

Materials and Components Business

October 6, 2021

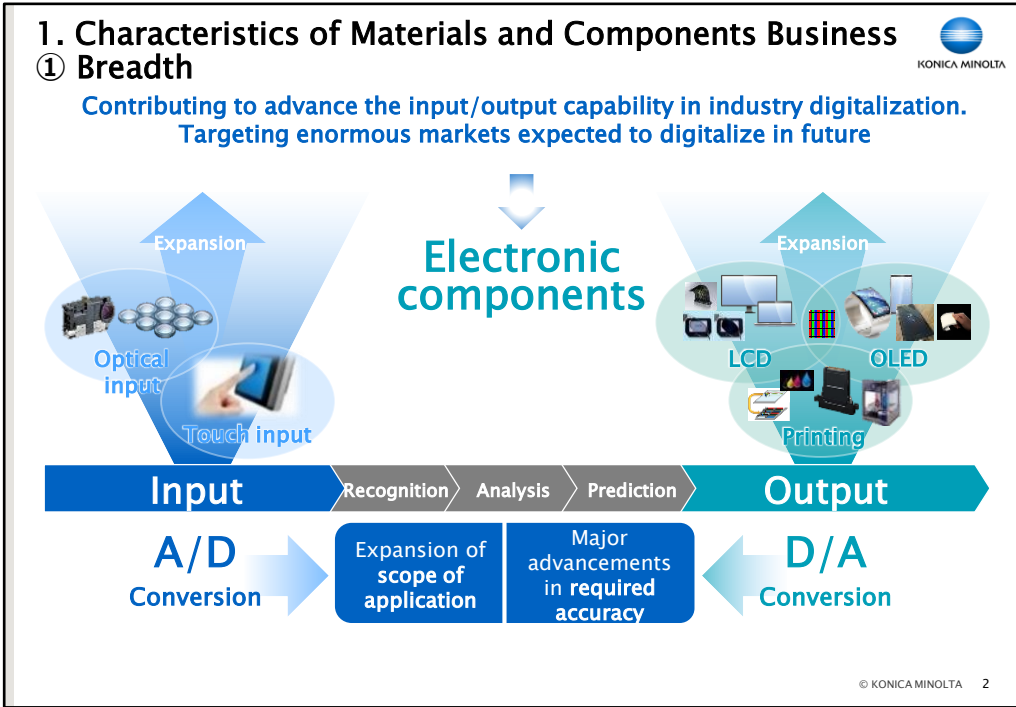
Noriyasu Kuzuhara

Executive Vice President and
Executive Officer

General Manager of Materials
and Components Business
Headquarters



I would like to explain the characteristics of Materials and Components Business and how we are continually working to create value.



At first, I explain the characteristics of Materials and Components Business, which are described in four points. The first point is the breadth. In the process of industry digitization, the input and output are advanced extremely. This is an enormous market that continues to evolve and is expected to digitalize in the future. Large business opportunities exist in industries that are experiencing various demands. We provide electronic materials in the form of components or materials.

2. Characteristics of Materials and Components Business



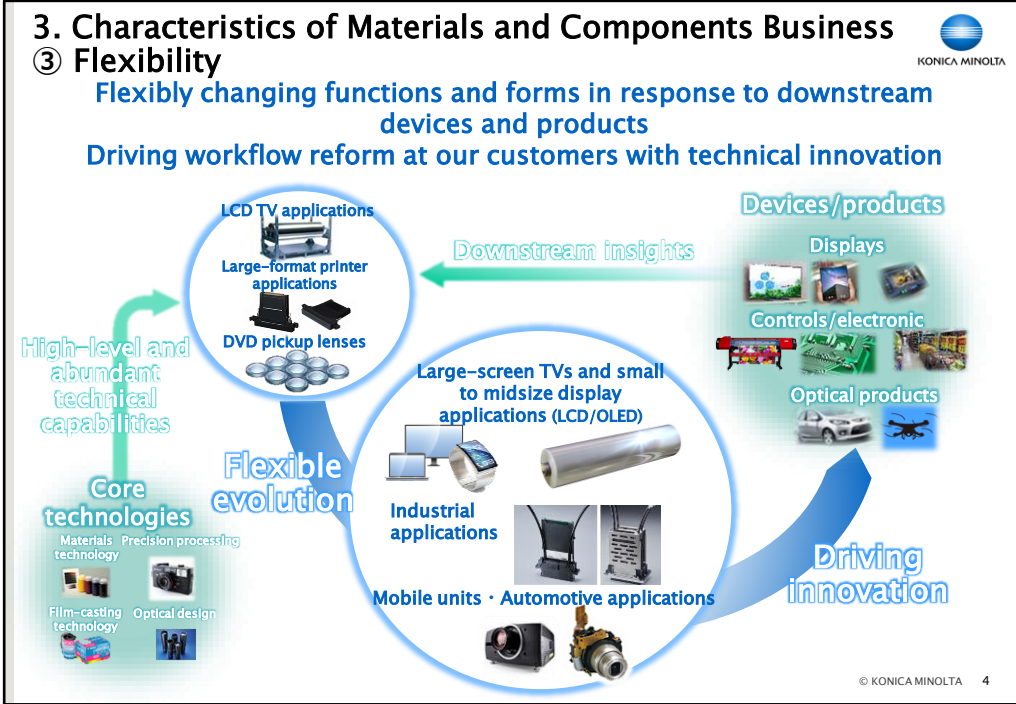
② Depth

Enhancing value across the supply chain as a whole by providing high-added-value electronic components from the upstream portion of the supply chain

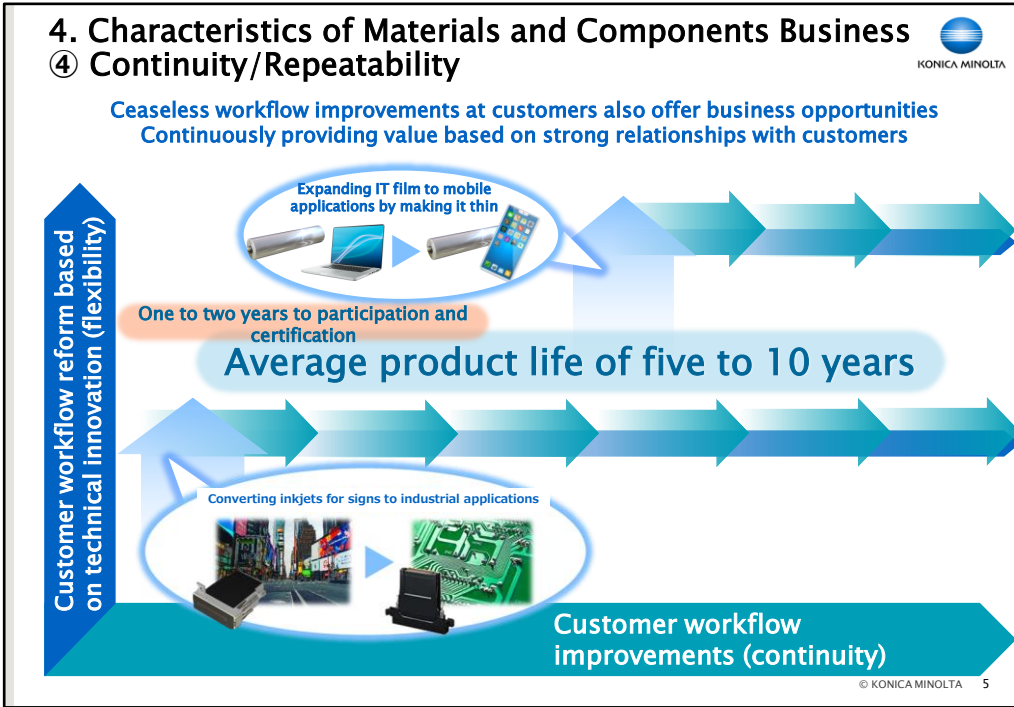


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The second point is depth. Materials and Components Business locates upstream in the supply chains. We will provide electronic components with high-added-value from the upstream, thereby increasing the value of the whole supply chains.



