

SYL

Sharing Your Life



MESSAGE

PARTNERSHIPS

PRODUCT INFORMATION

INTRODUCTION OF TRADITIONAL JAPANESE "CLOTH"

NEWS & TOPICS

ABOUT MURATEC

NICE TO MEET JAPAN

First, I would like to thank you for your continued patronage of our products.

Due to COVID-19, we have much less opportunities to meet in person these days than before. It is our sincere hope that all Muratec partners around the world stay healthy and active.

This infectious disease, both by itself and in terms of its impact on society, particularly the economy, seems to cast a dark shadow over the world's future. For nearly 30 years after the end of the Cold War, with the rapid advancement of information and communication technology, cross-border movements of people and goods have increased steadily. This trend has changed our lifestyles and brought about dramatic economic growth. COVID-19 is believed to have the potential to change this trend substantially. In fact, the global textile industry is currently undergoing an extremely challenging phase.

However, in the long run, what we are experiencing now could turn out to be an opportunity for further evolution of our business activities. As a matter of fact, we have shared a common understanding for some time that we must address such issues as resources, energy, and environment. Promoting smart production and resilient corporate activities in uncertain situations was referred to as a means of addressing these issues. And the application of new technologies, including digital technology, has been believed to be a key to tackling these challenges. COVID-19 seems to have the effect of accelerating all these processes.

Throughout its history, Muratec has made the best of its new technologies such as splicer, link coner, and air jet spinning to help its customers automate their entire production lines or reduce the number of their manufacturing processes. By doing so, we have contributed to ensuring more flexible production with less manpower and energy. Today, in the face of major changes in society, I feel a renewed sense of commitment to Muratec's mission.

Meanwhile, we must not forget that it is not Muratec alone that has brought forth these innovative technologies. These technologies have been made possible through exchange of ideas and cooperation within an ecosystem comprising many Muratec partners—such as customers, suppliers, and other companies in the same industry that work on the front-end and back-end processes. This kind of collaboration may be only natural in the textile industry, which is marked by a long history and many years of experiences.

On the one hand, COVID-19 is said to have accelerated the disruption of relations between people, regions, and countries. Technology, on the other, has the power to connect them again.

Going forward, Muratec will keep on doing its utmost with its partners toward the creation of even more new technologies. We will greatly appreciate your continued guidance and support.



Daisuke Murata
President & C.E.O.



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TRÜTZSCHLER + **muratec** = **IDF +1 VORTEX**

IDF+1 VORTEX

What is the ideal spinning plant for the age of the "new normal"?

IDF+1 VORTEX is the new spinning plant concept proposed by Muratec and Trützschler.

This concept combines Trützschler's carding and drawing technologies with Muratec's VORTEX spinning technology to create a proposal for the ideal spinning plant for the age of the "new normal" by pursuing reduced process time, reduced manpower, and reduced energy consumption.

Collaboration history

Muratec developed its original Murata Jet Spinner spinning system which utilizes air vortex in the early 1980's. This was the predecessor to today's VORTEX spinning machines, and had achieved the world's fastest spinning speeds even at that time. Because this system used a high draft ratio, and taking into consideration machine efficiency and yarn quality, it was recommended to use slivers with uniform fiber orientation over three passage draw frames for the raw material.

After the announcement of the VORTEX III 870 in 2011, Muratec and Trützschler began joint research on raw materials aimed at even further development of air spinning technology. Through repeated discussions and tests, several years after the joint

research first began, the companies succeeded in producing slivers of desired quality after just one passage of draw frame by using the IDF 2 after carding.

The companies first introduced the concept, together with sample fabrics at the ITMA ASIA+CITME 2018, then at ITMA 2019 Barcelona the following year, in addition to the announcement of the VORTEX 870 EX, the latest model in the VORTEX spinning machine series, the IDF+1 VORTEX proposal and operating demonstrations featuring one passage draw frame sliver usage were carried out at both the Muratec and Trützschler booths (as below).



