

INSIGHT

PRYSMIAN GROUP MAGAZINE

ISSUE 02 | 2022

**R&D Chief Srinivas
Siripurapu's innovation
overview for 2022**

**Chief Digital Officer
Stefano Brandinali on the
latest digital projects**

Exclusive interview:
**ARPA-E Program Director
Dr. Philseok Kim**

Innovation

THE KEY DRIVER TO THE ENERGY TRANSITION

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Focus on

Leading the market through innovation

With technological, social, and climate change now a permanent feature of the business landscape, our ability to innovate is what makes us a market leader in the cables sector.

Our innovation ecosystem enables us to enhance projects today by proposing new solutions that improve on previously available technology and drive performance for tomorrow.

In this issue of INSIGHT, some of Prysmian Group's top innovation executives share their strategic goals, interest areas, and news on the company's latest projects. In an exclusive guest interview, ARPA-E Program Director Dr. Philseok Kim discusses how the U.S. agency is innovating to improve the reliability and resilience of the country's electricity grid.

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Prysmian Group's Chief R&D and Innovation Officer Srinivas Siripurapu says the Group is producing innovations over the next five years that normally would have taken two decades



AN ENRICHED ENVIRONMENT FOR NEW R&D OPPORTUNITIES, **FASTER THAN EVER**

What is the macro picture for innovation at Prysmian Group right now?

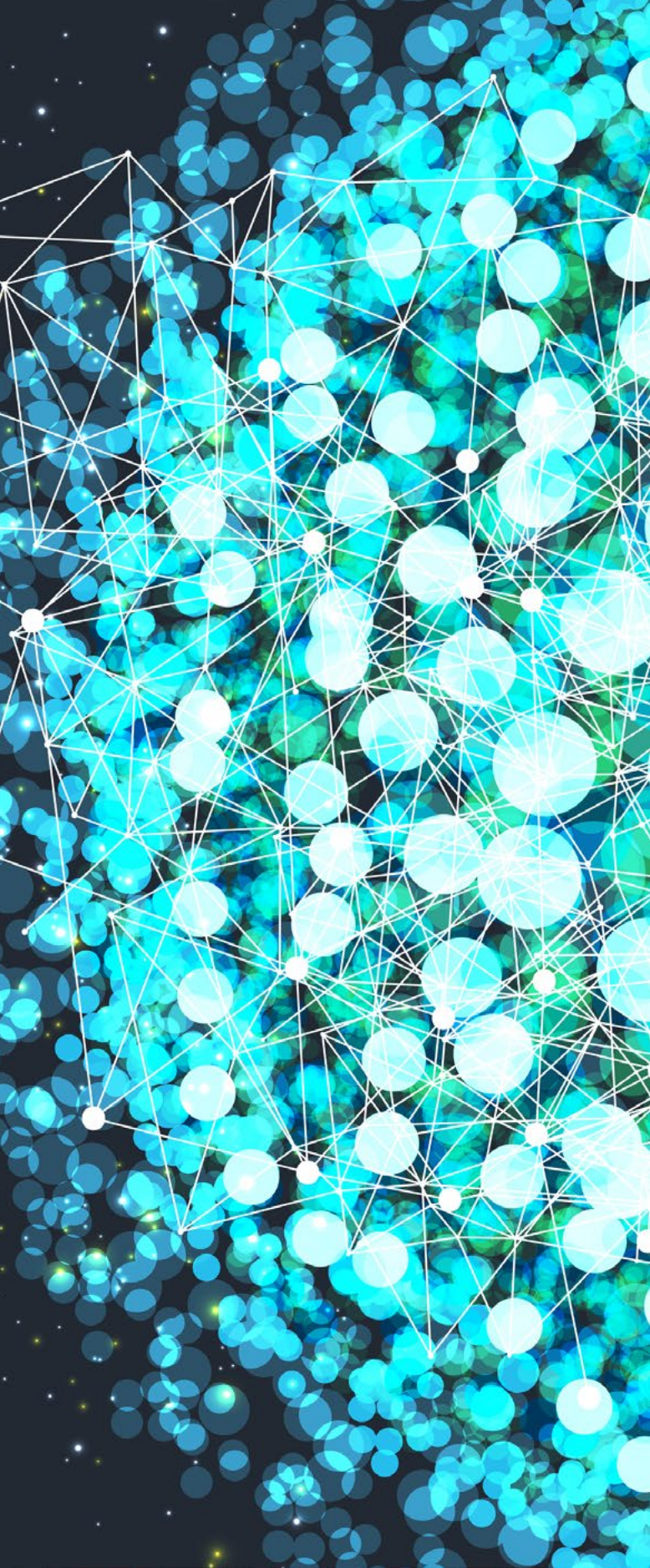
There are three main themes, and they are being driven by changes we see in the world around us.

1. ELECTRIFICATION TO FIGHT CLIMATE CHANGE

The first is mass electrification in response to climate change. The drive to replace fossil fuels with electricity wherever possible is coming much faster than we thought. And to fulfil this shift towards an increasingly electrified world we are seeing massive growth in spending on renewables energy infrastructure and in grid modernization.

2. DIGITAL INCLUSION

The second theme has been the acceleration of digital inclusion during and after the Covid pandemic. Governments everywhere clearly see the need to reduce the digital divide in terms of access to services, work, and education. It is clear to us we will see the mass deployment of fibre and of enabling digitalization in general, including IoT in factories.



We will be producing innovations in the next five years that typically would have been spread over at least two decades. We are gearing up with the right focus on both new technologies and key STEM talent to address this one-in-a-lifetime opportunity to enable critical energy and information structure for our communities to thrive and grow in the future.

Last but not least, the third theme is sustainability.

3. SUSTAINABILITY

The first two themes are undoubtedly key drivers, but everything that we do is done within a sustainability framework as the underlying priority for us, for our customers and for the world that we live in.

How has the rapidly evolving macro picture impacted your focus areas?

The main challenge we face is to ensure development and industrialization of these new innovative technologies balancing speed with reliability. Our mantra for new solutions is to develop building blocks to be thinner, lighter, faster and greener.

On the energy front, our systems are evolving to higher voltages to transport large amount of power (over 2 GW) to longer distances at higher sea depths. This year we completed the industry's first qualification of a 525 kV HVDC submarine cable system that will enable faster offshore wind deployment across the globe. We are also focusing our innovation efforts to support the large growth expected from solar farms for the next decade.

In terms of grid modernization, we are working closely with key customers and government research labs to accelerate development of breakthrough innovations going beyond cable products. The focus here is on automation, robotics and monitoring solutions to increase grid resilience. The E3X Technology and Robot System, a game-changer for sustainable overhead power transmission was awarded the 2022 Edison Gold award.

