Sample Issue
Partial Articles Only

15 (Wed.)–18 (Sat.) Nov. 2017
The Jakarta International Expo, Indonesia

MAIN EXHIBITORS:
• VICTORY BLESSINGS INDONESIA, PT
  FUJI KIKAI KOGYO CO., LTD. JAPAN
  TAIYO ELECTRIC INDUSTRY CO., LTD.
  HAGIHARA INDUSTRIES INC.

Booth No. B-4218
PlasPak Indonesia 2017

• NISHIMURA MFG. CO., LTD. JAPAN
  Booth No. D-820
  Plastics & Rubber Indonesia 2017

• ALTECH ASIA PACIFIC INDONESIA PT INDONESIA
  Booth NO. D-9231
  PlasPak Indonesia 2017
Shipping Address
Name: ____________________________
Company: _________________________
Address (line 1): ____________________
Address (line 2): ____________________
City/Town: _________________________
State: _____________________________
Zip Code: __________________________
Country: __________________________
Phone: ____________________________
Fax: ______________________________
Email: ____________________________

Billing Information:
☐ Print + Electronic  ☐ Electronic Only
☐ Bank Transfer (please send account information by ☐ Fax or ☐ Email)
☐ Visa Card  ☐ Other (Please contact us for other options)

Card Number: ______________________
Expiration Date (month/year): __ __ / __ __

Amount Paid (US$): __________________
Card Holder Name: __________________
Card Holder Signature: __________________

Please return this form to:
Converting Technical Institute
VORT Iwamotocho 1-3-4-6 Iwamoto-cho, Chiyoda-ku, Tokyo 101-0032 Japan
Phone: +81-3-3861-3858  Fax: +81-3-3861-3894  Email: econvertech@ctiweb.co.jp  Website: www.ctiweb.co.jp

E-mail advantages

• Instant viewing
  The magazine reaches the reader as soon as it is ready for publishing.
• Ubiquitous access
  The electronic version can be viewed on PCs, tablet PCs, smart phones, and any device that has internet access and can load a PDF file.
• Portability
  Because the format is portable, readers and advertisers can use their handheld devices to show articles to those without internet access at the moment for use on the spot.

Online ordering
Order online with your credit card or PayPal account. With no need to open an online billing account, checkout is even easier than before.

For more information, access our site and visit us at:
www.ctiweb.co.jp/eng/

2017 Advertising Rates

<table>
<thead>
<tr>
<th></th>
<th>1/2-year</th>
<th>2/4-year</th>
<th>5/6-year</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-color*</td>
<td>$3.200</td>
<td>$2.940</td>
<td>$2.680</td>
</tr>
<tr>
<td>½ Page</td>
<td>$2.000</td>
<td>$1.840</td>
<td>$1.680</td>
</tr>
<tr>
<td>¼ Page</td>
<td>$1.500</td>
<td>$1.380</td>
<td>$1.260</td>
</tr>
<tr>
<td>¼ Page</td>
<td>$1.400</td>
<td>$1.280</td>
<td>$1.170</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1/2-year</th>
<th>2/4-year</th>
<th>5/6-year</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-color**</td>
<td>$4.500</td>
<td>$4.140</td>
<td>$3.780</td>
</tr>
<tr>
<td>½ Page</td>
<td>$3.000</td>
<td>$2.760</td>
<td>$2.520</td>
</tr>
<tr>
<td>¼ Page</td>
<td>$2.500</td>
<td>$2.300</td>
<td>$2.100</td>
</tr>
<tr>
<td>¼ Page</td>
<td>$2.000</td>
<td>$1.840</td>
<td>$1.680</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Premium Position**</th>
<th>1/2-year</th>
<th>2/4-year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover</td>
<td>$6,000</td>
<td>$5,520</td>
<td>$4,870</td>
</tr>
<tr>
<td>Inside Front Cover</td>
<td>$5,300</td>
<td>$4,900</td>
<td>$4,270</td>
</tr>
<tr>
<td>Inside Back Cover</td>
<td>$5,300</td>
<td>$4,900</td>
<td>$4,270</td>
</tr>
<tr>
<td>Back Cover</td>
<td>$5,800</td>
<td>$5,330</td>
<td>$4,690</td>
</tr>
<tr>
<td>Front Top 4C</td>
<td>$5,100</td>
<td>$4,690</td>
<td>$3,770</td>
</tr>
<tr>
<td>Front Top 2C</td>
<td>$4,100</td>
<td>$3,770</td>
<td>$3,090</td>
</tr>
</tbody>
</table>

*2-color ads: Combination of Black and Cyan, Magenta, or Yellow
** 4-premium positions are 4-color unless otherwise specified
*** Premium positions are filed on a first come first serve basis
**** For additional options (spread, island, etc.) contact us directly

Reach the World
Advertising in Convertech International provides you with a way to reach all corners of the converting world. Our readership is not limited to one aspect of the industry, so your advertisements will be seen by potential customers, as well as those who will ask your customers to use your products.

Combining an advertisement with a short 1 or 2-page article is a great way to provide more information in detail to the world.

For more information, access our site and visit us at:
www.ctiweb.co.jp/eng/

Contact Information

JAPAN/INTERNATIONAL
CONVERTING TECHNICAL INSTITUTE
Shigeo Araki
VORT Iwamotocho 1-3-4-6
Iwamoto-cho, Chiyoda-ku, Tokyo 101-0032 Japan
Tel: +81-3-3861-3858, Fax: +81-3-3861-3894
E-mail: econvertech@ctiweb.co.jp
URL: www.ctiweb.co.jp/eng/

Indonesia
PT Victory Blessings Indonesia
Franky M. Hutapea, President Director
Redwood Business Center Block A No. 5
Jl. Ganjar—Kota Delima,
Cikarang Purwakarta—Bekasi
Tel: +62-21-29093803, +62-21-371111-40
Fax: +62-21-29093840

KOREA
KOREA PACKAGING INSTITUTE
Yeong Ho Kim
Lotte IF Castle 2-1313
98, Gasan Distal 2-ri, Geumcheon-Gu
Seoul, 153-803, Korea
Tel: +82-2-2026-8166
Fax: +82-2-2026-8169

Taiwan
Worldwide Services Co., Ltd
Robert Yu
11F-2, No. 540
Wan Hin Road, Section 1
Tai’ichung, 408, Taiwan
Tel: +886-4-2325-1794
Fax: +886-4-2325-2967

Media summary
Magazine: Convertech International
Issuance: 6/year (January, March, May, July, September, November)
Language: English
Size: A4
Color: Full Color
Subscription Fee:
  • Year Subscription (6 issues)
    Print + Electronic: US$160
    (US$45 Shipping)
    Electronic Only: US$115
  • Single Issue
    Print + Electronic: US$30
    (US$8 Shipping)
    Electronic Only: US$15
Print and electronic versions are released during the middle of each issuance month.
Of the many challenges with which the Japanese converting industry is faced today, one of the most prominent is the maturation of the technologies that brought it to where it currently stands. Although this situation still leaves some room for minor improvements and modifications, it leaves little outlook for major innovation. As a result, the industry is no longer dominated by manufacturer-led business models, but by a market that spontaneously generates new demands, such as that for safety, that it in turn places on manufacturers. In light of the difficulty that domestic manufacturers have in grasping these often unarticulated demands, this situation is even more challenging for foreign companies that do not have the same level of access to Japan’s market information.

When the manufacturer-led business model still dominated, consumer values were focused on the latest high-quality, high-value products, a relatively easy target for which Japan’s technology-oriented converters could aim. After all, one simply had to look at last year’s products to know which direction to take in the future. As the market matured, however, consumers began to focus on more practical values, many of which could only be determined by understanding the consumer. In other words, converters began to realize that they had to create business models that included analysis of marketing elements. These new business models discovered that one of the most important values of consumers in Japan is safety.

Safety is an essential element of everything from food to automobiles, and is part of every aspect of our lives. Not surprisingly, Japan’s pursuit of ever greater safety through these new business models has led to a demand for made-in-Japan products around the world, but particularly in Asia. This is also the case for the major Japanese electronics manufacturers. Meanwhile, one inspection equipment manufacturer at JAPAN PACK this past fall commented that many of the visitors from Asia who come to Japan to shop do so because they believe products sold in Japan are inherently safer than those sold in their own countries, even when made by manufacturers of other countries because to sell in Japan requires a higher level of safety.

In Japan, almost all products are assumed to be safe, which frees us from one less worry in life. Given that many of the commonly found product in Japan are unknown in the rest of the world, at Convertech International we see it as our duty to help bring this level of safety and variety to the rest of the world by being the best source of information on those aspects of the Japanese converting industry that cannot be easily acquired outside the country.
# Table of Contents
November/December 2017

<table>
<thead>
<tr>
<th>Page</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>The Newly Developed FN425E Flexible Packaging NS Slitter Model&lt;br&gt;Nishimura Mfg. Co., LTD.</td>
</tr>
<tr>
<td>18</td>
<td>VSP Meat Packaging, Light Blocking Glass Bottles, Positive List Regulation, and Bottle-to-bottle Chemical Recycling&lt;br&gt;Japan Food Packaging Association</td>
</tr>
<tr>
<td>21</td>
<td>Problems With Plastic Drug Packaging Allow Glass to Remain the Dominant Packaging Material in India’s Massive Drug Market&lt;br&gt;12th International Packaging Seminar (IPS’17)</td>
</tr>
<tr>
<td>24</td>
<td>&quot;No-hassle Hand-made Feel&quot; Is the Latest Trend in Japan's Commercial Food Industry&lt;br&gt;Kewpie Corporation</td>
</tr>
<tr>
<td>26</td>
<td>&quot;EM-250W&quot; Label UV Inkjet Printers Finding New Uses for Short-run Flexible Packaging&lt;br&gt;IWATSU ELECTRIC CO., LTD.</td>
</tr>
<tr>
<td>30</td>
<td>AR, VR, and Personalized Labels Stand to Stimulate the Global Label Industry&lt;br&gt;LABEL FORUM JAPAN 2017</td>
</tr>
<tr>
<td>36</td>
<td>The Past and Future of One of Japan's Major Converting Equipment Manufacturers: Water-based Printing and Customer-oriented Design&lt;br&gt;ORIENT SOGYO CO., LTD.</td>
</tr>
<tr>
<td>44</td>
<td>Hard, Tough Vulcanized Fiber Paper Clips Can Be Bent to Any Shape Imaginable With a Little Water&lt;br&gt;SUGAI WORLD, Inc.</td>
</tr>
<tr>
<td>46</td>
<td>New Wearable Memo Decals and Bands Are a Must for Memo-takers in All Types of Workplaces&lt;br&gt;Cosmotec Co., Ltd.</td>
</tr>
<tr>
<td>48</td>
<td>New Packaging Materials Eliminate Odors and Condensation, Reduce CO2 Emissions, and Prevent Counterfeiting&lt;br&gt;26th Annual Research Presentation Conference &lt;br&gt;The Society of Packaging Science &amp; Technology, Japan</td>
</tr>
<tr>
<td>52</td>
<td>Secondary Materials Play an All-important Role in Packaging and Improving Convenience&lt;br&gt;The Society of Packaging Science &amp; Technology, Japan, 73rd Symposium</td>
</tr>
</tbody>
</table>

---

### November/December Advertisers:

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuji Kikai Kogyo Co., Ltd.</td>
<td>7</td>
</tr>
<tr>
<td>HAGIHARA INDUSTRIES INC.</td>
<td>9</td>
</tr>
<tr>
<td>THINK LABORATORY CO., LTD.</td>
<td>11</td>
</tr>
<tr>
<td>TAIYO ELECTRIC INDUSTRY CO., LTD.</td>
<td>11</td>
</tr>
<tr>
<td>Nishimura Mfg. Co., LTD.</td>
<td>17</td>
</tr>
<tr>
<td>FUJI SHOKO CO., LTD.</td>
<td>23</td>
</tr>
<tr>
<td>YAMABUN ELECTRONICS CO., LTD.</td>
<td>29</td>
</tr>
<tr>
<td>JYOHOKU SEIKOSHO CO., LTD.</td>
<td>45</td>
</tr>
<tr>
<td>NIRECO CORPORATION</td>
<td>93</td>
</tr>
</tbody>
</table>
55  BASF's Future Automobile Paint Color Themes
    Reflect the Social Changes of the Times
    *BASF Japan Automotive Color Trends 2017-18*

56  Clean Pilot Coater
    With Six Changeable Coating Options Goes Into Operations
    *Independent Unit Environmental Condition Control Enables Near Production Facility Performance*
    *Kobayashi Engineering Works, Ltd.*

61  Expanding Laser and Engraving Cylinder Making Capacity
    With a New FX3 and Japan's First K500G4
    *Sanyo Gravure Co., Ltd.*

68  KURAPOWER SHEET:
    A Unidirectional CFRTP Substrate for Forming and Reinforcing Applications
    *KURABO INDUSTRIES LTD.*

71  Supply Surplus of Ethylene and Ethylene Derivatives
    Expected to Continue Through 2021
    "Forecast of Global Supply and Demand Trends for Petrochemical Products (2008–2021)"
    *The Study Group on Global Supply and Demand Trends for Petrochemical Products*

