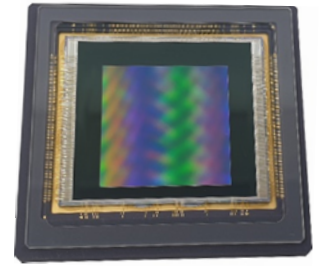


H I G H D Y N A M I C Newsletter

Sept 2024



IMAGING SENSORS FOR ENVIRONMENTAL APPLICATIONS

When it comes to environmental challenges, the need for action is undeniable. In this edition, we explore the contribution of PYXALIS to environmental projects and highlight the efforts made and goals established towards more sustainable options and practices.

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PYXALIS' ENVIRONMENTAL PROJECTS

BEING ONE OF ITS PILLARS, ENVIRONNEMENT HAS ALWAYS BEEN AN IMPORTANT SECTOR TO WHICH PYXALIS WANTED TO CONTRIBUTE.

Through different projects, PYXALIS has used its know-how and expertise to design custom image sensors that meet challenging customer requirements.

Since the environment represents one of the three main pillars of PYXALIS, the company gives particular interest to the projects that contribute positively to this field. Some of the projects PYXALIS contributes to are the projects TERRA FORMA and AURORA using snapshot imaging.

TERRA FORMA project is a collaborative project where PYXALIS interacts with **CSUG**^[1], where the hyperspectral imaging capabilities of PYXALIS are put forward to serve different environmental applications related to erosion problems, sediment transfer and biodiversity:



Credits to CNRS/UGA-IPAG

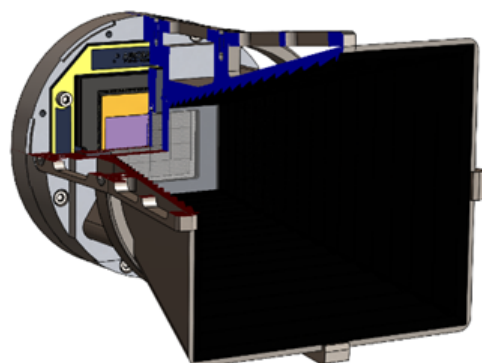
- Temporal monitoring of suspended matter in rivers
- Characterization and tracing of compounds' origins
- Study of process dynamics in watersheds: Turbidity measurements / Fluvial flow measurements
- Biochemical and leaf surface characterization
- Species detection
- Monitoring of experimental plots

The sensor currently used for this project is the HDPYX300, which is a 3MP, Global or Rolling, High sensitivity HDR 120dB CMOS image sensor. The target is to move forward with the usage of another Commercial-Off-The-Shelf sensor: the GIGAPYX4600, a 46MP, BSI Rolling Shutter, High Speed HDR CMOS image sensor, to increase both the spatial and spectral resolution of the sensor.

[1] <https://terra-forma-web.osug.fr/>

AURORA is an ESA project involving **OHB, ESA, Absolut System, CSUG** and **KP Labs**, with an aim to:

- Continuously observe the Aurora Borealis and Australis.
- Identify the location, extent, and dynamics of geomagnetic storms.
- Determine vector components of local magnetospheric magnetic field.
- Study the radiation environment (electrons, protons, heavy ions).



Cross-section of the Hyperspectral Module of the AOSI instrument

PYXALIS contributes to this project through the GIGAPYX4600 sensor combined with an advanced integrated spectrometer solution namely the Auroral Optical Spectral Imager (AOSI). More details on the project can be found in the article [A Small Satellite Constellation for Monitoring of the Aurora \(usu.edu\)](#).

To get more information about our projects and capabilities, do not hesitate to visit our website www.pyxalis.com or contact us using contact4business@pyxalis.com !



DISCOVER GREENPYX AND ITS ACTIVITIES

FORMED IN 2020, GREENPYX IS A DEDICATED GROUP OF 10 PASSIONATE COLLEAGUES WHO MEET MONTHLY TO EXPLORE AND TRY TO IMPLEMENT INITIATIVES AIMED AT REDUCING THE COMPANY'S ENVIRONMENTAL IMPACT.

Despite contributing to the elaboration of environmental projects, it is undeniable that the field of microelectronics has an important negative impact on the planet (digital industry's greenhouse gas emissions: 2.5% in France and 4% worldwide, and those figures are growing because of Internet of Things, AI, and blockchains... [1] [2]).

Working on sustainability alongside microelectronics requires a deep and challenging dive into our processes, and that is one of the missions of GreenPyx, a group of 10 colleagues (among 50!), who reunite once every month to think about the actions which can be led to lower PYXALIS' environmental impact.

Our actions encompass a wide range of initiatives:

IN-HOUSE AWARENESS-RAISING

Climate Fresk / 2-tonne workshop & various awareness-raising events linked to ecology and our impacts



WASTE MANAGEMENT FOCUS IN OFFICES

More than 90% of dustbins in the company are used for recycling or organic rubbish



IT PRACTICES

When renewing its IT equipment, 50% of the acquired laptops were reconditioned



GREEN SPACES CERTIFICATION

PYXALIS has obtained Level 2 Fredon environmental charter for green spaces



INTEGRATING ENVIRONMENTAL METRICS INTO INCENTIVE AGREEMENTS

The environmental component in the agreements on incentive bonus schemes: Involve employees in improving PYXALIS' impact through eco-friendly travel and Individual carbon footprint

VOLUNTARY ELABORATION OF CARBON FOOTPRINT

Elaboration of the company's carbon footprint, which PYXALIS wants to establish despite not having any legal obligations



Awareness raising campaign on waste sorting provided at PYXALIS

What's next:

- Install solar panels which will enable us to reduce by 50% our electrical consumption
- Move towards eco-design and eco-conception: a goal which requires many years but can start with short-term Life-cycle Assessment of our products
- Try to increase our part of Responsible Purchasing

It is important to note that we are aware of the low impact our actions currently have, however such actions allow us to get together and think of questions that concern us and determine further actions with higher impact.

