



BABYLUX

# Newsletter n° 4

June 2015 / December 2015

## News & events

A very busy autumn is waiting. Here follows a list of events where you can find BabyLux. If you want to know more about the project, join us!



[The 37<sup>th</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society \(EMBC'15\): a Bridge to improve the Quality of Health Care and the Quality of Life](#)

Milan, Italy, 25<sup>th</sup>-29<sup>th</sup> August 2015

[1<sup>st</sup> Congress of Joint European Neonatal Societies \(jENS\)](#)

Budapest, Hungary, 16<sup>th</sup> – 20<sup>th</sup> September 2015

[Meet me Tonight](#)

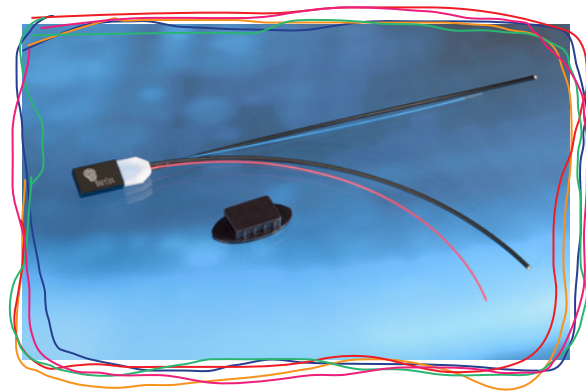
Milan, Italy, 25<sup>th</sup> and 26<sup>th</sup> September 2015

[GoPhoton!](#)

Milan, Italy, 2<sup>th</sup> September – 3<sup>rd</sup> October 2015

[ICT 2015](#)

Lisbon, Portugal, 20<sup>th</sup> – 22<sup>nd</sup> October 2015



Prototype of the TRS/DCS hybrid sensor

## People

This newsletter is dedicated to a specific component of the BabyLux project: the sensor. Fraunhofer Institute for Production Technology IPT has provided its technology portfolio for the design, development and fabrication of the fiber-optical sensor that will be applied to the scalps of the babies for parameters detection.



**MATTHIAS REHBERGER**  
Research Associate,  
Fraunhofer Institute for  
Production Technology IPT

***Mr. Rehberger, in which way is the sensor innovative? What are its main characteristics?***

The BabyLux Sensor is innovative in three different ways. The first one is of technical nature: we combine two different photonic technologies, DCS and TRS, to gain a better understanding of the human brain supplied with oxygen. For this reason, we have to implement both measurement technologies in one single probe. The second one is due to clinical needs: we have to face the requirements of clinical applications, which means a high degree of miniaturization as well as the use of biocompatible materials, like special types of silicone covering the probe. And the last one is from a background of production technology: we design the probe to manufacture, that means from the very beginning we've used materials and faced productive technologies to make the probe scalable and ready for mass production.

***We are half way to the end of the project. How would you describe the BabyLux experience so far and what are the next steps?***

The project so far has been a success. The hardware for the measurement technologies was tested and also in combination with the first prototype of the fiber optical probe. It turned out it is working and now we have to put everything together to build up the demonstrator for the clinical trial, which will be the final part in the project. Within this period, with the horizon of the end of the project, it has to turn out whether the demonstrator can hold the requirements that are in the clinics for real application under real life settings.



This project is partially funded under the ICT Policy Support Programme (ICT PSP) as part of the Competitiveness and Innovation Framework Programme by the European Community.  
Grant agreement n. 620996



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**NIELS KÖNIG**  
Head of Department Production  
Metrology, Fraunhofer Institute for  
Production Technology IPT

### **Why is the BabyLux project important for you?**

As Fraunhofer Institute we are always interested to see our technologies on the market, that's why the BabyLux project is very interesting for us, because it's not a typical research project, that means that we are not focused on research, we are focusing on product development, which is a totally different story.

### **BabyLux partner meeting in Aachen hosted a Fraunhofer spin-off company, Fionec. A potential stakeholder?**

For the exploitation of this technology Fraunhofer IPT has always been collaborating with partners. IPT is also supporting spin-off companies. The Department for Production Metrology has a spin-off company on fiber optics sensors called Fionec. They are experts in fiber optical sensors for distance measurements on industrial applications, but they are also quite skilled in building customized fiber optics probing heads. That's why we think they are the ideal partner for the exploitation after the BabyLux projects.

## BABYLUX Talks Episode #3

watch the video interview

[www.youtube.com/watch?v=rkEL6HX\\_xfc&feature=youtu.be](http://www.youtube.com/watch?v=rkEL6HX_xfc&feature=youtu.be)

## An outside glance @ BabyLux



The fionec GmbH is a high-tech enterprise that develops sophisticated optical technologies. It is specialized in the field of optical metrology and assembly of special fiber optic probes.

It has established close ties with both scientists and engineers in the industrial sector. That's why we have asked Frank Depiereux, the CEO, to answer a short interview as follows. Here's his opinion on the BabyLux project.

### **What is your opinion about the BabyLux project?**

The BabyLux project is a fascinating approach of using highend optical technologies in a very innovative way. Using and adapting optical components and technologies in the field of medical technologies and even in neonatal diagnostics means pushing the given technologic possibilities to the limit. Reaching the goal of the BabyLux project opens surely new possibility in diagnostics and therefore improves the addressed neonatal treatment of infants tremendously.

### **To what degree is BabyLux innovative from a Technical point of view?**

One goal of the BabyLux project is to develop an innovative, fiber optical probe head that enables monitoring the brain blood flow and oxygenation. Due to the fact that the patients are babies, one can imagine that the said probe head has to be clearly miniaturized. The miniaturization itself goes hand in hand with the needed functionality for the given monitoring task. So the highly innovative aspect for this part of the project is to combine several different optical fibers and beam shaping/directing elements in a miniaturized and sealed probe head, that fulfills on the one hand the monitoring task and on the other hand the regulatory requirements for clinical equipment.



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