



Let AI Take Flight Towards Infinite Green Possibilities.

Formosa Plastics Group's exhibition theme for the 2023 Taipei Innovative Textile Application Show (TITAS) is “Let AI Take Flight Towards Infinite Green Possibilities.” The theme embodies combining smart manufacturing with green technologies to bring about a new era of recyclable, renewable, and eco-friendly textiles. From raw materials to finished fabric products, our green textile products are manufactured using the newest technologies and low-carbon emissions energy sources, allowing eco-friendly green energy to play an indispensable part in our lives.

The Formosa Plastics Group Pavilion at TITAS 2023 features a collaborative exhibition put on by Formosa Chemicals & Fibre Corporation, Formosa Plastics Corporation, Nan Ya Plastics Corporation, and Formosa Taffeta Company. The Pavilion is composed of seven main areas, each based on a single theme: Schoeller, Fashion and Feathers, Popular Sports, Outdoor Sports, Environmental Protection and Recreation, Industrial Materials, and Protection. These exhibits display how Formosa Plastics Group's main products are utilized in multiple fields, including fashion, sports, outdoors, protection, and industrial materials while highlighting the latest developments in yarns and fabrics. Formosa Plastics Group's vertically-integrated production line produces seven different fibers: rayon fiber, polyester fiber, nylon fiber, polypropylene fiber, elastic fiber, carbon fiber, and functional yarn, all of which are combined by Formosa Taffeta under the name of Formosa Taffeta Fabrics. We look to showcase our close vertical collaborations with other companies by displaying these eight different products at the Formosa Plastics Group Pavilion. We have led the market with our innovative new materials, protecting the environment, achieving carbon reductions, and building a high-quality product image for our series of fiber products.

Formosa Plastics' Key Exhibition Items for TITAS 2023:

A. Formosa Chemicals & Fibre Corporation:

1. After 3 years of the COVID pandemic, and due to rising global inflation in 2023, the world economy is currently facing severe issues. Formosa Chemicals & Fibre Corporation has nevertheless remained committed to fulfilling its corporate social responsibilities by continuing to develop ways to recycle discarded ocean fishing nets as raw materials. Additionally, it is one of the few companies around the world using chemical dispersion technologies to mass produce recycled nylon 6 pellets, helping to mitigate the severe pollution that marine waste is causing to the global environment. From 2018 onwards, the Formosa Chemicals & Fibre Corporation has adopted recycling technology at marine debris cleanup areas to chemically extract recycled CPL with quality similar to that of newly-produced CPL. The Corporation has also collaborated with Vietnamese companies and brands to recycle and reuse discarded fishing nets. After the recycled raw nylon yarn produced has been approved by brand owners, the Corporation then works together with downstream processing

companies, including its affiliate Formosa Taffeta, to turn this yarn into dyed fabrics. These fabrics are then provided to other brands for the production of ready-made garments, creating a vertically integrated production line for functional outdoor sports clothing. Additionally, the Ocean Conservation Administration launched the 2020 Local Government Trial Initiative to Recycle and Reuse Fishing Nets and Oyster Ropes. The oyster farming industry in Chiayi County generates 1,375 tons of nylon 6 waste each year in the form of discarded oyster ropes. For a long time, this waste had not been effectively reallocated and handled, due to the low prices for recycled materials on the market. In response, Formosa Chemicals & Fibre Corporation built a production line in Chiayi's Xingang Township to recycle and reuse these materials, eliminating marine debris produced by the oyster farming industry and protecting the beautiful coastlines of Chiayi. This project began mass production of recycled materials in April 2021. In order to expand the scale of recycling nylon 6 from marine debris, the Corporation has continued to invest in enhancing its production capacity. The Chiayi Xingang facility is planned to have its capacity expanded to 750 tons/month in the third quarter of 2023, allowing the Corporation to produce 1,250 tons/month of recycled nylon 6 in total when combined with the 500 ton/month output from its Vietnam facility.