Exhibition of VORTEX spinning machines at the Trützschler booth at ITMA 2019

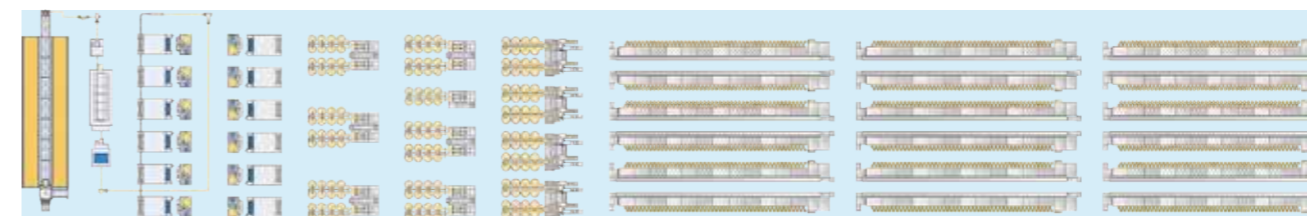
IDF+1 VORTEX overview and benefits

The benefits which IDF+1 VORTEX bring to plants are simple, but serve a vital role in plant operation in the age of the new normal where the shift from mass production to small lot, high variety production continues while high speed is also required.

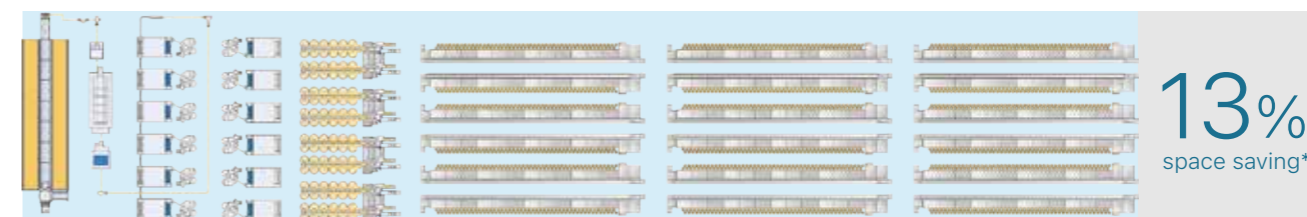
1 SPACE

Reduces required space by approximately 13% compared to a conventional three passage draw frames (for Ne30, 850 kg / h).

Standard process : 3 Passages draw frames



IDF VORTEX SPINNING : with only 1 Passage draw frames



* Case : Ne30, 850kg/h

2 CAN MOVEMENT

Reduces can movement carried out by operators by 32%. Increasing the can size makes it possible to reduce this even further, allowing for a maximum can movement reduction of 55% per day (when using a φ600mm can size).

3 OPERATOR

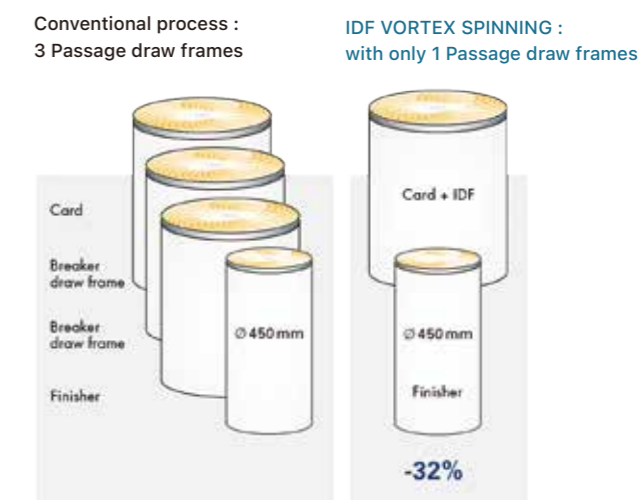
Allows for reduction of 1.5 operators per shift. (for 850 kg/h)

4 SLIVER PIECING

Also allows for a reduction in the number of sliver piecings, which also have an impact on quality, by 900 piecings per day (for 850 kg/h).

5 ENERGY CONSUMPTION

Reduces power consumption by approximately 4% and air consumption by approximately 9% in the sliver preparation process. Energy reduction benefits have also been verified in the VORTEX 870 EX compared to conventional models.



6 QUALITY AND OPERATION

Comparing VORTEX spinning machine operation data for conventional three passage draw frames and this new one passage draw frame, the conventional three passage draw frames wins in terms of yarn quality data, however the differences are almost undetectable in fabrics.

