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We reserve our right to modify them at any time, to be confirmed by authorized specification.

CAT. NO. 21P4H2 19-05-5(TU)

muratec

VORTEX

870 EX

Spinning System

VORTEX®

Jun. 2019

MURATA MACHINERY, LTD.

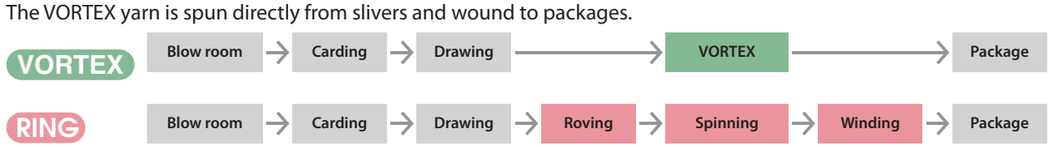
VORTEX's Three Challenges —Technical Development, Higher Spinning Speed, Variety of Count Range and Materials.

Spinning Technology

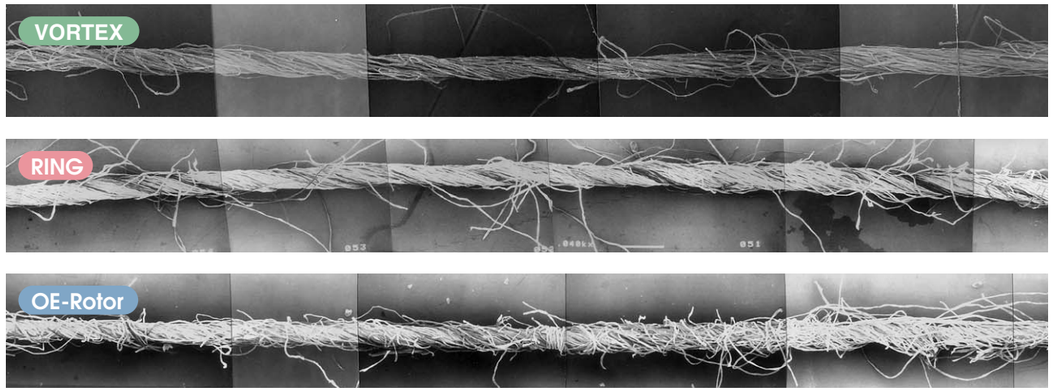
In 1990's Muratec successfully invented the new spinning principle, named as "VORTEX spinning".
Yarns produced by this VORTEX spinning have features different from those produced by other spinning methods.

Process Integration

The VORTEX yarn is spun directly from slivers and wound to packages.



Comparison of yarn formation



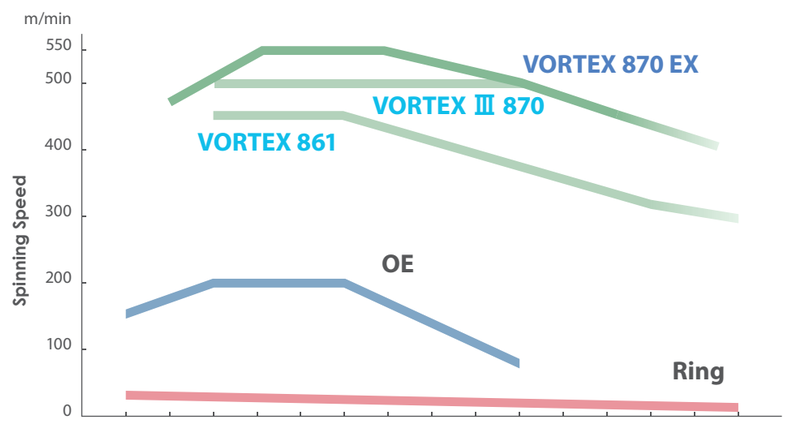
Advantages of VORTEX yarn formation

1. Less Hairiness & Clear Appearance
2. Resistance to Pilling & Abrasion
3. Moisture Absorption & Wash Resistance
4. Stability against Deformation

