

Announcement made at the Québec Government Delegation in Paris, in the presence of Mr. Pere Roca i Cabarrocas, Scientific Director of IPVF, Research Director at CNRS — École Polytechnique, CNRS Silver Medal (2011).

As Europe endures a historic heatwave and electrical grids have been placed on high alert, IPVF confirms that a new passive photovoltaic architecture makes it possible to produce more clean energy precisely when grids need it most.

PARIS PREMIÈRE IN FAVOUR OF THE CLIMATE AND THE SOLAR INDUSTRY

Ten years after the signing of the Paris Agreement, a universal amplifying architecture embedded within the surface of solar panels — and adaptable to building exterior walls, rooftops, and fences — is unveiled: IPVF has published a scientific opinion on this passive geometric optics innovation, designed in Quebec City by reflect10, which increases average daily production and multiplies solar output by 2.66 during the morning and late-afternoon hours.

THE DISCOVERY OF REFLECTRICITY

A QUEBEC TECHNOLOGY PRODUCES A NEAR-TRIPLING OF SOLAR PANEL OUTPUT DURING THE CRITICAL HOURS OF MORNING AND END OF DAY.

This applied physics innovation modifies the surface geometry of the panel. Reflectricity, tested over 9 months across two continents, relies on angles machined directly into the module surface that generate internal reflections within an optical cavity.

This mechanism enables increased photon capture without expanding solar farms or modules. A flat panel will therefore never be able to match the performance of a reflectricity panel of the same cell generation, because reflectricity amplifies every cell — present and future. The more cells advance, the wider the absolute gap in favour of reflectricity grows. The advantage is structural and compounds with every industry advancement. Reflectricity aims to establish itself as a new universal standard.

Future manufacturers licensed by reflect10 will offer a panel that not only produces more energy during critical hours, but also performs under any sky condition (all-sky), generating +19% additional energy under diffuse light, cloud cover, or smog. **reflect10 preliminarily estimates that its licensed manufacturers will be able to produce a reflectricity panel at industrial scale at a comparable cost per watt produced to a flat panel of the same dimensions.**

WHAT REFLECTRICITY IS

Reflectricity is a photovoltaic module architecture designed to multiply the internal reflections of solar radiation within the light-capturing surface. In short, this method aims to leverage reflections to generate more electricity. Reflectricity does not change the solar cell in any way. It changes the geometry of the module: a three-dimensional structure that, according to the universal laws of geometric optics of Snell-Descartes, multiplies internal reflections and increases the probability of absorption of each photon. Reflectricity does not create energy. It captures more of the energy that flat panels were allowing to escape. It is compatible with all existing cell technologies — PERC, TOPCon, HJT, BC. Every future improvement in cell technology will amplify the gains of reflectricity.

THE FINAL PANEL FORM WILL BE REVEALED AT A LATER DATE

The final geometry of the panel surfaces — currently in the optimisation phase, with prior art established since 2025 — will be disclosed later this year. It is the subject of three PCT patent applications, one of which has already received a favourable opinion on all 18 of its claims following examination of the international search report.

THE IPVF SCIENTIFIC OPINION

Following analysis of the physical principles of this technology and of report INO-262879 R01 of March 2026, produced by the Institut National d'Optique in Canada (now LUQIA), IPVF — the Institut Photovoltaïque d'Île-de-France, whose founding shareholders include EDF, TotalEnergies, Air Liquide, CNRS, École Polytechnique, Horiba, and Riber — issued an official scientific opinion on May 7, 2026 (ref. IPVF-2026-DG-009).

Mr. Pere Roca i Cabarrocas, Scientific Director of IPVF, Research Director at CNRS — École Polytechnique, CNRS Silver Medal (2011), states:

'Reflectricity operates within the geometric optics regime, governed by the laws of Snell-Descartes. This results in an average daily gain of approximately +20%, a more evenly distributed production curve throughout the day, and a higher photovoltaic surface density per unit of installation length. In this context, the multiplication factor of 2.66 in the morning and late afternoon is expected.'

'Report INO-262879 R01 of March 2026, produced by the Institut National d'Optique in Canada using Ansys Zemax OpticStudio software, is rigorous and presents a clear analysis of the achievable gains. The modelling indicates a collected optical power ratio of approximately 1.20 over a full day under direct light, and approximately 1.19 under diffuse light — representing an average daily gain of approximately +20% and +19% respectively, compared to a flat panel of the same footprint. These gains, achieved through an architectural modification of the module without any alteration of the cell itself, represent a significant departure from the industry's customary pace of improvement.'