On the digital front, our solutions are focused on fibre densification and connectivity. Flexribbon technology allows faster splicing from small

flexible cables with extreme fibre counts (up to 6912 fibres). Sirocco Extreme microduct products feature industry first bend insensitive 180µm fibre for sustainable telco networks with product circularity. Innovation is key here to develop future-proof solutions that also address cost, time, and labour bottlenecks.

You often say you see sustainability as an R&D opportunity. Can you give us some examples?

DESIGN FOR SUSTAINABILITY PROGRAM

Indeed, over the past 3 years, we have a forged an innovation strategy that is strongly linked to sustainability. The culmination of a deep thought process here is our new 'Design for Sustainability' framework. It is based on six measurable and recognized sustainability criteria -- carbon footprint, substances of hazardous concern, recyclability, recycling input, product environmental benefits

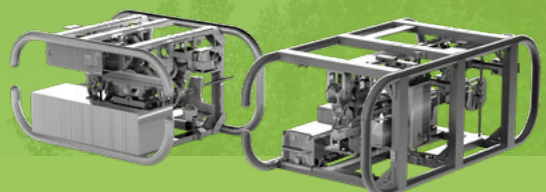
PRYSMIAN GROUP IN PARTNERSHIP WITH EXELON CORPORATION WINS PRESTIGIOUS 2022 EDISON BEST NEW PRODUCT AWARD FOR INNOVATIVE E3X® ROBOT SYSTEM



Prysmian's commitment to developing new technologies to support the modernization of the energy grid and that energy transition has been awarded at the 2022 Edison Awards Gala in Fort Myers, Florida on April 21, 2022. **This innovative grid-enhancing robotic technology applies heat-dissipating E3X® coating to existing power lines to reduce power grid congestion.** It creates a breakthrough grid-enhancing solution without the need to build new transmission lines, unlocking capacity by 15-25 percent for utilities.

The revolutionary system was selected for its advanced electronics, imaging capabilities and artificial intelligence, which can withstand extreme voltages, operate in severe weather conditions, and navigate slope angles. It can also be deployed without deenergizing that portion of the power grid, and it's the only technology to enhance the capacity of the existing conductor.

Named after inventor Thomas Edison, the Edison Awards have been recognizing and honoring the best in innovation and innovators across the globe since 1987. Like the famous inventor, the awards personify the persistence, excellence and human drive for innovation, creativity and ingenuity.



and transmission efficiency -- that are the “sustainability weapons” the R&D teams use in conceiving product improvements. It is a great opportunity to refresh our product portfolio using sustainability principles. As a first step in the deployment of the program, in 2021 we launched the ECOCABLE label, the first proprietary green product label in the cable industry. By 2023 we will take those concepts and make them part of our DNA to support our group climate ambition to reduce our scope 1/2/3 emissions and provide our customers more sustainable choices.

Speaking about sustainability as an R&D opportunity it is worth mentioning our commitment in the e-mobility area.

Can you tell us a bit more?

Electric vehicle charging infrastructure will be vital to decarbonize the transportation sector which contributes a quarter of worldwide greenhouse gas emissions. Charging times are undoubtedly a critical issue when it comes to electric vehicles. We are developing a complete suite of AC and DC charging cables including cooled megawatt charging systems. In parallel we are participating in innovative concepts such as the first Dynamic Wireless Power Transfer (DWTP) Electric Vehicle charging pilot project in Italy on the “Arena del Futuro” test track in collaboration with A35 Brebemi motorway, Electreon, ABB and other partners. We have supplied the first 800V LVDC fully recyclable P-Laser cable system together with PRY-CAM technology for real time monitoring of the test track.

ARENA DEL FUTURO

You can’t talk about innovation without talking about talent. What are you doing internally to boost innovation culture across the Group?

Our people are our most important asset. Prysmian Group employees told us in our last Speak Up survey they wanted to be more engaged and wanted to have access to the latest developments in innovation. So, we have launched a program called “Wired for Innovation – Electrify the Future” inviting world experts to speak on a series of innovation-related topics (such as nanocarbon technologies, green hydrogen, solar). These seminars organized in a lunch-and-learn format are open to all employees in a hybrid setting allowing for interaction with the speaker and collaboration among our employees. For our first event we had 1,000 people participating and we had 2,000 for the second one. The program started in 2022 and will continue in 2023, so stay tuned for more interesting sessions!

At Prysmian Group, innovation is shared between four complementary entities that work together and are coordinated by the Innovation Steering Committee.

GENERATING VALUE THROUGH DIGITAL INNOVATION

In this interview, Prysmian Group CIO and Chief Digital Officer Stefano Brandinali explains some of the Group's latest digital projects. R&D focuses on creating new products aligned with business strategies. Corporate Hangar embraces the concept of open innovation, looking for new ideas outside the Group's core business. EOSS has a mission to provide electronics and optical sensing solutions - through its PRY-CAM and Omnisens technologies – to customers who increasingly choose to rely on the Internet of Things to bring forward a data-driven revolution in managing and monitoring electrical assets and critical infrastructures like pipelines. And Digital Innovation is inventing new digital products, making factories smarter, and introducing “digital plankton” to enable the company's transition from cable manufacturer to solution provider.



What is Prysmian Group's digital innovation strategy?

We are in the third phase of our Digital Ambition journey. We began in 2016 by setting up the Innovation Lab to scout internally for pilot projects, and in 2020 it became a new corporate function. By 2020 we

selected the ones that worked best for us, and now we are seeing the results. At this point, our journey moves into a phase where we want to generate value through customer experience.

Our Digital Ambition has three main goals. The first is to help Prysmian Group become a supplier of services

and solutions, as well as a cable systems. These services are based on data, so we need to add a digital layer to our physical products, to support our growth and enlarge our portfolio. And our goal is to eventually monetize this data.

Our second goal – and this is new – is to become data-driven by leveraging on data to improve performance and product quality.

DIGITAL AMBITION'S GOALS





Lastly, to reposition our company as a digital leader by investing in digital culture and technology. We are leaders in the cable systems segment, but we are not digital leaders. As a digital leader, we will sell both physical and digital solutions.

What are the key focus areas for the Group's Digital Ambition?

The first is digital products and services, or developing new hybrid products integrating software solutions at scale. Another important target is smart factories, or optimizing business performance through digital solutions and automation at our 108 plants around the world. This translates into more efficiency, less waste, and cost savings. Third goal is to create a digital culture, or what I call "digital plankton." This means building next-generation skills by nurturing customers and our peoples' digital needs.