The third point is flexibility. Devices and products in downstream develop in various directions. We gain the feedback from the downstream development in upstream and deepen downstream insights. We will examine what functions or forms can be offered to our customers and utilize them in our next development. In the process, Konica Minolta will evolve and apply its core technologies, which are its strengths, in a sophisticated and flexible manner. Our products start with a certain form and evolve. By constantly moving through this cycle, we are advancing our business flexibly and continuously.



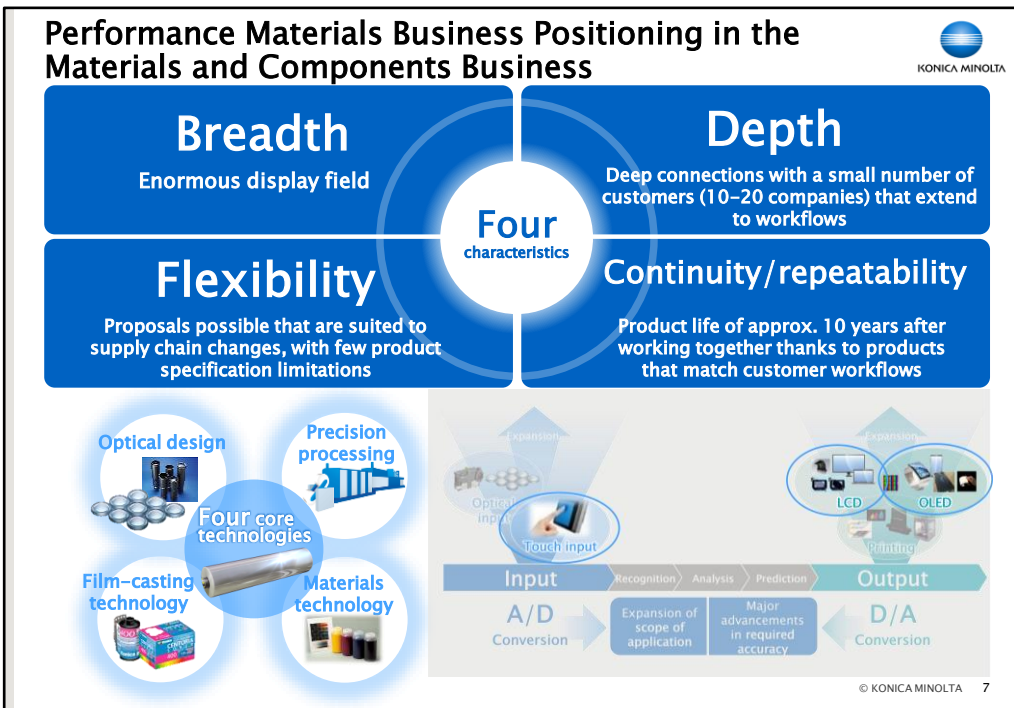
The fourth point is continuity / repeatability. The vertical axis shows flexibility, and the horizontal axis shows continuity. As we have seen in the loops just now, this means that we will reform our customers' workflows by creating new technical innovations.

In an easy-to-understand sense, the vertical axis will be the introduction of new products. After introducing them, they do not end as they are, but rather improve the customer's workflow, which is shown on the horizontal axis. The products we introduce constantly evolve in various ways while changing our customers' workflows.

As a result, these product cycles last at least 5 or 10 years, or even much longer. Our business is characterized by a mix of these initiatives while deepening engagement with customers.

Materials and Components: Performance Materials Business

First, let me explain from performance materials business.



The figure illustrates the positioning of performance materials business in the Material Components Business as four distinctive characteristics.

The breadth is an enormous display field. Regarding the depth, we are really deep in our relationship with customers, which consist of around 10 to 20 companies, which is relatively a small number of customers. Within this context, we are building relationships that cannot be separated and growing together by further raising the value of our customers' products while thoroughly understanding our customers extending to their workflow. Flexibility and continuity / repeatability are shown in the slide.

Our four core technologies are optical design, precision processing, film-casting technology, and materials technology. These are always combined to apply new customer workflow changes.

Materials and Components Business Mainstay Products

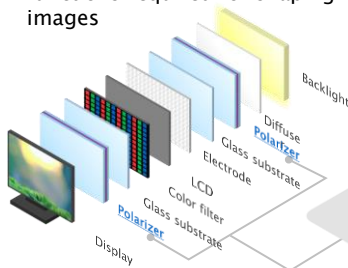


Our main product is protective film for LCD display polarizers in the display field
Four sheets of polarizer protective film are used per display. There are two types, as follows.

Polarizer protective film

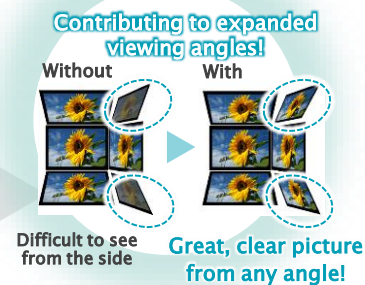
Plain TAC film

Only polarizer protective functions required for shaping images



Phase difference film

Addition of optical functions called phase difference and functions that improve view quality



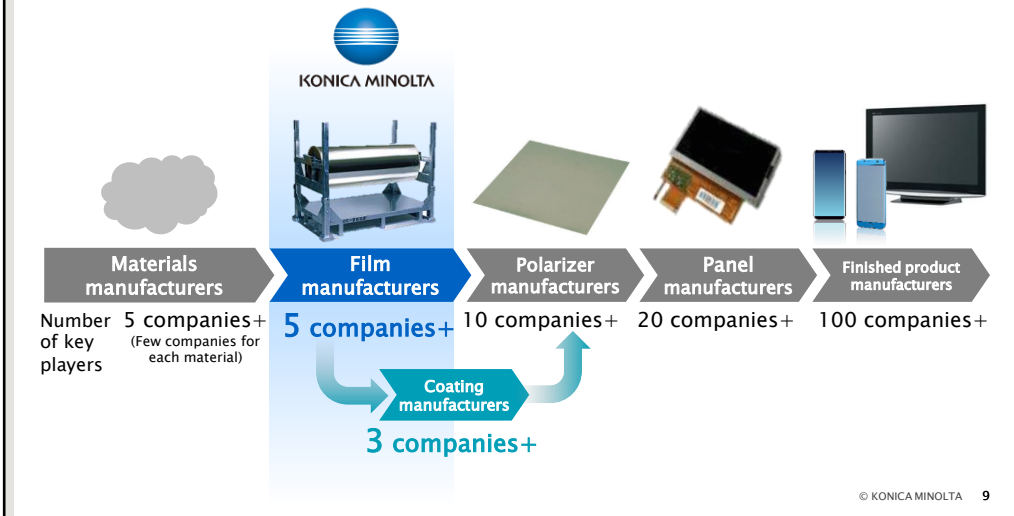
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Here is an explanation of materials and components mainstay products. There are two categories of products in general. The first one is plain TAC film, which has been recognized already. This started as a polarizer protective film. Rather than simply using a single protective film as a product form, we are constantly evolving by changing the form in line with the evolution of various displays. The second one is phase difference film, which actively incorporates optical functions. This is the functional film itself, which directly influences the image quality of displays. In other words, it is a product that has a significant impact on the performance of the panel as well as on the workflow of the manufacturing process.