VORTEX®

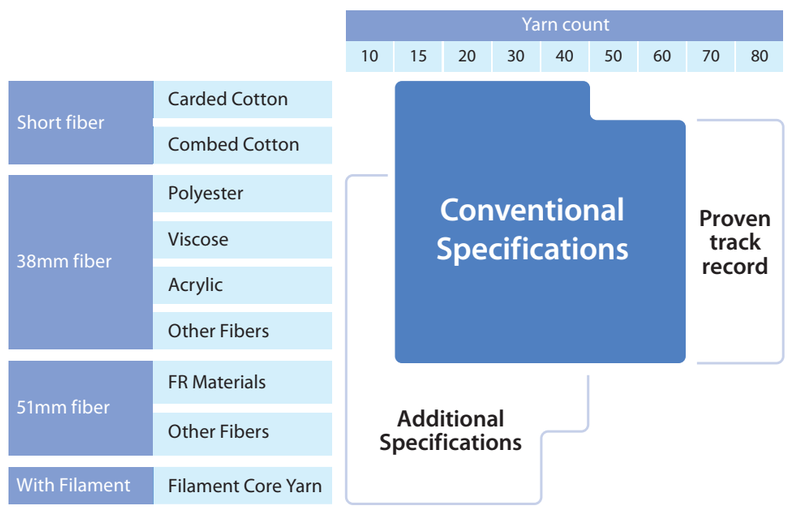
High-speed Spinning

VORTEX III 870 which was released in 2011 achieved a maximum speed of 500m/min. Since then, we have steadily built up a track record of success and trust in high-speed spinning and achieved a maximum speed of 550m/min. with the 870 EX.



Expansion of Applicable Range of Spinning Materials and Yarn Counts

While reflecting past experience and customer opinion in each of its products, Muratec has continued to prove spinning results with various materials and yarn counts. Currently, it supports the widest range of materials and yarn counts with a single machine.



Smart Layout

1 Sliver (Standard: After 3-passage drawing)

Can Size: f16-24 inch
Height: 1,500mm at maximum

2 Relax Zone

The twist generated when the sliver is drawn from cans is dispersed for steady drafting.

3 Draft Part

A draft 200 times or higher is possible. The independent drive of the 3rd - 4th drafting rollers and the wide range of drafting allow for flexible spinning parameters and use of various materials.
EX is equipped with new motors to drive the 3rd and 4th drafting rollers.

4 Spinning Part

Adopting Muratec's original spinning method using rotational air, this method creates highly functional VORTEX yarns.

5 Monitoring Part

Spinning tension is stabilized by directly winding yarn from the spinning part to the ruler. Real time monitoring of spinning conditions is implemented by sensors under steady tension.

6 Winding Part

Winding up to a maximum speed of 550m/min. is realized, and it is capable of handling a winding package range from parallel to 5°57'.