2. Continue to more effectively conserve energy and water, and reduce carbon emissions. Establish goals to achieve carbon neutrality by 2050, and with 2020 as the baseline year, set short-term goals to reduce carbon emissions by at least 10% by 2025 compared to the baseline year and medium-term goals to reduce carbon emissions by at least 25% by 2030 compared to the baseline year, and propose solutions to address environmental pollution issues arising from wastewater produced during the downstream weaving and dyeing processes. In 2014, the Corporation was the first in the industry to begin developing pre-dyed industrial yarn. Furthermore, it has worked with major fishing net manufacturers, Ching Fa and King Chou, and rope manufacturers, Nian Shan and Zhen Kuan, to make fishing nets and ropes for marine recreation activities, successfully converting part or all of its clients into using dyed yarn. This has reduced the amount of wastewater generated by its clients in the weaving and dyeing processes, reducing environmental impacts. In 2019, these efforts were further expanded to the clothing industry, where Formosa Chemicals & Fibre Corporation worked together with large weaving companies such as the Formosa Taffeta Company and Hsin Hsing to supply fabrics for the production of casual wear, sportswear, and shoes, allowing it to better fulfill its responsibilities as an environmentally-friendly business.

The amount of resources saved by using pre-dyed fibers from the Formosa Chemicals & Fibre Corporation to produce 1 ton of finished fabric:

Water conserved: 116 tons

Percentage: ↓85% Electricity conserved: 127 kWh

Percentage: ↓64% Reduce carbon emissions: 3,319 kg

Percentage: ↓84%

3. Due to the increasingly severe impact of climate change, it has become common for summer temperatures to exceed 40°C, and for winter temperatures to fall below negative 20°C. Both manufacturers and consumers place a shared priority on finding ways to make clothing lighter, softer, more breathable, and more comfortable. Formosa Chemicals & Fibre Corporation has for many

years produced cool-sense and heat-retaining functional yarn by incorporating functional masterbatches during the manufacturing process, and it has used its own small-scale synthesis and dispersion technology to develop long-efficient low-denier functional yarn. It has then worked together with professional brands to expand into the European and US markets. In 2022, the Corporation collaborated with the Taiwan Textile Research Institute to develop moisture-absorbing and elongated functional yarn with fiber tows that would elongate and form curves after absorbing moisture, making the fabric surface more porous and less likely to adhere to the skin. These materials are used in fabrics for making outdoor sports or recreational clothing, improving their breathability and comfort. The Corporation has established a consensus on collaboration and market expansion with other brands and looks to develop organic hydrophilic cooling and functional nylon pellets in 2023, providing fiber spinners with directly-spun fibers, and developing various functional fabrics. Through these efforts, the Corporation is aiming to adapt to climate change and better meet the needs of consumers for fashionable, comfortable, and healthy clothing.

4. Apart from working together with Nan Ya Plastics Corporation to develop recycled yarn from plastic bottles, the Formosa Chemicals & Fibre Corporation has also developed organic yarn, acrylic yarn, and flame-retardant yarn. By incorporating different yarn production techniques, such as by using low-hairiness equipment and MVS machines, it is able to produce high-quality and GRS-certified eco-friendly low-hairiness yarn, which can be used as fabrics in the manufacture of braided belts, shoes, accessories, and outdoor cloth materials. Additionally, it has collaborated with Chung Hsing Textile to develop white polyester yarn, mainly produced by directly adding brighteners during polycotton manufacture. This reduces carbon emissions from dyeing after polycotton manufacture. This technique can be applied to the manufacture of socks and towels. Additionally, in response to construction needs, and to address the issue of car batteries catching fire, the Corporation also manufactures fireproof fabrics and welding blankets used for the work site and electrical vehicle safety measures.
5. The Corporation has developed graphene rayon fibers in order to promote personal health protection and environmental sustainability. Graphene, when used in fibers, has the unique characteristic of being an extremely good conductor of heat, and is also able to release long-distance infrared rays. Additionally, the Corporation's rayon is produced from FSC-certified natural wood pulp, making it silky to the touch and biodegradable, among other advantages. This material can be used in blankets, filling materials, and garments such as jeans, allowing the Corporation to meet consumer health needs while also contributing to global sustainability.
6. Turning plastic into gold - physically recycling and reusing polypropylene (PP) plastic materials to produce green fibers.

