

Informally speaking

A formaldehyde magazine from Johnson Matthey



- Meeting up in Curitiba, Brazil
- Can an entire plant be relocated?
- We are 'Projects'
- Our Life Cycle Analysis illustrated
- An exceptional cleaning agent

Growing optimism!

Welcome to a weightier edition of **Informally speaking**, filled with informative reading beginning with why we feel optimism is growing. For one, we are seeing signs of improvement in the global market. Secondly, the catalyst plant expansion we have mentioned in previous issues is progressing well and thirdly, our formaldehyde business has become more local and strengthened through added competence and resources. In addition, a reorganisation within JM took place at the end of 2023 resulting in that we now have a Managing Director responsible for our business, Jo Godden. See opposite page for background on Jo. We believe this change, together with the strengthening of our organization, will allow us to focus even more on creating the most value for our customers.

"Creating Value" was also the theme of our Formaldehyde China conference held in Nanning in April and organised by our very capable and strong team in Beijing. Based on the response from the event, we feel it truly did provide value to our customers. Another event this spring was our Formaldehyde South America conference in March, which drew a record number of participants for this region, all of whom were very pleased. It was held in Curitiba, Brazil and organised by our teams in Perstorp and in the U.S. Please read more about these two great events in this issue.

Also in this issue are interviews with a couple of customers in South America, as well as in Egypt where our customer there tells about how they successfully moved an entire **FORMOX™** plant from one continent to another! Speaking of plants, we are happy to share with you what we are doing in terms Life Cycle Analysis as well as our latest developments in the plant field – big is beautiful, and sustainable. And we want to shine a little of the spotlight on a large group of people who work hard to make your plants come true – the Projects department.

As usual we bring you some technical advice related to formaldehyde production as well as a look at a specific downstream product – Polyols. Last, but definitely not least, the time has now sadly come to say goodbye to Eddy Lee, our ever-cheerful colleague who has worked with formaldehyde in Asia for over four decades. Please be sure to read his story on page 26.

Finally, please keep the feedback coming as this is the best way we can learn how to improve further. So keep well, stay safe and please reach out to us whenever you have any questions related to how to best produce formaldehyde in a safe, sustainable and environmentally friendly way.



Lars Andersson and Ronnie Ljungbäck
Global Market Managers Formaldehyde



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Introducing Jo



Introducing you to Jo Godden, our new Managing Director.

With over 25 years' experience in the chemicals industry, Jo Godden is now leading the Formaldehyde business for Johnson Matthey as Managing Director. She has always had a passion for science, which led her to studying Chemical Engineering at university.

Her work life began with ICI in their graduate scheme as a chemical process engineer. This technology focused role required travel to support customers at their sites all over the world, which formed Jo's passion for providing technology solutions to create value for customers. A number of other roles in ICI followed, including an operations manager for the ICI Paints Division and market development manager for ICI Syntex.

Jo joined JM in 2002, through acquisition, leading Asia Pacific sales and then global sales for the Chemical Catalysts business. Her experience in commercial development and sales led to a broader general management role leading Noble Metals Europe, which then became a global role.

Jo gained experience in Corporate, working across the enterprise for the JM Group CEO as Commercial Director. More recently, with a wish to be closer to the business and customers, she has moved to Managing Director roles, firstly for Fuel Cells and now for the Formaldehyde business.

"Working in partnership with our customers is our route to reducing carbon emissions for a cleaner, brighter future"

Jo Godden, Managing Director

Jo's experience in forging strong relationships with customers and understanding their needs is important in developing the business.

"My first exposure to the Formaldehyde business came during the integration of Formox into JM in 2013, so I am delighted to be part of the business once again. 2024 is an exciting year for the business as we complete our catalyst expansion project. I am looking forward to connecting with our customers to understand their challenges and help them to achieve their goals.

BY

Working in partnership with our customers is our route to reducing carbon emissions for a cleaner, brighter future."



Nicole Watson
Marketing
Communications
Representative

On the front page:

Formaldehyde South America, Curitiba, Brazil, March 2024

Read more about this event on page 6



Upcoming conferences...

Formaldehyde Europe, May 2025, Sweden

More information to be released soon

Protecting nature, the climate and advancing the circular economy

Johnson Matthey is committed to reducing the environmental impact of our formaldehyde production through the continuous development of **FORMOX** formaldehyde process technology.

Since the launch of our **FORMOX** products and services in 1959, we have constantly evolved our process and catalyst technologies and technical support to become the world leader in these fields. Our philosophy is to see that you get the most formaldehyde out of the least methanol at the lowest possible cost, whilst ensuring plants are equipped with an emission control system which is designed to meet all the prevailing emissions legislations globally.

To drive our continued development of the technology and quantify the sustainability benefits of the **FORMOX** technology, the JM team have undertaken sustainability analysis including a Life Cycle Assessment study. This study demonstrates the environmental benefits of our products together with alignment to UN SDGs such as:



SDG 3 Good Health and Wellbeing

The ECS¹ in our plant design helps to promote good health & wellbeing through the effective treatment of formaldehyde production off-gases.