74  Paper Substrates Offer the Potential for
    High-temperature Curing and Dimensional Stability in Printed Electronics
    *Techno Alpha Co., Ltd. / Arjowiggins Creative Papers*

77  Production Environment Will Rely on Growth in Asia
    *2017 Keypoint Intelligence Supply Market Conference*

78  Five Companies in Japan Come Together to Develop a Drone Collision Prevention System
    *New Energy and Industrial Technology Development Organization (NEDO)*

80  Developing Medical Devices That Can Also Be Used During Disasters,
    Session 3
    *Smart Polymer × Future Medicine*
    *Mitsuhiro Ebara*

84  Coating Theory and Phenomenon for the Plant, Chapter 4, Session 3
    *Nanotechnology and Coating*
    *Professor Akira Kawai*

88  Basic Course on Instrumentation and Control in the Converting Process,
    Session 40
    *Yoshihiko Ohta*

94  The Potential of Screen Printing, Session 2
    *Screen Printing Is Not an Out-of-date, Difficult to Control Printing Method*
    *What Is the Finest Required Degree of Fine Line Printing for Electronics?*
    *Yasushi Sano*

101 Enhancement of Thermoelectric Figure of Merit Using Submicron Structures, Session 6
    *PSA and Cutting-edge PSA Applications*
    *Wataru Morita / Kunihisa Kato*

104 Plastic Surface Decoration Technology
    *Chapter 3: Decoration Technology Details 8, Session 11*
    *Shohei Masui*
The Indonesian Packaging market was valued at 101,232.4 million units in 2016 and is estimated to grow at a CAGR of 5.2% to reach 130,325.8 million units in 2021. Flexible Packaging is the largest packaging type accounting for 42,538.6 million units in 2016, while Rigid Plastics are expected to see the highest CAGR of 7.7% during 2016-2021. Strong favorable demographic factors such as increasing disposable income levels and spending capabilities, rising consumer awareness and a hectic lifestyle of busy professionals are driving the growth of the packaging industry in Indonesia.

Source: Orbis Research

**Show Title:** Plastics & Rubber Indonesia 2017

The 30th International Plastics & Rubber Machinery, Processing & Materials Exhibition

**Date:** Wednesday 15 – Saturday 18 November 2017, 10.00-18.00 Hrs.

**Venue:** The Jakarta International Expo, Jakarta, Indonesia

**Organisers:** PT Pamerindo Indonesia

---

**DrinkTech Indonesia** provides a focused event for beverage processing, filling and packaging technology suppliers targeting this buoyant market sector. Supported by Asrim, The Indonesian Soft Drink Industry Association, Aspadin (Association of Indonesia Bottled Water Company) and GAPMMI, The Indonesian Food & Beverages Association.

**PlasPak Indonesia** is the specialist platform for packaging technology and solution suppliers targeting the largest sector within Indonesia’s plastics industry.

**Mould & Die Indonesia** provides a dedicated focus for this high value niche sector and is supported by IMDIA, The Indonesian Mould & Dies Industrial Association.

**NEW FOR 2017** PrintTech Indonesia, promoted by ACIMGA, the Italian Manufacturers Association of Machinery for the Graphic, Converting Industry, offers a new event dedicated to the world of technologies for Converting, Package Printing and Labelling at Plastics & Rubber Indonesia. Further information can be found at www.printechindonesia.com.
Exhibition Preview

Selected Exhibitor Profile

• Additives
• Adhesives & glues
• Bag and sack making equipment
• Coding, marking and printing equipment
• Cutting machines
• Embossing Equipment
• Extruders
• Extrusion Lines
• Fillers
• Flexible Packaging
• Flexographic and rotogravure printing technology
• Foams and intermediates
• Injection moulding
• Labellers/labels
• Laminating technology
• Looms
• Lubricants
• Marking Equipment
• Measurement & Weighing System
• Melt filter and pumps
• Mixers
• Packaging Materials
• Palletizers
• Plastic Packaging
• Plastic Packaging Machinery
• Preprocessing
• Presses
• Quality Control & Testing
• Robotics and automation systems
• Slitter rewinders
• Thermoforming
• Thermoplastics
• Winding Equipment

Main converting machinery and materials related exhibitors

Packaging Materials
• Arter Packaging (Shantou) Co., Ltd
• Chukoh Chemical Industries, Ltd.
• E.J.S Industry Co., LTD
• Goldstab Organics Pvt Ltd
• HEFEI ZHONGCHEN LIGHT INDUSTRIAL MACHINERY CO., LTD
• HUANGHUA HUAMAO CHEMICALS CO., LTD
• Hyundai Boteco
• Inter Aneka Lestari Kimia, PT
• MINLAND PLASTICS CORP.
• Malion New Materials Co., Ltd
• SEAL KING IND. CO., LTD.
• SHANDONG TONGJIA MACHINERY CO., LTD
• SUQIAN GETTEL PLASTIC INDUSTRY CO., LTD
• Shantou Hongqiao Packaging Industry Co., Ltd.
• XIANG IN ENTERPRISE CO., LTD.

Quality Control & Testing
• ALTECH ASIA PACIFIC INDONESIA PT
• E.J.S Industry Co., LTD
• Goldstab Organics Pvt Ltd
• Marubeni Techno-systems Corporation
• PT ALMEGA SEJAHTERA
• PT, KAWATA MARKETING INDONESIA
• SEAL KING IND. CO., LTD.

Slitter Rewinders
• DONG WOO ST CO., LTD
• FUJI KIKAI KOGYO CO., LTD / VICTORY BLESSINGS INDONESIA, PT
• HAGIHARA INDUSTRIES, INC / VICTORY BLESSINGS INDONESIA, PT
• HCI CONVERTING EQUIPMENT CO., LTD.
• JIANGYIN HUITONG PACKING MACHINE CO., LTD
• JIANGYIN KESHENG MACHINERY CO., LTD
• LONG NEW INDUSTRIAL CO., LTD.
• LUNG MENG MACHINERY CO., LTD.
• NISHIMURA MFG. CO LTD
• PT. TRIYOTEK
• QUEEN’S MACHINERY CO., LTD.
• SANKO PLASTICS (MALAYSIA) Sdn. Bhd. / VICTORY BLESSINGS INDONESIA, PT
• SMARTVISION STROBOSCOPE / VICTORY BLESSINGS INDONESIA, PT
• SUNNY MACHINERY FACTORY
• SWEDCUT (MUNKFORS SWEDEV ASIA LTD.) / VICTORY BLESSINGS INDONESIA, PT
• TAIYO ELECTRIC INDUSTRY CO., LTD. / VICTORY BLESSINGS INDONESIA, PT

November / December 2017

Convertech International

5
Fuji Kikai Kogyo Co., Ltd.
Booth No. B4218
http://www.fujikikai.co.jp

Fuji Kikai Kogyo Co., Ltd. is a leading Japanese manufacturer in the rotogravure printing machine industry and offers a wide range of products including various types of printing machines, laminators, and coating machines. Over the years, Fuji Kikai Kogyo has continuously shared its commitment to the progress and development of skills, inventory control, and a greater service level to match the ever-changing requirements in the flexible packaging field. We maintain a fresh perspective on market trends and have embarked on research and development with new ideas. Our products have been well received by the market.

Fuji Kikai Kogyo continues to create new products using our trusted technology as a means of contributing to the progress of society’s industrialization.

Main Products:
- Rotogravure Printing Press
- Dry Laminator
- Coating Machine
- Metal Printing Machine (PRIMEX)

Fuji MD Rotogravure Printing Press with direct-connection AC servo motors and printing cylinders creates new value.
1. High quality resulting from high registration accuracy
2. Minimized material loss
3. High operational rates suited to short run jobs
4. Designed for water-based printing

Main converting machinery and materials related exhibitors

Slitter Rewinders
- VICTORY BLESSINGS INDONESIA, PT / HAGIHARA INDUSTRIES INC. / FUJI KIKAI KOGYO CO., LTD / TAIYO ELECTRIC INDUSTRY CO., LTD / SMARTVISION STROBOSCOPE / SWEDCUT (MUNKFORS SWEDDEV ASIA LTD.) / SANKO PLASTICS (MALAYSIA) SDN. BHD.
- WEBCONTROL MACHINERY CORP.

Flexographic And Rotogravure Printing Technology
- ALTECH ASIA PACIFIC INDONESIA PT
- BOTHEVEN MACHINERY
- Boosung Engineering CO LTD
- Bukit Surya Mas, PT
- CHYI YANG INDUSTRIAL CO., LTD.
- Chukoh Chemical Industries, Ltd.
- Converting Solution(Gravure Printing Machine,Dry Laminating Machine,Extrusion Laminating Machine)
- FUJI KIKAI KOGYO CO., LTD / VICTORY BLESSINGS INDONESIA, PT
- GUANG DONG SHANZHANG MACHINERY CO., LTD
- GuangDong Olger Precise Machinery Technology Co., Ltd.
- HAGIHARA INDUSTRIES, INC / VICTORY BLESSINGS INDONESIA, PT
- HEMINGSTONE MACHINERY CO., LTD.
- JIANGYIN HUITONG PACKING MACHINE CO., LTD
- LONG NEW INDUSTRIAL CO., LTD.
- PT. SSI Prima Mas
- QUEEN’S MACHINERY CO., LTD.
- SANKO PLASTICS (MALAYSIA) Sdn. Bhd. / VICTORY BLESSINGS INDONESIA, PT
- SMARTVISION STROBOSCOPE / VICTORY BLESSINGS INDONESIA, PT
- SWEDCUT (MUNKFORS SWEDDEV ASIA LTD.) / VICTORY BLESSINGS INDONESIA, PT
- Shantou Huaying Soft-Packaging Equipment Plant Ltd.
- TAIYO ELECTRIC INDUSTRY CO., LTD. / VICTORY BLESSINGS INDONESIA, PT
- VICTORY BLESSINGS INDONESIA, PT / HAGIHARA INDUSTRIES INC. / FUJI KIKAI KOGYO CO., LTD / TAIYO ELECTRIC INDUSTRY CO., LTD / SMARTVISION STROBOSCOPE / SWEDCUT (MUNKFORS SWEDDEV ASIA LTD.) / SANKO PLASTICS (MALAYSIA) SDN. BHD.
- WEBCONTROL MACHINERY CORP.
- XIANG IN ENTERPRISE CO., LTD.
DRY LAMINATOR

FL2 series is the latest dry laminator fully equipped with new features.

Dry laminating machines are mainly used for food packaging and can glue together materials with different properties, such as tin foil and plastic films. The FL2 series is equipped with a chamber doctor blade and LOSLES winding system. This is the latest dry laminator to bring together a range of technologies in minimizing material waste. It is easy to operate and achieve higher operating rates.

AQ CHAMBER

Closed circulation doctor has many advantages: no adhesive splashing, no solvent odor, easy doctor setting, fewer viscosity changes, less solvent consumption for dilution (30% less), etc.

LOSLES WINDER

The latest "Brush Cutter" is employed to prevent wrinkles near paper cores, which can be a cause of waste.

Multi-drive Rotogravure Printing Machine

Direct Coupled AC Servo Motor

Eliminating the need for timing belts and reduction gears, our machine allows for precision printing cylinder phase control. The printing cylinder phase origin is the motor origin. This machine also does not require an initial registration bar or laser pointer, allowing printing to be started as soon as the printing cylinders are set.

Stable Register Precision

Equipped with the latest tension and color control, the printing machine maintains stable register precision even with conventional printing cylinders. When targeting high precision registration (±0.05 mm), we will suggest the necessary conditions for printing cylinder precision, etc.

Significantly Reduced Loss Rates

The highly functional operational control system reduces loss to within a few meters. Therefore, the product rate is nearly 100% and waste is significantly reduced.

High Operational Rate

Utilizing blank printing, free printing, and the operational management system, greatly increases operational rates, making the machine ideal for short runs.

Water-based Gravure Printing, Process Printing

By changing out the dryer and doctor, etc., this system can be used for water-based gravure printing and process printing.

http://english.fujikikai.co.jp

FUJIKIKAI KOGYO CO., LTD.

TOKYO BRANCH - 7-10 SHIRATORI-3-CHOME KATSUSHIKA-KU TOKYO, JAPAN
Tel: +81 3 3660-4161 Fax: +81 3 3660-4672
The world around us is full of industrial products made of relatively thin materials, including paper, textiles, plastic films, thin-film glass, nonwoven fabric, and metal foils. Although this variety shows that these materials are essential to our daily lives, they are also critical in furthering the development of high-tech industries that will eventually form the core of the global economy. Some examples from the IT, energy, and medical fields include optical films for flat panel displays, solid polymer membranes used in fuel cells, and artificial biological membranes for medical applications. During the manufacturing process, however, we call these materials webs.

Web manufacturing technology relies on the converting technologies of coating, laminating, and printing, as well as on web handling technology (here we include unwinding, slitting, cutting, drying, and rewinding, etc.). Among these, coating and printing have established themselves as cutting-edge technologies, for which academics have shown great interest. In contrast, web handling technology has conventionally been refined through production plant experience, although the technology itself has reached a fairly advanced level, its academic understanding is poor.