Supply Chain and Customers



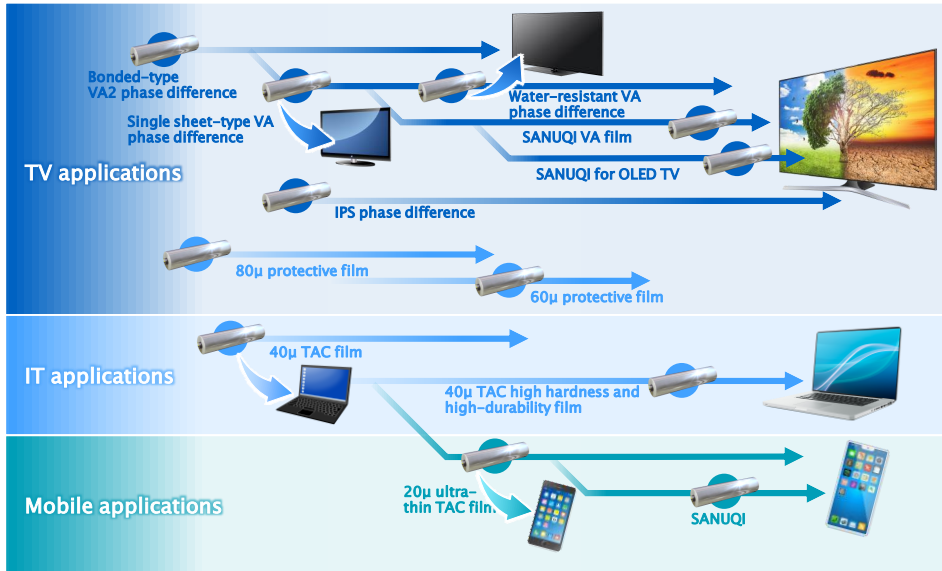
Positioned upstream in the supply chain, we maintain deep relationships with a small number of customers, and provide products that can be plugged into customer workflow reform, based on quality information



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This diagram simply shows the supply chain and the relationships with our customers. The supply chain begins with upstream materials manufacturers. Our position as film manufacturers is to procure these materials freely to some extent, select them in a manner that demonstrates the necessary functions, process them in the form of film, and deliver them to the downstream customers. The ultimate goal is to respond to the various demands of the most downstream finished product manufacturers by thinking about what can be done as an upstream manufacturer. This is our approach.

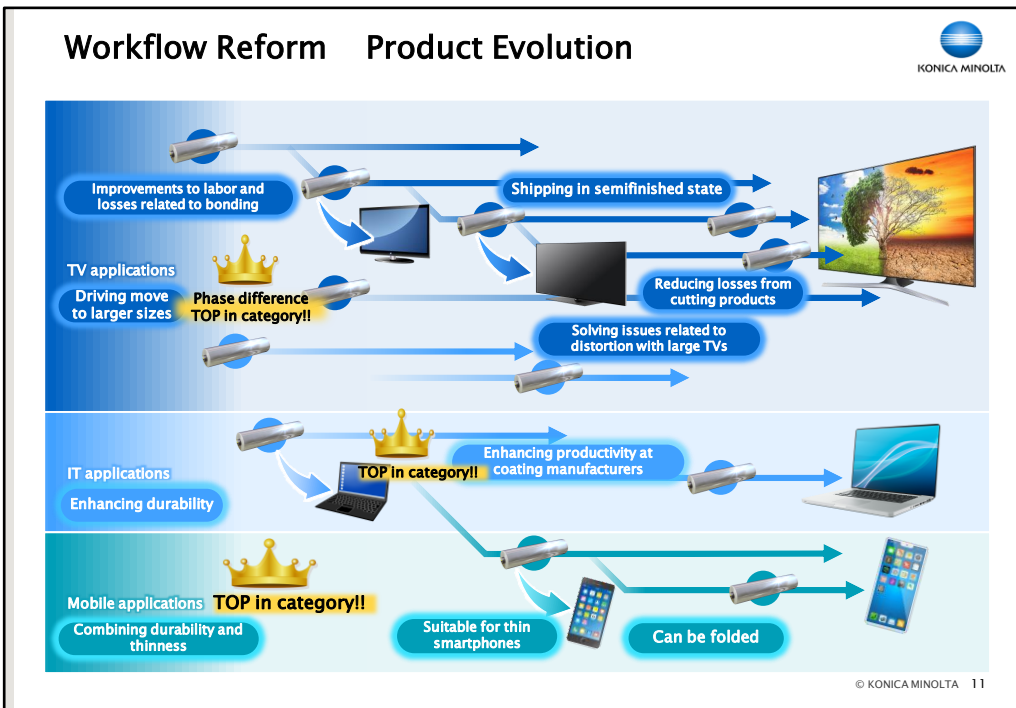
Konica Minolta Product Applications and Changes Identifying Market Changes and Developing Multiple Products



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The diagram shows our product applications and changes. It represents that we have developed multiple products in response to changes in the market and have evolved the products to respond to customer workflows. We are evolving in ways to respond the demands of not only performance, but also customer workflow challenges. This is the reason why the life of one product is extremely long.

Workflow Reform Product Evolution

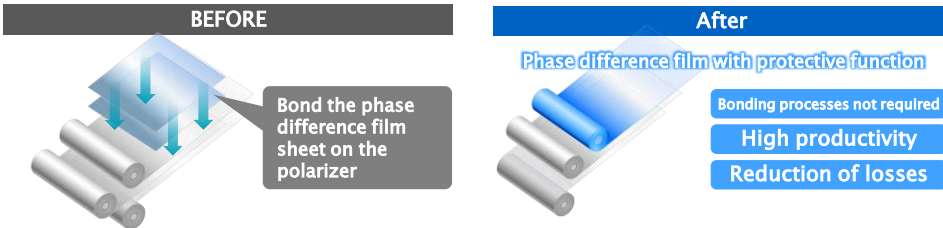


An example is given in the diagram. By applying the evolution of workflow changes in the previous diagram, each evolution has meanings. Starting with VA films, the entire phase difference film has now grown to Genre-top. In addition, sales of ultra-thin films for information technology applications have been strong, and we continue to firmly maintain our Genre-top. In mobile applications, we deployed films that are even thinner than previous ones as the first manufacturer in the industry.

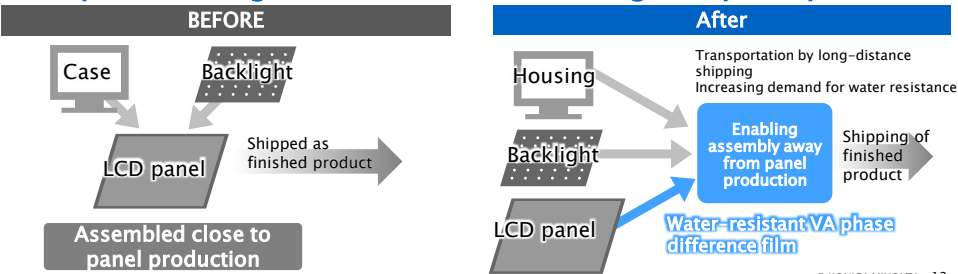
Specific Examples of Workflow Reform and Improvement



Example 1. Improving losses and labor related to bonding



Example 2. Adding functions that make changes in panel production



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The figures show specific examples of past workflow reforms and improvements. I hope you understand our DNA flowing into this business, in which we will continue to sharpen the approach in the future, while constantly implementing the initiatives I explained.

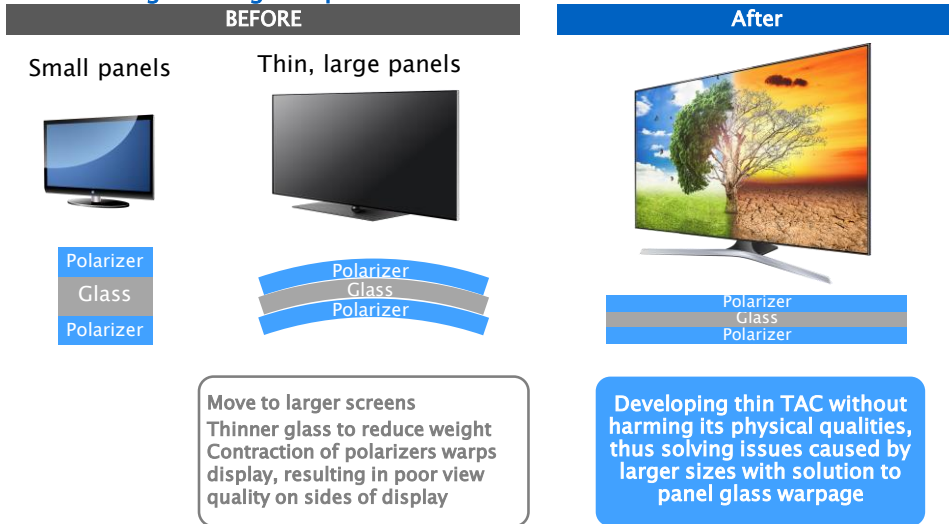
The first example is the market's first rollout of a very simple, dramatically restructured phase difference film for VA. As a result, we have still maintained Genre-top of the market. In the conventional method, the process was extremely complicated, in which films were bonded as multiple layers. In this method, it was difficult for large televisions to be in the market as they are now, but we innovated on this process.