SDG 12 Responsible Consumption and Production

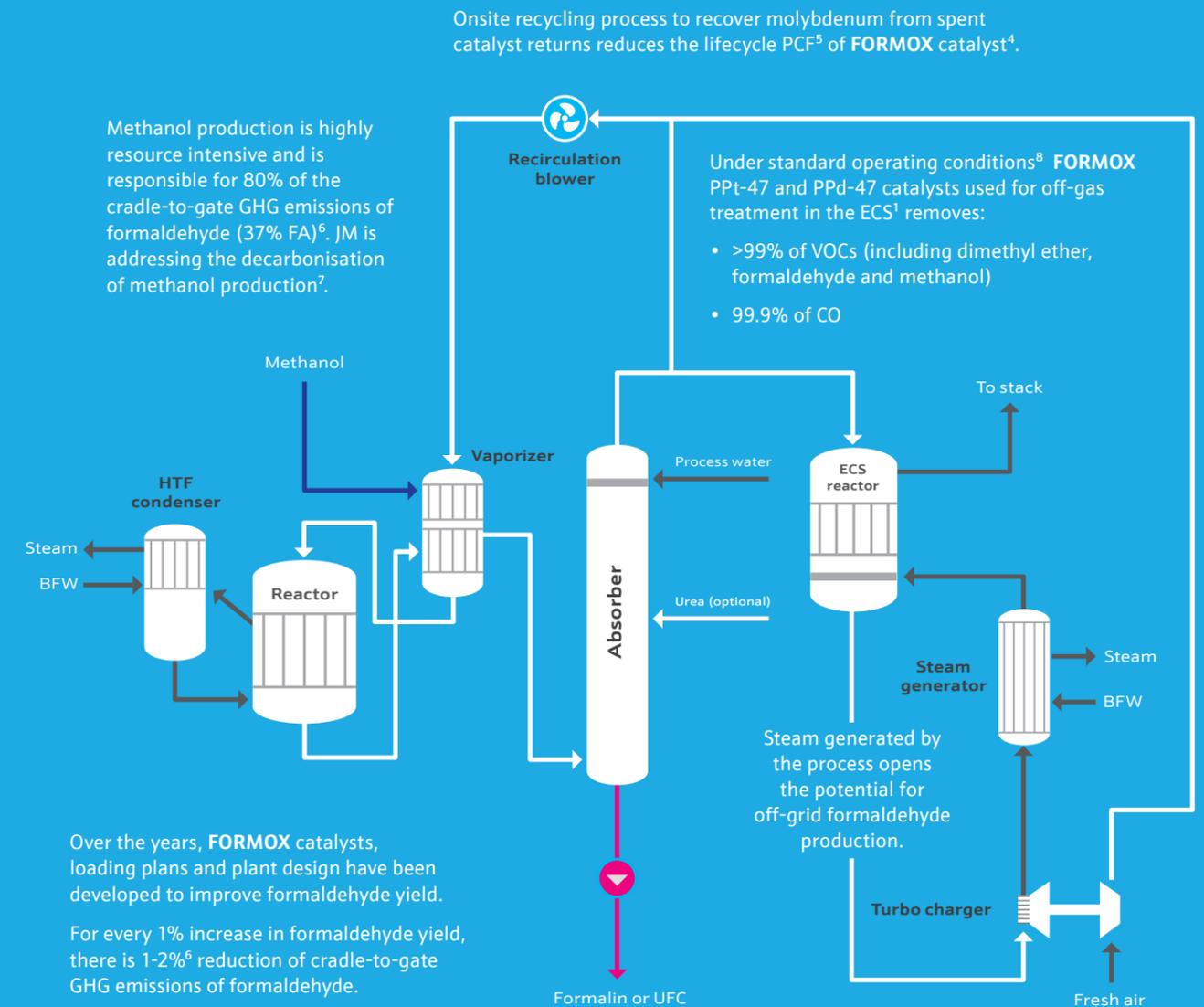
JM has improved productivity of its **FORMOX** process technology 4-fold over the past 65 years which can help reduce the impact of formaldehyde production. For example, a life cycle analysis of the productivity² improvements made in the **FORMOX** technology over the last 25 years indicated reduced global warming impact of formaldehyde production by 6% (per ton of 37 Formalin wt%)³.



SDG 13 Climate Action

FORMOX catalyst manufacturing choices demonstrate our commitment to minimising our environmental footprint⁴ and conserving scarce mineral resources.

The results of our LCA study are described in the infographic below, helping you to see how sustainability is considered at each stage of the **FORMOX** process.