“We believe that there are no waste materials, only resources that haven't been properly utilized.” The Corporation recycles, crushes, sorts, and cleans the PP plastic products used by consumers, turning them into recycled plastic shards used to manufacture PCR-PP plastic pellets. These pellets can be used to produce embroidery textiles, finished garments, and other home decoration textiles or outdoor textiles. PCR-PP is not only able to keep plastic out of the ocean and out of landfills,

reducing use of energy, petroleum resources, and carbon emissions, but it is also able to create greater possibilities and potential for the sustainability cycle. In doing so, the Corporation has promoted the concept of the circular economy, adopted a “We Produce, We Recycle” attitude, and worked together with consumers to achieve a win-win situation.

B. Nan Ya Plastics Corporation:

1. SAYA, an eco-friendly sustainability brand under the Nan Ya Plastics Corporation, creates a safeguarding circularity by implementing the BPA-Clear project.

SAYA was established in 2020 by Nan Ya Plastics as an eco-friendly sustainability brand. The brand is focused on developing polyester recycling techniques, and fully integrates market and industry resources to do so, from developing diverse recycling channels to a rich variety of different applications for recycled materials. In the past year, the brand also established the SAYA Lab. By focusing on sustainable and renewable technologies, the team explored the development of various possible ways to recycle and reuse PET. Today, it has displayed the fruits of its research for the first time, sharing details on its industry-leading BPA-Clear Bisphenol A Removal and Regulation Technology. Through removing and strictly regulating BPA, this technology is able to effectively regulate BPA content for production lines, ensuring that international standards for BPA levels are met, and making recycled polyester products safer.

2. BPA-Clear Bisphenol A Removal and Regulation Technology

While recycled polyester pellets can effectively reduce waste by creating a sustainable cycle, there are also concerns that these recycled materials may contain harmful substances. Urgent attention needs to be paid to whether these materials have adverse health impacts. In response, SAYA has invested significant efforts into investigating concerns that recycled textile products may contain Bisphenol A remnants. After in-depth research and testing, SAYA Lab developed its leading BPA-Clear Bisphenol A Removal and Regulation Technology, which is able to effectively ensure that Bisphenol A levels meet international standards (less than 1ppm) during the production of eco-friendly recycled textile products through modifications to manufacturing equipment, innovative implementation of Bisphenol A removal technologies, and strict regulation of sources for recycled materials. At the same time, this technology can already be used for stable mass production.

3. SAYA Hopes to Inspire New Industry Trends and Will Continue to Display Industry-Leading Results to Fulfill its Green Lifestyle Vision

SAYA recycles more than 8 billion plastic PET bottles each year. It has developed applications for polyester products, beginning from the industry’s sources, and it has established the SAYA Lab to carry out research into implementing eco-friendly sustainability concepts, breaking through technological barriers and high industrial cost restrictions. It has developed internationally and domestically certified high-quality products, and in the future, it hopes to be able to use recycled PET bottles in a wider variety of applications. Apart from becoming a provider for functional fabrics, including buckles and accessories, synthetic down, and functional films, SAYA aims to setup a OneHub full-service integrated recycling station, achieving an important milestone for the brand’s sustainability and recycling technologies.

C. Formosa Plastics Corporation:

Tairyfil carbon fiber is a carbon fiber developed independently by Formosa Plastics Corporation from precursor spinning to carbon fiber carbonization. The fiber is widely used in sports equipment, wind turbine blades, and industrial applications. Formosa is one of the world's leading carbon fiber producers, holding a competitive advantage due to its vertical integration. From crude oil refining to carbon fiber carbonization, companies in the Formosa Plastics Group are able to carry out every step of the production process. Tairyfil carbon fiber is available as a small to large tow fiber, with sizes ranging from 1.5K to 48K, and with a standard to high modulus. It also works well with both thermosetting and thermoplastic resins. In particular, the carbon fiber TC780 produced from a new “dry jet wet spinning” process possesses high strength, making it suitable for high-pressure cylinders. We have continued to improve our dry jet wet spinning technology, and have introduced the high-strength intermedia modulus TC880 carbon fiber, intended for use in next-generation pressure cylinders and aerospace high-strength carbon fiber applications. Apart from producing raw materials for carbon fibers and delivering solutions tailored to individual customers, the Formosa Plastics Corporation has collaborated with customers to produce innovative new products such as Lazuli colored carbon fiber diving fins. We cooperate with the world-renowned badminton brand VICTOR to jointly develop badminton rackets and badminton shoes. In the second half of 2023, we will launch revolutionary products DX-10METALLIC racket and classic badminton shoes P9200TTY. These products help us create mutually beneficial relationships with our customers.