Let me explain the second example. There were some arisen issues when the customer's assembling process was not completed within a single plant and the process had transportation step. This is an example of how we respond to the customers' issue and overcome it with our technologies.

Specific Examples of Workflow Reform and Improvement



Example 3. Proposals that solve issues related to increasing the size of TVs and reducing the weight of panels



Here is the third example. The problem with very large panels is that when polarizers and glass are affixed as multiple layered film, they warp. In response, we are working to solve the problem by proposing ultra-thin films.

Foundational Strategies for Products to Contribute to Workflow Reform 1



Taking the leading market share for products that utilize the characteristics of solvent belt casting

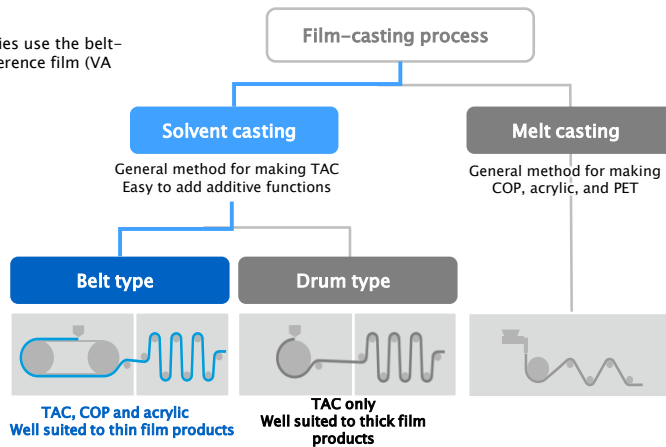
Solvent belt-casting line

Konica Minolta's film-casting factories use the belt-casting method suited to phase difference film (VA and IPS) and ultra-thin film.



Phase difference film for LCD-TVs

TAC protective film for small and medium-sized mobile devices



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One of the factors behind our evolving workflow transformations is the technology we have selected. Film-casting process is broadly divided into two types: solvent casting and melt casting. Typical films are mainly made by melt casting. Material is often melted by heat in the melt casting. But the challenge for processing thin film was relatively high partly due to problems of accuracy. On the other hand, the solvent casting is divided into the belt type and drum type. This belt type, which we have selected, has a high degree of flexibility in materials, and it is easy to add additives that add functions to films as well. Belt-type is also a very easy way for adding function due to having a lot of factors in the process that control films. We are realizing Genre-top described earlier by taking advantage of this feature.

Market Growth and Change



- Display market: Mature with moderate growth in demand for all sizes
- Significant internal changes and growing opportunities

Panel manufacturers



G10.5 large-size factories

Cyclical downturn in new facilities, ongoing capacity increases

- Ensuring superiority among large TVs over G8

Polarizer manufacturers

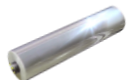


2.3/2.5m-wide polarizer factories

Accelerating investment to capture large TV demand

- Changes in competitive landscape: Growth of Chinese companies
- Growth in wide polarizer capacity: Around 18% per year

Film manufacturers

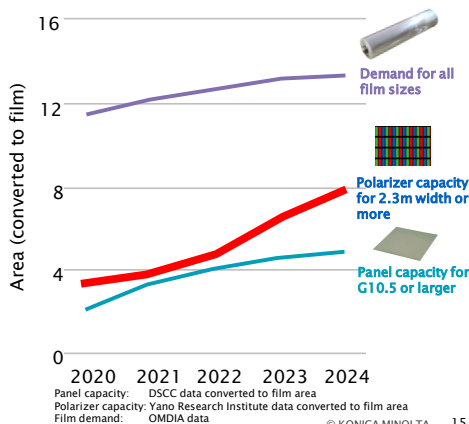


2.3/2.5m-wide film factories

Increasing ability to provide wide film in line with polarizer investment

- New investment, facility renewals, and various methods

Demand moving toward large sizes and wide film



I will explain the market growth and change.

I think that the display market as a whole is now considered to be mature. But in reality, they are still making significant internal changes. Given the fact that the industry is based on facilities, a major transformation occurs when old facilities become obsolete and new facilities are needed. This is the turning point whether each manufacturer drops out or grows.

In factories for large displays, named G10.5, the investment framework for panel manufacturers has almost been established. Today, polarizer manufacturers, which provide components, continue to invest aggressively in plants that process wide films suitable for large panels. This inevitably affects upstream film manufacturers like us, as conventional lines become unusable and new lines are needed. Here, if the conventional lines are no longer unusable, investment efficiency is extremely poor. However, if we can respond to the demand by making maximum use of our conventional lines, business deployment can be extremely effective from a ROIC perspective.

Foundational Strategies for Products to Contribute to Workflow Reform 2



Investing in the growing wide film field (from 2019, with further investment planned)

Solvent flow casting method + new materials



Offline width processing



① Existing production lines	Responding to the move to wide film by making all production lines offline
② All product fields	Capable of responding to the move to wide film All phase difference modes (VA/IPS), protective film
③ Production capabilities	Utilizing high-speed productivity of solvent flow casting to expand manufacturing capabilities as a whole
④ Enhancing length and thin-film suitability	Simplifying the supply chain and reducing losses

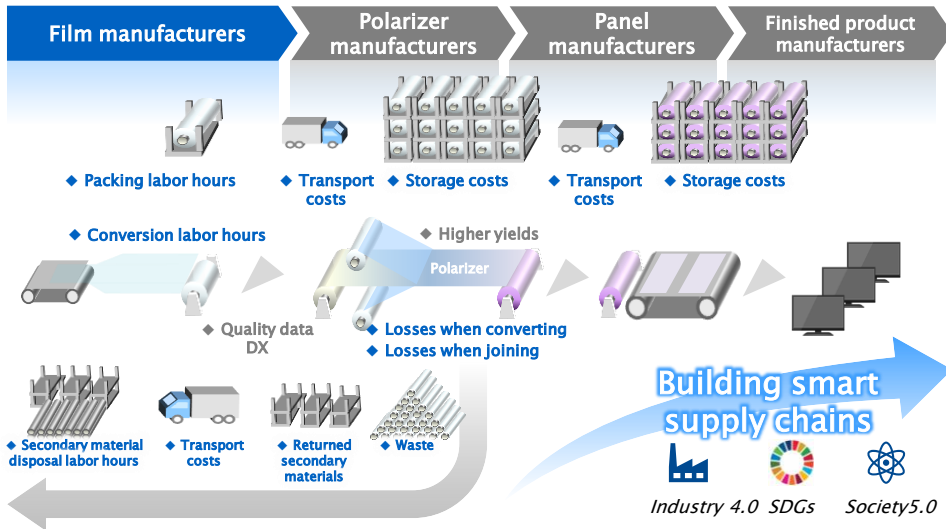
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Our production lines of solvent flow casting have responded to various film width in accordance with the evolution of various displays. The Demand for 2.3m and 2.5m widths will increase, and in some cases, some production lines will be unable to respond the width. In our case, we properly use our production lines in accordance with a variety of applications and handle them with offline width processing. Although it seems inefficient at first glance, the solvent flow casting method is extremely productive. And it is completely different from that of the similar processing with the melt casting. We are able to allocate resources in an extremely simple manner by utilizing our existing highly productive lines with currently possessing width. As a result, production capability is increased, and we can respond to the demand of wider film. We decided the method to this direction in FY2019 and are currently strengthening it.