Let's talk about some examples. What are some of your latest projects?

We have a project called Data Driven for Safety at our Neustadt factory in Germany that uses Artificial Intelligence (AI) and machine vision to provide a safer workplace for our employees. We have developed a machine vision system that can recognize the motion trajectories of workers, vehicles, drums and moving objects like a bicycle. It can track near misses. And it can warn, say, a forklift operator backing

up that a bicycle is coming towards him. We are looking at how to make it actionable, such as triggering an alarm such as a light or a siren. So this is still ongoing.

What projects did you finish this year?

Optical fibres are delicate and can break during manufacture before the entire 50 km length for the drum is completed. Our Battipaglia optical fibers plant was showing a mediocre performance in terms of fiber length, with an average of 27 km. A short cable creates waste. We decided to find a solution by applying advanced statistics to the huge amount of data already being picked up by digital sensors at the plant. It was being generated in a table format, and we changed the visualization so we could track the manufacturing journey through the plant. By doing this, we pinpointed the machines where the fibre broke sooner. This tweak enabled our production engineers to gain an average of 4 kms in fibre length. We are calling this Data Driven Performance for Operation, and are applying this approach to problem-solving at nine other plants.

Are there any projects that developed out of a pilot?

Yes. We created PG Connect back in 2020 with help from a start-up called Over.IT. PG Connect is a remote testing and maintenance tool using a state-of-the-art augmented reality camera headset that allows handsfree operation and a cloud-based field service management software with a number of advanced collaboration features. During the pandemic, it became important to business continuity because it enabled us to carry out Factory Acceptance Tests for clients remotely, which was a significant competitive advantage. We have now extended PG Connect into

an entire product family. PG Connect Tour allows for a virtual plant walkthrough (e.g. Plant visits and inspections). PG Connect LAB is used for lab tests and measurements, and PG Connect Training is used for remote training. PG Connect helmets are now used in 50 factories around the world.

These three examples show concrete ways in which our Digital Ambition is creating value for our business and our customers. Digital tools and solutions are being currently leveraged to optimize business performance: digital products and services will help in sustaining the Group's growth strategy, supporting collective intelligence by digitalizing the company's culture.

DIGITAL PLANKTON

Building next-generation skills by nurturing customers and our peoples' digital needs.



A clean and fair energy transition in the United States depends on a resilient electricity grid.

ARPA-E AND BUILDING A MORE ROBUST, CLIMATE-PROOF U.S. ELECTRICITY GRID THROUGH UNDERGROUNDING

Dr. Philseok Kim, Program Director at ARPA-E, a U.S. government agency focusing on energy technologies research, is looking into technologies to improve the reliability and resilience of U.S. electric power distribution by undergrounding. In this exclusive interview for INSIGHT, he explains the importance of a strong grid and why he invited Prysmian Group to speak at the ARPE-E 2022 Energy Innovation Summit

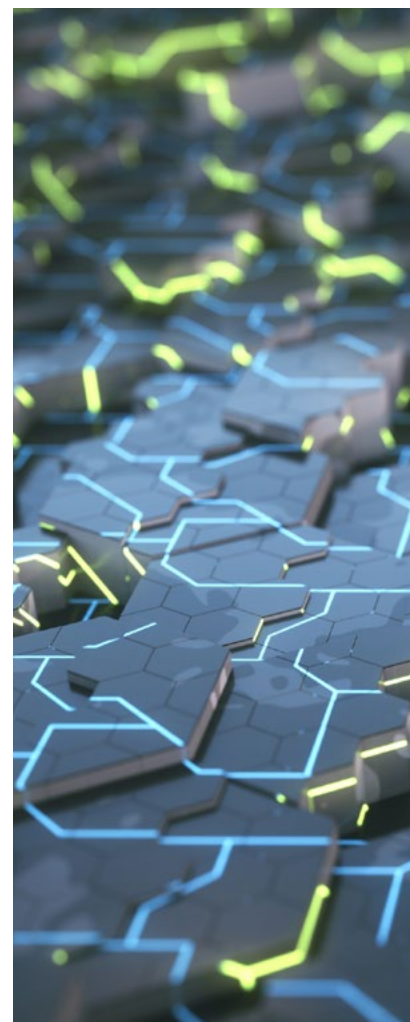


How would you explain the overall goals of ARPA-E, for people who may not be familiar with it?

The Advanced Research Projects Agency-Energy (ARPA-E), which is part of the U.S. Department of Energy, advances high-potential, high-impact energy technologies that are too early for private-sector investment. ARPA-E projects have the potential to radically improve U.S. economic security, national security, and environmental well-being. ARPA-E empowers America's energy researchers with funding, technical assistance, and market readiness.

ARPA-E focuses on energy challenges that could radically improve U.S. economic prosperity, national security, and environmental well-being. We invest in short-term research projects that can have transformational impacts.

ARPA-E's mission areas, as defined by its authorizing statute, are to reduce imports of energy from foreign sources; reduce energy-related emissions, including greenhouse gases; improve the energy efficiency



of all economic sectors; provide transformative solutions to improve the management, clean-up, and disposal of radioactive waste and spent nuclear fuel; and improve the resilience, reliability, and security of infrastructure to produce, deliver, and store energy.

Congress directed ARPA-E to “establish and monitor project milestones, initiate research projects quickly, and just as quickly terminate or restructure projects if such milestones are not achieved.” Accordingly, ARPA-E has substantial involvement in the management and direction of every project.

ARPA-E funds a wide range of individual technology projects. Typically, these projects are organized into focused technology programs that revolve around a common technical area. All ARPA-E programs and projects are created through a process of rigorous debate over the technical and scientific merits and challenges of potential research areas. ARPA-E Program Directors are constantly exploring potential topics for future program areas.

ARPA-E also issues periodic open funding solicitations for a broader range of projects that do not fall into a single technical area to address

the full range of energy-related technologies, as well as targeted funding solicitations aimed at supporting America’s small business innovators.