D. Formosa Taffeta Company:

1. Biomass elastic yarn: The Company produces Spandex from biomass materials made by fermenting non-food use industrial corn. This Spandex has the same properties as ordinary Spandex, and when combined with biomass polyester with nylon fabrics, can be turned into a series of elastic biomass textiles with superior elasticity and texture. It represents a new generation of eco-friendly elastic biomass textiles, which can be processed for various functions, and used in different seasons and for different purposes.

Eco-friendly requirements:

- (1) Bio-based Spandex elastic fiber is composed of 30% biomass.
 - (2) Able to reduce water consumption by 39% and carbon emissions by 23%.
 - (3) Uses plant materials to replace petroleum-derived raw materials, reducing petroleum consumption.
2. Biomass polyester and nylon fabrics: The Company has launched a new generation of environmentally-friendly fabrics - biomass fabric. Biomass nylon 56, nylon 410, and nylon 11. Biomass nylon 56 is composed of 45% plant matter, derived from plant materials such as non-food use corn and sugar cane. Biomass nylon 410 is composed of 70% plant matter, derived from plant materials such as non-food use corn and sugar cane. Nylon 11 is composed of 100% extracted castor oil. These three types of biomass nylon are all produced from biomass materials refined from plant matter instead of traditional petroleum-derived raw materials. These new-generation eco-friendly products allow the Company to reduce petroleum consumption and greenhouse gas emissions, while still producing nylon with the same unique qualities. By applying different processing techniques,

this nylon can be made highly splash-resistant or water-repellent, making it a new choice for outdoor sports enthusiasts.

The Company produces biomass polyester fiber by turning agricultural waste materials that are easily obtainable from farms, such as corn stalks, hay, sugar cane scraps, and discarded scraps from processing fruits and vegetables, into ethylene glycol. This process involves crushing the materials before they are put through enzymatic hydrolysis, fermented, and finally combined with bio-alcohol. By using this as a source of biomass polyester fiber, we can reduce the consumption of petrochemical materials, and avoid competing for food resources.

1. Biomass-based Nylon 11 waterproof breathable film: Composed of 48% biomass material, extracted from natural castor oil. The drought-resistant and fast-growing castor oil plant is an ideal petroleum substitute as a raw material. It is often used in cleaning products, which means using the plant avoids competing for food resources. This new generation waterproof breathable film effectively addresses environmental issues, while also being able to provide high-quality protective properties. It is thus both eco-friendly and green, while also managing to provide high functional performance.
2. Carbon capture EG polyester fabric: Carbon capture EG polyester fabric is produced using unique carbon capture and biomass fermentation technology. This technology turns the waste gas—carbon dioxide—created during industrial production into ethanol and ethylene glycol, serving as the base materials for creating new polyester fabrics. These materials are then used to create products woven from polyester fiber through direct carbon reduction methods, which not only re-capture greenhouse gases harmful to the environment but also reduce our reliance on petroleum-derived materials, reducing global carbon emissions and pollution. This fabric is an innovative and new sustainable, eco-friendly material.
3. Recycled polyester and nylon fabrics made from marine waste
Recycled polyester fabric made from marine waste: In support of the collaboration between Adidas and environmental NGO Parley, Formosa Taffeta Company has implemented efforts to recycle plastic waste polluting the oceans in the Maldives and Sri Lanka. The Company turns this recycled plastic into yarn, which is then made into Formosa Taffeta Company eco-friendly fabrics. From recycling plastic bottles on land to recycling plastics in the ocean, the Company has continued to find more ways to help save the ocean.

Nylon fabrics made from recycled marine waste: The Taiwanese oyster farming industry uses huge quantities of nylon oyster ropes, resulting in marine waste such as waste fishing nets. By recycling and processing these materials through techniques such as melting, dispersion, and refining, the Company can reuse them to make new raw nylon yarn.