Foundational Strategies for Products to Contribute to Workflow Reform2 ~Simplifying the supply chain~



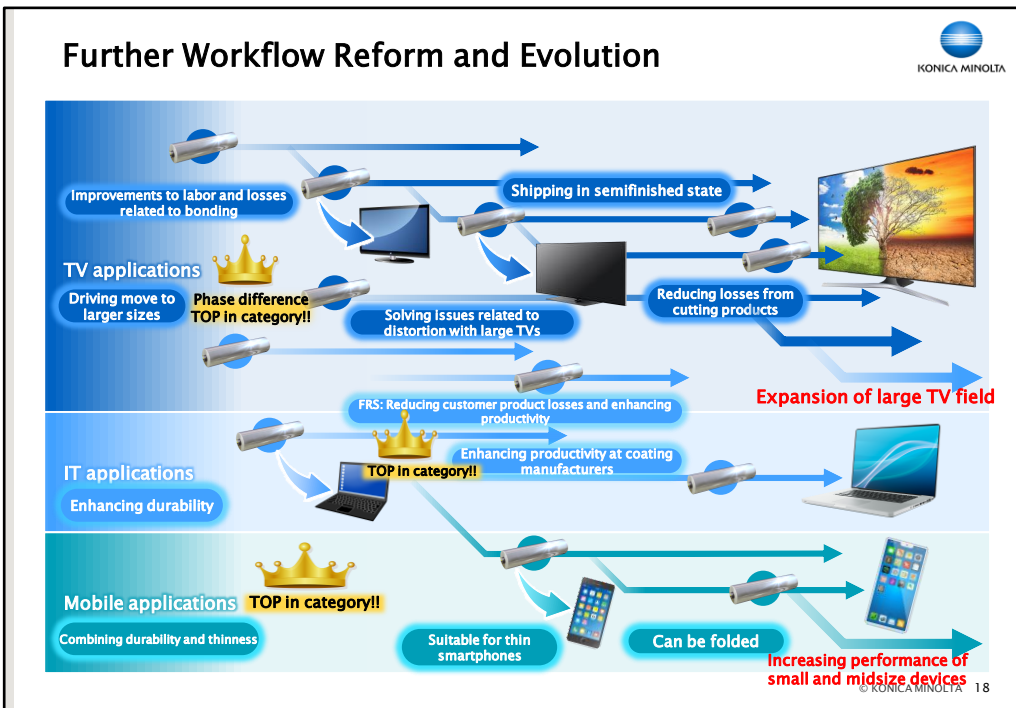
Value of long length: Minimizing waste, cost, and environmental impact across the supply chain



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In addition, by processing offline, we are able to wind a large amount of film cleanly while maintaining their shape firmly. It is technically difficult for each company to wind film cleanly, but in our process, it is possible to do it and we lengthen the roll of the film. It is our technical advantage because the interval of switching the film in the process becomes as long as possible and then the process is not interrupted. The initiative is exactly the building smart supply chain. In addition, this corresponds with major trends such as SDGs and Industry 4.0, so I think the significance of the initiative will continue to increase in the future. Currently, we are working to deploy this process and meet this trend.

Further Workflow Reform and Evolution



As part of our efforts to further reform the workflow, we continue to work to reduce losses from cutting product and enhance the functionality of films for small and midsize mobile devices in addition to the initiatives I mentioned. As you can see in this diagram, the films look simple at first glance, but the patterns of evolution are limitless. We will cleverly grasp the movement of the whole industry to change in various directions.

Looking to Achieve Medium-term Plan in FY2022



- Growth area: ① Large TVs and new resin
② increasing performance in small and midsize mobile field
- Current circumstances: Expect to achieve targets in FY21, and progressing in line with plans for FY22

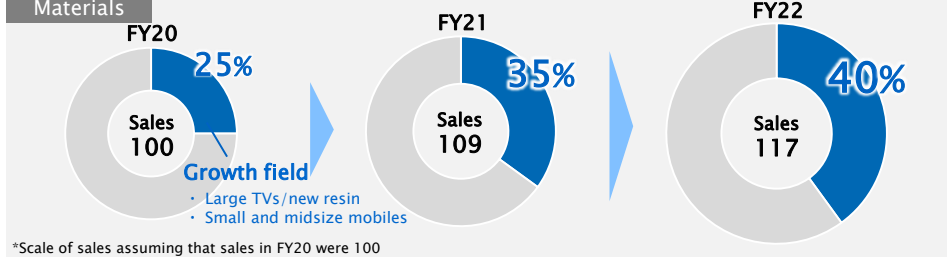
① **Large TVs** SANUQI platform products performing as expected.
LCD-TVs: Year-on-year growth of SANUQI-VA
OLED-TVs: SANUQI-QWP generating results in FY21

② **Small and midsize mobiles** Volume increase for high-performance products



11/27/2020
IR-DAY
Materials

We have identified large TVs, new resins, and small and midsize mobiles as our growth fields, and will expand sales with these drivers to generate profit