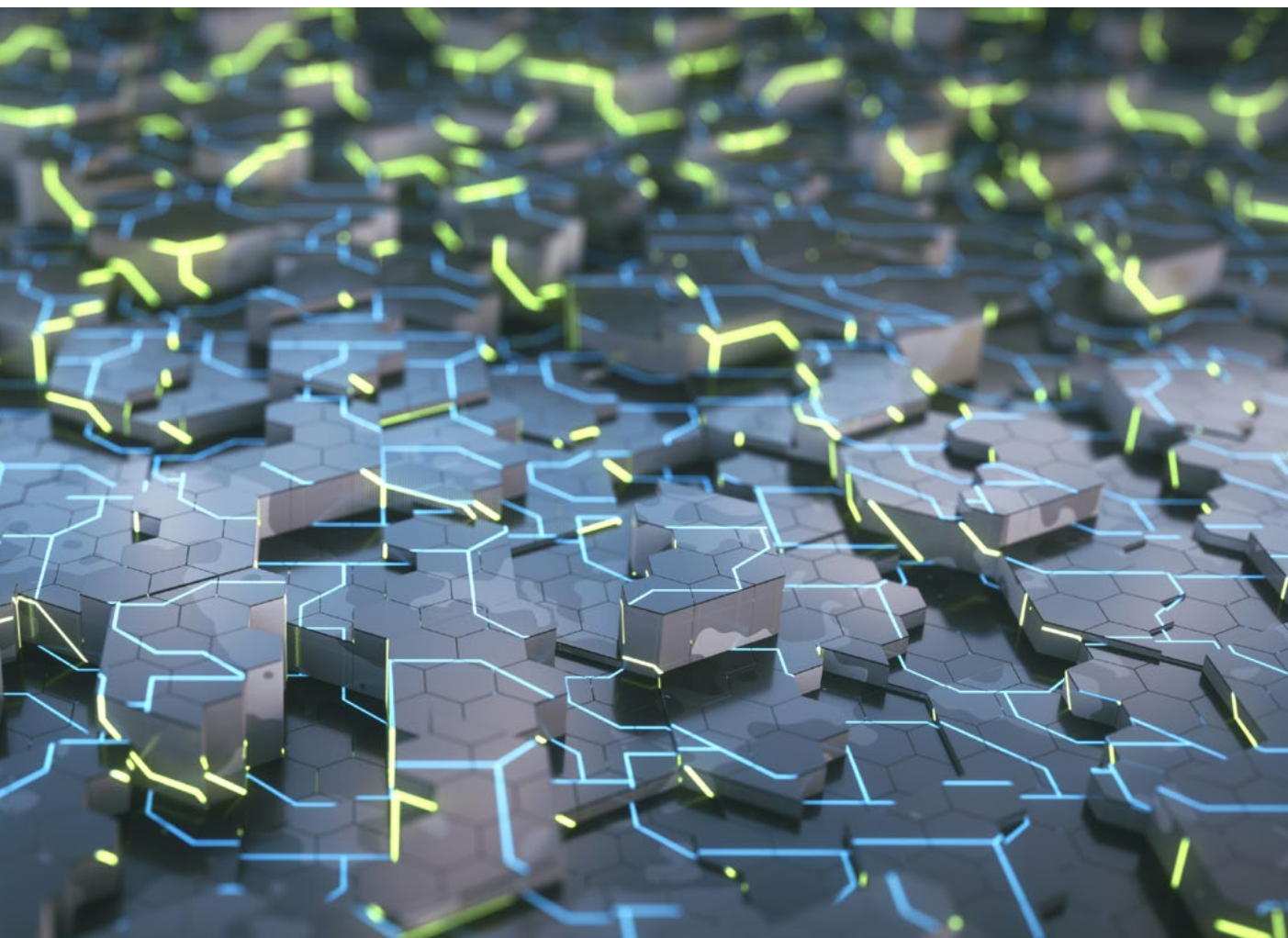
ARPA-E also funds projects on a rolling basis through “Exploratory Topic” funding opportunities that are meant to inform potential new program areas for the future.

ARPA-E Program Directors are the driving force behind ARPA-E’s mission and are empowered to identify, define, and recommend the most impactful energy R&D to be funded by the agency. They are recognized as thought leaders in their respective fields and are responsible

for program creation, design, implementation, and management. Program Directors typically serve 3–4-year terms which enable ARPA-E to keep a steady influx of new talent and fresh ideas.

EXPLORATORY TOPIC FUNDING

Funding opportunities
that are meant to
**inform potential
new program areas
for the future**



What is your specific focus area?

Before joining ARPA-E, I had a broad interest in functional materials and composites, polymers and gels, paints and coatings, engineered interfaces and micro/nanostructures, bio-inspired engineering, and architecture. I am a co-founder and former CTO of Adaptive Surface Technologies, Inc. (formerly, SLIPS Technologies, Inc.) which commercializes fouling-resistant/fuel-saving ship hull coatings and additives as well as zero-waste consumer packaging solutions.

Before my start-up experience, I spent 5 years at Harvard University's Wyss Institute for Biologically Inspired Engineering where I participated in R&D activities in the area of adaptive materials, adaptive living environments, and slippery liquid-infused porous surfaces.

In addition to my academic experience, I have 12 years of industrial experience in petrochemicals, polymers, and coatings products.

My interest area got even broader after joining the agency. I have been looking into technologies to improve the reliability and resilience of U.S. electric power distribution by undergrounding -- a proven way to improve grid resilience and reliability, but at the highest cost. The reliability, resilience, and security of the U.S. grid system are poorer than in many other developed countries due to outdated infrastructure. They are getting worse every year as the frequency and intensity of extreme weather events grow, exacerbated by climate change. Grid dependability is a climate and energy justice concern since low-income and disadvantaged populations experience frequent and longer outages. To allow a clean energy transition, such as renewable power, DERs, and EVs, toward decarbonization, the U.S. must rapidly expand transmission and distribution grid infrastructure in the next few decades. However, existing undergrounding technologies are slow, disruptive to the surfaces and environments (resulting in low societal acceptance), unsafe for our workforces, expensive, and lacking reliability and resilience.

Undergrounding provides reliability, resilience, and security, yet is expensive and time-consuming to install.

Therefore, I am specifically looking at novel underground civil construction technologies that are minimally disruptive to the surface (small rig footprint, fast mobilization/demobilization, low power requirement, low noise and hazardous wastes), automated to the greatest extent possible (with the ultimate goal of autonomous drilling, concurrent construction of conduits, ducts, vaults), and equipped with enhanced situational intelligence (real-time detection of other buried utilities and obstacles, steerable drilling tools to avoid damages).