7 Splicer Carriage

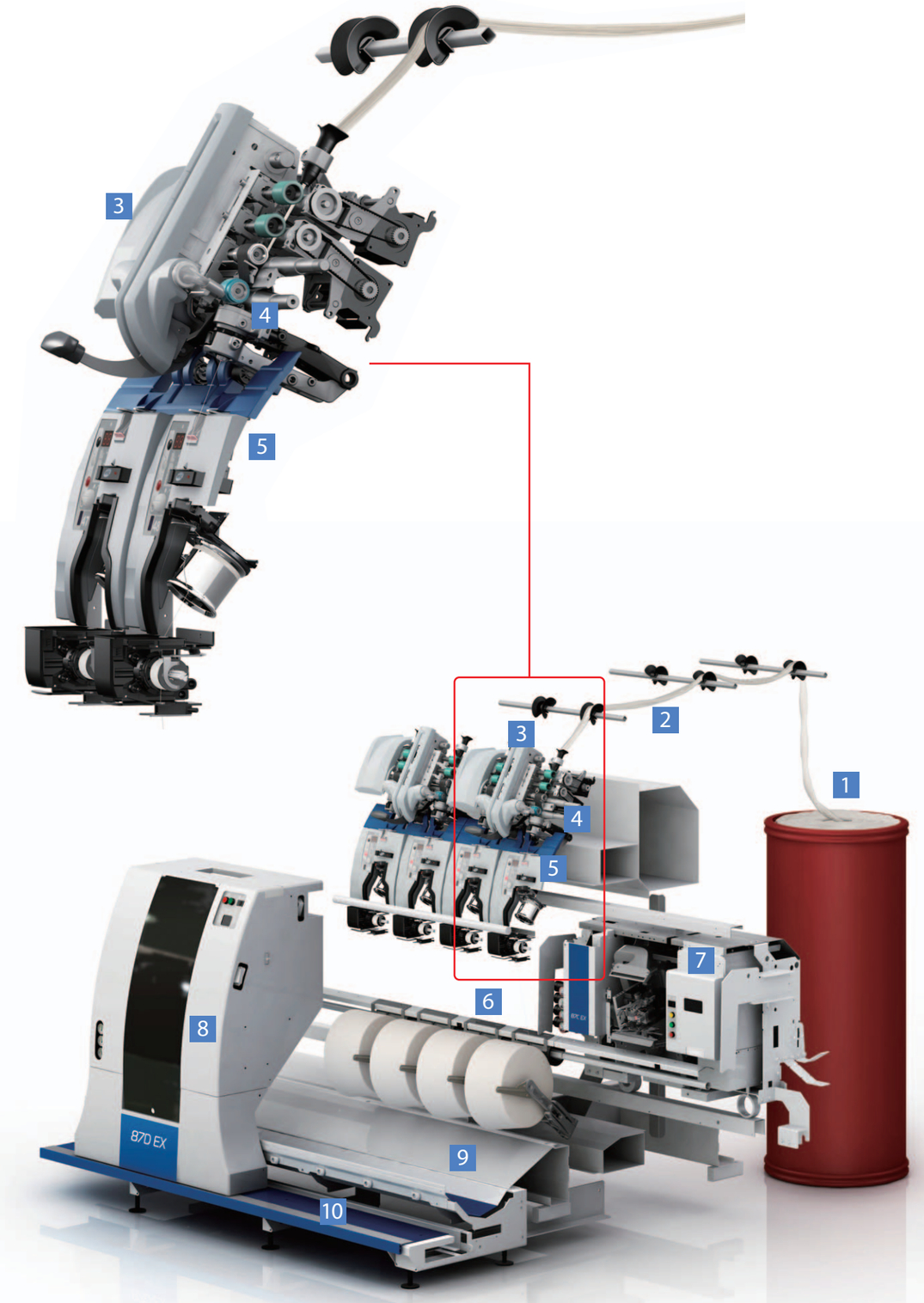
Up to six splicers can be mounted on one machine.
Cycle time is reduced to contribute to high-speed spinning. Also, in response to the spinning needs of various materials, we developed an optional part for coarse yarn counts.

8 Auto Doffer

Doffing capacity is improved.

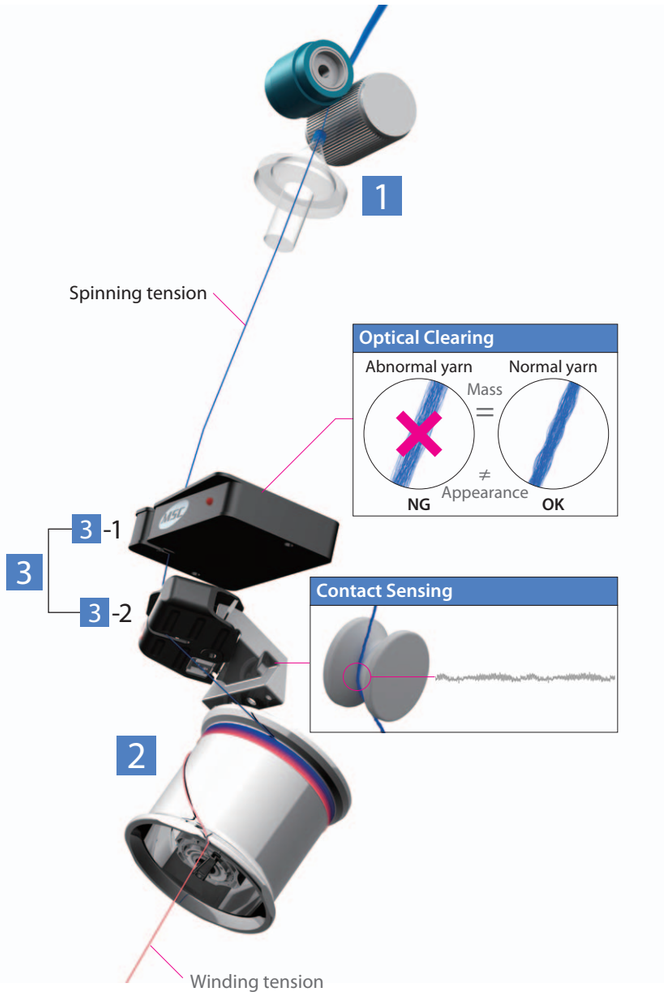
9 Package conveyor

10 Maintenance Step



STS System, the Reliable Yarn Quality Keeper

STS (Spinning Tension Stabilizing) system, one of the superior technology available in VORTEX.
Yarn is sent directly from spinning chamber to friction roller without nip roller in this system.
It contributes stabilizing spinning tension which leads to the superior VORTEX yarn quality. Besides, more precise quality monitoring can be achieved by the two different sensors (Non-contact optical sensor and contact tension sensor).