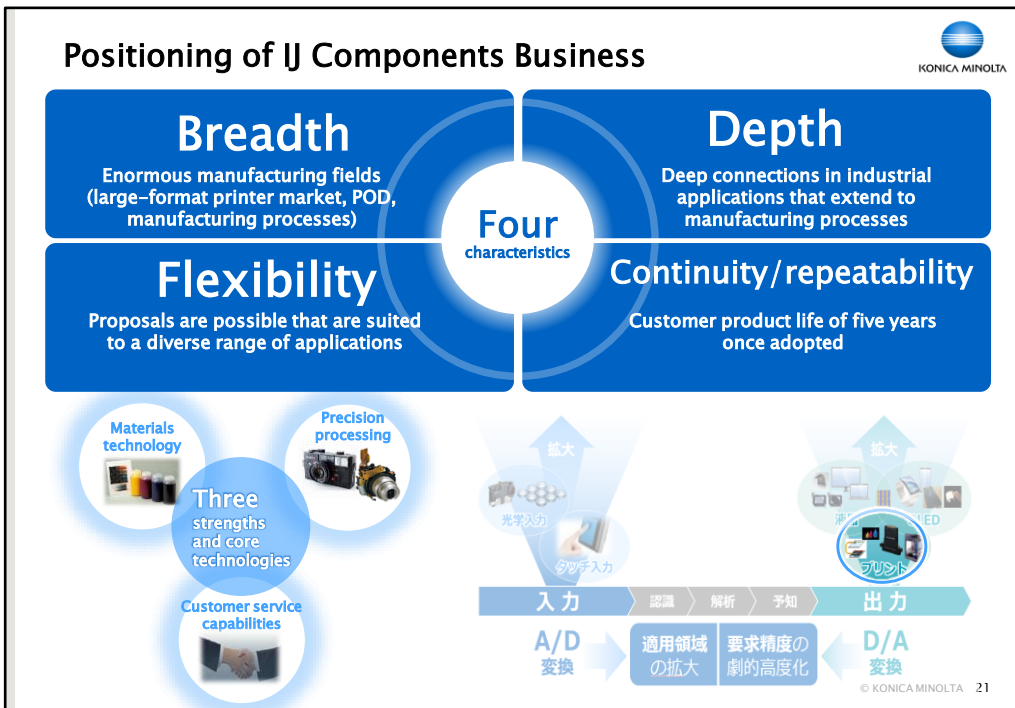


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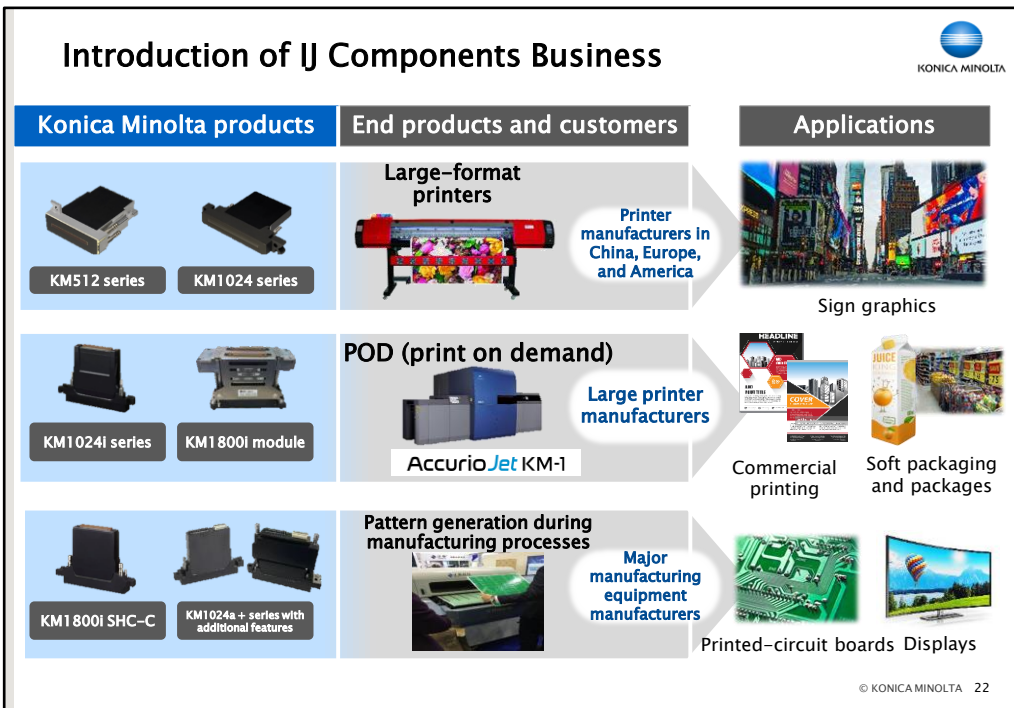
Aiming to achieve our Medium-term Business Plan in FY2022, we will aggressively deploy the initiatives I mentioned into the growing area of large TVs, including new resins. Also, we further improve the functionality of films for small and midsize mobile field. Specifically, we will deploy the platform for large TVs that use the new resin SANUQI, which we recently introduced. This product is being rolled out for VA mode and is increasing year on year as planned. Furthermore, SANUQI has already been adopted as antireflection film for OLED TVs by changing processing methods. Overall, we will steadily grow our growth fields in this manner over FY2020, FY2021, and FY2022, leading to achieve our plan.

Materials and Components: IJ Components Business

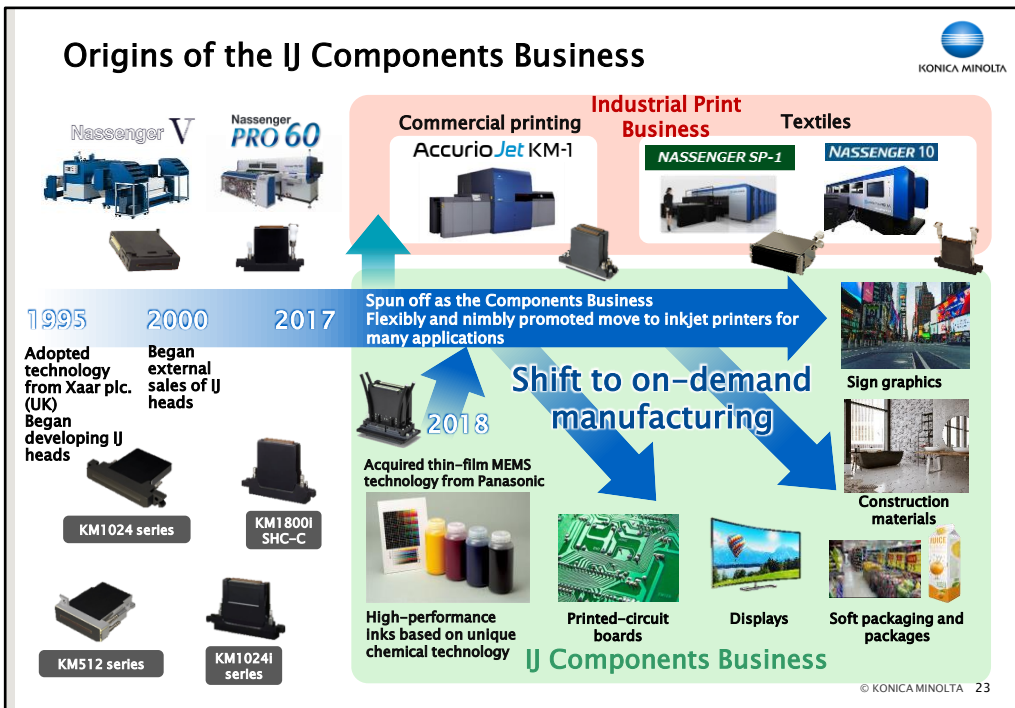
Next, I would like to explain about Inkjet (IJ) components business.



Regarding IJ components, I have also organized the characteristics of our business in terms of breadth, depth, flexibility, and continuity / repeatability. With regard to breadth, the Company captures the enormous manufacturing fields as the market, and is entering the market not only in the current printing field but also manufacturing processes by capturing the trend of inkjet manufacturing sophisticatedly. Regarding depth, it is the same approach as performance materials business just described. Flexibility is also characterized by the fact that it is easier to deploy the business more flexibly because we propose processes rather than products. Continuity / repeatability is the same as performance materials business.



I'll explain IJ components business in a little more organized way. I have divided the market into three broad categories. As described at the top of the slide, there is a well-known sign graphics market for inkjet heads for large format printers. More than half of our sales is derived from this field currently. In this field, we will steadily maintain our position in the market. The second one is the print-on-demand (POD) field, and the third one is industrial applications field such as printed-circuit boards and displays area, which is related to pattern generation during manufacturing process. Thanks to our cutting-edge initiative, we are expanding our market share.



Here is a brief explanation of the establishment of IJ components business. We started the business on R&D basis in 1995. We began external sales of inkjet heads around FY2000. Like our performance materials business, we have a long history.

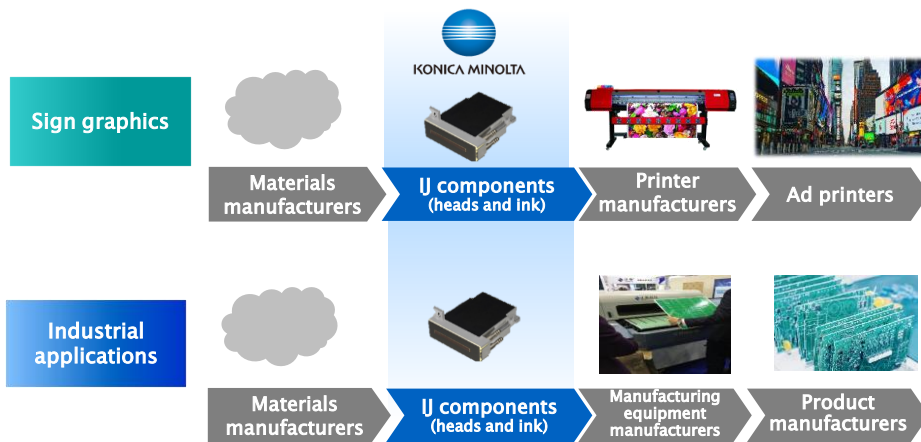
I think that you may relatively recognize IJ business as industrial print business. At this presentation, I will explain it by focusing on how to create value and strengths as Materials and Components Business.

The point here is that it is very consistent with the trend of on-demand manufacturing. Inquiries are becoming stronger due to this trend. In addition, technological development is significantly important.