A lot of effort is required from us to achieve our missions, and the road is long, however, to have a real impact, change is required in all the microelectronics ecosystem. From PYXALIS' side, we are trying to connect our company to all the reflections around this sustainability issue.

Stay tuned for the next newsletters to discover more updates on PYXALIS' actions.

[1] [The environmental footprint of digital technology](#)

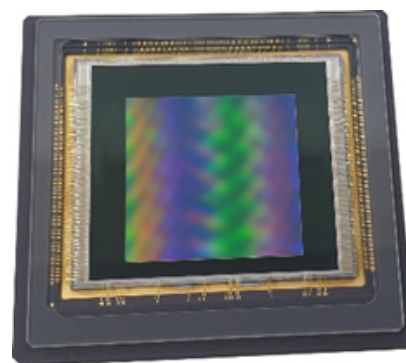
[2] [ADEME - Arcep study on the environmental footprint of digital technology in 2020, 2030 and 2050](#) (English version is available)

HDPYX1600-G: A GLOBAL SHUTTER IMAGE SENSOR FOR YOUR LOW LIGHT APPLICATIONS

The HDPYX1600-G is a **16 MP** CMOS image sensor that uses a **global shutter** pixel with a 25.4 mm Optical Diagonal. It is one of PYXALIS' commercial-off-the-shelf products that offers an interesting set of specifications such as low noise, high sensitivity and high speed.

Some key performances/features

- 4.4 μm pitch
- High Dynamic Range > 80dB (Dual gain)
- Readout Noise < 2e- in Low Noise mode
- Full Well Capacity > 17 ke-
- Peak QE: 72%
- SNR Max 42.3dB
- Max Frame Rate: 100 fps
- 2 operation modes: Low Noise and High Speed
- Ultra-low crosstalk in NIR
- 2x2 binning (charge domain)
- 12 bits ADC
- Output format: 12 or 16 (HDR) bits
- 32 LVDS data lanes up to 960 Mbps
- Ceramic package, LGA, 288 pins
- Power < 3.1W @ full speed



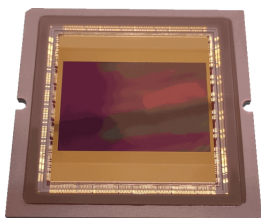
Thanks to its features, the HDPYX1600-G is the right sensor for low light applications such as: **Night Vision, Surveillance** and more. The sensor exists not only in monochrome, but also in standard RGB Bayer. A demo camera is available for product evaluation.



If you want more information about this sensor, you can visit our website: www.Pyxalis.com or you can contact us directly via contact4business@pyxalis.com.

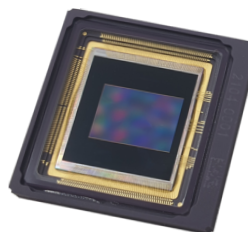
Discover some of our other sensors:

GIGAPYX4600



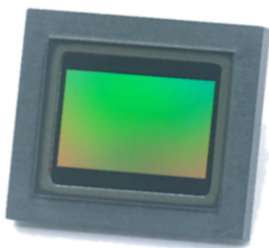
46 MP, BSI Rolling Shutter
High Speed HDR CMOS image sensor

HDPYX330-G



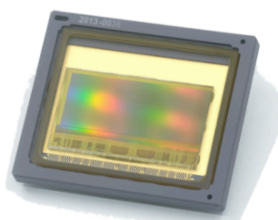
3.3 MP, Global Shutter
Low light HDR CMOS image sensor

HDPYX230-G



2.3 MP, Global Shutter
HDR ruggedized CMOS image sensor

HDPYX300



3 MP, Global or Rolling Shutter, High
sensitivity HDR 120dB CMOS image sensor



LET'S MEET !

Q3 & Q4 2024 agenda

It is important for us to move around and meet up face to face with the image sensor community members.



VISION - STUTTGART 8-10 October

Come and meet us at the French Pavillon booth #10F76 as we showcase our innovative solutions amidst a gathering of industry leaders and visionaries



ICSO - ANTIBES 21-25 October

Julien Michelot, our R&D Manager will present the irradiation results of the GIGAPYX4600



MEDICA - DUSSELDORF 11-14 November

We will be attending the exhibition to discuss and explore the latest innovations in the field



MEMS & Imaging Sensors Summit- MUNICH 14 November

Let's meet booth #14 to discuss the newest MEMS & imaging technology



SPACE TECH EXPO EUROPE - BREME 19-21 November

Our team will be at Space Tech Expo to meet our clients and discuss space projects

Looking forward to seeing you in person!

YOU HAVE A PROJECT THAT NEEDS A CUSTOM IMAGE SENSOR DEVELOPMENT, A STANDARD CMOS SENSOR OR A COMPLETE SOLUTION ?

WE MAY HAVE A SOLUTION FOR YOU.



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