1 Spinning Chamber

Spinning is performed by the nozzle and spindle.
Attachment/detachment as well as device change can be easily performed.

2 Friction Roller

A friction roller is adopted for the mechanism that draws yarn from the spinning chamber. The difference between the spinning tension and the winding tension is absorbed by the friction roller, which stabilizes the spinning tension.

3 Yarn Fault Detection and Quality Management

Optical MSC (Muratec Spin Clearer) and Contact spinning sensor located between spinning chamber and friction roller ensure the superior quality management.

3 -1 MSC (Muratec Spin Clearer)

Muratec's unique optical digital clearer is adopted. In addition to the basic performance as a clearer, it also has a rich set of quality control functions.

Yarn defect detection

S(Slab), L(Thick), T(Thin)-channel
TT(Long Thin)-channel
LL (Long Thick)-channel
Nep channel
Yarn diameter index detection channel
FFD (Foreign Fiber Detector : MSC-F) *option
Trash Filter (MSC-F) *option

Quality control

Continuous CV% measuring
Precision Classification Data
Periodic defects (short and long)
IPI Data
Hairiness Data

3 -2 Spinning Sensor

The sensor placed between the spinning chamber and the friction roller monitors the spinning condition. The yarn quality is enhanced by monitoring the spinning tension by this sensor as well as the defect detection by the clearer.

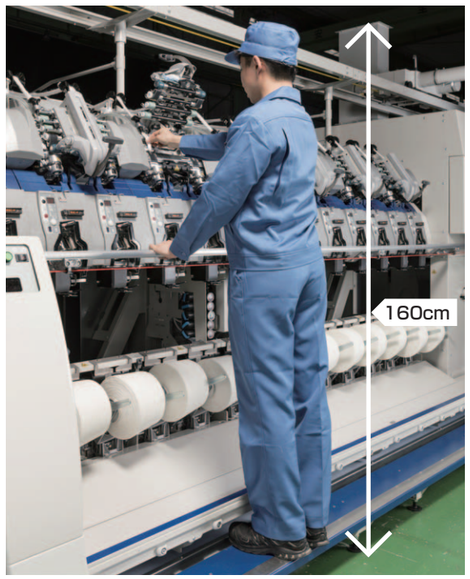
User – Friendly Equipment

Unit indicator

The operating panel and the operating status display of each unit are integrated. In case of unit stops, the indicator shows a factor code on the status display and it is classified into four types: machine upper, middle, lower part and yarn quality. A high visibility lamp is arranged for each alarm. In addition to the display of operating status, it is also possible to check the Input/Output signals of each unit's device by switching to the maintenance mode.

Easy Operational Layout

Each of the drafting, spinning, and winding parts is designed to ensure easy-to-use operations. The front bar on the front of the machine and the maintenance step at the operator's foot also support safe and reliable operations.

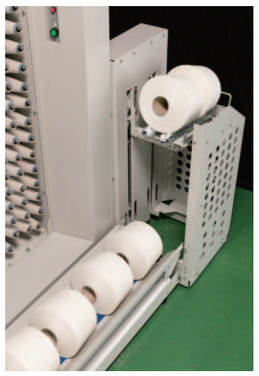


Modular Design

Major parts are modularly designed for easy maintenance. These parts can be attached and dis-attached without difficulty.

Package conveyor

The conveyor transports packages to the pickup point at the machine end. It controls speed according to the package position and stops automatically when the package reaches the pickup point.



Package Lifter (option)

Packages are lifted by the package lifter to a height that allows for easy retrieval by the operator. This contributes to improvement in the work environment and efficiency.