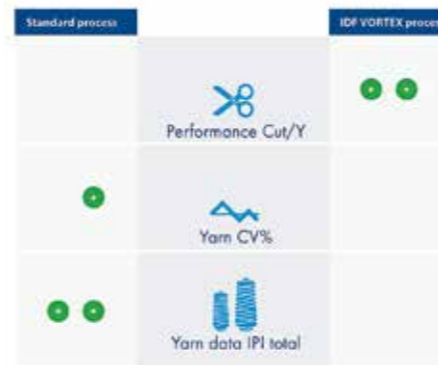
In addition, the one passage draw frame tends to have less machine stoppages due to quality cuts.

User comments

The Pallava Group's Sri Cheran Synthetics Private Ltd. company in Tamil Nadu, southern India, is a model plant for IDF+1 VORTEX. In development trials, positive responses were received for various evaluation items including process time reduction, manpower reduction, energy consumption reduction, yarn quality, and more, and the equipment has continued to be expanded thereafter.



Mr. G. Muthulakshmanan
President
Sri Cheran Synthetics India Private Ltd.



Mr. S. Sundaravadeivel
President
Pallava Textiles Private Ltd.

Very less cuts & very less splices in yarn. So hard waste drastically reduced. Highest Operative Efficiency achieved 98.5% plus and downstream process efficiency also 1.0-1.5% higher than regular process.

Reduction of the passage in draw frame leads to the less operation, less handling. Is there another advantage, which Trützschler and Muratec do not know ?

In IDF process, the fly generation and waste accumulation are very less, which improves the efficiency of the VORTEX machine by less yarn faults.

Ne 16 to 40s

One pass sliver is used for which yarn count?

Ne 20 to 40s

Off-line Uster results seems little poor but Fabric appearance found NO difference between 3 passages and 1 passage.

How is the yarn quality or operation by 1 passage, compared with standard 3 passages?

Positive side is better performance in next processes like Warping and Weaving. On the other side, H1 faults on the Classimat faults increases by 50% on the yarn results. Short term variations, Uster Cvm%, Cvm(10m) increases by 10% compare to 3 passage drawing.

IDF & VORTEX combination as of now we worked for higher volumes in Viscose & Ecovero. We have plan to work 100% Polyester, Modal, Tencel and with cotton blend process in IDF & VORTEX combination.

Do you continue to use IDF+1 VORTEX for further usage, which is the next target? (blend or another material?)

Yes. We will continue to use IDF+1 VORTEX for Viscose products. We would also like to achieve the good results in 100% Polyester, PV and cotton blends.

Highest productivity, higher yarn realization, less space, less operators, less power cost and less investment (compact unit).

What is the biggest advantage by IDF+1 VORTEX?

Space, Power and Labour requirements are lower in IDF process.

Success of this very short process with higher yarn realization will definitely change the trend of ROI (Return on Investment).

What are your expectations for IDF+1 VORTEX and from Muratec going forward?

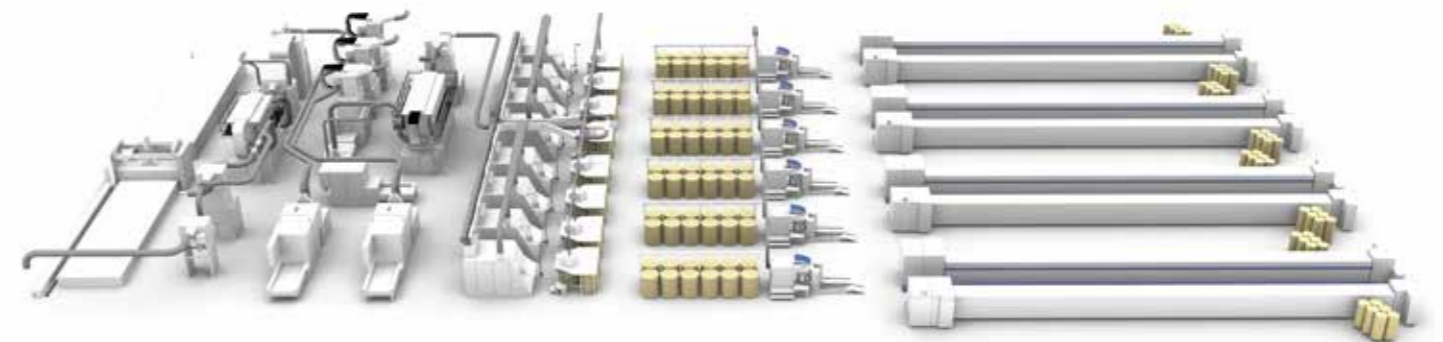
Cots and Apron combination can be improved further to achieve the same quality results of 3 Passage drawing in finer counts like Ne 40s and above.