1. ECS: Emission Control System
2. Productivity growth between 1998 and 2023 as measured in kg FA 37% /tube/day
3. **FORMOX** formaldehyde process performance from 1998 and 2023, from IPPC Chemicals (2003) and JM internal sources, respectively. Global market average emission factors from ecoinvent 3.9.1
4. JM's **FORMOX** catalysts have a 25-35% lower product carbon footprint than catalysts of the same composition manufactured without molybdenum recycling.
5. PCF: Product Carbon Footprint
6. Internal LCA of standard FS3 plant at 1.5 bara, 418 tpd 37% FA capacity. Global market average emission factors from ecoinvent 3.9.1
7. To learn more about JM methanol production please follow the QR code opposite.
8. Standard FS3 plant at 1.5 bara, 418 tpd 37% FA capacity



BY



Jeanette Simpson
Sustainability Manager
– Products & Services



Formaldehyde South America 2024

4th – 7th March 2024, Curitiba, Brazil



After nine years JM was once again able to hold another South America conference and we were very happy to welcome a record number of participants for the region – 47 participants from 17 different companies throughout South America and Europe! We had a joyful welcoming reception at the hotel on Monday evening the 4th, which was a great opportunity to meet and greet our formaldehyde colleagues and catch up a little bit before the event started the next morning.

Day 1

Atul Shah, Business Manager for Americas, kicked off the conference Tuesday morning, followed by a safety experience that I shared with the group. Ronnie Ljungbäck, Sales & Market Manager Catalysts, then officially opened the conference by delivering an update on JM's business and sustainability efforts. Lars Andersson, Market Manager Formaldehyde Plants, presented FORMOX Plants, followed by Ronnie speaking about Catalysts, and me speaking about Technical Support.

After a coffee break, Philippe Thevenin, Global Technical Services Leader – Formaldehyde, demonstrated several valuable features of the JM-LEVO™ Formaldehyde Portal. Lars then provided our latest updates on FORMOX 2.0 High Pressure Plants and Philippe walked us through the High Pressure Catalysts.

Guest speakers

Francisco Jorge Pedrosa Junior, President of ABRAF – Associação Brasileira dos Produtores de Formol e Derivados (Brazilian Association of Formaldehyde and Derivatives Producers) presented about

formaldehyde installed capacity in Brazil. He also addressed regulations for methanol imports and wood based panels, before we broke for a group photo and lunch.

Simon Maddren from MMSA (via Teams) started the afternoon sessions with a Methanol Market update, followed by our latest view on the formaldehyde market and a presentation on Plant Upgrades by Fredrik Rietz, Global Commercial Licensing Manager. Lars and Ola Erlandsson, Senior Process Specialist, then presented on future development for formaldehyde technology, which provided insight into our efforts to improve our product portfolio.

That evening we enjoyed dinner at the hotel's restaurant with another great opportunity to connect and network.

Day 2

On Wednesday we welcomed everyone to a new day of topics and real case scenarios presented by both JM and invited speakers, including:

- Carbon footprint and formaldehyde decarbonisation by Lars, Fredrik and Ola

- Alternative methanol feedstock – insights and information regarding "green and blue" methanol/formaldehyde, by Philippe
- TurboPac Generation 2.0 – upgrades on the turbocharger system, by Tomas Lorentz from PBST
- Water quality – real cases showing the importance and financial impact of cooling towers' chemical treatment, by Bruna Damer from BR Water Solutions
- Foresa smart safety sampler – a safer way to sample gas from the formaldehyde reactor outlet, by Foresa's Antonio Touriño Couso
- Deflagration event at Hexion – interesting real case and root cause analysis for a deflagration event, by Rui Vicentini Silveira, Senior Process Specialist at Hexion
- Deflagration event at Dexco – another interesting real case and root cause analysis for a deflagration event by Gustavo Garcia, Process Engineer and Vitor Falcade, Production coordinator at Dexco



In the afternoon we travelled by bus to the Oscar Niemeyer Museum, also called "Museu do Olho" (The Eye Museum). There we enjoyed over fifteen exhibition spaces with different types and origins of art, "teleporting" us to a completely different universe for a different perspective and expanding our minds beyond formaldehyde.

After the museum visit, we visited a renowned "churrascaria" restaurant where we were served barbecued meats from large skewers in traditional Brazilian style to wrap up the day with good vibes and wonderful tastes.

Day 3

In the morning of the final day Ola spoke on the importance of Volume flow and gas velocity, followed by Philippe on Loading plan design considerations. After the coffee break, I spoke about Catalyst usage and ageing, as well as Operational problems, presented through real industry issues showing lessons learned and how to avoid them. After lunch Ola spoke about CO measurements, Philippe about Optimisation of plant and catalyst operation, Ronnie about Spent catalyst, and Atul about Catalyst loading and unloading.

The conference concluded with a Slido quiz and wrap-up before Atul closed the conference and bid farewell to the participants.

"Obrigado por participar!"

Thank you everyone who participated and made our return to Brazil such a great event. Also to our invited speakers as well as to our customers who gladly shared with us about operational problems they have dealt with.

BY



Lucas Freitas
Regional Technical Service Engineer

Hexion serves wood panel producers in Brazil

Rui Vicentini Silveira is a Senior Process Specialist at Hexion Química do Brasil Ltda in Curitiba. He joined the company as a process engineer in 2006, working with formaldehyde and resins production, as well as with process safety. Under his umbrella today are two production sites in Brazil, and one in Uruguay, all of which supply mainly wood panel producers in Brazil.

No stranger to the conferences

Asked if this was his first time attending one of our formaldehyde conferences, he replied that the first one he ever went to was in 2008.