At the strong behest of the industry, the author has spent the past 20 years working to theoretically understand the physical phenomena related to web handling, and predicting and preventing the problems that occur during manufacturing. Our research has been studied widely in Japan by industries that utilize web handling technology, and has been praised for the help that it has provided in eliminating defects and developing new products.

On the other hand, we have also received strong interest from around the world in publishing our results in English given the desire to understand the strength of Japan’s web handling technology. Given that the theoretical research into web handling began outside of Japan, we are elated to be able to publish an English version of our work as it will allow us to repay our debt to those who came before. At the same time, nothing would make us happier than to see this work contribute to the opening of new horizons for readers around the world involved in web handling technology.
HAGIHARA INDUSTRIES INC.
Booth No. B4218
http://www.hagihara.co.jp

HAGIHARA INDUSTRIES INC. is a market leading manufacturer of slitter rewinders in Japan, and has been highly active in deploying sales promotions in the Southeast Asian market. We have participated in overseas exhibitions every year, including Propak Asia, Chinaplas, and ICE Europe. As usual, we will participate in Plaspak Indonesia 2017 and exhibit our slitter rewinders that have been developed specifically for the Southeast Asian market. We will also display a “Duplex Center Drive Slitter Rewinder, Model HDF-406-1300/T” slitter rewinder designed for high production efficiency thanks to Hagihara’s technology. We will demonstrate the slitter rewinder at our booth.

**Duplex Center Drive Slitter Rewinder HDF-406-1300/T**

**Main features**
- *Unwinder ø800mm (1000mm as an option)*
- *Rewinder ø600mm*
- *Hagihara’s original differential shaft “Air-Friction” for rewinding.*
- *Machine speed 400m/min.*
- *Duplex shaft type product receiver.*
- *User friendly touch screen*
Exhibition Preview

TAIYO ELECTRIC IND. CO., LTD.
Booth No. B4218
http://www.taiyo-e.co.jp/
OFT Inspection System Series

The OFT Inspection System Series inspects printing patterns during high-speed printing. This system uses a line color camera to capture images of the surface of the printed film, and stores a reference image along with the actual captured images to detect defects by comparing the images via pattern matching.

ALTECH ASIA PACIFIC INDONESIA PT
Booth No. D-9231
http://www.altech.co.jp/eng/

We are a solution provider for better production efficiency and product quality in the packaging industry. Our aim is to provide solutions to our customers to achieve better production efficiency and product quality. Currently, the demands for quality from the end user are increasing dramatically. In order to meet such demands without lowering production efficiency, the customer must choose the right equipment from the right partners. Below are some of our exhibition highlights.

1. DAC ENGINEERING CO., LTD.
   “Crossover” 100% camera inspection system (demonstration).
2. Sawa Corporation
   Ultrasonic gravure cylinder and flexo anilox roller cleaning machine. (demonstration)
5. Think laboratory Co., Ltd.
   Gravure cylinder polishing machine (demonstration), “New FX3” laser etching gravure cylinder making line (panels), and “FXJ” on demand printing machine (panels).

Main converting machinery and materials related exhibitors

Laminating Technology
• BOTHEVEN MACHINERY
• Boosung Engineering CO LTD
• Bukit Surya Mas, PT
• Chukoh Chemical Industries, Ltd.
• DAEKWANG MACHINERY CO., LTD.
• DONG WOO ST CO., LTD
• FUJI KIKAI KOGYO CO., LTD / VICTORY BLESSINGS INDONESIA, PT
• Goldstab Organics Pvt Ltd
• HAGIHARA INDUSTRIES, INC / VICTORY BLESSINGS INDONESIA, PT
• HCI CONVERTING EQUIPMENT CO., LTD.
• JIANGYIN HUITONG PACKING MACHINE CO., LTD
• LOHIA CORP LIMITED
• LONG NEW INDUSTRIAL CO., LTD.
• PT. SSI Prima Mas
• REACH ELECTRICAL (S) PTE LTD
• SANKO PLASTICS (MALAYSIA) Sdn. Bhd. / VICTORY BLESSINGS INDONESIA, PT
• SHANDONG TONGJIA MACHINERY CO., LTD
• SINOMECH CORPORATION
• SMARTVISION STROBOSCOPE / VICTORY BLESSINGS INDONESIA, PT
• SWEDCUT (MUNKFORS SWEDEV ASIA LTD.) / VICTORY BLESSINGS INDONESIA, PT
• TAIYO ELECTRIC INDUSTRY CO., LTD. / VICTORY BLESSINGS INDONESIA, PT
• VICTORY BLESSINGS INDONESIA, PT / HAGIHARA INDUSTRIES INC. / FUJI KIKAI KOGYO CO., LTD / TAIYO ELECTRIC INDUSTRY CO., LTD / SMARTVISION STROBOSCOPE / SWEDCUT (MUNKFORS SWEDEV ASIA LTD.) / SANKO PLASTICS (MALAYSIA) SDN. BHD.
• WEBCONTROL MACHINERY CORP.
• WORLDLY INDUSTRIAL CO LTD
• YAO HSIN Plastic Machinery Co., Ltd

For the latest exhibitors’ information, please check the official website at http://www.plasticsandrubberindonesia.com
THINK LABORATORY

New era of new gravure Proposal.
Fully Automated Gravure Cylinder Making System

New FX 3

400 m/min high speed supported
25% ink reduction
improve on crawling
improve on highlights

For free cylinder making test, please contact the following contacts

FXIJ printer. New in world. Coming soon

THINK LABORATORY Co., Ltd.
Head office 1201-11 Takada, Kashiwa, Chiba 277-8525, Japan
Tel +81-47143-6760 Fax +81-47146-0566

COLORCON

COLORCON, Taiyo’s Automatic Register Control Equipment for Gravure Printing

The Latest
Model SKT®-001
Newly developed for easier operation and suitable AC servo motor control

Model DT-3000
Suitable for sectional drive-type presses

Model SK-2090
User friendly operations

Inspection System and Web Hi-Vision System

Inspection System OFT™ Series
Inspects printing defects while high speed printing, by means of a pattern matching method

Web Hi-Vision System
Still image printing monitor

TAIYO ELECTRIC INDUSTRY CO., LTD.
www.taiyo-e.co.jp

Tsukuba Factory : 29, Kasuminosato, Animachi, Inashiki-gun, Ibaraki 300-0315, Japan Tel. +81-29-840-3280 Fax. +81-29-889-2487
Tokyo Office Tel. +81-3-3802-7421 Osaka Office Tel. +81-6-6942-6720

November / December 2017 Convertech International
The Newly Developed
FN425E Flexible Packaging NS Slitter Model

Nishimura Mfg. Co., LTD.
http://www.ns-slitter.co.jp/

1. Introduction

Last year, on the occasion of our 60th year in business, Nishimura Manufacturing Company developed a new model in our general-purpose secondary slitter series for standard flexible films. This new general-purpose flexible packaging material slitter is aimed at supporting the future through a design that balances cost with a full update of our existing model to meet the needs of the current market. Our demonstration of the machine at an exhibition in Japan at the start of 2017 was well received, and led to the highly welcome sale of one of the slitters during the event. Similarly, we will demonstrate one of our new FN425E models at our booth during PLASTICS & RUBBER 2017. By demonstrating an actual machine at the show, our goal is for visitors to experience our spirit of manufacturing, which combines functionality, general applicability, and durability.

2. Technological Development Background

Founded in 1957, Nishimura Manufacturing Company is now approaching its 62nd year in business. Throughout our history, we have supplied equipment to a wide range of industries, and designed slitters that work with a broad variety of materials, including the latest materials of the times and those materials for which demand exists regardless of the era. Some examples include packaging film, optical film, paper, metal foil, lithium ion secondary battery electrodes, separator film, video tape, audio tape, x-ray film, nonwoven fabric, and adhesive tape. Among our slitters, one of our top-selling machine has been the FN Series, a general-purpose secondary slitter model series for standard flexible films, including packaging materials. As of today, we have delivered more than 800 units.

The specifications of this series have been kept simple for good operability and a reasonable price that falls within the range of general-purpose machines. More importantly, although true for all of our slitters, we have given our FN Series models the durability to be continually used for 20 and 30 years. The design, which considers both the rationality and the reliability of the equipment, represents our spirit of manufacturing.

On the other hand, we are faced with one problem particularly because these models are well-used for years on end. Specifically, the problem of “updating our general-purpose models.” Currently, the most basic of our FN Series models operates at a maximum speed of 250 m/min. Many of the model’s operators are long-time users, and in many cases will install a new machine with the same specifications as their existing machine. As such, until now the FN Series machines have changed very little in terms of appearance, ease of use, and basic machine specifications. In contrast, the primary demands common to all slitters in the standard flexible film market in Japan today are a speed exceeding 350 m/min. and a cost range on the level of general-purpose machines. Our models that meet these specifications are upgraded versions of our standard specification models. As such, a divide has occurred between our general-purpose models and the typical needs of today’s film market (primarily in Japan).

Although the need for slitters on the global market for standard flexible films, including packaging film, is extremely large, there are many competing manufacturers and price competition is severe. In this light, we have recently placed more
importance on high-value equipment as films have become more advanced, so we cannot deny that our name recognition on the standard flexible film market has fallen. Therefore, we began developing a new general-purpose slitter for standard flexible films and plan to demonstrate these machines in order to strengthen our presence on this market as well as increase the name recognition of the "NISHIMURA" brand on the global market (Photo1).

3. Requirements for Slitters on the Flexible Packaging Market

Given the nature of standard flexible film applications, high-volume production must be low-cost and efficient. As such, slitters are required to operate at high speed, be easy to use, and be available in the cost range of general-purpose equipment. As mentioned in the previous section, the slitters that are widely sold throughout the world today operate at speeds exceeding 350 m/min. and come equipped with a mechanism that eases the work of unloading the material after it is rewound into a roll.

During the development of the FN425E Slitter, our sales department took the lead in designing the machine to ensure the machine was equipped with only the minimum required specifications and to ensure the cost was kept low. We also placed particular attention on the ease of use.

For example, the touch screen and operations panel button displays are very different from those of our conventional general-purpose model. Specifically, we adopted graphics and charts for the touch screen display, and made modifications so that the layout provides organized information that is easy to understand at a glance (Photo2). Moreover, we used icons for the operational button displays where possible, and replaced the conventional word-type indicators with graphics and symbols that represent the specific operation (Photo3). These improvements were not made simply to improve visibility, but were made so that the operational procedures could be under-
stood as images in recognition of today’s globalizing world. In fact, slitter manufacturers in the US and Europe, regions populated by individuals with a variety of linguistic backgrounds, primarily use icon displays for most equipment operations today.

In terms of machine specifications, we increased the maximum speed from the original 250 m/min. to 400 m/min., and the machine now comes equipped standard with coreless edge trim rewinding units and a cantilevered rewinding shaft.

The edge trim rewinding units are designed to solve problems found during higher speed operations (Photo4). When operating flexible packaging slitters at high speed, the trimmed edges can break or become entangled, which often causes problems that halt production. In response, our edge trim rewinders have a structure that guides the trimmed edges immediately below either side of the rewinding shaft and rewinds these using motor torque control. Moreover, locating the trim rewinding units directly below the rewinding shaft allows product rewinding and edge trim rewinding to be observed at the same time from the same position. In addition, we equipped the individual rewinding nip rollers before rewinding with a contact pressure adjustment mechanism that stabilizes high-speed rewinding operations (Photo5) (Figure1).

The machine is equipped with a cantilevered rewinding shaft mechanism designed to improve operability in terms of the work required to remove the roll of material after rewinding. One end of the rewinding shaft set in the rewinding unit can be unlocked and removed from the unit, while the opposite
end acts as the fulcrum around which the rewinding shaft can be swiveled horizontally. In this way, the rewound material can be removed and the core can be replaced while the rewinding shaft is still attached to the rewinding unit, which shortens work times.

We also improved the rewinding shaft. In this case, the rewinding shaft is composed of a main shaft and individual friction core holders (referred to as PX Holders) (Photo6). The PX Holders also have the unique ability of being able to transmit torque; engaging the pistons laterally prevents the holders from being affected by torque transmission variation during rewinding regardless of the weight of the rewound product. The torque transmission unit is also specially machined to reduce torque variation, which improves stability. The holder surfac-

<table>
<thead>
<tr>
<th>Specifications (options)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine Speed</td>
<td>400 m/min</td>
</tr>
<tr>
<td>Min. Slit Width</td>
<td>80 mm (40 mm)</td>
</tr>
<tr>
<td>Material Width</td>
<td>500 - 1200 mm</td>
</tr>
<tr>
<td>Rewinding Diameter</td>
<td>ø500 mm</td>
</tr>
<tr>
<td>Unwinding Diameter</td>
<td>ø800 mm</td>
</tr>
<tr>
<td>Rewinding Core Inside Diameter</td>
<td>ø3&quot; (ø6&quot;)</td>
</tr>
<tr>
<td>Unwinding Core Inside Diameter</td>
<td></td>
</tr>
<tr>
<td>Cutting Method</td>
<td>Razor in Air (wrap shear)</td>
</tr>
<tr>
<td></td>
<td>(wrap razor)</td>
</tr>
<tr>
<td></td>
<td>Edge Trim Rewinding Unit</td>
</tr>
<tr>
<td></td>
<td>Rewound Roll ø400 mm</td>
</tr>
<tr>
<td></td>
<td>Record Roll</td>
</tr>
<tr>
<td></td>
<td>Traverse Roll</td>
</tr>
</tbody>
</table>

Figure 1 Roll Positions and Major Specifications

Photo 6 Rewinding Shaft (when pistons are engaged)
es are embedded with ball bearings, which allow even heavy product rolls to be easily unloaded with a simple push of the hand (“Floating Support”).