Advantages of EX

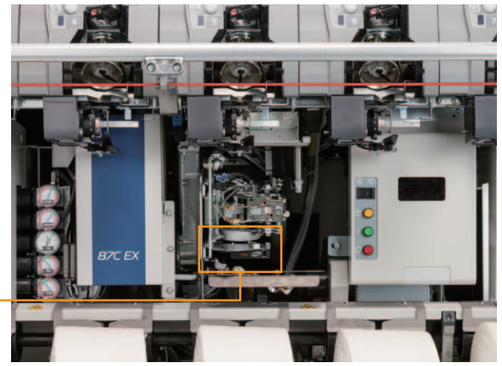
Splicer Carriage

Muratec has developed the 87C EX. This improves splicing capacity by reducing the cycle time.

Cycle Time	8.5 seconds
Traveling speed	35m/min
Frequency of splicing	120 times/h/unit

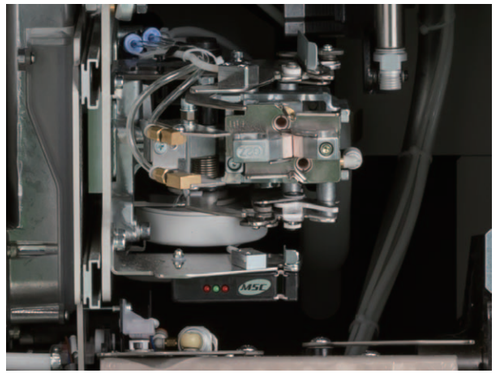
Splice Monitor (option)

It checks the quality of splicing.



V-Splicer (option)

The untwisting conditions can be changed between the yarn from the package and the yarn from the spinning chamber.
This is effective for yarns that are difficult to untwist, especially for coarse yarn counts.



AD (Auto Doffer)

Muratec has developed the 87D EX, improving its doffing capacity. It contributes to the high speed production of Ne10, with 2kg package production at 450m/min.

Traveling speed	25m/min.
Auto Doffing Capacity	75 Packages/hour

Bobbin Stocker

Number of bobbin stock	160

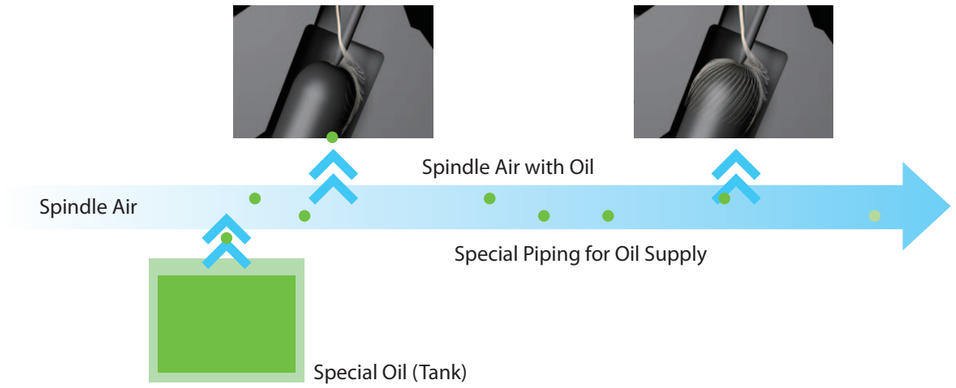
More Comfortable & Convenience

POLYMASTER (Option)

POLYMASTER solves the deposition of polymer and oil accumulation on the spinning part during the process of polyester spinning, which has been a challenge for all spinning machines. In the past, because of regular cleaning by deposition, many operations with reduced speed were seen, but with the Polymaster device, operations at normal speed is possible now. In addition to 100% polyester, Polymaster is also effective in the production of raw materials that require regular cleaning such as ployester blended and dope dyed fiber.

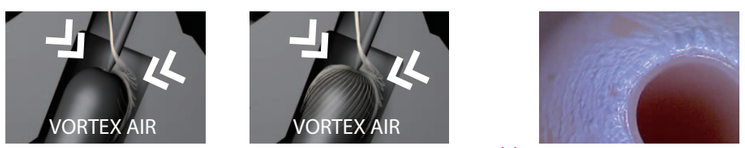
POLYMASTER Device and Air Pipe▶

The finishing liquid in the tank is fed through the air pipe mounted on the POLYMASTER device. This prevents polymer and oil accumulation on spinning parts by feeding oil mist with air.



In the past, it was necessary to periodically clean the polymer and oil accumulation on the tip of the spindle, but POLYMASTER usage can significantly reduce the frequency of cleaning.