What are the next steps?

The next scenario being planned by Muratec and Trützschler is to apply this system to blended materials. It is difficult to mix materials in a one passage draw frame, so at present IDF+1 VORTEX is only being applied for use with 100% polyester and 100% viscose materials.

We currently have expectation from Trützschler's T-BLEND system, which allows for blending at ratios of even just 1%, to overcome this issue.

The optimal, near future plant which we are envisioning will feature the following types of equipment and allow for use of even blended materials in one passage draw frame. The following figure shows an average yarn count of Ne24 with 8 carding machines with IDF 2, and 8 VORTEX spinning machines with 96 spinning units. The estimated production capacity is 300 tons or more, for 100% material or blends up to three types with count range Ne10-80.



Tetsuji Masai

Director, General Manager of
Textile Machinery Division

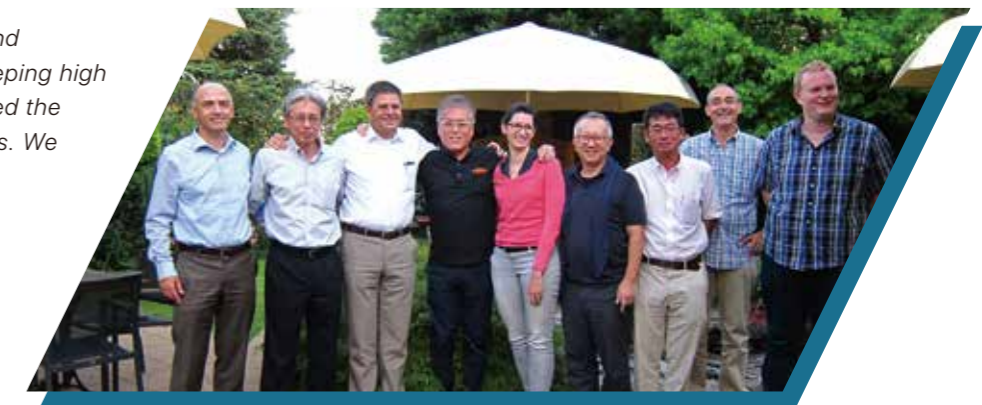
This collaboration with Trützschler has given us further advantage in VORTEX spinning machines, by reducing process time, manpower, energy consumption and so on.

We have enjoyed the cooperation with raw material manufactures and oil manufactures in the development of VORTEX until now.

Of course, there were many hurdles and difficulties to increase the speed while keeping high quality in VORTEX, but we also experienced the same in this attempt to reduce the process. We

would like to express our sincere gratitude to all who were involved in helping us in this attempt.

Still it will take some time to offer the next proposal in the above, the age with "new normal" will encourage Muratec and Trützschler!



POLYMASTER for VORTEX spinning machines

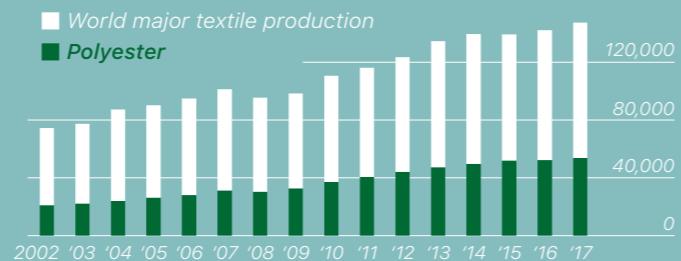
Now usable for more than just polyester spinning, greatly expanding its value!



Polyester, is the most demanded manmade fiber, but there are still some issues with its spinning

As the market for 100% polyester or high polyester blended materials continued to grow every year, the accumulation of polymers and oils on the spinning parts was becoming a challenging issue for VORTEX spinning, ring spinning, and open-end spinning.

However, for VORTEX spinning, the development of POLYMASTER quickly resolved this issue.