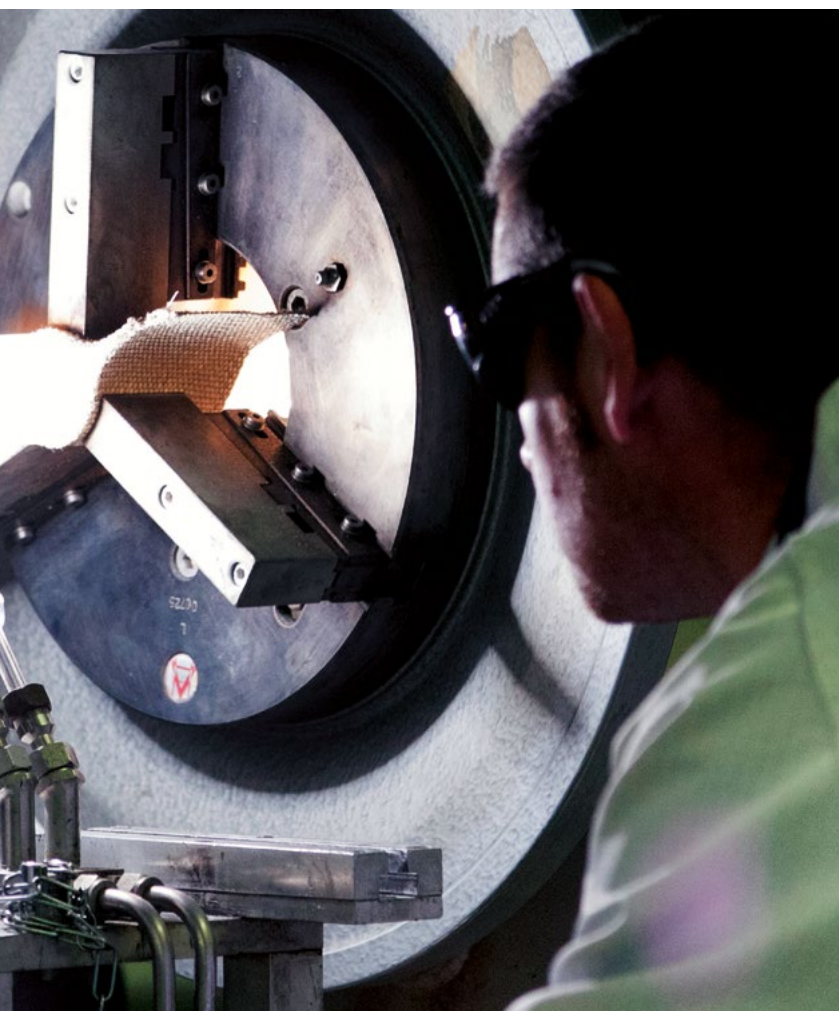
I held a workshop on this topic in July 2022. Information on this workshop can be found at www.arpa-e.energy.gov/events/undergrounding-workshop.

What are some of the other things you are working on?

In addition to my focus on a reliable and resilient grid, I am directing two inherited programs from former program directors.

ULTIMATE targets next-generation superalloys for power generation and aviation industries that can continuously operate at extreme temperatures and stress environments (at 1300C as a standalone material and at 1700C with coatings) to increase the efficiency of gas turbines and jet engines up to 7% by allowing the turbine inlet temperature up to 1800C. The project teams are taking AI/ML-





based approaches as well as literature, physics, and experience-based alloy design approaches to identify candidate MPEA (multi-principal element alloy) compositions that show unprecedented creep strength at high temperatures while providing ductility at room temperature.

The HITEMMP program entails new approaches to the design, fabrication, and testing of compact and efficient heat exchangers operating at high temperatures (>800C hot side, >300C cold side) and across a high-pressure differential (>80 bar hot side, >250 bar cold side) utilizing supercritical CO₂ as a heat transfer fluid. Heat exchangers are critical to efficient thermal energy exchange in numerous industrial applications and everyday life, with valuable applications in electricity generation, transportation, petrochemical plants, waste heat recovery, and much more. The project teams are building a 50 kWth prototype unit targeting minimum of 40,000 hours of mean time to failure utilizing refractory alloys as well as ceramics and various additive manufacturing strategies.

Other project cohorts I am directing include new materials and systems for DAC (Direct Air Capture) to remove CO₂ from thin air, high-efficiency magnetic materials with no or little amount of rare earth elements to make powerful motors and inductors, new

high-entropy catalysts for ammonia oxidation, additively manufactured carbon-composite based light-weight automobile body materials, novel approach to dry industrial products without evaporatively drying the water, low-cost grid-scale batteries using only abundant materials, and cost-effective geothermal resource exploration using ambient seismic imaging.

Why did you invite Prysmian Group to speak at ARPA-E's 2022 Energy Innovation Summit?

I organized a panel discussion on "Rethinking solutions for the resilience, reliability, and security of electric grid infrastructure" at the 2022 ARPA-E Energy Innovation Summit to discuss transformative ideas and technologies that can quickly bring cost-effective grid resilience, reliability, and security solutions to the U.S. grid infrastructure, with an emphasis on addressing associated environmental justice issues.

It was obvious that I needed to include experts from the power utility sector, materials and equipment, and engineering and construction on the panel. During the course of developing my undergrounding program, I had the opportunity to meet Dr. Sriniripurapu and learn that Prysmian Group has commercialized a wide range of electrical cable types, power equipment, and monitoring equipment, and has been at the forefront of testing new ideas and innovations in Europe and the United States.

As a result, I thought it would be beneficial for Summit attendees to hear Prysmian's ideas and perspectives on improving the reliability, resilience, and security of our future grids. Furthermore, I discovered that Prysmian Group has never attended the ARPA-E Energy Innovation Summit. I am pleased that not only Dr. Sriniripurapu

attended the Summit as a panelist, but that more Prysmian Group representatives were able to attend the ARPA-E Energy Innovation Summit.

I visited and witnessed an extremely busy Prysmian Group exhibition booth where many inspiring conversations and networking took place, and I look forward to seeing the Prysmian Group again at our future ARPA-E Energy Innovation Summit events.

PRYSMIAN GROUP TALKS ABOUT

Improving the reliability, resilience, and security of our future grids

What are some of the ways to boost innovation in a company?

WIRED FOR INNOVATION, **an events program that nurtures an innovation culture**

One of them is to create an “innovation culture” where every employee can take part. That’s the idea behind **“Wired for Innovation - Electrify the future”**, a series of virtual events for Prysmian Group employees on topics ranging from major technological breakthroughs to how digital acceleration can positively impact the world of work.

The events program was set up by staff in response to employee feedback from the annual Speak Up survey, where people asked for more information about innovation. Two engineers in Research and Development, Marina Gandini and Pauline Audebet, volunteered to organize a series of live meetings with outside experts in their field taking place in the Prysmian Group auditorium. The expert is interviewed by a Prysmian Group executive in an hour-long format, including a 30-minute question-and-answer session.