A SIGNIFICANT DEPARTURE

Over 72 years (1954–2026), the global solar industry has advanced at an average rate of +0.18 percentage points of efficiency per year under real-world field conditions — rising from 6% to 19%, a gain of +13 points over 72 years of research targeting cell chemistry.

'By way of comparison, I would say that for 72 years, experts have been trying to build a better engine to make the car go faster. We bet everything on aerodynamics. Without touching the engine.'

— Louis Massicotte, founder of reflect10 and inventor of reflectricity

Reflectricity bets on physics rather than chemistry, on module geometry rather than cell improvement. And it delivers an immediate gain of +20% — a leap equivalent to more than a century of incremental industrial progress ($20\% \div 0.18 = 111$ years), compressed into a single architectural innovation applicable to all photovoltaic cell types without modifying them. During the critical morning and evening hours, the multiplication factor of 2.66 confirmed by IPVF and modelled by INO — equivalent to +166% relative output — makes this calculation staggering: at 0.18% per year, it would take centuries, not decades, to achieve an equivalent gain through cell improvement alone. These figures do not compare chemical efficiencies. They measure the gap between two approaches: improving cell chemistry, or changing module geometry.

'We are facing a genuine opportunity. One only needs to do the math on the 2.66 multiplication factor to see the remarkable progression generated by reflectricity's amplifying geometry. We have found a way to generate a near-tripling of output during critical hours. Let us act quickly.'

— Louis Massicotte

Reflectricity does not improve cell efficiency. It improves real-world module output in the field. It is precisely this metric — the only one that matters to a government combating climate change or a solar farm operator — that the figures of a century and a millennium measure.

'The established laws of physics allowed us to find a solution that is relatively straightforward to deploy, and that appears to rest on a phenomenon rare in history. In the current climate context, this is a chance, an opportunity that must be seized. If solar farm operators and governments quickly facilitate the replacement of their panels to accelerate the deployment of reflectricity, it will make a marked difference on climate targets. IPVF has confirmed the performance of this technology. The solution exists and is immediately applicable. All that is needed is for every stakeholder to support its deployment. Now more than ever, with the European heatwave, it is urgent to reduce CO₂ emissions and imperative to triple global renewable capacity by 2030.'

— Louis Massicotte, founder of reflect10

Reflectricity thus positions itself in the photovoltaic market as a structural upgrade technology: for example, in the hypothetical scenario where all global solar farms adopted this technology, the +20% gain applied to the 3 TW of installed capacity in 2026 would be equivalent to unlocking 600 GW of additional clean capacity, without occupying a single additional square metre of land. To put this scale in perspective: 600 GW represents nearly ten times the record global solar additions of 2025, or the equivalent of the entire installed electricity capacity of the United States in a single year. The $\times 2.66$ gain during peak demand hours could furthermore contribute to addressing the challenges of the duck curve and energy storage.

Sources: SolarPower Europe — Global Solar Market Outlook 2026–2030, June 2026 (3 TW global installed capacity); SolarPower Europe — 664 GW global solar additions in 2025; EIA — America's Electricity Generating Capacity 2025 (total installed capacity in the United States); IPVF Scientific Opinion ref. IPVF-2026-DG-009, May 7, 2026 (+20%, $\times 2.66$).

In all major global economies, the electrical load curve structurally presents two daily peaks: in the morning between 7 a.m. and 10 a.m., and in the evening between 5 p.m. and 9 p.m. These peak hours coincide with the highest CO₂ emissions on the grid: when demand exceeds solar production, thermal power plants activate as backup, pushing carbon intensity up to 10 to 23 times above the daily minimum in economies with high solar penetration (California, United Kingdom, Australia). These two windows correspond precisely to the low solar elevation hours during which reflectricity produces a multiplication factor of 2.66, mechanically reducing reliance on thermal plants at the moment when their climate impact is highest.

Source: EnergyTag / ElectricityMaps, analysis of 300 global zones, 2025.

'During the critical morning and evening hours, when electricity demand is at its highest, the multiplication factor of 2.66 achieves 88.7% of the COP28 tripling target. It is the shape of the panel that changes — and this is a solution that is immediately applicable. Given that, according to the IMF (International Monetary Fund), governments heavily subsidise fossil fuels every year, it would certainly be beneficial for the economy, public health, and the environment to offer transitional support for deploying a 'reflectrification' of their solar farms. By encouraging the progressive replacement of panels by 2030, governments would be taking concrete action against climate change. The math is clear.'

– Louis Massicotte

Quebec and more than one hundred states and governments gathered in Dubai in 2023 committed to tripling global renewable capacity by 2030. This is a central objective of IRENA and the Paris Agreement, and the IEA describes it as the «single most important lever» for reducing global CO₂ emissions. As of June 2026, the world is behind schedule: the current trajectory leads only to a doubling (7.2 TW), leaving a shortfall of 3.7 TW against the 11 TW target.