IJ Components' Supply Chain and Customers



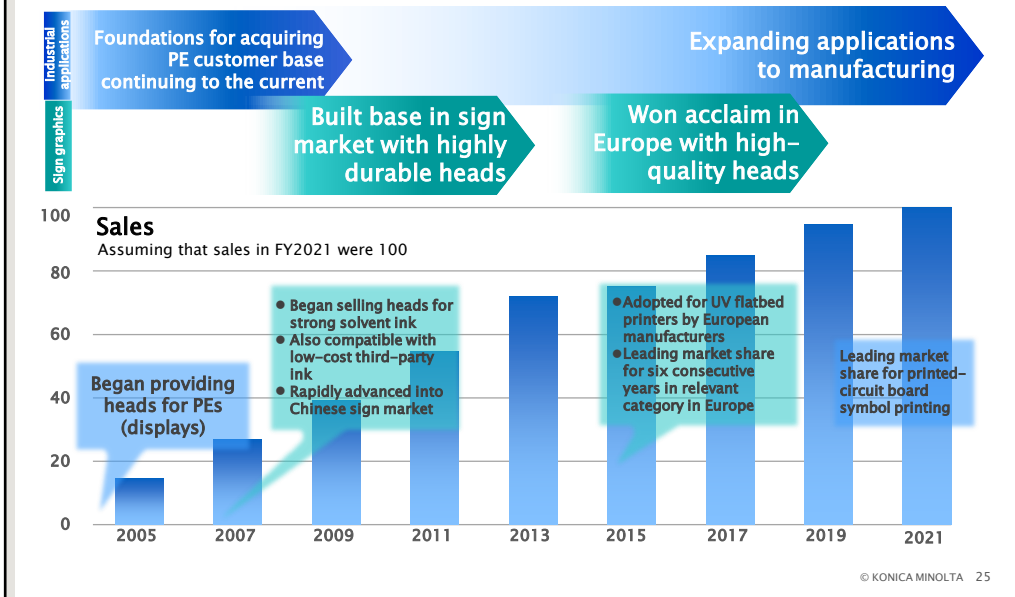
Positioned upstream in the supply chain, we provide products capable of contributing to workflow reform at customers around the world, in various industries



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This diagram shows the relations of customers and supply chain of inkjet components. Like our performance materials business, our business is located upstream in the supply chain. We provide products that can contribute to the workflow reform of customers in various industries around the world. We have already deployed the business in the sign graphics market. Industrial applications differ according to the industrial sector, and we need to respond to them. There is a huge number of large company's manufacturers in downstream supply chain, and inkjet heads are core components for them. Once they have adopted our IJ heads, we will continue to occupy a very important position for our customers.

History of Growth of IJ Components Business



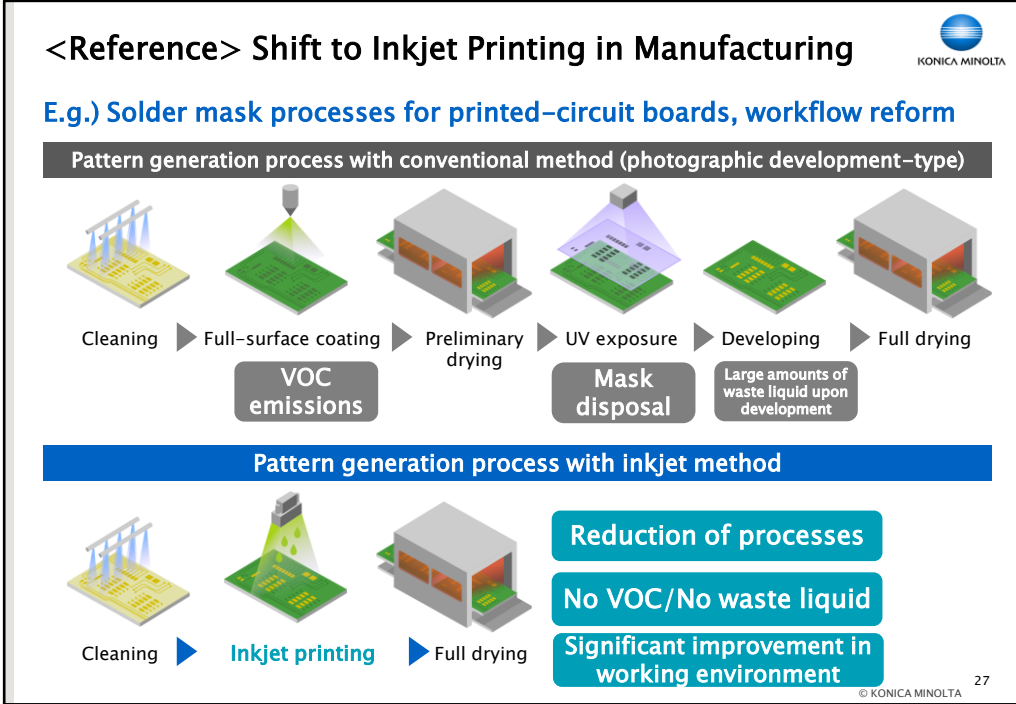
I will review the history of IJ components business once again. The key point in this slide is that our IJ components business originally started as industrial applications.

We have begun supplying inkjet heads for display manufacturing. The customers have used them in the display panel manufacturing process called ODF. In this field, our inkjet heads have occupied 100%, and we have a track record of being used even now.

Thereafter, we expanded our business to include sign graphic applications, and we are aggressively deploying this business in response to trends in expanding applications for manufacturing.

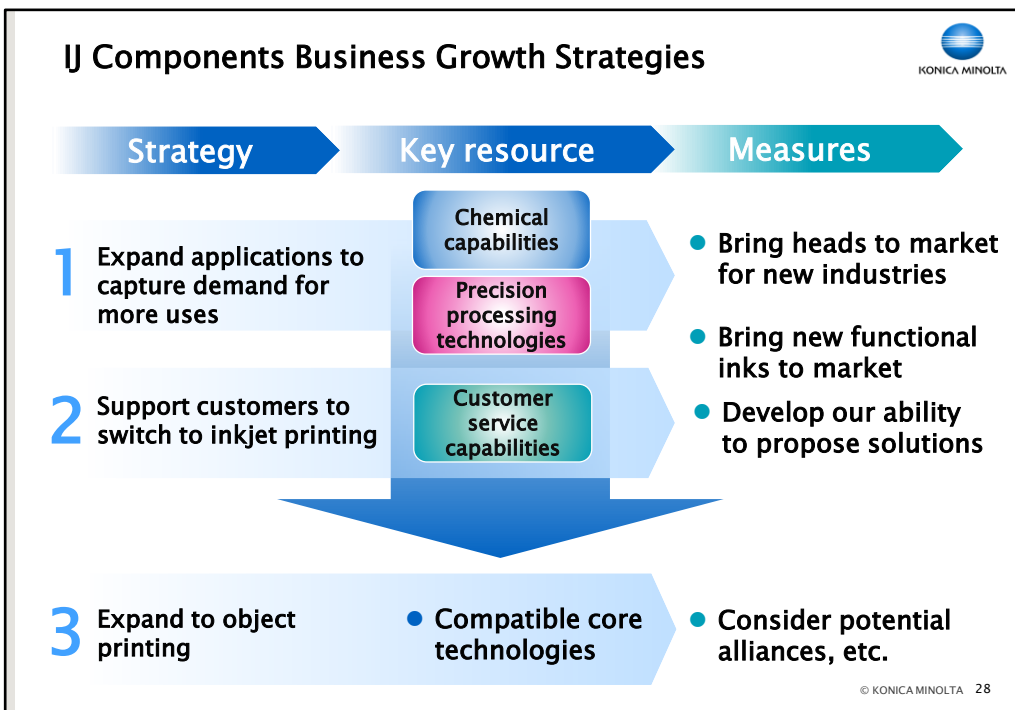


Let me explain the sources of the strengths in IJ components business. There are three major points. The first point is the precision processing technologies developed with camera business, which are shown in red on the slide. The second point is the chemical capabilities that we have cultivated through the film business, which are shown in blue. The fact that we have these two technologies at an extremely deep level within the company leads to the strength of our ability to deploy our components. By combining these technologies and proposing them to customers, we are raising value for our customers and driving the shift to inkjet manufacturing, thereby reforming our customers' workflows. Precision processing technologies are easy to focus on, but material compatibility is a major point of advantage in industrial applications. We can design IJ heads that are definitely adaptable to materials with various properties. In addition, it is characterized by having a wide range of ink options, and we can propose them. It's a key point.



As a reference, I have cited solder mask processes for printed-circuit boards as one example of the shift to inkjet manufacturing. It indicates how the workflow reforms due to the use of inkjet technology. Conventionally, the process is based on the development method. Once a full-surface coating has been made, a preliminary drying is carried out, and then masked and exposed. The pattern is separated into reacted area and non-reacted area by developing and washing. And then it is full dried, and the pattern is made. By inkjet method, it becomes a fairly simple process, just drawing the pattern directly. This not only reduces the processes, but also results in the elimination of VOC/ waste liquid and a substantial improvement in the working environment. The key point is that the field which can be converted to inkjet process will be expanded by combining with material technologies.