“They tell us about their experiences, informing us about technologies related to their fields,” explained Marina Gandini (Submarine Cable Development Senior Engineer).

“Wired for Innovation wants to encourage every Prysmian employee to nurture his or her own curiosity, to explore the unknown and to ask ‘why’, regardless of their job function,” said Pauline Audebet (Material Innovation Engineer).



We aim to demystify innovation learning from the very best innovators in an informal setting has been appreciated by our employees.

Cristina Bifulco
*Chief Sustainability Officer
and Group IR VP*

The first guest was Professor Matteo Pasquali from Rice University, Houston Texas, and Director of The Carbon Hub, which aims to advance technology that provides clean hydrogen energy and widespread carbon materials. He spoke his work related to carbon-based nano-materials and technology advancements in the sustainable generation of green energy.

Sergio Brovelli, Professor of Physics at Bicocca University in Milan, explained his work on luminescent quantum dots for next-generation devices towards zero-energy architecture. On October 13, Christian Urgeghe, Chief Technology Officer of Industrie De Nora, discussed his research on electrodes and water technologies to enable the hydrogen revolution.

The first presentation in April was watched by 1,000 employees, and the second one in June drew an audience of 2,000. The sessions are during lunch hour, and all employees receive a link so they can either watch live or store the link and watch it later.

“We aim to demystify innovation” explains Cristina Bifulco, Prysmian Group Chief Sustainability Officer and Group IR VP who hosted the first session. “Learning from the very best innovators in an informal setting has been appreciated by our employees.”

Tracking the Future

Building the U.S. Power Grid of the Future

In 1882, Thomas Edison opened Pearl Street Station, the first central power plant in the United States.

Originally serving just 59 customers, the plant grew to provide power to over 500 customers in two years. Since then, the U.S. power grid has expanded exponentially. According to the U.S. Energy Information Administration (EIA), the current U.S. power grid is comprised of over 7,300 power plants and 160,000 miles of high-voltage lines, serving 145 million customers throughout the country. It's a system built on 140 years of expansion and innovation.

After decades of underinvestment, however, the power grid is in desperate need of modernization and upgrades to prepare for the changes that are underway. Not only is the grid aging (with many assets operating past their design life), but carbon free renewable energy is rapidly replacing power generation from fossil fuels, and severe weather events are stressing the grid with ever increasing frequency. On top of this, electrification of the economy is expected to require between 40 percent and 100 percent more electricity than we currently use. Preparing for this future is a hefty undertaking that will require a massive amount of investment to keep the lights on. The domestic wire and cable industry is ramping up for the challenge. As the U.S. accelerates into the energy transition, investment and innovation within the wire and cable industry will help the U.S. power grid expand; this will enable a successful transition towards renewable energy, and a more sustainable and reliable future.

President Biden visits Brayton Point

Prysmian Group welcomed U.S. President Joe Biden on July 20, 2022 to the site of its future submarine power cables plant in Brayton Point, Massachusetts, where it is investing **\$200 million** to support the development of wind power as part of the U.S. energy transition.

and cyber criminals and hackers as serious concerns when it comes to grid reliability.

U.S. CLIMATE CONCERNS

The current administration has put significant weight on reducing carbon emissions by replacing base load power plants with intermittent resources.

Although power plants have been historically located near population centers, renewable resources are often located far away. In 2021, President Joe Biden announced that the United States set a goal to reach 100 percent carbon and pollution-free electricity by 2035. Both the Infrastructure Investment and Jobs Act and the Inflation Reduction Act will provide incentives for utilities and developers to ramp up investment in renewable energy resources – as well as the transmission lines to meet these goals. As the U.S. power grid accelerates the transition towards these renewable energy sources, the proper infrastructure must be in place to facilitate that shift.

BOLSTERING CABLE INFRASTRUCTURE

None of this is possible without wire and cable, which moves power from where it is generated to

where it is needed, when it is needed. The investments in wire and cable manufacturing plants open the door for such improvements. The infrastructure we build today must serve for generations to come. In many parts of the country, one of the biggest challenges for increasing levels of renewable energy is overstressed transmission grids that are unable to accommodate more renewable resources. In fact, according to the U.S. Department of Energy, 90 percent of planned renewables cannot interconnect to the grid due to lack of capacity. While renewable generation projects can take as little as one year to complete, transmission projects can often take a decade or more to reach full operation. Domestic wire and cable manufacturing companies are investing in their manufacturing facilities; with each dollar put in, whether to retool current plants to produce new products, or expand current facilities to accommodate more production, companies open the door for new and innovative solutions that will increase the reliability of the current grid, helping to meet future challenges.

STATE OF RELIABILITY

In 2020, the average U.S. electricity customer experienced eight hours of service interruptions. That's the highest average since the EIA began collecting electricity reliability data in 2013. Extreme weather events are increasingly stressing an already overburdened grid. From hurricanes, wildfires, and droughts to extreme heat and cold, engineering assumptions and grid planning criteria often seem obsolete. 2021 was a prime example, most notably because of Winter Storm Uri that left many in the southern U.S. without power. According to the 2022 State of Reliability Report, published by the North American Electric Reliability Corporation (NERC), February's weather phenomenon demonstrated that a significant portion of the grid was unable to supply electrical energy during extreme weather. The concern continued into the summer, as NERC highlighted the risk of summer blackouts in many parts of the country. On top of weather concerns, NERC also cited geopolitical events, new vulnerabilities, new and changing technologies,

Our energy transition is happening, and U.S. cable manufacturers are rising to the challenge. The massive electrical infrastructure expansion that is needed will require more U.S. capacity, which will create more U.S. jobs. Important building blocks include shorter supply chains to meet tight project deadlines, and innovative designs that lower cost and power losses while increasing capacity and reliability as we build the grid of the future.

Joe Coffey | Prysmian Group Director of Transmission

REDUCING ENEL'S CARBON FOOTPRINT WITH ALESEA

Prysmian Group's virtual drum management tool Alesea's commercial rollout has taken a major step forward thanks to a partnership with Enel, the energy multinational, which will adopt it for use soon.

WHAT IS **ALESEA**?

Alesea is a digital product developed in tandem with Corporate Hangar, the innovation hub co-founded by Prysmian Group in 2017 to support and develop high-value projects with strong commercial potential.

Alesea is a smart device installed on the cable drum, connected to a cloud infrastructure where the data is stored and processed, and controlled by the user through an intuitive Web platform. Alesea is equipped with a GPS locator, environmental and movement sensors and multi-network mobile communications providing worldwide coverage.