Without POLYMASTER



Fiber oil or polymer accumulation in the spindle tip » Unstable spinning

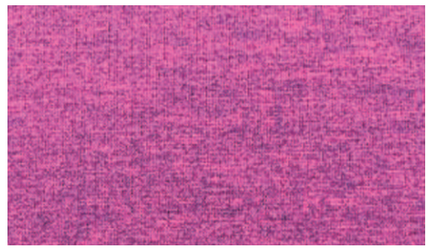
With POLYMASTER

The mist finishing liquid keep preventing accumulation even after long run

Filament core yarn device (option)

The core yarn is produced using long fiber as a core and covered with short fiber.
Core yarn on VORTEX can solve problems that are difficult with other spinning methods.

1. Larger filament package supply
2. Lesser number of yarn joints.
3. High speed prduction



Ne30 Knit Sample
Cover: 100% rayon
Core yarn: 70d polyester
Only the cover fiber is dyed.

Ne45 woven Sample
Cover: 100% Lyocell
Core yarn: 30d polyester
Only the cover fiber is dyed.

Applicable Specifications

Material	Denier	Yarn Count	Filament Package Size (mm)			Maximum Weight (Kg)
			Length	Outer Diameter	Inner Diameter	
Polyester /Nylon	30-200	Ne10-50	420	135	26	4
			290	200	68	
			150	240	120	

* **Maximum Core Ratio: 40%**

User Support

VOS III – Visual On Demand System

The VOS III - Visual On-demand System is a data management system that combines operability and flexibility, fusing Muratec's accumulated technology and know-how.
This system adopts a touch panel screen to display various data such as operating status, quality control, operation management, and maintenance control in an easy-to-understand manner. It can also be used for trend analysis of production and quality.

Machine Settings

Setting parameters of spinning conditions, clearing setting, and package setting are displayed in a list format. Data for up to 200 lots can be stored.

Operation management

Reports efficiency and reasons for loss in efficiency.

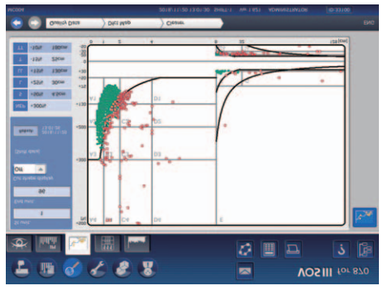
Quality control

Shows the quality report, as yarn defects and IPI. Also shows the trends of machine and spindle.

Maintenance control

Supports maintenance work with alarm display and shift reports.

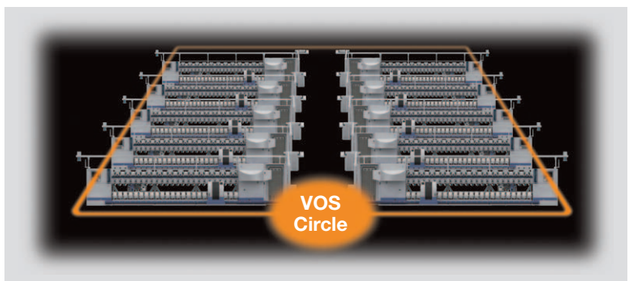
Efficiency Analysis

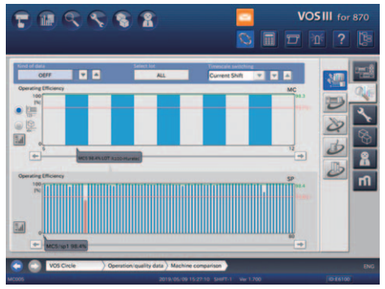


Clearing Curve and Cut Status

VOS Circle (option)