4. OWASTEX® Polyester fabric made from recycled and reused textiles waste: Formosa Taffeta Company has increased its emphasis on eco-friendly manufacturing, and has reused greige fabric leftover from the fabric manufacturing process. New pellets are made from this leftover material,

which are then re-polymerized and made into polyester, raw nylon yarn, and new greige fabric. In doing so, the Company has successfully elevated the circular economy present within the enterprise. All enterprises share a common goal in pursuing environmental value. Formosa Taffeta Company's eco-friendly recycled polyester and nylon yarn utilizes technology to recycle and reuse greige fabric, allowing the Company to make progress towards its ideal goal of "fully reusing all materials with zero waste." These materials allow the Company to decrease consumption of natural resources and reduce environmental burdens, while at the same time maintaining production of its usual high-quality and highly functional fabrics.

5. Eco-friendly water-based coating fabrics - In response to global trends, the Company has developed eco-friendly water-based coatings technology to replace its original solvent lamination techniques, avoiding the risks to the environment posed by volatile solvents. After processing, the fabric can be made to be splash-resistant, wind-resistant, and water-resistant, making it ideal for lightweight wind-resistant jackets intended for light casual wear or city wear.
8. CORDURA® re/cor high-strength recycled nylon fabric is made from 100% recycled materials, and produced through professional recycling technologies. The material is able to fully meet the required high resilience and durability requirements for the CORDURA® brand (passed the Martindale 100,000 oscillations durability test). At the same time, it is a highly functional product that embodies eco-friendly concepts, ideal for use in outdoor camping, rock climbing, and extreme sports activities.
6. Specialty fabric - The heat- and flame-resistant DuPont NOMEX® fabric is used in industrial safety, firefighting, and military-use garments, including arc-resistant, molten metal splash-resistant, fire-resistant, high visibility, and police apparel. For greater comfort, the Company has also developed four-way and two-way stretchable fire-resistant textiles. In addition, textiles can be made water-repellent or moisture-absorbent, or provided with near-infrared-resistant camouflage properties after downstream processing. In order to make safer textiles, the Company has started adopting new low-formaldehyde production methods and will continue to use these materials in dampers.
7. High strength and abrasion-resistant material - KEVLAR® is used in bulletproof helmets, shields, and water-blasting suits. Applying DuPont's patents, the fabric can be processed via pre-soaking and bonding techniques to create a new generation of composite fabrics for bulletproof and stab-proof vests.
11. Antistatic textile - In response to our competitors, an additional antibacterial process to meet food industry requirements and a special composite yarn for ultra-comfortable paint coveralls have been developed for the NEGA-STAT®. This direction represents a shift toward higher-quality textiles. Disease prevention packs developed specifically in response to the pandemic: The many washable windproof jackets and pants for disease prevention are fashionable and help reduce environmental pollution. The packs also include goggles, gloves, and face masks to protect consumer health.
8. Functional yarn BODYTEK® - A wide range of different fibers have been used to develop a myriad

of innovative yarns with high added value. These fabrics have a wide range of applications, and can be divided into four types based on their function:

- Healthcare series - Fabrics need to be capable of retaining heat, promoting blood circulation, and releasing negative ions, as well as provide antibacterial and deodorizing functions, protection from UV rays, and skin protection when used in products such as underwear, outdoor wear, bedding, medical materials, protective clothing, and bath products.
- Environmental - Fabrics need to be green, reuse resources, and protect the environment. This includes underwear, sportswear, casual wear, everyday fabric products, etc.
- Functional - Fabrics need to offer functions such as moisture absorption, heat dissipation, quick drying, anti-pilling, lightweight, soft texture, cool sense, friction resistance, and temperature regulation when used in underwear, sportswear, casual wear, and high-quality dresses, etc.
- Protection - This includes fabrics that are fire- and flame-retardant, high in strength, cut-resistant, anti-static, shielded from electromagnetic waves, etc., when used in special clothing, work clothing, damper fabric, high-strength fabric, protective clothing, furniture, and interior upholstery, etc.

9. Formosa Taffeta Company carbon fiber products: The Company uses ultra-light high-strength carbon fiber to make fabrics, creating different products in response to different requirements from each customer. Carbon fiber products are used in a wide variety of different applications, from green wind power generation to high-unit-price car components, and the material is ideal for high-tech industries requiring lightweight materials.

Formosa Plastics Group Enthusiastically Welcomes You to TITAS!