The system offers real-time access to information regarding cable drum location, potential cases of theft and tampering, drum use and the amount of cable available.



Customers are hungry for innovative solutions. We have an impressive innovation pipeline and it is important to work with customers to accelerate their adoption.

Massimo Battaini
Prysmian Group
Chief Operating Officer

After a year of testing carried out by Enel on hundreds of drums across Spain, Alesea's solution generated a significant sustainable impact on Enel's Spanish unit Endesa's supply chain, an achievement that can be exported on a global scale. Enel found that technology delivered several benefits.

It showed the potential to reduce annual CO₂ emissions, inform in real time about inventory and usage (allowing for just-in-time inventory management and therefore a positive effect on operating capital), increase the rate at which reels are returned to producers, lower downtime spent in the field, promote circular economy principles, generate real-time insights, and to manage the evolution of construction processes remotely while monitoring any changes.

The testing phase resulted in improved supply chain operations.

The initiative also highlighted the added value that IoT solutions for cable and coil inventory management can bring to manufacturing processes and digital transformation.

Enel's innovation team worked with Alesea through an open and transparent exchange across all use cases.

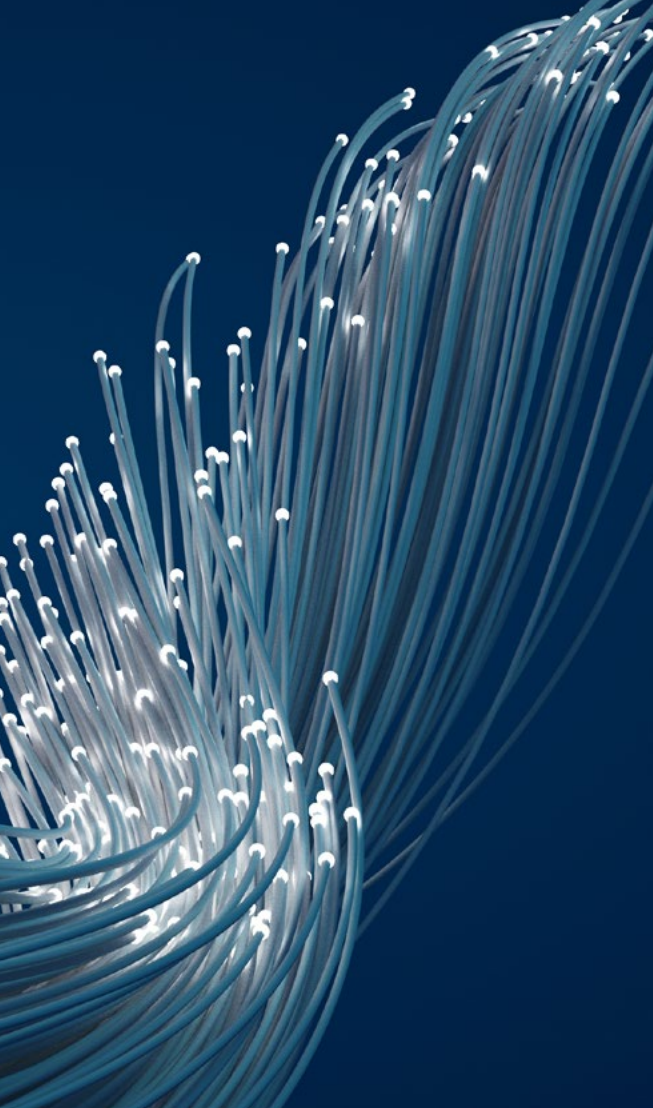
Constant sharing of best practices for supply chain management and lessons learned allowed Alesea to develop a deeper understanding of Enel's processes; the company was thus able to **customize its offerings with the goal of generating ever greater operational impact.**

Doing Business

Sirocco family of fiber optic cables setting new records for cable density

The soaring demand for digital services – be they 5G, augmented reality, edge computing or simply heavier internet traffic – is one of Prysmian Group's three key innovation drivers, along with electrification and sustainability.

As one of the world's largest producers of telecom cables, Prysmian Group is uniquely positioned to support the exponential growth of data traffic. Its Sirocco range of fibre optic cables is setting new records for cable density, offering an even further reduced diameter that makes them an unrivalled space-saving solution



Sirocco Extreme

SETTING NEW RECORDS FOR FIBER DENSITY

WORLD'S FIRST

commercially available
microduct cable featuring

180μm optical
fibre

WORLD RECORD FIBRE DENSITY

8.7 fibres
per mm²

288 fibres in a diameter
of **6.5 mm**

PRYSMIAN GROUP'S TECHNOLOGY

BendBrightXS 180μm single-mode
bend-insensitive fibre

As the world's demand for information continues to increase, fibre networks are becoming more dynamic, crowded, and limited for space, and Sirocco Extreme product enhancements show once again the Group's commitment to respond to these evolving needs of the market.

The Sirocco Extreme cable launched in April 2020 is the world's first commercially available microduct cable featuring 180μm optical fibre, and with 288 fibres in a diameter of 6.5mm provides world record diameter and fibre density. With a fibre density of 8.7 fibres per mm², it is possible to install the cable into an 8mm ID duct where previously it was only possible to install up to 192 fibres.

Sirocco Extreme microduct cables utilize Prysmian Group's BendBrightXS 180μm single-mode bend-insensitive fibre (ITU-T G.657.A2), providing a solution that's ready for evolved systems and future-proof. They are designed for the latest

FTTx and 5G networks and offer a scalable solution that's high-density, physically compact, and easily deployable. It uses Prysmian's PicoTube technology making them up to 40% smaller than standard Sirocco microduct cables, making it possible to install more fibres into congested duct space and enabling the use of smaller ducts for new installations, resulting in lower installation costs and the use of less raw materials. This provides benefits for both the total cost of network deployment and the environmental footprint.

“Growing demand for digital services was already a clear trend before Covid-19. Post-pandemic, digital inclusion has become a topic that everyone can agree on, because it means access to jobs, education, and health services. Bridging the digital divide has become a top priority of governments around the world, and Prysmian Group is ready to offer its innovative solutions to help reaching their ambitious targets”

said Sridhar Siripurapu, Chief Innovation Officer and Chief R&D Officer at Prysmian Group.

Energy transition and digitalization drive Prysmian financial results to **an all-time record quarter**

FULL YEAR 2022 GUIDANCE INCREASE

€1.425 - €1.475 BN

vs. €1.300 - €1.400 BN in July

Adjusted EBITDA

€450 - €500 M

vs. €400 - €600 M in July

Free Cash Flow

"Prysmian reported the best quarter ever, with excellent performance across nearly all businesses and geographical areas. This result confirms the Group's ability to harness the secular drivers of the energy transition and digitalization, even in an uncertain macroeconomic and market scenario.

