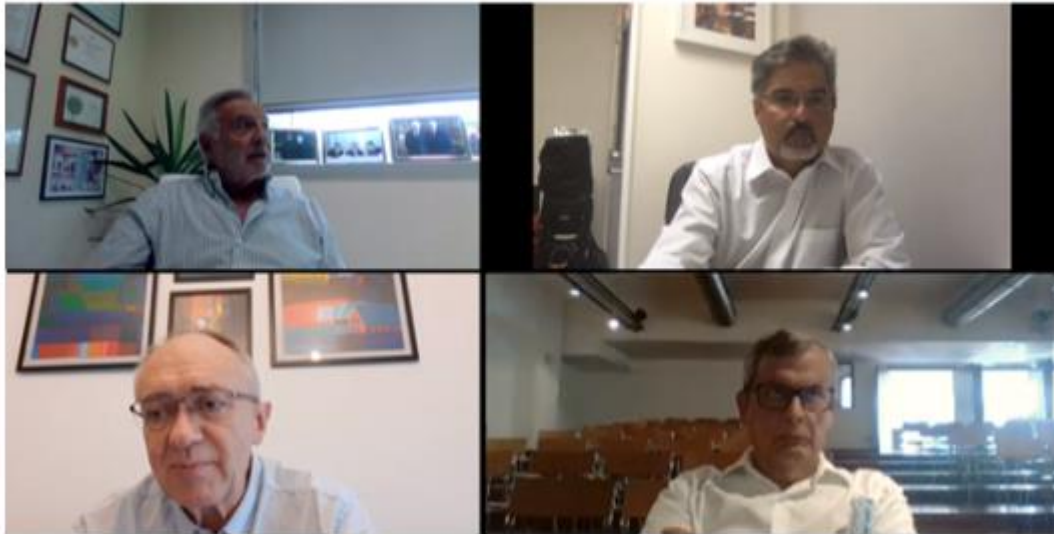
From left to right: Riccardo Castagna (CNR), Gustavo Ardila (UGA), Francesco Simoni (Università Politecnica delle Marche), Jolan Gauthier (CTEC), Maciej Haras (CBRTP), Lucia Petti (CNR), Giuseppe Nenna (ENEA), Mathieu Tomachot (CTEC), Jean Herisson (Ayming), Fausta Loffredo (ENEA), Fabienne Brutin (Ayming), Wojciech Konieczny (CBRTP), Dumitru Ulieru (SITEX 45), Grzegorz Kołodziej (CBRTP), Oana-Maria Ulieru (SITEX 45), Bogdan Sava (INFLPR), Massimo Rippa (CNR).



Workshop in Cetraro, Italy (12th-14th of September 2020)



From left to right: Maciej Haras (CBRTP), Jolan Gauthier (Cedrat Technologies), Jean Herisson (Ayming), Lucia Petti (CNR), Domenico Sagnelli (CNR), Massimo Rippa (CNR), Mateusz Wazłó (CBRTP), Gustavo Ardila (UGA), Ambra Vestri (CNR), Francesco Simoni (Università Politecnica delle Marche) and Giuseppe Nenna (ENEA).



Our [first meeting with the Advisory Board](#) has taken place, mainly remotely, during our meeting in Cetraro (Italy) the 14th of September. Currently, our Advisory Board is composed of: Luigi Nicolais (Materias s.r.l. - Engineering University Campus, top left), Luigi Occhipinti (Cambridge Graphene Center, top right), Thomas Skotnicki (Warsaw University of Technology, bottom left) and Francesco Simoni (Università Politecnica delle Marche, bottom right). For more information refers to our [LinkedIn post](#).

Video created for the Future Tech Week 2020 (online event, 21th to 25th of September), presenting the project.



## WHERE WILL YOU MEET PULSE-COM PARTNERS?

- [FUTURE TECH WEEK 2020](#) - Online event - 21st to 25th of September 2020
- [Summer school 2020 Computational Photonics](#) - Karlsruhe, Germany - 21st to 25th of September 2020
- [ACTUATORS 2020/2021](#) - Mannheim, Germany, 17th to 19th of February 2021
- [SENSOR+TEST 2021](#) - Nürnberg, Germany - 4th to 6th of May 2021



<https://www.pulsecom-h2020.eu/>



*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 863227.*

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