This is precisely where reflectricity positions itself as an immediate accelerator: an architecture that increases production while preserving the same land footprint, and that optimises the temporal distribution of every installed gigawatt so that it produces more at the right moment. The COP28 target sets the required volume. Reflectricity proposes to optimise its temporal distribution, at costs comparable to those of flat panels, so that every gigawatt more effectively displaces the fossil sources that the tripling target aims to eliminate.

'As for the costs of reflectrification, I am not a financier, but one thing is clear: we are not talking about trillions. It is a matter of planning the progressive or accelerated replacement of panels in existing solar farms with reflectricity modules. And of course, nothing prevents prioritising the mass shipment of replaced panels — still in good condition — to countries suffering from energy poverty. The signatories of the Paris Agreement and COP28 would all come out ahead.'

– Louis Massicotte

FIELD TRIALS ACROSS TWO CONTINENTS

Proof-of-concept experimental campaigns conducted under real-world conditions — in Quebec (~47°N) near Ski Mont-Blanc in the Laurentians, and in Morocco near Meknès (~33°N) — over 9 months between late summer 2025 and May 2026 demonstrated production trends consistently superior to flat panels under all irradiation conditions tested, in line with the simulation projections validated by IPVF and modelled by INO in Canada. Jean-Philippe Goutte, a Level 7 engineer trained in France and Director of E3C Consulting in Casablanca, attests to having personally observed more than 1,800 hours of field trials and analysis, concluding that the +20% and $\times 2.66$ thresholds proved to be observed trends within the proof-of-concept testing framework.

Ongoing optimisation campaigns are planned over the coming decade, in parallel with the commercialisation of exploitation licences.

AN IMMEDIATE LICENSING OPPORTUNITY

reflect10 does not intend to manufacture reflectricity panels. It is now inviting all solar panel manufacturers serving the utility-scale market to participate in a first sealed-bid auction for the 50 initial exploitation licences of its intellectual property. Ten transition licences are also being offered to fossil fuel energy producers. The reflectricity principle will also be adaptable to the building-integrated photovoltaics (BIPV) sector — particularly for exterior walls, rooftops, and fences — opening the way to building energy self-sufficiency and distributed generation.

'reflect10 is not a panel manufacturer. We are an intellectual property company, on the model of Qualcomm or Dolby. We license the architecture and optical know-how; the licensed manufacturer adapts the principles of reflectricity to its production line, conducts certification testing, and commercialises the product. The principles of this architecture require no new chemistry, no new semiconductor material, no tracker. IPVF has confirmed the scale invariance of the performance. It is up to the manufacturer to optimise their economic equation. This is precisely why we are organising a competitive sealed-bid auction. The industry must move quickly in this direction.'

– Louis Massicotte

ABOUT REFLECT10

reflect10 is a private company founded in Quebec City, Canada, by Louis Massicotte, a technology entrepreneur and practitioner of citizen science — a form of scientific inquiry formally recognised under UNESCO's 2021 Recommendation on Open Science, which encourages non-professional and volunteer researchers to contribute to scientific knowledge.

Having been in business since the age of 21, Louis Massicotte is known as a business adviser and commercialisation expert, and for co-founding nStein Technologies in 1998, one of Canada's first artificial intelligence companies focused on natural language processing, as well as for several inventions in the field of connected health, including the wireless digital ECG (2001) and the GPS bracelet for individuals living with Alzheimer's disease. Three further projects include the creation of Vista4 in 2002 — a decentralised video streaming platform incorporating detection algorithms to optimise bandwidth allocation, created five years before Netflix introduced its streaming service in 2007 — a mortgage request transfer system for the American banking sector in 2019, and energy efficiency systems for real estate developments aimed at achieving residential and tourist energy self-sufficiency.

Long preserved by Louis Massicotte as a trade secret, reflectricity is intended as one of the first reformulations of solar energy capture methods.

The discovery is the subject of three international PCT patent applications potentially covering more than 150 countries, with the support of an international patent agency.

Reflectricity is the private property of the Fiducie des Braves 2021, linked to the Massicotte family, whose worldwide commercialisation has been entrusted to its subsidiary reflect10.

reflect10.com

Press attaché — reflect10 / Paris

Caroline Elbaz-Zenatti

+33 6 63 73 79 42 c.elbazzenatti@cez-presse.fr

media@reflect10.com

Note: The French-language version of this press release constitutes the official reference document. This English translation is provided for convenience only. In case of any discrepancy or inquiry, media are invited to refer to the original French text.