"That was in Toronto," says Rui. "The next two were in the US – one in San Francisco and later in Houston."

With him at this year's conference in Curitiba, the same city where he is based, were six of his colleagues from Hexion.

"We had a big delegation. Some of them were attending for the first time, and all of them enjoyed it and found the presentations to be both interesting and very useful."

We are always trying to keep up with progress in formaldehyde production and we learn a lot from seeing different process modes and learning about the safety aspects.

About Hexion

Based in Columbus, Ohio, Hexion is a leading global producer of adhesives and performance materials. Hexion provides specialty products and technical support for customers in a diverse range of applications and industries, such as construction, agriculture, energy, automotive and infrastructure protection. Building on over a century of experience, Hexion is working to preserve the earth's natural resources, meet the needs of growing populations and respond to a changing climate.

Sharing experience

Having attended several conferences before, Rui knew about the type of experience sharing that typically goes on at them and volunteered to tell about a deflagration event that had occurred in Hexion's Curitiba plant in 2016.

"I think that it is always important to share learnings that can enhance the safety in the chemical industry, and I appreciate the opportunity given at the conference."



Rui Vicentini Silveira sharing about an operational problem at Hexion



The Hexion Curitiba team at the 2024 Formaldehyde South America conference

BY



Charles Hodgdon
Editor

Brazilian manufacturer Dexco speaks about the conference and JM-LEVO

Gustavo Garcia started out as an intern at Dexco in 2010 when the company was in the process of building its formaldehyde plant at their site in Agudos, a part of São Paulo. Three years later he had become a process engineer and today he holds that position not only for the formaldehyde plant, but also for the resin and paraffin wax emulsion plants.

"Dexco is a really big company with operations in many different areas," he says. "I work in our Wood Division – MDF, MDP and wood flooring."

Today he and his colleagues are producing resins not only for use at the site in Agudos, but also for other sites including three MDF plants, three MDP plants and three laminating plants.

"So the formaldehyde plant is running at full capacity," he says, "and in June we will be changing the catalyst in the reactor with the help of a technician from JM and the catalyst loading machine."

About Dexco

Dexco is a leading manufacturer in Brazil of industrialized wood panel, among other things. The company makes and sells MDP and MDF panels under the Duratex brand. In the Forestry segment, with over 140,000 hectares of land, where eucalyptus trees are grown using state-of-the-art technology, Dexco employs best management practices to protect native land. Dexco was the first company in South America to be granted FSC® certification for forest management.

Surprised at the conference

Gustavo was one of four from Dexco to attend the Formaldehyde South America conference.

"My expectations when going there were to maybe hear about new technologies, new machines, new catalysts, new plant types that perhaps JM is trying to sell. But I had a very good surprise from a lot of experience sharing, and case studies and hearing about problems at other sites that were helpful. It was also really great to meet in person many of the people from all the different JM teams that we have been in touch with over the years."



Vitor (left) and Gustavo (far right) presenting about a deflagration at Dexco



The Dexco delegation attending the Formaldehyde South America conference

Vitor Falcade, Production Coordinator at Dexco, agrees: "It is very important to be at this type of event because it is a big opportunity to improve our knowledge and processes in formaldehyde production. The exchange of experiences and the strengthening of our collaboration networks between producers across South America is extremely valuable."

During the conference, Gustavo and Vitor generously shared with everyone their experience from a deflagration event at their plant.

"I think it was a really pleasant opportunity," says Gustavo. "It was a time to share an experience we had on our formaldehyde process with the crowd and get back the comments, doubts and a lot of talking that started a lot of rich experience changing."

Frequent user of JM-LEVO Formaldehyde Portal

Asked about the Portal, Gustavo says he uses it frequently and uploads data at least once a week, sometimes more.

"What I like about it is that every time we need to adjust the capacity, I put the information into the tool and I get the right conditions for what we want. Really good and really fast too. It is new, so it needs some adjustments, but I talk to Philippe and others and they take care of it."

"Our relationship with the FORMOX team has always been very nice and very straightforward," he adds. "Alejandro, Lucas, Lars, Atul – they always help us, no matter what it is from the smallest thing to something bigger. JM is a company that takes care of customers, and everyone is very easy to talk to."

BY



Charles Hodgdon
Editor

JM-LEVO tips and reminders

How to get the most out of the JM-LEVO Formaldehyde Portal

Did you know that...

With the Premium license you can get so much more from the JM LEVO Formaldehyde Portal such as:

- Analytics module for production optimisation
- The ability to customise graphs
- Heat map for visualisation of hot spots
- Breakdown of direct variable cost

In addition, the Premium license provides 24-hour response on optimisation requests as well as support for multiple users, extended load comparisons, and a Global Manager Role that gives one person access to several production sites within the same organisation.

Upgrading from the Included to the Premium version can be done by contacting your JM representative. Please don't hesitate to contact us if you have any questions about the Premium version. We would be happy to demonstrate all the extra functionality that you can have at your fingertips.