We also modified the design of the new slitter in terms of the appearance. For example, we adopted a two-tone color and made part of the cover translucent, giving the new machine a more sophisticated appearance than our conventional design (Photo7, 8). The neatly positioned internal wiring and piping can also be seen through the plastic cover. Although these areas typically remain hidden, we have given care to these areas over the years.

As mentioned thus far, the design concept for our newly developed FN425E slitter maintains the functionality and durability of our conventional machines while upgrading the specifications to meet the needs of today’s market and reducing the cost to a level equal to similar machines generally sold in Japan.

4. Future Outlook

As described thus far, we newly developed the general-purpose FN425E slitter model for the standard flexible film markets, including packaging film. Over the past 20 years, we have mainly supplied slitters to markets that handle special materials, including lithium ion secondary battery materials (film, nonferrous metal foils) and advanced films (optical-use, electronic-use), which has increased the ratio of our international sales to 70% and brought the “NISHIMURA” name recognition throughout the industry. Even so, there is no guarantee that today’s market environment will continue into the future. Existing structures change with the continuous development of new materials, while new companies, teams, and research centers come into being. As such, for us to continue the “NISHIMURA” name indefinitely, we must steadily work to increase our name recognition from where we stand now. For this reason, we hope to improve the standing of the “NISHIMURA” name globally by aggressively promoting ourselves through this new machine, which is designed to be used widely in the standard flexible film market—a major market for slitters—and by having users experience our slitters through demonstrations of an actual machine.
Facing the future with you
We are NISHIMURA

40 Engineers
60 Years of Experience
No. 1 in Japan

Facing the future with you
We are NISHIMURA

NISHIMURA MFG. CO., LTD.
Head Office and Main Factory
21, Minaminawashiro-Cho, Kamitoba, Minami-Ku, Kyoto 601-8113, Japan
TEL +81-75-681-0351    FAX +81-75-681-4610
www.ns-slitter.co.jp

60 Years in Business
Japan’s First Slitter Manufacturer

15–18 November 2017, The Jakarta International Expo
Booth No. D-820
VSP Meat Packaging, Light Blocking Glass Bottles, Positive List Regulation, and Bottle-to-bottle Chemical Recycling

Japan Food Packaging Association
shokuhou.jp

The concept of reducing food loss continues to spread from Europe to countries around the world. One recent approach to reducing food loss that is increasingly being adopted is to utilize shelf-life extending packaging. This past summer, the Japan Food Packaging Association (JFPA) held its regular research conference, during which four talks were held covering the initiatives taken by film and food producers to develop packaging that significantly reduces the deterioration of food freshness and nutrients. Other talks cover changes in packaging related regulations and recycling methods of turning old plastic (PE) bottles into new bottles.

Vacuum Skin Packaging

Hidetaka Hattori, Marketing Director at DUPONT-MITSUI POLYCHEMICALS CO., LTD., spoke on the use of vacuum skin packaging (VSP) for fresh meat. VSP is a vacuum packaging method that is typically used for irregularly shaped, bulky foods. When used with meat, for example, VSP reduces dripping, maintains flavor, and extends the shelf life six times compared to standard trays and two to three times compared with modified atmosphere packaging (MAP). VSP also eliminates the need for the absorbent sheets used with standard tray packaging to soak up drippings, which allows VSP to reduce packaging weights by 50% compared with tray packaging. In this way, VSP contributes to both lower costs and resource savings.

Although VSP is rarely used with meat in Japan, it is widely used for meat in the EU. According to a survey by Rabobank, a Dutch financial institution, 40–50% of fresh meat in England and Germany is packaged with VSP, and 10–30% of fresh meat in France, Poland, and Spain is packaged with VSP. Meat tends to be sold in large pieces in Europe, which is why VSP is so widely used here. In all cases, the survey shows that VSP’s use has increased over the past few years, whereas standard tray packaging has decreased. In addition, VSP is also increasingly used in Australia, Hong Kong, and Korea. In particular, Europe has a high awareness of environmental problems, and the European Commission has raised a target of reducing food loss in the EU by 30% by 2025 compared with 2015. In this way, the regulatory environment has also smoothed the adoption of VSP.

In Japan, however, thinly sliced meats are more common. As such, standard trays, which are more suited to this type of meat, have found strong support here. Similarly, this situation means that distributors and consumers are unfamiliar with VSP in Japan. Mr. Hattori says that for this reason it is first important for Japan to learn about the benefits of VSP before installing the packaging equipment, films, and other infrastructure necessary for the approach.

As part of a move to increase the use of VSP, DUPONT-MITSUI POLYCHEMICALS has purchased a small-scale VSP packaging machine, which they loan out along with the company’s ionomer resin film. The company is also testing how bacteria grow in VSP, MAP, and trays as part of their policy to drive the spread of VSP.

Blocking 99% of Light With Glass Bottles

Recent consumer trends have shown increasing interest in healthy plant oils, such
In general, this makes Indian drug prices extremely low, and even neighboring countries such as Pakistan, Sri Lanka, and Bangladesh have higher drug prices despite their smaller economies.

Another unique aspect of the Indian drug industry is the high share accounted for by generic drugs. Until the patent system was reformed in 2005, India only allowed process patents (patents related to synthesis methods for active ingredients), and did not allow substance patents for the active ingredients and other substances. As such, prior to 2005 Indian drug producers were legally allowed to copy and sell new drugs.

India also employs a mechanism whereby drugs used by regional public medical institutes and other hospitals are procured and stored by the state governments in bulk, in part because of domestic logistics conditions. In this way, each region has a facility (warehouse) for storing these drugs, which are then transported to each medical institution as necessary. This approach leads to problems whereby the government secures a certain volume of drugs for all hospitals and medical institutions even though these facilities may not require those specific drugs.

India’s drug industry has evolved into a massive market, but the expected 18% growth rate through 2020 has recently slowed to some extent. One of the reasons for this slowdown is India’s upper price limit for essential drugs (drugs considered to be the minimum required drugs in developing countries). In general, this makes Indian drug prices extremely low, and even neighboring countries such as Pakistan, Sri Lanka, and Bangladesh have higher drug prices despite their smaller economies.

Another unique aspect of the Indian drug industry is the high share accounted for by generic drugs. Until the patent system was reformed in 2005, India only allowed process patents (patents related to synthesis methods for active ingredients), and did not allow substance patents for the active ingredients and other substances. As such, prior to 2005 Indian drug producers were legally allowed to copy and sell new drugs.

India also employs a mechanism whereby drugs used by regional public medical institutes and other hospitals are procured and stored by the state governments in bulk, in part because of domestic logistics conditions. In this way, each region has a facility (warehouse) for storing these drugs, which are then transported to each medical institution as necessary. This approach leads to problems whereby the government secures a certain volume of drugs for all hospitals and medical institutions even though these facilities may not require those specific drugs.

India primarily uses glass and plastic drug bottles and pack-
aging cost in any way.

To authenticate a product, the user first starts the application on their smartphone and selects the product from the application list that they want to authenticate. Next, the user photographs the designated area. If the camera recognizes the hidden code, the user knows the product is authentic because the code cannot be scanned and reproduced. Moreover, the application also sends information on the person investigating the product, the product, the location, and other such data to a database in Switzerland. In this way, the application does more than just allow the user to instantly verify the authenticity of the product, at the same time it also identifies the location of the pharmacy or store selling the counterfeit product so that this information can be provided to the police. The application does not need to be online to authenticate a product.

Another unique U-NICA technology is “intraGRAN,” which produces an anti-counterfeiting hologram on plastic molded products during injection molding.

To form the hologram in the cap of a plastic bottle, for example, the hologram die-mold is first laser engraved at U-NICA’s plant in Switzerland and shipped to the injection molding company that will produce the actual cap. Once the hologram is formed in the cap, any product with this cap can be easily recognized as authentic, which helps to reduce counterfeiting.

Mr. Roelandts predicts that for at least the next five to six years a counterfeiting technology will not emerge that can copy intraGRAN. Part of the reason for this technology is so difficult to mimic is that developing this kind of technology requires a lot of money and the right facilities.
In Japan, food and beverage industry labor shortages have become a serious problem. According to the Ministry of Health, Labour and Welfare, in June 2017 the effective jobs-to-applicants ratio reached 1.51, making for three straight months where jobs outnumbered applicants at the highest level since Japan’s bubble economy in the late 1980s and early 1990s. In fact, the labor shortage in Japan has even begun to lead some food and beverage establishments to close their doors. In this light, Kewpie Corporation’s (Commercial) Food Service Division has been able to steadily increase revenues by developing products that allow establishments faced with labor shortages to easily provide tasty food even with fewer employees. During the company’s 2017 fall/winter strategy proposal meeting, held this past July, the company introduced a variety of products that allow foods to still feel hand-made while reducing the hassle of food preparation.

Labor Shortage Reinvigorates Small Bags

Seizo Shimizu, executive officer and chief director of the Food Service Division, explains that during the first half of 2017 the Food Service Division saw revenues for salad dressings and other condiments on a par with the previous year, but saw a drop in revenue of ¥2 billion for processed foods, salads, and prepared foods as a result of damage to the potato, sweet corn, yam, and other crops during a major typhoon in 2016. Making up for these losses were the strong sales of egg products, which exceeded revenues from the previous year. Although overall sales to the food and beverage industry (bakeries, restaurants, cafes, etc.) exceeded the previous year, sales to other areas, such as school lunches, prepared foods, and convenience stores, were lower.

One reason for the sluggish sales of small bags of dressing commonly seen in convenience stores in Japan was the increasing shift starting a few years ago in sales by convenience stores to pre-packaged salads that include cups of dressing to give them a more hand-made feel. More recently, however, labor shortages in the convenience store industry have led many companies to feel the work of measuring these salad dressings and filling the cups has become too difficult. This change has thusly led to a return to small bags. Moreover, Mr. Shimizu says that the company has been strengthening the base dressings used in these small salad dressing cups, which has started to lead to a recovery in revenue from convenience stores.

Hotels and Restaurants

Of their different condiments, sales of one liter plastic bottles of Grated Carrot Dressing (a new product) have been particularly healthy, with revenue over the three months since its release recording the highest value for one of their salad dressings in the past 10 years. Mr. Shimizu says that with its chunks of carrot and vibrant color, Kewpie selected the salad dressing for the power salads the company has been promoting to restaurants since last fall. Likewise, this dressing has increasingly been used in place of hand-made salad dressings at hotels and restaurants. In addition, Kewpie’s ten or so chunky sauces that feel hand-made with chunks of ingredients have sold well, leading Mr. Shimizu to say that this “hand-made feel” is a key word in making up for labor shortages.

The impact of the labor shortages has also reached the wholesale food industry. According to Mr. Shimizu, labor shortages in the wholesale industry have led to a demand for shorter delivery times, and the wholesalers themselves now have less time than in the past to listen carefully to product
With nearly 80 years of history, IWATSU ELECTRIC CO., LTD. (IWATSU) manufactures business telephone systems and other telecommunications equipment, as well as provides the call center systems essential to mail-order businesses and after-service. IWATSU also has a long history of producing printing related equipment, and in 1961 was the fourth company in the world to develop a dry-type electrostatic platemaker. Later, IWATSU developed an analog platemaker in 1969, a digital platemaker in 1997, and an inkjet platesetter in 2006 in its efforts to support the base of the light offset printing market. As part of the Iwatsu Group, Iwatsu Manufacturing Co., Ltd. (formerly, Denshikako Co., Ltd.) produces “PinkMaster,” a paper plate material for offset printing. More recently, in June 2012 IWATSU began selling the EM-250W Industrial Digital Label Printing System as their next step into the label printing machine market. With its ability to print on films, IWATSU has received many inquiries into using the digital printer for short-run flexible package applications.

Strong Demand for Transparent Film Printing

Until now, IWATSU’s main business in the printing field was the supply of platemakers and PinkMaster paper plates to the light offset printing market. Following its peak in 1997, however, the offset printing market has undergone a gradual decline, and light offset printing, which is regarded for its simplicity and low cost, has followed a similar path. Takehiro Okawa, head of the No. 1 Sales Department, says that IWATSU realized it would be impossible to expand their business by relying on platemakers alone, so in 2007 they began researching other options with a focus on the label printing market. In 2011, IWATSU began selling its four-color (CMYK) EM-250A inkjet printer, the predecessor of the EM-250W, but as Mr. Okawa explains, labels are printed on both paper and transparent film substrates. Given the company’s foresight regarding the strong demand to print white ink on transparent film labels, they worked to develop a white ink printing unit. In 2012, they developed and began to sell the EM-250W, a five-color version of the EM-250A that...
files can then be saved under a new name so that the machine can be easily set to print repeat orders. In addition, the machine enables seamless printing and timed printing of text on rolls from which the matrix has been removed.