IJ Components Business Growth Strategies



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I'll explain the growth strategies of IJ components business along in the perspective of each strategy, key resources, and measures.

In terms of strategy, the first one is to expand applications to capture demand for more uses. The second one is to support customers to switch to inkjet printing. We will reform the workplace using existing analog technologies into a digitized workplace using inkjet. In order to change the method which gotten used to by customers, there is a variety of resistance and discomfort. But it is necessary to lead customers firmly and overcome resistance and discomfort together. Therefore, our ability to propose solutions will be required, and this part is an important point.

The third one is to expand to object printing in the future. Keeping in mind that we may need new core technologies, we will advance this strategy by combining our strengths, such as chemical capabilities, precision processing technologies, and customer service capabilities.

Growth Strategy 1. Expand Applications to Capture Demand for More Uses



We will expand applications for our products by enhancing our range of new functional inks and industrial heads, in order to boost our superiority in industrial applications



Printed-circuit boards



Displays



Soft packaging and packages



Construction materials

Konica Minolta
strategies and
superiorities

Technical capabilities: We will build close relationships with equipment and panel manufacturers and anticipate demand with leading development and proposals based on heads for industrial applications that utilize our chemical capabilities and precision processing technology

Customer service: Covering everything including customized accommodation of customer needs and support

Brand power: High brand recognition backed by a track record of having supplied heads since the early days of the market

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I will explain the first growth strategy in detail. We will expand applications by expanding new functional inks and industrial heads in order to enhance our competitiveness in industrial applications.

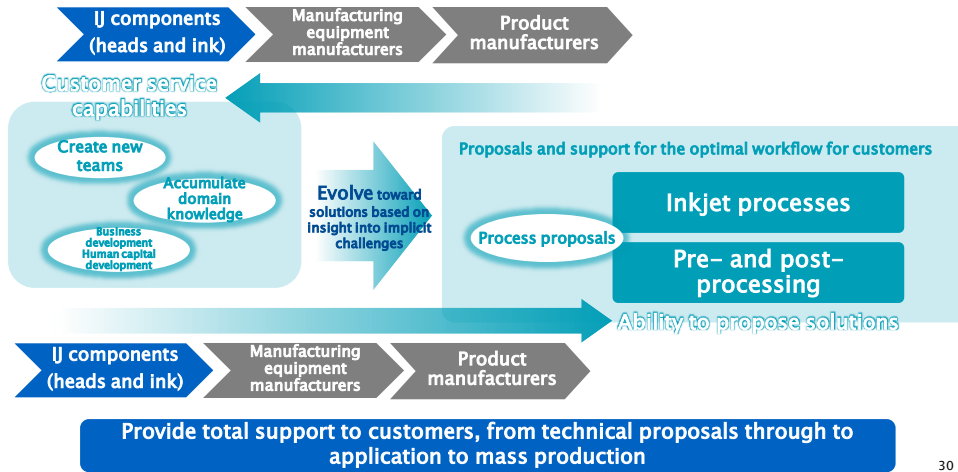
Applications include printed-circuit boards, displays, soft packaging, and construction materials. We will build close relationships with equipment manufacturers, panel manufacturers and other customers based on inkjet heads for industrial applications that leverage our chemical and precision processing technologies. As a result, we will advance development with anticipation of demand and make proposals to customers. In addition, we will leverage the combined strengths of our customer service and brand power. Our brand power is backed by our track record of supplying components from beginning of the market. Our customer service and brand power serve as major intangible assets, particularly in reforming working process of the massive supply chain, where changing processes is very challenging.

Growth Strategy 2. Support Customers to Switch to Inkjet Printing



Promote a move to inkjet printing by proposing and supporting the optimal workflows for customers, centered on analog users*

*Analog users: Using printing, coating, evaporation, photolithography, etc.



The second strategy is to support customers to switch to inkjet printing. We propose optimal workflows to customers and support them, focusing on current analog technology users of manufacturing equipment manufacturers and product manufacturers in the supply chain. As a result, we will promote the use of inkjet in our customers' processes.

Initially, we will progress the proposal for using inkjet, but ultimately, we will expand to propose solutions that include the inkjet or the pre- and post-processing as process proposals. We evolve the business toward solutions based on insight into implicit challenges

Inkjet heads and components, including materials, become major core.

Growth Strategy 3. Expand to Object Printing



Enter the object printing field and maximize our superiority in industrial applications, which will lead to significant business expansion

Scan method

The head is scanned and the item to be printed is moved



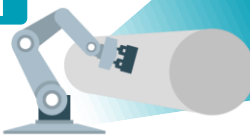
Single-pass method

The head is fixed and the item to be printed is moved



Robot method

A high-performance inkjet head (capable of 3D movement) suitable for the robot method is used to print on an object



Aircraft



Automobiles



Construction materials

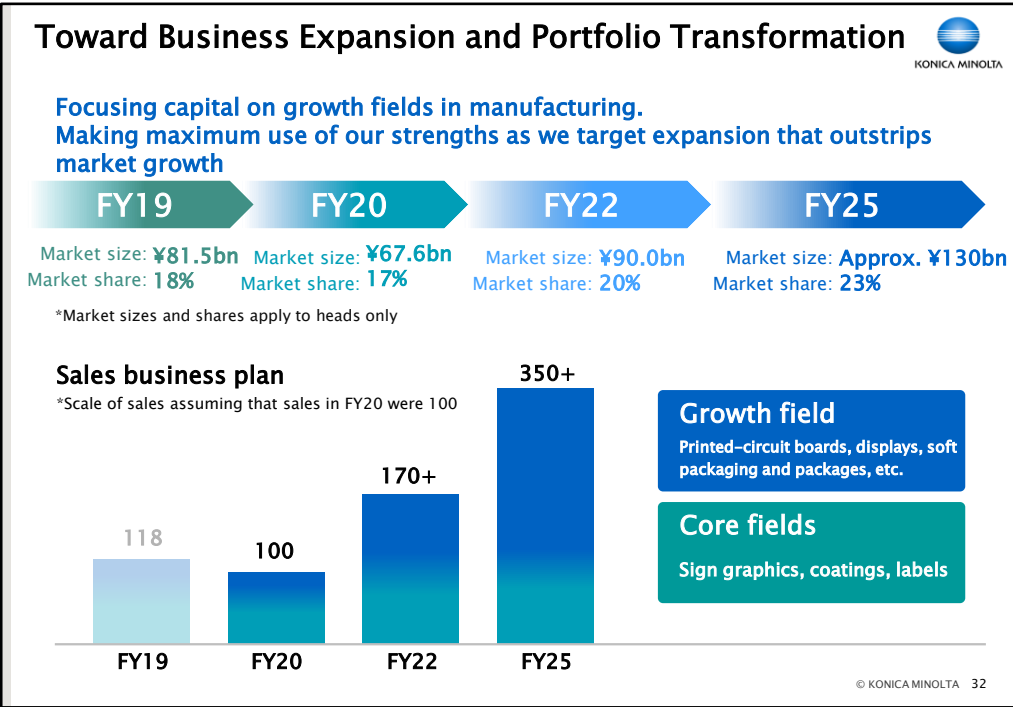


Helmets

Vending machines

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The third point is to expand to object printing. The mainstream of conventional printing methods are the scan method and the single-pass method. In addition to them, we will develop a printing method that makes the inkjet heads follow the surface of three-dimensional object, called the robot method. In the robot method, there are demands for various performance for inkjet heads. So, we will promptly respond to the demands and propose them to customers with response to their performance requirements. As a result, we have already begun activities aimed at the fields where the inkjet method has not yet well recognized, shown on the right side of the slide.



I would like to confirm the major initiatives toward business expansion and portfolio transformation again.

We aim to expand our sales more than market growth by concentrating capital investment in growth fields in manufacturing and leveraging our strengths. In particular, we will expand our business in growth fields. At the same time, we operate our business with maintaining the strengths described earlier in our core fields.

Compared to FY2020, the planned figures seem to be large, but the result in FY2020 is due to the impact of COVID-19. We have been advancing our evolution systematically and continuously since FY2019.

This is the end of the presentation. Thank you for your attention.



KONICA MINOLTA