Large capacity plants – new designs for growing demands



Comparison of Included & Premium versions

Portal access (users)	Included	Premium	Features	Area	Included	Premium
1 Plant manager	•		Site/Plant dashboard KPI	Dashboard	•	•
1 Site manager	•		Optimisation tool	Analytics		•
Multiple plant manager		•	Time-to-reload forecasting	Dashboard		•
Multiple site manager		•	Overall production cost (DVC)	Dashboard	•	•
Global manager		•	DVC development breakdown	Plant		•
Service & Information	Included	Premium	Comparison of historical data	Comparison	•	
Recommendations within <2 days		•	Extended lead comparison	Comparison		•
Recommendations within <7 days	•		Customisation units of measure	Settings		•
Technical Information Library	•	•	Data upload management	Uploads	•	•
Customer specific documents	•	•	Automatic data ingestion (ADI)*	Uploads		•
Upload template for process data	•	•	Upload history	Uploads	•	•



Follow JM on LinkedIn for further updates or contact Philippe or your Regional Sales Manager or Technical Service representative if you have any questions.

BY

Dr Philippe Thevenin
Global Technical Services
Leader – Formaldehyde



The scale of new capacity of formaldehyde technology plants in China has been huge over the last few years, mainly to supply the BDO and POM markets. Over that time, JM has experienced record capacity sales, but it is clear that the need for larger capacity plants than what is currently available is growing.

JM's largest standard plant, the FT3, is the largest twin stream single plant capacity on the market with a capacity of 290 ktpa (at 0.5 bar g and 10% inlet). This, however, will not be enough for the future when we see more projects looking for far higher capacities and requesting multiple FT3 plants. New plant designs offering higher capacity and reduced total footprint at a lower CAPEX are ways to address this.

"FX4", or "the FX configuration", is a new setup with four reactors in one plant that double the capacity compared to the FT3. This arrangement is flexible in terms of the number of reactors that are installed from the beginning, leaving space to add one more reactor as needed for future expansions.

Conceptual "FY3" plant

We are also looking at another setup that incorporates three reactors in the same plant to further optimise this option. This alternative is well suited to answer the needs of the BDO, POM and other industries where a larger formaldehyde plant is needed. The conceptual plant we call "FY3" will offer a solution that gives a lower CAPEX for the installed plant as well as an even further optimised footprint.

BY



Fredrik Reitz
Global Commercial Licensing
Manager

Large capacity plant range

FX4: 300 to 1670 MTPD

Nominal capacity in China will be 1440 MTPD

FY3: 600 to 1254 MTPD

Nominal capacity in China will be 1080 MTPD

Available options:

- Turbocharger
- Steam quality (pressure, super heating, max or min amounts)

All design features of today's range of capacities will be found in these new designs. That is, well-proven, reliable technology that has been the signum of FORMOX plant designs over the years. The turbocharger, a natural part of our technology for many years, will be available as an option also for these new designs. We will use the same equipment and equipment design, but arrange it in a new configuration. This offers customers a product they can feel comfortable with and provides all the benefits of JM's existing FORMOX formaldehyde technology range.

With these new designs we aim to maintain JM's leading position in the market for many years to come.



Formaldehyde China 2024

17th – 19th April 2024, Nanning, China



The fifth JM China Formaldehyde Conference took place this April in the city of Nanning. Nearly 100 attendees, including 66 from existing and potential JM customers gathered to learn more and to share experiences and knowledge. The large turnout is a testament to the rapid development of JM's formaldehyde business in China over the past five years.

"Formaldehyde creates value" was the theme of this year's event. Formaldehyde is an important basic raw material, and today, 23 years after the FORMOX process became known virtually overnight in China (see the interesting story on page 26), its downstream products have a wide range of high value-added applications here, like BDO, POM and MDI.

Day 1

On the morning of the first day, Terry Qian, Managing Director, CT & PGMS China, gave a welcome speech and officially opened the conference. Peng Zhang, Commercial Lead, CT China, introduced Johnson Matthey's vision on catalysing net zero transition, and Jianguang Zhang, Sales Director – Formaldehyde, shared the latest update on formaldehyde market.

Huamin Zhang, Commercial Licensing Manager, Vivian Wang, Commercial Catalyst Manager and Wilson Wang, Project & Engineering Lead presented FORMOX plant technology innovation for large capacity plants, our portfolio of FORMOX plants and catalysts, and project management respectively.

After lunch, Ling Zhong, Sales Director, Chemicals, introduced JM & Eastman glycolic acid (GA) and MEG technology. Vivian Wang and her team – Shaoze Yang and Mei Zhu, Catalyst Sales Managers, gave several presentations on CAP technology, catalyst application and the JM-LEVO Portal. Carlos Du, Process Engineering

Manager, showed the value that our technical service offering brings, explained how we design the catalyst loading plan for our customers, and presented our solution for alternative feedstocks to the FORMOX plants. Zhankui Bu, Project Manager, gave a taste of our different options for upgrading existing formaldehyde plants.

At the end of the day we held a joyful welcome dinner at the hotel for all attendees, full of Nanning's local ethnic characteristics and flavours.