Even for the materials, for which it was required to clean the spinning parts frequently during the operation and decrease of spinning speed, the use of POLYMASTER makes it possible to significantly reduce the number of cleanings and return to normal spinning speeds.



Mechanism & Advantages

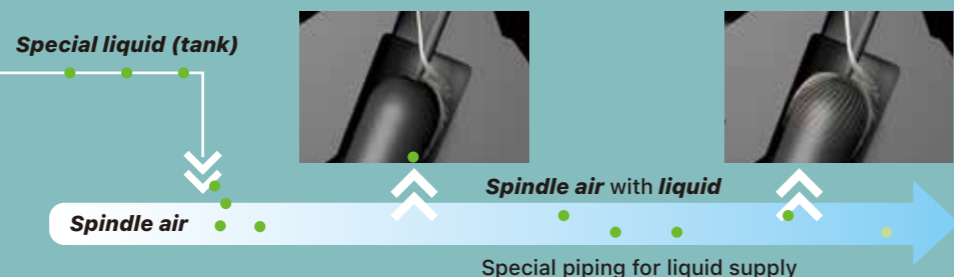
POLYMASTER was developed to resolve issues which arise from the accumulation of oils on spinning parts while spinning polyester. However, in recent years it has been found that POLYMASTER is also effective for use in spinning of polyester blends, dope dyed, and spinning of materials other than 100% polyester.

Typical POLYMASTER uses

- 100% polyester
- Polyester / Viscose
- Dope Dyed

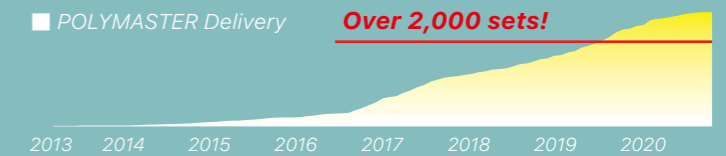
- Flame retardant polyester
- Recycled polyester

POLYMASTER is supplied to the spinning parts via air piping from a tank placed at the back side of the machine. Mixing "finishing liquid" (POLYMASTER mist) with the spinning air when during spinning process prevents deposition of polymers and oils on the spinning parts.



Over 2,000 POLYMASTER units delivered

Ever since the release of POLYMASTER in 2013, orders for over 2,000 sets have been delivered all over the world.



"POLYMASTER" provides value to not only spinners, but also to end users

In recent years, POLYMASTER has also been recognised by customers other than spinning plants as well. We receive an increasing number of inquiries from apparel manufacturers and other customers willing to buy yarns from VORTEX spinning machines using POLYMASTER in order to maintain stable yarn quality.

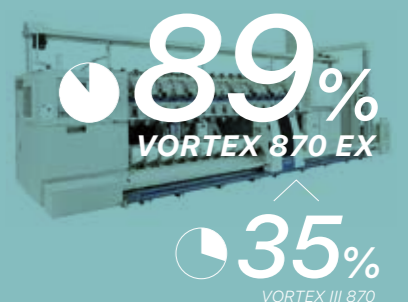
POLYMASTER, higher speeds with the VORTEX 870 EX

The maximum spinning speed for VORTEX spinning machines is 500m/min. for the previous VORTEX III 870 model, and 550m/min. for the latest VORTEX 870 EX model.

POLYMASTER has an even greater effect when carrying out spinning at speeds of 500m/min. and higher. The majority of VORTEX 870 EX customers run these machines at a spinning speed of 500m/min. and higher, and almost 90% of these machines are equipped with POLYMASTER.

The higher speed of the VORTEX 870 EX is also leading to an increased number of POLYMASTER installations.

POLYMASTER installation rate in all delivered units





注染 Chu-Sen

"Chusen" ("pour dyeing") is one of the dyeing techniques passed on over generations in Japan. In this traditional dyeing method, plain woven cotton cloths called "tenugui" are dyed by pouring the dye over the cloth. As the name "tenugui" implies, with "te" meaning "hand", and "nuguu" meaning "to wipe", tenugui are used like a handkerchief or towel to wipe off sweat or water, however the sides are intentionally left as it is and with no edge finishing, because this allows them to dry faster and makes them more practical. In addition, the unique multi-color usage of chusen dyeing results in a bleeding of colors, so the technique is also used for kimono (and yukata light kimono), shawls, and other accessories, as well as interior items, and new applications are also being pursued.