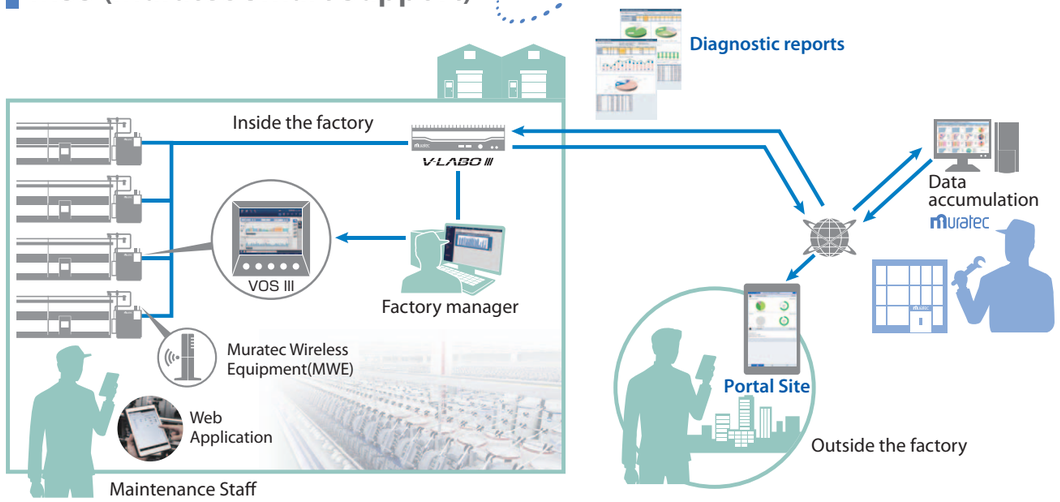
Up to 90 machines on the same floor can be connected via a network. Anyone can confirm the operating status of other machines from any machine's VOS screen.
In addition, it is also possible to copy setting conditions to other machines.





Efficiency Display of Five Machines in the Factory

MSS (Muratec Smart Support)



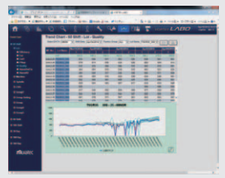
VORTEX-LABO (option)

V-LABOIII is a centralized management system used for optimum data and information management of VORTEX spinning. Data collected from VOS and the results of its data analysis can be shared through the customer's network PCs.
V-LABOIII's communication function enables information sharing between the machine site and administrators, Muratec.

Information sharing through network PCs in the factory

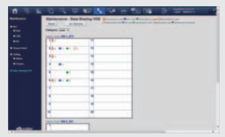
Quality control

- Monitoring of yarn quality data
- Long-term storage of data



Maintenance information

- Extraction of trouble points
- Display of trouble points with cause of trouble
- Classification by action

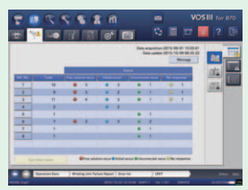


Information sharing through mobile terminals

MSS Web Applications

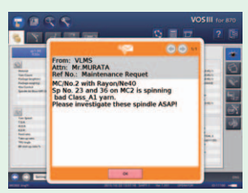
- Machine trouble information generated by V-LABO III
- Troubleshooting guide
- Alarm code search
- Maintenance schedule management

Information sharing through VOS and V-LABO III



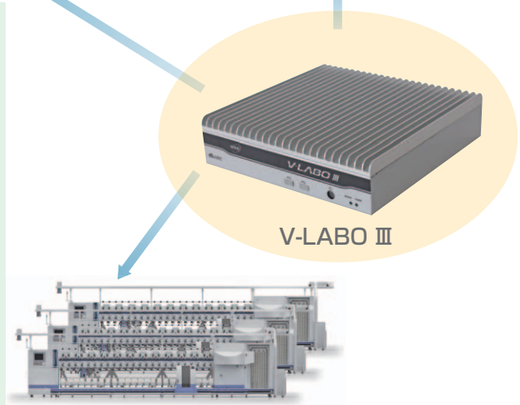
Maintenance information

- Machine trouble information generated by V-LABO III is displayed on VOS
- Work progress is reported through V-LABO III