Day 2

On day two, Carlos Du shared some typical operational problems and our solutions, followed by Marvin Su, Process Engineer, who demonstrated how we optimise FORMOX plants. Guofeng Sun, Project Manager and Eric Yu, Technical Service Engineer, talked about our understanding of deflagrations and CO measurement respectively.

We organized a customer Q&A session to take place after all the presentations, which was hosted by Carlos, Simon Smrtnik, Process Engineering Manager, Tomas Nelander, Global Formaldehyde Technical Services Manager, and Philippe Thevenin. We had an open discussion and answered in detail all our customers' questions on plant design, plant optimisation, catalyst operation, etc.

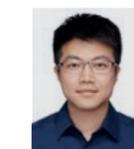
In the afternoon, we organized a tour for all to visit the scenic Qingxiu Mountain in Nanning and to taste local cuisine during dinner.



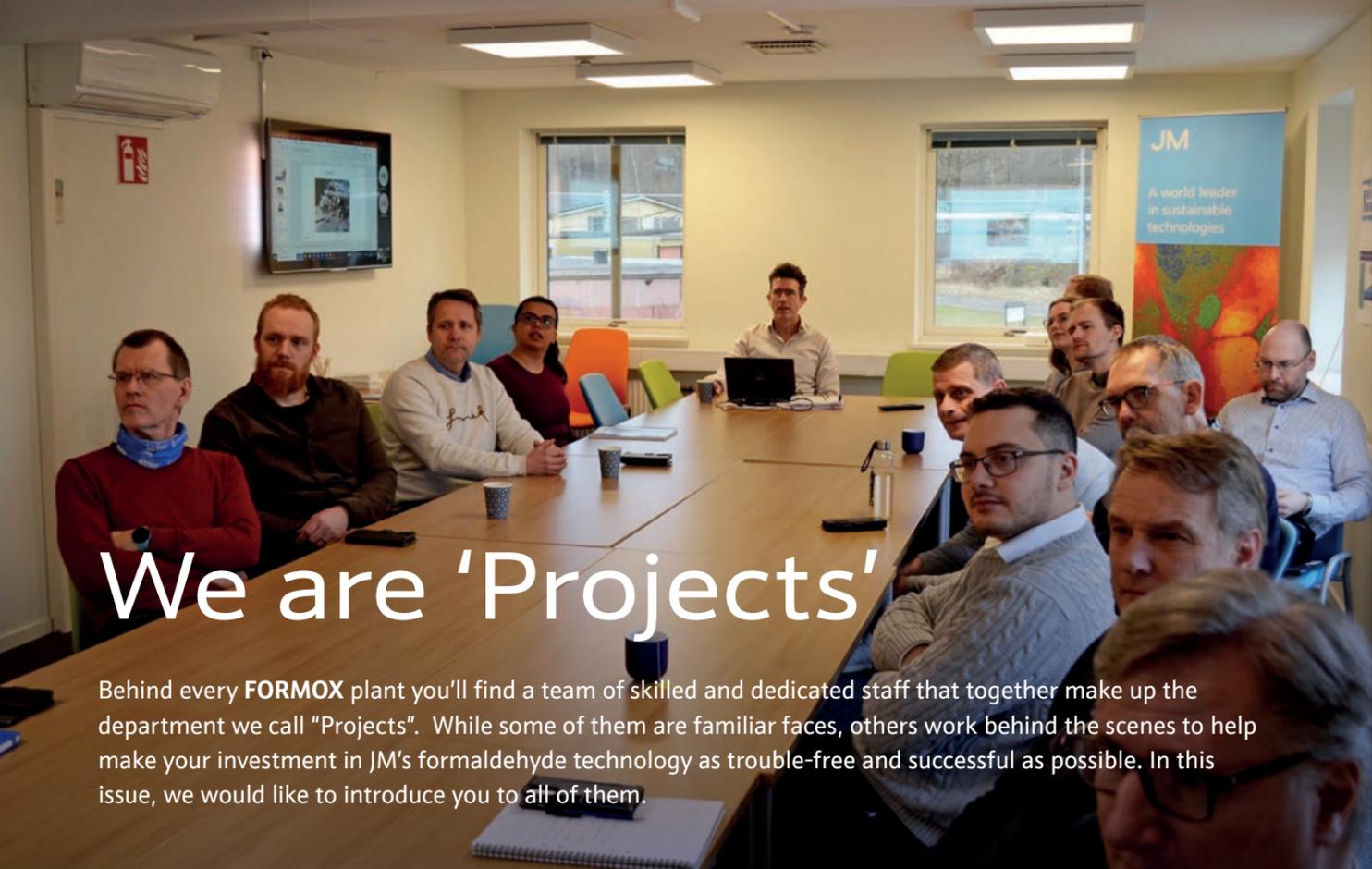
An important and appreciated platform

The conference has become an important platform for the formaldehyde industry in China to communicate, share best-practice, and build partnerships. Attendees said that it not only enhanced mutual understanding and confidence in JM's technical offerings, but also helped new customers in recent years to deepen their knowledge of the formaldehyde business and technology.