Chusen dyeing has its roots in Osaka, the 2nd largest city in Japan after Tokyo, and there were once numerous chusen dyeing workshops in Sakai City on the outskirts of Osaka City. The surrounding area is home to numerous producers of the narrow woven fabric which serves as fabric for chusen dyeing, with Sakai City share making up approximately 90% of the bleached cotton processing in Japan. There are still several chusen dyeing workshops in Sakai, one of which is Nakani Co., Ltd., which is relatively new, having been founded in 1966, and which focuses on branding itself by adding new value to traditional industries. The company develops the high design aesthetic "Nijiyura" brand which focuses on the unique "nijimi" (bleeding) and "yuragi" (variation) aspects of chusen dyeing. Since the time the current company president, Mr. Yuji Nakao, joined the company, the demand for tenugui has been superseded by the demand for towels and handkerchiefs, and the amount of orders for dyed novelty goods with company names and logos have continued to decline. All that was expected from chusen dyeing workshops was to deliver uniform quality items at a cheaper rate and within desired delivery dates, so there was also no price bargaining power for the company either.

President Nakao worried about whether this was all that could be done with a traditional industry, where it was difficult to train new workers



>>>INTRODUCTION OF TRADITIONAL JAPANESE "CLOTH"

with the required skills, and if the tradition could be passed on to future generations, and so he gathered his artisan's pride and established the "Nijiyura" brand in 2008 based on a desire to "have the appeal and positive aspects of chusen dyeing be properly appreciated".

In the tenugui industry, planning and sales are often separate from manufacturing, however Nakani utilizes the strengths of their workshop to carry out every step of the process up to the actual in-house dyeing, including planning, design, and mould fabrication, while also carrying out sales through company operated stores. This is to provide products directly to customers and hear the direct feedbacks of those customers, which can be re-applied for planning in order to ensure the continuation of the company's innovation.

The Nijiyura brand is characterized by colorful and vivid color usage which takes advantage of the color blurring and bleeding which are the strengths of chusen dyeing. The company offers a wide range of designs including modern designs and collaborative designs with other companies, but since Japanese bleached cotton is always used as the base material, the finished products always have a Japanese aesthetics, no matter how colorful the designs and patterns are.

The company considers its target sales demography to be a pinpoint "29 year old females", who work and spend the money they earn to buy high quality items which they like. If they find acceptance in that demography, then they also expect that will be a hit with the 40 and 50 year old female who are very sensitive to current trends, and the company currently has "Nijiyura" direct sales shops in Tokyo, Osaka, and Kyoto, as well as other large cities all over Japan.

The company also holds tours and workshops at their production workshop, which has an old, downtown feeling, for better conveying of the appeal and techniques of chusen dyeing, and also carries out dispatch dyeing experiences outside their workshop. The company has garnered much attention for their proposals of new usage and arrangement for tenugui, which were often derided as "old fashioned" and "out of date". The company also actively carries out PR through YouTube and Instagram, and has been covered by a wide range of other media. The company is also selling tenugui fabric designer masks to prevent droplet disease infection and expects favorable Internet sales.

Special thanks to Nakani co., Ltd. (Osaka, Japan)



Masking

An important process in dyeing. Bleached cotton is layered and pasted. Sections with paste applied, are not dyed. If the placement or quantity of paste is incorrect by even a small amount, the dye will not bleed through to lower layers, causing the dyeing to fail.

Chusen dyeing

Masking "embankments" are created in locations to be dyed using paste and the dye is then poured. Suction is applied from underneath so that the dye penetrates down to the lower layers. The appearance of the color and color bleeding will vary based on the amount of dye usage and the timing of the suction.

Washing

The excess amount of paste and dye are washed away.

Drying

The cloth is hoisted up to the ceiling to allow it to dry completely and uniformly.

Division: Textile Machinery

MURATA (THAILAND) CO., LTD. showroom completed

The showroom of Murata Machinery's local Thailand subsidiary MURATA (THAILAND) CO., LTD. has now been completed after the company relocated from central Bangkok to Samutprakarn in June. It is a comprehensive showroom with showcases for the Textile Machinery, Machine Tools, and L&A divisions. The Textile Machinery Division's main exhibit is a single unit of the FPRO EX automatic winder. The company has expanded our lineup of splicers for special yarns, and made other changes which allow it to provide a wide range of support as the central location for not just Thailand, but the entire ASEAN region. Please feel free to visit if you are nearby!