**EM-250H Water-based Inkjet Printer**

Although the EM-250W was developed as a label printer, it has been used in many cases to print short-run flexible packaging jobs. UV ink, however, presents several problems in the flexible packaging field, such as residual monomer safety and odor. Because these problems limit the range of applications for which machines like the EM-250W can be used, there is a demand to switch to water-based ink. In this light, when IWATSU exhibited its EM-250H, a four-color water-based inkjet printer, at Label Forum Japan in Tokyo this past July, they received significant interest.

The basic printing performance, including resolution, is similar to that of the EM-250W. Instead of UV ink, however, the EM-250H uses Kao Corporation water-based pigment ink and a thermal drying system. The machine has a maximum printing speed of 25 m/min, but at present it is only capable of printing four-color CMYK. As such, the EM-250H is primarily targeted at paper substrates. Given their outlook for demand to print water-based ink on film substrates, however, IWATSU is currently verifying its ability to print white ink. IWATSU intends to make further announcements as preparations are completed.

---

**Contact Type Desk-top Film-Sheet Thickness Measuring System**

<table>
<thead>
<tr>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOF-4R</strong></td>
</tr>
<tr>
<td>Measurement length</td>
</tr>
<tr>
<td>Power supply</td>
</tr>
<tr>
<td>Temperature/Humidity</td>
</tr>
<tr>
<td><strong>TOF-5R</strong></td>
</tr>
<tr>
<td>Resolution</td>
</tr>
<tr>
<td>Accuracy at 20°C</td>
</tr>
<tr>
<td>Measuring force</td>
</tr>
<tr>
<td>Measurement pitch</td>
</tr>
<tr>
<td>Measurement range</td>
</tr>
</tbody>
</table>

| **TOF-6R**    |
| Resolution | 0.5 µm, 1.0 µm, 0.1 µm, 0.01 µm |
| Accuracy at 20°C | ±0.8±0.1 µm, ±0.2 µm |
| Measuring force | 0.3±0.01 N, 0.19 N (0.12%) |
| Measurement pitch | 1 mm |
| Measurement range | 0.00-0.2 mm, 5-100 µm |

---

**Exhibit**

**neo functional material 2018**

Date: February 14-16, 2018  Venue: Tokyo Big Sight East Hall
Our booth number : 3K-28
AR, VR, and Personalized Labels
Stand to Stimulate the Global Label Industry

LABEL FORUM JAPAN 2017

This past July, Label Forum Japan 2017, organized by the Label Shimbun Co., hosted 24 conference sessions covering the factors that are expected to drive growth in the label industry through 2020. Alongside the conferences, the Forum also hosted a table-top exhibition to demonstrate the latest products and equipment in the label industry today. Some of the topics covered during the conference sessions included market trends in Japan, special adhesives to improve label application, the impact of AR and VR on labels, special demand resulting from changes to labeling laws in Japan, and personalized and customized labeling marketing campaigns based on digital printing.

Japan’s Market Trends

According to Natsuki Uchida, Executive Manager Editorial Division, Label Shimbun, the company’s own surveys have shown that Japan’s printing industry as a whole posted revenues of ¥5.46 trillion in 2016, a contraction of 2.7% from 2012 to 2016. Despite this decline, label industry revenue continued to increase slightly by 2% over the same five year period. In fact, by 2016 label revenue had reached ¥624.7 billion, or 11.4% of the entire printing industry.

Although more than half of label printers during the first half of FY 2016 posted increases in both revenue and profit, looking more closely at annual sales by company scale showed that large companies with sales of ¥3 billion or more saw larger increases in revenue and profit, whereas many smaller companies with sales of less than ¥100 million actually saw decreases in revenue and profit.

In 2016, adhesive labels accounted for 82% of all label deliveries and saw the highest growth rate (3.2%) of all label categories, thus driving the industry’s 2% growth from 2012 to 2016. In fact, adhesive labels on their own now account for roughly 10% of the entire printing market. Roughly half of adhesive labels already include variable information, and there is an outlook for further growth in demand for on-demand label printing. Similarly, label printers are increasingly receiving jobs directly from brand owners, with data from 2015 showing a 4% increase in the number of jobs that came directly from brand owners (45% in 2015 as compared to 41% in 2014). Meanwhile, jobs received through trading companies and agencies fell to 27%, jobs from printers outside the label industry fell to 18%, and jobs from other printers in the label industry fell to 10% in 2015.

Moreover, brand owners are increasingly interested in high value adhesive labels printed with photographs and gradations, which has driven an increase in the number of colors. Currently, 26% of jobs, the highest fraction, are four-color jobs, while 23% and 22%, respectively, are two-color and three color jobs. There has also been a shift to shorter runs, where 85% of jobs were runs of less than 10,000 units. Although the greatest number of jobs were runs of 3–5,000 units, very short
The Past and Future of
One of Japan’s Major Converting Equipment Manufacturers:
Water-based Printing and Customer-oriented Design

Under the design philosophy of “deeply understanding the customer’s needs,” ORIENT SOGYO CO., LTD. has solidified its footing as a gravure printing machine manufacturer over the past four and a half decades. Ahead of its 46th anniversary in business this December, the company underwent a change of management in June, whereby Hitoshi Harada, the founder of ORIENT SOGYO, passed the reigns of management to Hidenori Harada. The first step in this process actually dates back to December 2015, when ORIENT SOGYO constructed a new main plant to centralize their previously distributed, poor efficiency plant operations. With Hidenori Harada’s international experience, this change in management also stands to further reinforce the company’s position in Southeast Asia, which, given increasing interest in environmental issues in the region, should be increasingly accepting of ORIENT SOGYO’s water-based gravure printing machines and line-type water-based flexo printing machines for flexible packaging. Along with the potential demand for these machines, of which ORIENT SOGYO is the only manufacturer in the world, the company also foresees potential demand for its narrow width dry laminators and nonsolvent laminators for use with digital printing machines.

46 Years in Business
As the global flexible packaging industry undergoes generational change, looking back over the history of ORIENT SOGYO’s 78 year old chairman, Hitoshi Harada, on the eve of the company’s 46th year in business will provide an interesting look at where ORIENT SOGYO came from and where it is headed in the future.

Hitoshi Harada was born in 1939 in Shintoku-cho, Hokkaido, and moved to Tokyo in 1950. After graduating from the Faculty of Law at Hosei University, he entered Nakajima Seiki, one of the biggest gravure printing machine manufacturers in Japan at the time, as part of the sales force. Nakajima Seiki also built packaging equipment for a period, at which time Hitoshi Harada was mainly involved in packaging equipment sales to paper making companies. After returning to gravure printing equipment sales, in 1968 he successfully supported FUJI TOKUSHU SHIGYO Co., Ltd. in their building of a new headquarters and plant in Nagoya, Japan. As a result, the 29 year old Hitoshi Harada was transferred to Nakajima Seiki’s Nagoya office and was appointed as its second president. Following Japan’s strong economy in the late 1960s, however, Nakajima Seiki faced several management difficulties, which prevented Hitoshi Harada from returning to Tokyo. When he later consulted with Kozo Nakajima, president of Nakajima Seiki, about starting his own business in Nagoya, Mr. Nakajima
Paper Clips made of paper, not to be confused with metal paper clips, come in a wide variety of shapes and sizes for use as bookmarks, day planner page labels, and memos. SUGAI WORLD, Inc., a Tokyo-based company that plans, designs, and produces stationery items and lifestyle products, exhibited its lineup of “Clip family” and “Monster Clips” Paper Clips at the 28th International Stationery & Office Products Fair Tokyo (ISOT). In addition to the obvious use of these types of clips to hold documents together and as bookmarks for day planners, SUGAI WORLD has taken advantage of the inherent weakness of paper to water in order to design a unique clip. In this case, the clip is designed as a little animal or monster with individual body parts that can be bent into different shapes or made into a hook shape when wet with water. Once bent, the clips can be hung on a pen holder, for example, to hold rubber bands or keys. In fact, their use is only limited by the imagination of the user.

Monster Clips, which are designed as cute little monsters, are made of hard, tough vulcanized fiber paper. Vulcanized fiber is made from wood pulp or cotton pulp that has been immersed in a zinc chloride solution. The zinc chloride impregnated fiber is then stacked to the desired thickness, after which the zinc chloride is removed and the fibers dried into a hard, special paper. During impregnation, the zinc chloride causes the pulp fibers to swell and become strongly bound together, which is what makes the paper so dense and stiff. In addition to its excellent rigidity, compression resistance, and wear resistance, the paper also has heat insulation and electrical insulation properties, so it has also been used to make electrical insulation, martial arts equipment, storage trunks, grinding disks, and fiber crafts. This type of paper is environmentally friendly and biodegradable, but it can also be discarded as burnable trash.

Unlike other clips made of paper, Monster Clips can be bent into different poses. Immersing the 1 mm thick Monster Clips in water for five minutes softens the paper, which allows the different body parts to be bent into the desired shape. Once the paper dries, it hardens into the desired pose. As such, the monsters can be made to sit up, stand, and played with like toys because of their heartwarming appearance. According to Yu Sugai, president of SUGAI WORLD, Monster Clips were born from the concept of utilizing the weakness of paper to water in order to create something that can be freely shaped...
It took SUGAI WORLD one year to develop Paper Clips in cooperation with Tokyo-Shiki Co., Ltd., a paper carton and paper goods converter. In July 2015, SUGAI WORLD began marketing the first types of Paper Clips (Clip man, Clip girl, and Clip cat from the Clip family), followed by the release of Clip money, Clip bear, and a black version of Clip cat the following October. In July 2017, the company released Monster Clips. Clip family and Monster Clips are available in variety stores, stationery stores, and bookstores throughout Japan, as well as locations in the US, Canada, and Australia. The clips are also available through online shops.

In this way, Monster Clips can be used in any way that can be imagined. In addition to document clips and bookmarks for books and day planners, they can be formed into hooks to be hung on pen holders and racks as a way of holding rubber bands and keys, for example.

Immersing the shaped Monster Clips in water again allows their pose to be changed repeatedly. Even after reshaping a Monster Clip ten times to see what happened, the author of this article did not see any obvious deterioration.

It took SUGAI WORLD one year to develop Paper Clips in cooperation with Tokyo-Shiki Co., Ltd., a paper carton and paper goods converter. In July 2015, SUGAI WORLD began marketing the first types of Paper Clips (Clip man, Clip girl, and Clip cat from the Clip family), followed by the release of Clip money, Clip bear, and a black version of Clip cat the following October. In July 2017, the company released Monster Clips. Clip family and Monster Clips are available in variety stores, stationery stores, and bookstores throughout Japan, as well as locations in the US, Canada, and Australia. The clips are also available through online shops.

Monster Clips Can Even Be Bent to Hold Rubber Bands and Keys

In Addition to Bookmarks, Monster Clips Can Also Be Used as Label Holders

JYOHOKU’s Wide Experience, And High Precision Processing Technology

T-Die for Extrusion Coating

JYOHOKU’s actual achievement and original technology have been highly acclaimed at home and overseas.
New Wearable Memo Decals and Bands Are a Must for Memo-takers in All Types of Workplaces

There is some good news for those who write memos directly on their hands or arms during work. A new wearable memo that can be stuck to the user’s arm like a decal or wrapped around the user’s wrist like a wristband was released to the market this fall. As a developer of functional films and a lamination/die-cutting converter, Cosmotec Co., Ltd. used its areas of expertise to develop both a sticker version and band version of this new product, which they recently released under the name “wemo.” Specifically, the company applied its patented pressure-sensitive skin decal technology to develop a sticker version that can be easily applied directly to the skin like a decal and written on like a memo. In other words, the decal can be applied directly to the user’s skin without the use of water and written on by the user as if they were writing on their own skin. Because the wemo concept considers different occupations in various environments, including nurses in the medical field, the company also offers versions that are printed with graduations and versions that can be written on and removed again to be stuck in a notebook. Naturally, wemo can also be used in non-work related situations. During the 28th International Stationery & Office Products Fair Tokyo (ISOT), held this past July, Cosmotec attracted the attention of many visitors with their unveiling of this new functional stationery product.