BY



Shaoze Yang
Catalyst Sales Manager



We are 'Projects'

Behind every **FORMOX** plant you'll find a team of skilled and dedicated staff that together make up the department we call "Projects". While some of them are familiar faces, others work behind the scenes to help make your investment in JM's formaldehyde technology as trouble-free and successful as possible. In this issue, we would like to introduce you to all of them.

Jonas Lindborg is Chief of Projects and runs the department together with the help of Simon Smrtnik and Stefan Wedman. Simon heads up the Process Engineering Team, and Stefan oversees the Detailed Engineering Team. Meanwhile in Beijing, Wilson Wang (pictured on page 17) manages a staff of nine who work primarily on projects for the ever-growing Chinese market.



Jonas (centre) runs the department together with Simon (right) and Stefan (left), tightly coordinating every stage of a **FORMOX** project.

"Every project is unique," says Jonas, "so each time we put together a team of people from across the various disciplines, and that team will follow the project from kick-off meeting to plant start up.

"That's actually one of our strengths," adds Stefan, "that the same team that starts a project also finishes it. A lot of valuable relationships are created in the project execution process."

PROJECT MANAGERS

Whether it's a brand-new plant, an expansion for an existing site, or a revamp, you'll find one of our five Project Managers at the helm. They are Gert Svensson, Lukas Olsson, David Palmer, Jan-Erik Andersen and Ronny Böös.



Jonas (left) together with two of his project managers Gert Svensson (centre) and Lukas Olsson (right). Not in photo: David Palmer, Jan-Erik Andersen and Ronny Böös.

Gert says that a full plant project today takes about two years to complete. Jonas points out some of the reasons for that:

"A formalin plant is a lot of hardware," he says. "It can have anywhere from 300 to 400 I/Os, or tags," he explains, "depending on its size and complexity. Main components like the fans and the large vessels are designed and manufactured especially for us, and some have to be crafted by hand."

Gert says that the first six months of the project are therefore the most intense, as that's when most of the engineering needs to be done so that manufacturing can begin.

100 years of experience

Jonas Lindborg, Gert Svensson and Stefan Wedman all joined the business back in 1994. Jonas was hired to work on the first plant ever delivered to Russia. Gert was brought in as a consultant to work on the first plant for China, together with Stefan. Since then, not only has the technology evolved, but the trio has amassed a ton of experience. In fact, Stefan likes to say that "Between the three of us, we have a hundred years' experience of designing plants."

THE PROCESS ENGINEERING TEAM

Simon Smrtnik heads up the Process Engineering team consisting of Debopriya Das, Saga Vesterbacka, Shefalipareesh Solanki, Michel Bellais, Ahmad Hameed, Oscar Enander, Marko Ristic, and Paul Zachrisson.

One of the team's main focuses is ensuring your plant will operate as safely as possible. To that end, different team members contribute with different specialties. Michel, for example, does various simulations. Debopriya works with process safety and performs both Hazard and Operability studies (HAZOP) and Layers of Protection Analysis (LOPA). And Marko commonly works with turbocharger projects and revamps.

"I like revamps," says Marko. "They pose special challenges for us engineers. Trying to fit in a new product into an old site is always a unique opportunity."



From left to right, in the back: Michel, Ahmad, Oscar and Marko; in front: Debopriya, Saga, Shefalipareesh and Simon. Not in photo: Paul Zachrisson.

"Ahmad recently played an important role in a very unique project where one customer bought a used plant and moved it to another country," says Simon. See related article page 18.

"For that project," says Ahmad, "I mostly provided support for the customer who did all the work. We wanted to ensure that the plant would work as intended after being dismantled, shipped to a new part of the world, and adapted to the new operating conditions and new battery limit. To everyone's satisfaction, the relocated plant functioned like a Swiss watch."

To everyone's satisfaction, the relocated plant functioned like a Swiss watch

THE DETAILED ENGINEERING TEAM

The feeling one gets when speaking with these engineers is that they embody the sentiment, "It's all in the details." And because getting things right means paying very close attention to every facet, it's easy to understand how the work they carry out can be a time-consuming process. Depending on the scope, a new plant may require substantial mechanical, piping, electrical and instrumentation engineering, all of which can take up to a year combined before all details in the specific project are confirmed.

The first four to six months after the kick-off meeting with the customer is usually the most intense period for the Mechanical & Piping engineers. During that time, they need to do any necessary studies, prepare all the specifications for the manufacturers of the large vessels and other equipment, do the 3D modelling of the plant and carry out all the necessary reviews.



The Mechanical & Piping Engineering Team from left to right: Fredrik Bengtsson, Elias Sjölander, Karl Lundh, Sten Schmidt and Fredrik Lövgren.

For the Electrical & Instrumentation engineers, the more intense period tends to come a bit later in the execution process. This can also take four to six months due to the purchasing and delivery of the E&I equipment, including the DCS system and its configuration, and often continues all the way up to pre-commissioning of the plant.



The Electrical & Instrumentation Engineering Team from left to right: Christoffer Lindström, Peter Jannerstig, Magnus Nilsson, Achinkumar Mishra and Lorentz Rensfelt.