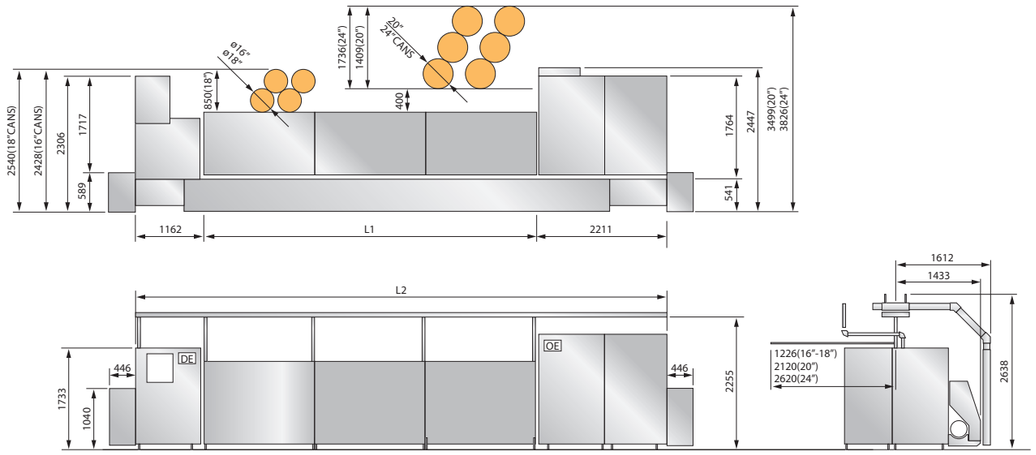
Message function

- Sending messages from the office to each machine
- Detailed instructions can also be given by attaching image files



Machine Dimension

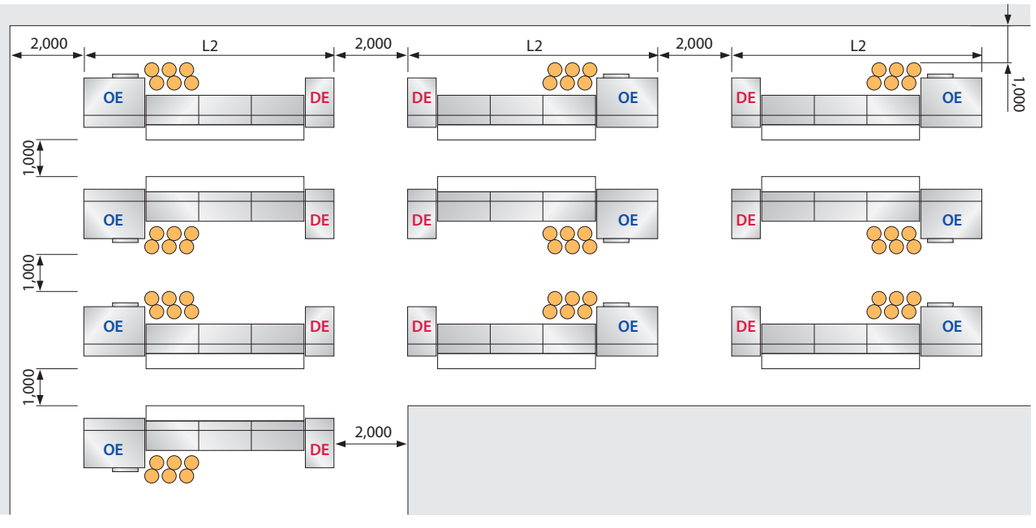
The entire length of the frame (mm)



Dimensions (mm)

Number of units	16 units	24 units	32 units	40 units	48 units	56 units	64 units	72 units	80 units	88 units	96 units
L2	7,133	9,013	10,893	12,773	14,653	16,533	18,413	20,293	22,173	24,053	25,933
L1	3,760	5,640	7,520	9,400	11,280	13,160	15,040	16,920	18,800	20,680	22,560

Minimum installation space between the frames (mm)



Main Specification

Spinning	Material	Cotton 100%, Synthetic/cotton, Synthetic 100% <Note 1>
	Yarn count range <Note 2>	Ne10～80
	Recommended fiber length	38mm (1.5″) , 51mm (2") *Option
	Sliver weight	70～35Grain/yd (5～2.5ktex)
Take-up system	Traverse width	6″
	Winding shape	0′／4°20′／5°57′
	Maximum diameter	300mm

<Note 1> Specifications of nozzle and spindle may vary depending on yarn type.
<Note 2> Yarn count range may vary with a fiber denier or other properties.

Standard equipment

VOS III control panel	2 Splicer carriages (~48 spindles : 1 carriage)
Spinning Sensor	1 Auto Doffer
MSC (Muratec Spin Clearer)	Automatic Waste Fiber Extracting System
Splice method : Splicer	Package Conveyor

Optional equipment

MSC-F (Foreign Fiber Detector)	Additional splicer carriage
Waxing device	Additional Spindles
Package lifter	Additional Nozzles
Over head blow cleaner	Splice monitor
For 51 mm (2 inch) fiber	POLYMASTER
Filament core yarn device	Splice method: Applicable to the knotter

WEBSITE

www.muratec-vortex.com

The VORTEX website continually provides all of the latest VORTEX information, as well as information on VORTEX partners who can provide VORTEX yarn.