Cosmotec Co., Ltd.
www.cosmotec.ne.jp

These Silicone Bands Are Wrapped Around the Wrist Like a Slap Bracelet.
The Three Bands to the Left Are Stickable Types. Any Information Written Directly Onto the Band With This Type Cannot Be Erased. The Memo Decal Can Be Removed From the Band and Stuck to a Daily Report, Notebook, Wall, or Desk, for Example. Meanwhile, the Four Images on the Right Are Erasable Types. Anything Directly Written on This Type Can Be Erased. The Erasable Type Also Comes Printed in Graduations and Ruled Lines
New Packaging Materials Eliminate Odors and Condensation, Reduce CO2 Emissions, and Prevent Counterfeiting

26th Annual Research Presentation Conference
The Society of Packaging Science & Technology, Japan

Packaging naturally serves to protect contents from deterioration during transport and storage, but it also provides functions that support sales promotions and improve convenience. Along with the more recent changes in consumer values and lifestyles, there has been an increasing demand for more advanced, rationalized packaging, as well as a greater need for packaging to tackle global problems such as food loss and global warming. This past summer, The Society of Packaging Science & Technology, Japan (SPSTJ), 26th Annual Research Presentation Conference hosted 32 presentations on solving issues with “transport packaging,” “functions, films, and barrier materials,” “ecological materials and technologies,” and “processes, design, and safety.” Of these, eight presentations focusing on eliminating condensation, reducing odors from the packaging itself, helping to reduce CO2 emissions, and preventing counterfeits were of particular interest.

Condensation and Malodor Countermeasures

Temperature-responsive Gas Barrier

Products shipped by sea are subject to a range of weather conditions, whereby temperature differences can cause condensation in the packaging that damages the product. This is a particularly problematic issue for electronics and foods.

In response, the National Institute of Technology, Yuge College, and Kobe University have been developing a film with a gas barrier that changes in response to temperature. Until recently, the research group has worked to develop nano-composite barrier films that combine inorganic clays and temperature-responsive poly(N-isopropylacrylamide) polymer (PNIPA). In this way, the team focused on the ability of this type of barrier film to respond to the surrounding temperature and expel moisture from the package as a way of countering damage from condensation.

During the presentation, Shingo Ikeda of the National Institute of Technology, Yuge College, introduced their temperature-responsive gas barrier film made by combining temperature responsive PNIPA and layered double hydroxide (LDH). LDH is a double hydroxide gas barrier material consisting of a trivalent metal ion in solid solution with a divalent metal hydroxide. Because the hydroxide base layers have a positive charge, the resulting film takes on a layered structure with a negatively charged anion sandwiched in between the hydroxide layers. The clay mineral used to form the PNIPA nano-composite is montmorillonite, which has a monocystal thickness of 1 nm. In other words, the 0.5 nm thick LDH layer is half as thick as the clay. As such, the team felt it could produce a thinner, more flexible film.

Standard LDH particles are 300–500 nm in diameter, but Mr. Ikeda says that by producing a composite gas barrier film from larger particle size LDH and heat-sensitive polymers, they were able to extend the air transmission pathway. In hopes of achieving an even higher gas barrier property, the team synthesized LDH of 3–4 μm in diameter, or 20 times the diameter of standard LDH particles. This structure allows the resulting LDH/PNIPA nano-composite film to contract and attain a high-
Secondary Materials
Play an All-important Role in Packaging and Improving Convenience

The Society of Packaging Science & Technology, Japan, 73rd Symposium

www.spstj.jp

Secondary materials play a supporting role in containers and packaging, but also play an important role in turning goods into products. Under the theme of the role and function of secondary materials in packaging, The Society of Packaging Science & Technology, Japan, (SPSTJ) held its 73rd SPSTJ Symposium this past summer. During the event, experts discussed both conventionally used secondary materials and the latest functional secondary materials.

Semi-permanent Reactive Anti-static Additives

Static electricity must be intentionally removed because of its many negative effects, including attracting dust, damaging fiber products and hair, damaging electrical equipment, and causing fires and explosions. In this light, Toshiki Sowa of the Kao Corporation Techno-Chemical Research Center presented on an anti-static additive that helps improve the appearance of packages and prevent dust adhesion by inhibiting electrostatic charge buildup in films.

Anti-static additives can be broadly divided into surface coated types and blended types, which both bleed out to the surface in order to realize their effect. Mr. Sowa says that in his estimate blended types account for 95% of anti-static additives. Blended types are advantageous in that they are long-lasting, but they are also problematic in that they take time to start working. They must also be heat-resistant to survive the heated blending process. He adds that an inappropriate additive quantity can result in excessive bleed-out and cause the surface to catch on fire. Additive bleed-out can also have a negative affect on adhesives.

Mr. Sowa explains that unlike these types that rely on bleed out, Kao’s latest approach utilizes an anti-static layer on a base resin, meaning that the additives do not bleed out and the effect is semi-permanent. Moreover, the layer structure is transparent and very hard, so the approach is suited to optical films.

The standard formulation consists of a photo-curing dipentaerythritol hexa-acrylate (DPHA) as the base resin, anti-static additives (1–5 wt%), and photoinitiators (3–5 wt%). This formulation is dissolved in a solvent to produce a liquid coating. After applying the coating (3–8 μm) to the substrate, the film is dried and pressed for one minute at 80–100°C. Finally, the dried film is exposed to UV (0.1–1 second) to form the anti-static layer. The surface and cross-section analysis show that the anti-static additives concentrate on the surface of this film and form conductive pathways. More importantly, Mr. Sowa says that they are able to precisely control the layer separation between the base resin and the anti-static additive layer. At a trace additive weight of 2–3%, the specific surface resistivity is 11–12 logΩ. The transparency remains stable and the additives do not bleed out even after 600 hours under a 60°C environment. In other words, the durability is suitable enough for optical applications.

Low-temperature Coating Reduces Carbonization

Nitta Gelatin Inc., a manufacturer and retailer of sweets, capsules, sausage casings, and collagen peptides made of gelatin, also produces industrial glue and synthetic hot melt adhesives made of industrial gelatin. With a focus
Now in its 70th year of business, Kobayashi Engineering Works, Ltd. began offering test coating services to its users on a new clean coating facility called C³LABO this past May. The C³LABO coater is based on the company’s many years of experience with web handling and high-precision coating technology and was designed to function as the ideal pilot coater. Likewise, the coater is equipped with a sealed changeable cassette coating head to offer customers six different coating options (primarily sealed types) in response to the demand for a wide variety of coating thicknesses and line speeds. In addition, the corona treatment, coating, laminating, and other units are separated by partitions so that each of the machine processes can be configured (temperature, humidity, room pressure) to closely resemble the conditions of the actual production machine. The company has also developed a refined support system for guiding the customer from order to startup, whereby the same staff members in charge of the customer’s testing are also in charge of all steps up through trial operations after installation. C³LABO is primarily targeted at optical film coating and other functional films, such as touch screen components, electrical materials, and medical materials.

Coating, Winding, Cutting
Kobayashi Engineering Works was founded shortly after World War II in 1947, after which its growth through today has centered on the two pillars of manufacturing and selling paper making machines and industrial equipment. With 260 employees, the company also operates a branch office in Yashio City in Saitama, just north of Tokyo, in addition to its headquarter plant. In 1982, Kobayashi Engineering Works took its first step towards international expansion by entering a technology support agreement with Yueli Machinery Co., Ltd. in Taiwan. In 2004, the two companies established Yueli Kobayashi Machinery as a joint venture in Jiangsu, China. Kobayashi Engineering Works has also entered technology collaborations with three companies in the US, works with cooperating distributors in the US and Australia, and has been expanding its global business with a focus on Asia.

In terms of paper making equipment, Kobayashi Engineering Works primarily builds paperboard (white paperboard and corrugated board base paper) making machines. Atsushi Uematsu, director of the Industrial Machinery Sales Department, explains that the company builds all of the machines related to paperboard (paper making units, dryers, rewinders, etc.), making them the only company in Japan that builds purely Japanese-made paper making machines. More recently, they have also received an increasing number of orders for paper making machines to produce special paper made from new materials, such as cellulose nanofiber and carbon nanotubes.

The company’s industrial equipment is based on the three core technologies of “coating,” “winding,” and “cutting,” so their focus is on building coaters, winders, and slitters/cutters. Their coating equipment can be designed with a wide variety of coating methods, including bar coaters, gravure coaters, and slot-die coaters. As such, the applications for which their machines have been employed are also varied, and include optical films, electrical materials, battery materials, office automation equipment, medical supplies, food packaging materials, architectural materials, magnetic recording media, and
Expanding Laser and Engraving Cylinder Making Capacity With a New FX3 and Japan’s First K500G4

With the highest share of the flexible packaging market in Nagano Prefecture, Japan, Sanyo Gravure Co., Ltd. entered its 60th year in business this past March. Over the past few years, Sanyo Gravure has taken steps to further strengthen its production capacity by improving its overall equipment effectiveness (OEE), and installing new equipment. As part of this move, in June the company completed a cylinder making plant equipped with the latest electromechanical engraving and fully-automated laser cylinder making systems at a total investment of approximately ¥800 million. After nearly doubling their gravure cylinder making capacity, the company set out this past fall to acquire FSSC 22000 Food Safety System Certification. By the summer of 2018, the company also plans to retool all of its drive motors and control systems on its existing gravure printing machines and dry laminators. Although the flexible packaging printing industry today is looking more and more to flexo and digital printing, Takaaki Hara, president of Sanyo Gravure, felt that staying with gravure printing and discovering new ways to utilize their printing machines together with their dry lamination, extrusion lamination, and bag making equipment was a better approach for the company.

Roots in Letterpress Printing

After working as a cameraman and journalist for a local newspaper in Nagano Prefecture, Akira Hara (currently senior adviser for Sanyo Gravure) left to establish Sanyo Shaken, a letterpress printing plate making company, in March of 1957 at the age of 22. Initially working with relief, planographic, intaglio, photographic, and polyethylene gravure, it was not until 1967 that the company began making gravure cylinders on their own. Unlike today, these gravure cylinders were made using the conventional gravure engraving process, by which a pigment paper is coated with a gelatin layer and light sensitized by immersing it in a chrome saline solution (potassium dichromate solution). Next, the crossline screen and then the imaging (continuous tone positive) film are exposed onto the pigment paper in a double exposure process, which causes the exposed gelatin sections to undergo a photo-curing reaction. This pigment film is then wrapped around a copper plated steel cylinder and the unexposed soft gelatin sections are dissolved with hot water, leaving the exposed and hardened gelatin relief sections on the copper cylinder. Next, the copper is etched and the cylinder plated in chrome. In this way, the analog nature of the process prevents it from producing the exact same cylinder twice.
Carbon fiber reinforced plastic (CFRP) is increasingly being used in automobiles and aircraft, but in part because of its simpler forming process, carbon fiber reinforced thermoplastic (CFRTP), which uses a thermoplastic matrix instead of a thermosetting plastic matrix, is also expected to see greater use. In this light, KURABO INDUSTRIES LTD. (KURABO) applied its unique fiber opening technology to develop “KURAPOWER SHEET.” These sheets are made by coating the surface of a unidirectional fiber sheet with a thermoplastic powder resin. The resulting sheets are extremely thin with a weight per unit area of 50–200 g/m², which makes them easy to form into components through a simple stacking and heat-press process. Currently, KURABO is proposing KURAPOWER SHEET for a wide range of areas, including multimeterial structures for automobiles and aircraft, as well as applications in the industrial, medical, and sports fields.

KURAPOWER SHEET: A Unidirectional CFRTP Substrate for Forming and Reinforcing Applications

KURABO INDUSTRIES LTD.
www.kurabo.co.jp

KURABO developed KURAPOWER SHEET by applying their technology for forming ultra-thin sheets by opening continuous fibers, one of the strengths of the company. Although these sheets can be made using various fibers, currently KURABO is focused on using carbon fiber unidirectional opened sheets (unidirectional sheets in which the carbon fibers are oriented in the length direction). Carbon fibers are often used for automobile components because of their

Easy to Handle and Form

Yuta Nakame
Supply Surplus of Ethylene and Ethylene Derivatives Expected to Continue Through 2021

"Forecast of Global Supply and Demand Trends for Petrochemical Products (2008–2021)"
The Study Group on Global Supply and Demand Trends for Petrochemical Products

In July, The Study Group on Global Supply and Demand Trends for Petrochemical Products (Ministry of Economy, Trade and Industry (METI), Manufacturing Industries Bureau, Chemicals Division) summarized movements in global supply (production capacity and production volume) and demand through 2021 as a revision to their global supply/demand trend forecast for petrochemical products (ethylene and propylene derivatives). Given the position of ethylene as the most important fundamental chemical product in the petrochemical industry and its use as the raw material for polyethylene, ethylene glycol, vinyl chloride, acetate, styrene, and many other general-purpose petrochemical products used in the converting industry, this article summarizes the supply/demand forecast for ethylene derivatives from this report.

Japanese Ethylene Plants Operational Rates Exceed 90% for 44 Straight Months

According to the Japan Petrochemical Industry Association (JPCA), the real operational rate of ethylene plants as of July 2017 in Japan was 96.1% (two plants at two companies were undergoing regular scheduled maintenance). This makes for 44 continuous months since December 2013 that ethylene plants in Japan have exceeded operational rates of 90%, the minimum operational rate required for profitable line operations. In other words, Japan’s plants have essentially been operating at full capacity for this entire time. Meanwhile, the average operational rate of naphtha crackers (ethylene facilities) in 2016 was 96.2%, making this the first time in the nine years since 2007 that this rate exceeded 95%.