A focus on technological innovation, supply chain efficiency and flexibility, and high customer service standards are robust strengths of our organization.

We are pursuing business expansion with determination, without losing our focus on profitability and cash generation — our Group's unrivaled competitive factors enable it to finance its investments while also reducing its debt.

Our record performance for the first nine months of the year allows me to confidently announce a further upwards revision of our 2022 full-year targets."

Valerio Battista
Chief Executive
Officer



RECORD NINE-MONTH SALES

€12.08 billion

RECORD NINE-MONTH ORDER BOOK

€6.85 billion

EBITDA

grew to €1.071 billion
(€700 million for 9M 2021)

NET PROFIT

+69.0% to €431 million
vs €255 million for 9M 2021

FREE CASH FLOW

€344 million (12 months)

SOLID PERFORMANCE ACROSS ALL BUSINESS LINES

Q3 Margins at 10.4% up 260 bps
compared to Q3 2021 (7.8%)

Group Sales grew to €12.089 billion, reporting a +15.0% organic growth compared to 9M 2021, with a positive performance in nearly all businesses and geographical areas. The third quarter was the Group's best ever quarter, with 16.2% organic growth, thanks to the long-term drivers of the energy transition and digitalisation. The excellent results of the Energy segment were driven by demand for the technologies needed to upgrade power grids, data centres and solar energy.

Power Distribution cables rose by double-digits in all geographical areas, whereas in the construction cable market the performance of the non-residential segment was particularly satisfying (Energy & Infrastructure: +16.1% organic growth). The industrial cable business reported a +10.3% organic growth, driven by the excellent performance of the OEM and Renewables businesses. In the Telecom space (+9.2% organic growth), optical cables confirmed their uptrend (+18.2%) and MMS (Multi Media Solutions) applications also reported an excellent performance. The Projects segment recovered significantly (+29.0% organic growth), mainly thanks to submarine cables and systems.

Adjusted EBITDA jumped by 56.0% to €1.131 billion, compared to €725 million for 9M 2021. The Group reported an excellent Adjusted EBITDA of €432 million in Q3 alone. Profitability improved sharply, with a ratio of Adjusted EBITDA to Sales at 9.4% (9.8% at 2021 metal prices), compared to 7.8% in 9M 2021. In Q3, margins also improved significantly to 10.4%, up 260 bps compared to Q3 2021 (7.8%). 9M 2022 foreign exchange impact has been €87 million.

EBITDA grew to €1.071 billion (€700 million in 9M 2021), including net expenses for company reorganization, net non-recurring expenses and other net non-operating expenses totaling €60 million (€25 million in 9M 2021). Operating income rose to €684 million, compared to €448 million in 9M 2021.

Net Profit attributable to owners of the parent soared by +69.0% to €431 million compared to €255 million for the same period of 2021.

Financial results

Free Cash Flow over the past 12 months was €344 million (excluding the €19 million cash out for acquisitions and the €19 million net cash inflow related to previous antitrust disputes).

The main factors that enabled Free Cash Flow generation were:

- \\ €1.269 billion operating cash flows before changes in net working capital;
- \\ €342 million cash used for increasing net working capital;
- \\ €310 million cash outflows for net investments;
- \\ €192 million taxes paid;
- \\ €79 million net finance costs paid.

Thanks to its capacity to generate robust and constant cash flows, the Group further reduced its Net Financial Debt to €2,372 million at the end of September 2022, down by an impressive €291 million compared to €2,663 million at 30 September 2021. This major deleverage is reflected in the ratio of Adjusted EBITDA to Net Debt, which improved significantly and will reach nearly 1x ratio at year-end.





Prysmian Group's 9M 2022 results once again confirm the Group's exposure to medium/long-term growth drivers and its focus on proactively and seamlessly serving its customers, also by leveraging its efficient and geographically widespread industrial footprint.

In the first nine months of 2022, global economy continued to grow sharply as in 2021, thanks to the easing of pandemic restrictions and to national plans in support of the development of infrastructure, energy transition and digitalisation projects. The strong recovery of economic activity was accompanied by considerable inflationary pressure, triggered mainly by the increase in energy and commodity prices and supply chain disruptions, exacerbated by the war in Ukraine.

To mitigate rising inflation, the main central banks began to pare back some monetary stimuli and to increase interest rates. Global economic growth expectations for 2022, while remaining positive, have been revised downwards, primarily following the conflict in Ukraine and the related international tensions.

After the 6.0% rebound in 2021, the global economy is expected to grow by 3.2% in 2022, according to the most recent estimates issued in October by the International Monetary Fund. In any event, there continues to be a high level of uncertainty regarding global macroeconomic performance.

Prysmian Group's 9M 2022 results once again confirm the Group's exposure to medium/long-term growth drivers and its focus on proactively and seamlessly serving its customers, also by leveraging its efficient and geographically widespread industrial footprint. This approach is supported by the excellent results achieved by the Energy segment, which hit a record level in 9M 2022, by the Telecom business' solid performance and the expected ongoing improvement of the Projects business, with €3.2 billion orders awarded YTD and a total order backlog of approximately €6.85 billion (an all-time high), with visibility of a further €4.1 billion expected to be converted in backlog by 2024.

As a result, for the full year 2022 Prysmian Group expects a moderate demand growth in the construction and industrial cables businesses after last year's excellent performance, with results also supported by the ability to implement pricing policies to contain the inflation-driven cost pressures. In the high-voltage underground and submarine cables and systems business, the Group aims to confirm its leadership on the market, which is expected to grow sharply, driven by the development of offshore wind farms and interconnections to support the energy transition, as well as the start of a significant market uptrend in the United States, where the Group has decided to expand its production capacity and has already obtained the first construction permits for the new submarine cable plant at Brayton Point (Massachusetts). For this segment, the Group expects results to be up on the previous year, with a more marked acceleration in the Q4 2022. In the Telecom segment, volumes growth is expected in the optical business, mainly thanks to the North American market, where the Group is strengthening its commitment to meeting the country's growing demand for broadband optical fibre connectivity.

Prysmian Group's long-term growth drivers are confirmed, mainly linked to the energy transition, the strengthening of telecommunications networks (digitalisation) and the electrification process. The Group can also leverage its broad business and geographical diversification, solid capital structure, efficient and flexible supply chain and lean organisation, all of which is enabling it to effectively seize growth opportunities.

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Prysmian
Group

Linking
the Future

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