Division: Textile Machinery

Exhibition at Intertextile SHANGHAI Apparel Fabrics

We exhibited at Intertextile SHANGHAI Apparel Fabrics, which was held from September 23 to 25 in Shanghai, China. This was the first in-person exhibition for the Textile Machinery Division in approximately 8 months. Due to travel restrictions because of Covid-19, no Japanese staff could participate, however we setup a virtual meeting using the video conferencing system for the first time in this exhibition, allowing for attendees to communicate with the Japanese specialist at any time. The continuous shift from mass production to small lot, high variety production, and overwhelming interest in sustainable products resulted in an increased number of inquiries related to VORTEX products. Going forward, we will work to satisfy these needs while continuing to focus on technological development and proposals aimed at supporting the "new normal".



Muratec contributes to SDGs through its textile machinery business.

Our company also agrees with the Sustainable Development Goals (SDGs) aimed at the 2030 Agenda which were adopted at the UN summit in September 2015. As such, we carry out activities aimed at helping realize a sustainable society free of extreme poverty, inequality, and injustice by working towards both company economic value and resolution of social issues through company business. The Textile Machinery Division also plays a part in the

foundation of textile industry innovation, and continues to support the global textile industry by working to develop new yarns and methods. The division aims to improve the welfare of people all over the world by contributing to the production of the high quality clothing essential for daily life and decreasing the energy consumption used for said production through the development and provision of the spinning process automation machinery which are our core products.



Murata Machinery Sustainability Report 2020



Continually creating innovative technologies for the fulfillment of a prosperous society



Textile Machinery
-Automatic Winder
-VORTEX Spinning System



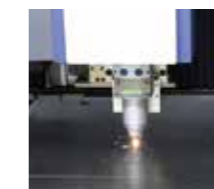
Logistics Systems / Factory Automation Systems
-Automated Storage & Retrieval Systems (AS/RS)
-Sorting System



Automated Material Handling Systems for Clean Rooms
-AMHS for Semiconductor Fab.
-MCS (Material Control Systems)



Machine Tools
-Twin spindle CNC chucker
-In-line opposed twin spindle CNC turning machine



Sheet Metal Machinery
-Laser punch press
-Press brake
-Fiber Laser cutting machine



Communication Equipment
-MFP (Multifunctional Peripheral)
-Facsimile

Tsumami-saiku

细工花



"Tsumami crafts" are beautiful accessories and objects made from scraps of cut cloth. Small pieces of cloth cut into squares are folded, and pinched, and combined to create items associated with the four seasons, and these are used as decoration for combs and ornamental hairpins as a type of traditional Japanese accessory. It is said that the practice began nearly 200 years ago from techniques when the court ladies of the imperial court in Kyoto began using left-over cloth from making kimono to make small Japanese-style accessories. Traditional tsumami crafts are

made using light and glossy silk fabrics. These gentle to the touch, cute, and bright Tsumami crafts are still very popular today for use in hair ornaments for days of celebration for women and girls, such as the Shichi-go-san Festival, Coming of Age Day, and weddings. They are used to make new items instead of wasting or disposing of extra, left-over cloth. The spirit of the "sustainability" that is advocated so much today, was always a part of the spirit of not being wasteful, expressed by the Japanese word "mottainai", even 200 years ago.

细工花，是利用碎布料制作而成的美丽小饰品。裁剪成正方形的碎布经过折叠、捏合组合成四季的风情小物，用作梳子或发簪，是日本的传统饰品。据说其技法发源于距今约200年前，京都宫廷中的宫女们利用和服余下的布料制作而成的日式小物。传统细工花使用纤薄有光泽感的丝质纺织品制作。手感柔和、可爱又华丽的细工花，作为妆点七五三、成人式以及婚礼等女性重要日子的发饰，如今依然深受青睐。多余的布料没有被丢弃，反而诞生出全新的饰品。如今全球都在倡导的“可持续”精神，从200多年以前便与“浪费可惜”这个词一起，深深扎根在人们的生活之中。