According to METI, despite this high operational rate Japan’s ethylene production volume in 2016 still fell by 600,000 tons to 6.28 million tons (actual 2015 production was 6.88 million tons). The major factor behind these increased operational rates and lower production volumes was the impact of ethylene plant stoppages over the past three years.

Forecast for Ethylene Supply and Demand in Japan

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
<th>Forecast</th>
<th>Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene Derivatives Domestic Demand (A)</td>
<td>474</td>
<td>466</td>
<td>481</td>
</tr>
<tr>
<td>Ethylene Derivatives Supply/Demand Balance (B) - (A)</td>
<td>122</td>
<td>106</td>
<td>106</td>
</tr>
<tr>
<td>Ethylene Derivatives Production (=ethylene monomer domestic demand) (B)</td>
<td>596</td>
<td>572</td>
<td>587</td>
</tr>
<tr>
<td>Ethylene Monomer Supply/Demand Balance (C) - (B)</td>
<td>92</td>
<td>56</td>
<td>57</td>
</tr>
<tr>
<td>Ethylene Production (C)</td>
<td>688</td>
<td>628</td>
<td>644</td>
</tr>
</tbody>
</table>

(Unit: 10,000 tons)
Combining electronic circuits printed from silver paste and other conductive materials (printed electronics) with electronics made using films and other flexible substrates (flexible electronics) offers the potential to create revolutionary next-generation devices. This concept, however, has several problems that must first be resolved. For example, the poor heat resistance, dimensional stability, and other physical properties of the PET films typically used as the substrate restrain the ability to form high-quality circuits and improve productivity. In this light, Techno Alpha Co., Ltd., a technology trading company that supplies European printed electronics technologies to the Japanese Market, has begun promoting “PowerCoat,” a printed electronics paper substrate developed by Arjowiggins Creative Papers (ACP) of France. With its excellent heat resistance, PowerCoat enables high-temperature processes, such as circuit curing up to 220°C, and is less expensive than other heat resistant materials.

**Functionalizing Heat-resistant Paper Surfaces**

As a large-scale paper manufacturer with 250 years of history, ACP has recognized the future growth potential of the printed electronics market. In 2013, the company conceived PowerCoat, which resulted from its work into developing products for the printed electronics market based on its unique position as a paper manufacturer. Since its initial release, PowerCoat has attracted strong attention from the European printed electronics market and has already received five awards related to innovative converting materials and printed electronics materials.

Haru Wakasugi, Marketing Group Manager in charge of printed electronics technology and materials at Techno Alpha, first came across PowerCoat through their European network. Fascinated by its unique characteristics, Mr. Wakasugi began promoting the material this past summer in Japan. He explains that today, developing flexible devices using printed electronics concepts primarily relies on the use of PET film electric circuit substrates, so the poor heat resistance and dimensional stability of PET under high temperature conditions has led to problems. As such, he felt that PowerCoat’s ability to overcome the weaknesses of PET film and ACP’s ability to supply PowerCoat at a relatively low cost, provides PowerCoat with...
One of the initiatives taken by the Japanese government to realize “Society 5.0,” expected to be brought about by the fourth industrial revolution of IoT, artificial intelligence, and robots, is the initiation of unmanned aircraft (drone) freight delivery services in cities by the 2020s (specified in “Future Investment Strategy 2017” as set out by the Cabinet on June 9). With its sights on a future filled with freight delivery drones flying overhead in Japanese cities, on June 15, the New Energy and Industrial Technology Development Organization (NEDO) announced the start of a project to develop an operations management system for the safety of the drones. Working with five private companies and considering the possibility of international standardization, over the next three years NEDO aims to develop a system that will prevent drones from colliding into each other. Existing drones have a high power consumption and can only fly for at most one hour, so the ability of converting technology to extend the usable life of the drone batteries is expected to open a new market for the industry.

Logistics Demonstrations in FY2019

NEC Corporation, NTT DATA Corporation, Hitachi, Ltd., NTT DOCOMO, INC., and Rakuten, Inc. are bringing together their areas of expertise to identify drones in flight, aggregate the positional information, and import weather and geographical information as they develop an operations management system to prevent collisions when multiple drones are operating in the same airspace.

The system envisioned by NEDO is composed of three systems (see figure). The first is an information transmission system that sends out information (maps, weather, electromagnetic conditions, etc.) to drones and control centers. The second is an operations management system for specific applications that acts as a central management system for multiple drones. The third is an operations management control system to control the different operational management systems from the second system and prevent drones carrying out different tasks from colliding into each other and nearby obstacles. NEC, NTT DATA, and Hitachi are in charge of developing the core operations management control system. Specifically, NEC is in charge of developing a flight plan management subsystem, NTT DATA is in charge of developing the airspace information management subsystem, and Hitachi is in charge of developing the post-flight operations status management subsystem.

Shinichi Usui, senior vice president at NTT DATA, explains that the company has already deployed its “airpalette” manned air control system overseas. Using the experience acquired through the development of this manned air control system, the company has been working to develop the airspace information management system. Because information is essential to ensure safety and effectively use the limited airspace when multiple drones are operating in the same area, they are investigating a mechanism that will centrally control the restricted flight area information and the area information for drones with preassigned airspace. They are also considering how to integrate the new system with their manned air control systems. In other words, the company hopes to develop a function that can ensure the safety of both unmanned and manned aircraft at the same time.

The operations management system is being developed by application, where NTT DOCOMO and Rakuten are developing the system for logistics (freight delivery). Specifically, NTT DOCOMO is working to minimize the effect on ground-based signals and is in charge of developing the technology for safe communications for drones in flight. Meanwhile, Rakuten is incorporating the logistics experience it has accumulated through its online sales. Hiroshi Nakamura, executive vice president of NTT DOCOMO, explains that they expect to use cellular communications. In this light, they received a license for an unmanned aircraft cellular development test station from the Ministry of Internal Affairs and Communications. They are also researching the quality of the signals in the air and developing technology to minimize the effect the signals have on the ground. The company is proceeding with demonstrations for freight delivery in areas such as Chiba city, a National Strategic Economic Zone. Likewise, Mr. Nakamura says they hope to contribute all of their capability to the development.
1. Introduction

In the final session of this series, we could like to look at medicine during the time of disasters. In the previous session, (Sept/Oct 2017), we introduced an early diagnosis system that can also be used in developing countries. In this session we would also like to place our focus on the pitfall of modern medical technologies, in short, their over-reliance on infrastructure. In particular, we will look at hemodialysis, a medical treatment for chronic renal failure, as a typical example of this situation.

Today, the number of patients receiving dialysis treatment worldwide is believed to be as high as 2.6 million. Moreover, patients receiving such treatment in developing countries are estimated to account for as much as 25% of the world total, a number which has continued to rise at 12% per year. In regions with poor infrastructure, dialysis treatments are limited by the medical facilities, indicating a risk that the number of patients whom are unable to receive sufficient dialysis treatment will increase. Even in Japan, earthquakes, typhoons, snow accumulation, volcanic eruptions, and other disasters risk causing temporary infrastructure disruptions, which presents the risk that existing dialysis treatments cannot be provided following these events. As such, the Tokyo District Disaster Dialysis Medical Network has created a disaster response manual for dialysis patients that envisions an earthquake occurring directly below the Tokyo Metropolitan area. In the case an actual disaster occurs, the manual states that patients should contact (1) the hospital they typically use, (2) the closest health care center, and (3) the main hospital designated by the region, in that order (Fig. 1). In fact, areas affected by the Great East Japan Earthquake on March 11, 2011 required at least three to four days to recover from the disrupted infrastructure. As such, patients had to endure the short dialysis treatment times of two and a half hours at major hospitals instead of their normal hospitals. Moreover, the accident at the Fukushima Daiichi Nuclear Power Plant forced dialysis patients in Iwaki-shi, Fukushima prefecture, to become dialysis refugees, who had to be evacuated as a group to other areas of Japan, including Tokyo, Chiba, and Niigata. Some of these patients were even reported to have died as a result of acute uremia in the buses on their way to distant hospitals. Similarly, the Kumamoto earthquakes, which occurred between April 14 and 16, 2016, either damaged or partially destroyed 14 of the 94 facilities that were able to provide dialysis treatment in Kumamoto prefecture. In other facilities, the equipment was damaged so that these facilities were also unable to accept patients for treatment.

In this way, the ability to provide dialysis treatment (or some
2. Plasma-assisted CVD

2.1 Introduction
One of the methods used to coat thin-films, chemical vapor deposition (CVD) generates a far more uniform, flatter coating film than other coating methods. CVD is also able to deposit films from a wide range of materials, including organics, inorganics, and metals. Although reduced-pressure CVD systems that use a vacuum chamber are effective in achieving uniformity, atmospheric pressure CVD systems operated at atmospheric pressure have become a subject of interest more recently.

In this session, we will discuss the plasma-assisted CVD method. The plasma-assisted CVD method is able to form films at low temperature that would typically be formed at high temperature via annealing, for example.

Using hexamethyldisilazane (HMDS, C$_6$H$_{19}$NSi$_2$) as the source, we utilized the plasma-assisted CVD method to deposit a polymerized hexamethyldisiloxane (HMDSO, C$_6$H$_{18}$O-Si$_2$) film over a repeating pattern formed of a resin material. The pattern cycle is varied over a range of 0.39–1.5 μm. We evaluated the flatness of the polymerized film by observing the cross-sectional geometry. We used the ratio of the peaks and valleys of the different repeating patterns (in other words the height from the surface of the substrate to the surface of the polymerized film) as the index for flatness. The flatness threshold for the pattern cycle is approximately 0.75 μm, where pattern cycles exceeding this threshold have a lower flatness index of approximately 0.5. Although we observed good flatness in pattern cycles below this threshold, these polymerized films contain voids. We will also describe how voids form in the polymerized film later on.

2.2 Processing Equipment
Because plasma-assisted CVD is conducted at reduced pressure, the system requires a vacuum chamber, an high-frequency RF power supply, and other facilities. Figure 4.18 shows the basic device structure. The vacuum chamber includes a discharge stage with an electrode couple structure. The stage is attached to the heating element, which facilitates the polymerization reaction.

The plasma is generated by applying a high frequency of 13.56 MHz between the electrodes. We used standard Argon (Ar) gas as the carrier gas. The reduced pressure vaporizes the liquid source, which is then fed to the reaction chamber. At this point, plasma polymerization generates a reaction product, which is subsequently deposited on the substrate located on the stage.

![Figure 4.18 Plasma-assisted CVD Device Structure](image-url)
20. Review: Automatic Control Textbooks and Practice (continued)

20.9 Control System Design
The control system must remain stable, regardless of the process state, and must rapidly track the edge position and tension (controlled value) to the reference value (target). In other words, during design it is important to investigate the stability and rapid responsiveness of the control system. Control systems are composed of a feedback mechanism and makes a closed loop in which the signal is endlessly circulated and amplified. When this closed loop is opened, the amplification gain of the loop is called the loop gain. A high loop gain will have faster rapid responsiveness, but also run-out and instability. In contrast, a low loop gain will have better stability, but slower rapid responsiveness, meaning the response will be poorer. Control system loop gain is designed so that it can be adjusted. One goal of design is to keep the system stable while maximizing loop gain.

(1) Stability, Gain Margin, Phase Margin
Two methods for investigating the stability of control explained in textbooks are the Routh-Hurwitz’s stability criterion and Nyquist stability criterion, but these are difficult to apply in practice depending on how familiar the user is with the concept. One method that is easy to use in practice, however, is the “Bode diagram stability criterion.” Methods based on Bode diagrams can be used as tools when the user is familiar with the concept. Here are the steps for using this method.

① Make an open-loop Bode diagram that combines the Bode diagrams for all of the processes within the closed-loop or all of the elements within the control device into a single gain and phase.
② Use the point where the gain property falls below 0 as the gain crossover and use the point where the phase property drops below 180° as the phase crossover.
③ Record the angular velocity or the frequency of the gain crossover.
④ Record the phase value for the phase property angular velocity or the frequency of the gain crossover.
⑤ Record the difference value between the phase value for the phase property and -180°. This will be the phase margin ($\Phi_m$).
⑥ Record the angular velocity or frequency of the phase crossover.
⑦ Record the value for the gain of the angular velocity gain property or frequency of the phase crossover.

![Figure 485 Open-Loop Bode Diagram](image-url)
Correct for meandering, based on pattern criteria!

Uses pattern matching
The system takes basic positions from within the entire image (such as the line, edge, pattern and text) and stores them in memory, detects web meandering and sends out correction signals.

Uses ZNCC (Zero-mean Normalized Cross-Correlation)
Stable detection is assured, even if there are variations in external light and print density.

Easy Search function
Simply specify the reference position from within the entire image and press the Search button to record the reference position in memory and start the detection.

Nireco Intelligent Camera NIC100
Nireco Intelligent Panel NIP100
6. What Is Screen Printing?

6.1 Printing Methods and Characteristics

In conventional printing methods, the imaged sections of a plate are coated with ink, and this copy is deposited onto the substrate. More recently, however, a broader interpretation of printing has included plateless methods and digital printing methods that do not use a plate.

Printing methods that use a plate are categorized into relief, intaglio, planographic, and stencil printing methods depending on the geometry of the imaged section of the plate. Screen printing is a type of stencil printing, and is unique in that the ink passes through the mask, so is sometimes called a type of special printing. The following sections detail these four printing methods.

a) Relief Printing: Letterpress and Flexo Printing
These printing methods use a plate in which the imaged sections are raised above the unimaged sections. Printing that uses a plate consisting of metal letters is called letterpress printing, and printing that uses a photosensitive resin plate is called flexo printing.

b) Intaglio Printing: Gravure Printing
These printing methods use a printing plate in which the imaged sections are depressed below the unimaged sections. In this case, the entire plate surface is first coated with ink, and a doctor blade is used to wipe away the excess ink from the unimaged sections. The ink remaining in the depressed imaged sections is pressed against the substrate to deposit the ink onto the substrate.

c) Planographic Printing: Offset Printing
These printing methods use a plate in which the imaged sections and unimaged sections are formed on the same plane so that there is no clear difference in the height over the plate surface. Using the nature of water and oil to repel each other, the imaged sections are selectively coated with ink. Typically, the ink is first temporarily transferred to a blanket (offset), from which the ink is printed, so is simply called offset printing.

d) Stencil Printing: Mimeograph Printing, Screen Printing, and Metal Mask Printing
These printing methods use a stencil in which the imaged sections are formed of openings in a mask. The unimaged sections of the stencil are covered in a resin or metal mask, and the imaged sections are composed of a mesh or complete...
Enhancement of Thermoelectric Figure of Merit Using Submicron Structures

Wataru Morita
Kunihisa Kato
New Materials Research Dept.
Research Center
LINTEC Corporation

1. Introduction

Thermoelectric power generation devices generate power through the Seebeck effect, a phenomenon that produces an electromotive force when a temperature difference is applied to either side of a material formed by joining different types of metals or semiconductors. Research into thermoelectric power generator has a long history, but following the more recent arrival of the IoT (Internet of Things), the concept has attracted strong interest as one of the options for an energy harvesters that could power freestanding sensors.

The IoT, by which various objects are connected to the internet, is expected to benefit a wide variety of familiar fields beyond logistics, industry, and the environment, such as the medical and health care fields, as well as daily items, by allowing us to accumulate and analyze information collected from all things. In order for “all of these things” to sense, we must first build a wireless sensor network that does not require connection to a power grid. Although the use of existing small-scale direct voltage power sources, such as watch batteries, has been considered as a wireless sensor power source, this approach is difficult to apply to long-term sensing, particularly when the battery must be replaced regularly in difficult to reach locations, such as high places and sealed spaces, and in severe environments, such as extremely hot or cold locations. As such, there is a strong desire for the regular use of freestanding sensors with a built-in energy harvester.

Energy harvesters generate electricity by drawing out tiny amounts of power from energy sources that exist in living spaces and their surrounding areas, including from electromagnetic waves (ultraviolet light and microwaves), vibration, and heat. Likewise, thermoelectric conversion devices that convert heat (temperature difference) to power may be applicable to living organisms (including the human body), electronic devices, vehicles, and other heat exhaust sources. Wireless sensor drives require around 10 μW of power even when drive is intermittent, although this depends on the application and communication distance.¹ When commercializing thermoelectric energy harvesters, they must be small enough to integrate into wireless sensors and produce this level of power at a relatively small temperature difference of 10°C. Conventional thermoelectric conversion devices are typically made using ceramic substrates, however, so their rigidity makes it difficult to apply such devices in situations where they must conform to curved surfaces.

As such, we have been developing a flexible thermoelectric power generation device and working to increase the output. As an example of one means of increasing output, in this session we will introduce our approach of using submicron scale structures to reduce thermal conductivity and thus increase the performance of thermoelectric materials.²

2. Using Submicron Structures to Improve Thermoelectric Properties

Several commonly used indexes for evaluating thermoelectric materials are electrical conductivity \( \sigma \) [S m\(^{-1}\)], the performance index (figure of merit) \( Z[1/K] (=\sigma S^2 \kappa ^{-1}) \), which is the ratio of the Seebeck coefficient \( S \) [VK\(^{-1}\)] to thermal conductivity \( \kappa \) [W m\(^{-1}\) K\(^{-1}\)], and dimensionless performance index \( ZT \), which expresses the arithmetic mean of temperature difference \( \Delta T = (T_h + T_c) / 2 \). In this case, a higher \( ZT \) indicates a higher power generation efficiency, so improved electrical properties and a low thermal
Session 11

Plastic Surface Decoration Technology

Chapter 3 Application Examples by Industrial Field

In Chapter 3, we will introduce examples of different applications in the various industrial fields (by application) for each of the decoration technologies explained thus far.

Table 30 shows the different applications for which these decoration technologies have been adopted. Although many of the applications and components use several of the various technologies, some applications and components primarily use a specific technology.

This chapter will be composed mainly of figures and tables, and will focus on those application examples outside of the automobile and vehicle fields. The automobile and vehicle fields will be covered in the next session.

1. Communications Devices and Household Appliances

Table 31 summarizes the decoration technologies used for communications devices and home appliances.

In the past, secondary decoration technologies, such as painting, printing, and vacuum metalization, were primarily used to decorate mobile phone handsets, laptop computers, and other communications devices, as well as home appliances. At some point, however, given the need for shape conformability and functionalization, many of these technologies were replaced with film decoration. In particular, IMR (in-mold release) was often used to decorate standard mobile phone handsets when these types of phones were more common. With the more recent shift to smartphones and tablet PCs, however, the face of mobile phones has a smaller area to be decorated, so NSD (non skin decoration, coloring/texturing) has come into greater use for decorating the backside of the device. Moreover, many smartphone and tablet PC owners use different types of covers for their devices. Soft type smartphone covers are made of fabric, soft-feel products, synthetic leather, and silicone, whereas hard types are often molded using D3 Texture (3D digital texturing).

Personal computers are decorated using painting, printing, vacuum metalization, IMF (in-mold forming), IMR, and OMD (out-mold decoration). In the case of OMD, the computer can also be made of a magnesium alloy.

In terms of home appliances, IM-D, OMD, and NSD are increasingly being used.

About the Author

In 1965, Shohei Masui began working for Sumitomo Chemical Company, Limited. Engaged in research and development of plastic materials and molding technologies, Mr. Masui was involved in the development and commercialization of glass fiber composite materials, injection press molding technology, and skin material lamination/integration molding technologies, among others. After later working for LPM Co., Ltd., Mr. Masui established the MTO Technology Research Laboratory in 2005. Today, he speaks, writes, and provides technical support to individual companies, primarily in the fields of decoration technology and CFRTP molding technologies as a technical consultant. He has provided his services globally in countries such as Taiwan, Korea, and China. He has also authored many works focused on areas related to plastic decoration techniques.
FLAT EXPANDER

Wrinkle Removal Roller
This straight, non-bowed roller removes wrinkles without applying any deflection to the web. The roller does not cause any excessive stretching in the web center or sagging at the edges, as often seen with bowed rollers.

Wrinkle Removal Principle

Tighten the adjusting bolt at web Leading Edge A and loosen bolt at web Trailing Edge B. In this way, the rubber cord will contract at Point A and extend at Point B as the roller rotates. As such, the web wrapped over the roller at Point C will expand at Point D to remove the wrinkles from the web.

Flat Expander (FE)
This is a straight, non-bowed rubber band type wrinkle removal roller.

Miravo (MRV)
This wrinkle removal roller consists of a straight, non-bowed roller.

Applicable Machinery

<table>
<thead>
<tr>
<th>Industry</th>
<th>Applicable Machinery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonwoven</td>
<td>Rewinding machines, slitters, coating machines</td>
</tr>
<tr>
<td>Film</td>
<td>Rewinding machines, slitters, printing machines, coating machines, vacuum deposition equipment</td>
</tr>
<tr>
<td>Glass Fiber</td>
<td>Weaving machines, rewinding machines</td>
</tr>
<tr>
<td>Paper Making</td>
<td>Rewinding machines, slitters, coating machines</td>
</tr>
<tr>
<td>Foil Making</td>
<td>Manufacturing plants for copper foil and aluminum foil</td>
</tr>
</tbody>
</table>
Find the latest in converting related equipment:
- Detailed equipment description/specifications
- Contact information for manufacturers and dealers
- Search by product type
- Search by company
- Listings in English and Japanese

Reach Hundreds of Equipment Manufacturers and Converters

Listing Price:
30,000 JPY per Item (tax not included)

How to Order:
- Contact us by fax
- Order over the internet:
  Click "Continue to Order Form" button

Order Form:

Company Name: ________________________________
Address: ______________________________________

Listing Price: 30,000 JPY × __ Items = ______ JPY
(tax not included)

Fax to: +81-3-3861-3894
Shipping Address
Name:
Company:
Address (line 1):
Address (line 2):
City/Town:
State:     Zip Code:
Country:
Phone:
Fax:
Email:

Billing Information:
☐ Print + Electronic   ☐ Electronic Only
☐ Bank Transfer (please send account information by ☐ Fax or ☐ Email)
☐ Visa Card
☐ Other (Please contact us for other options)

Card Number: ___________________________  Expiration Date (month/year): __ __ / __ __

Amount Paid (US$): ______________________
Card Holder Name: ______________________
Card Holder Signature: __________________

Billing Address (if different):
Name: ___________________________  Company:
Address (line 1):
Address (line 2):
City/Town:
State:     Zip Code:
Country:

E-mail:

Online Ordering
Order online with your credit card or PayPal account. With no need to open an online billing account, checkout is even easier than before.

For more information, access our site and visit us at:
www.ctiweb.co.jp/eng/

Media Summary

Magazine: Convertech International
Issuance: 6/year (January, March, May, July, September, November)
Language: English
Size: A4
Color: Full Color
Subscription Fee:
• Year Subscription (6 issues)
  Print + Electronic: US$160
  (US$45 Shipping)
  Electronic Only: US $80
• Single Issue
  Print + Electronic: US$30
  (US$8 Shipping)
  Electronic Only: US$15

Print and electronic versions are released during the middle of each issuance month.

Contact Information

JAPAN/INTERNATIONAL
CONVERTING TECHNICAL INSTITUTE
Shigeo Araki
VORT Iwamotocho I 3-4-6
Iwamoto-cho, Chiyoda-ku, Tokyo 101-0032 Japan
Tel: +81-3-3861-3858, Fax: +81-3-3861-3894
E-mail: econvertech@ctiweb.co.jp
URL: www.ctiweb.co.jp/eng/

Indonesia
PT Victory Blessings Indonesia
Franky M. Hutapea, President Director
Redwood Business Center Block A No. 5
Jl. Ganesha—Kota Deltamas,
Cikarang Pusat—Bekasi
Tel: +62-21-2909-3839, +62-21-37-1111-40
Fax: +62-21-2909-3840

KOREA
KOREA PACKAGING INSTITUTE
Yeong Ho Kim
Lotte It Castle 2-1313
98, Gasan Distril 2-ro, Geumcheon-Gu
Seoul, 153-803, Korea
Tel: +82-2-2026-8166
Fax: +82-2-2026-8169

Taiwan
Worldwide Services Co., Ltd.
Robert Yu
11F-2, No. 540
Wan Hsin Road, Section 1
Taichung, 408, Taiwan
Tel: +886-4-2325-1784
Fax: +886-4-2325-2967

Reach the World
Advertising in Convertech International provides you with a way to reach all corners of the converting world. Our readership is not limited to one aspect of the industry, so your advertisements will be seen by potential customers, as well as those who will ask your customers to use your products.

Combining an advertisement with a short 1 or 2 page article is a great way to provide more information in detail to the world.

For more information, access our site and visit us at:
www.ctiweb.co.jp/eng/

2017 Advertising Rates

<table>
<thead>
<tr>
<th>Premium Position**</th>
<th>1×/year</th>
<th>2-4×/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover</td>
<td>$6,000</td>
<td>$5,520</td>
</tr>
<tr>
<td>Inside Front Cover</td>
<td>$5,300</td>
<td>$4,870</td>
</tr>
<tr>
<td>Inside Back Cover</td>
<td>$5,300</td>
<td>$4,870</td>
</tr>
<tr>
<td>Back Cover</td>
<td>$5,800</td>
<td>$5,330</td>
</tr>
<tr>
<td>Front Top 4C</td>
<td>$5,100</td>
<td>$4,690</td>
</tr>
<tr>
<td>Front Top 2C</td>
<td>$4,100</td>
<td>$3,770</td>
</tr>
</tbody>
</table>

* 2-color ads: Combination of Black and Cyan, Magenta, or Yellow
** All premium positions are 4-color unless otherwise specified
*** Premium positions are filed on a first come first serve basis
**** For additional options (spread, island, etc.) contact us directly
Converting Technology Exhibition

neofunctional material 2018

Materials zone  Neo functional paper zone  Machinary zone
Prototyping / Contracting zone

Printable Electronics 2018  3Decotech Expo2018

Exhibition Guide

2.14 (Wed.) ～ 16 (Fri.) 2018
Tokyo Big Sight, East Hall