Stefan Wedman has been leading the bunch since 2012 and is pleased about the good mix of people. "It's a pleasure managing this team," he says. "We have a good combination of newer and senior engineers and together we have many, many years of experience in designing plants, which brings a lot of value to our customers."

We have a good combination of newer and senior engineers and together we have many, many years of experience in designing plants, which brings a lot of value to our customers.

PROJECT ADMINISTRATORS

Helen Lundström has been working within Projects in one form or another for over 35 years. First at Perstorp, later at Formox and now JM. That makes her the business's longest-standing employee. She and her colleague, Carina Gustafsson, work tirelessly every day engaging with suppliers, customers, shipping companies and customs authorities to solve the most difficult supply chain and logistics issues we face.

Both agree that keeping the supply chain functioning has become far more challenging since the pandemic. "We now find ourselves doing more of the work that used to be handled by the suppliers," says Helen. "They simply don't have the time, so we have to step in."



Newcomer, Carina (left), and our long-time pillar, Helen.

"We are actually woven into every project team," says Carina, "and the first link in the supply chain." "We're also the last link in that chain," adds Helen, "making sure everything gets properly marked and shipped to its correct destination."

Jonas couldn't agree more, adding: "Nothing works without them!"

SITE ADVISOR

Rogério Sampaio is one of our most recent recruits, joining the team in 2023 to fill the position of Site Advisor. He, like the Project Administrators, is one of the few people to be involved in virtually every plant project. As Site Advisor, Rogério is JM's representative on site and conducts inspections both during construction and again before commissioning. But even before that, he often visits suppliers to carry out inspections of pressure vessels prior to shipping to the site.



Rogério spends most of his time out on the road. Here a photo from a recent inspection in Egypt.

"As I only joined last year, all the projects I am involved in are still ongoing," he says. "But my first commissioning is coming up this July, which I'm really looking forward to."

PROJECT TEAM, BEIJING

Prior to 2018, JM had only two or three engineers working with projects in China. But as the market heated up and JM began selling more plants at a record pace, the Market team had the foresight to enable the expansion of the Projects team in Beijing. It has since grown to its current staff of nine engineers and managers, with one more on the way.



The entire team was assembled at the recent China Formaldehyde Conference in Nanning. They are, from left to right: Liliang Fan, Guofeng Sun, Zhankui Bu, Wilson Wang, Kevin Sun, Caleb Chen, Carlos Du, Marvin Su and Michael Quan

"Thanks to that decision and also to bringing in Wilson to manage the team," says Stefan, "we are now beginning to pick the fruits when so many projects in China are nearing completion. We would otherwise have been totally overloaded here in Perstorp if Wilson's team wasn't there."

For the Beijing team it has been a very demanding year and a half of intense engineering. "We have been really busy with that," says Wilson, "and now we are in an intense year of commissioning and startups, with nine scheduled this year in China. At one site, we are right now commissioning three plants all at the same time!"

"That's never been done before," says Stefan, "so we are all really excited about that too."



Commissioning three plants simultaneously, from left to right: Process Engineers Marvin Su, Michael Quan and Caleb Chen, Project Manager Guofeng Sun, Process Engineer from Perstorp Oscar Enander, and Electrical and Instrument Engineer Kevin Sun.

Working together to meet high expectations

Both Stefan and Wilson are quick to point out that there is a lot of cooperation between the teams in Perstorp and Beijing.

"We're brothers and sisters," says Stefan.

"We go hand in hand with the team in Sweden and share a common way of working and organising the design of new plants," says Wilson.

"Something else that we are really happy about," he adds, "is that the team has scored very high in customer satisfaction surveys. That's something we are really proud of, especially with the high expectations that customers have placed on us to deliver under tighter and tighter deadlines."



Wilson at the office in Beijing, proud of the praise he and the team have received from customers in a recent customer satisfaction survey.

Our work is never done

The Projects department's work doesn't end with the commissioning of a new plant. Even after we hand things over to Sales & Technical Service, usually about three months after startup, both Simon's team in Perstorp and Carlos Du's team in China continue to provide support for the TS team, as well as After start-up support. In addition, we cooperate with Ola Erlandsson and the R&D team for the continuous development of the technology.

These are just some of the ways that we help to create even more value for customers. Now that you have met everyone here at Projects, look for more from us in future issues of Informally speaking to discover all the ways in which we can be of service, and bring value, to you.

How Projects Teams bring value to customers

Dedicated staff

38 engineers, administrators and managers, 9 of which work in Beijing.

Reliable

We work together with and alongside our customers to meet their needs.

Experience

Long history in delivering formaldehyde plants and partnering with equipment suppliers.

Quality

We strive for on-time-in-full deliveries.

Specialists

Our customers have high expectations of us.

Relationships

We never stop supporting our customers.

One-stop-shop

We know what works best in our process, reducing OPEX for the customer.

BY



Charles Hodgdon
Editor



Relocating a used formaldehyde plant – a spectacular experience

Most customers who produce formaldehyde today usually choose to invest in a brand-new plant when they need to expand their capacity. But manufacturing a new plant is a process that takes time, represents a large cost, and has a certain impact on the environment. Is it instead possible to buy and relocate a used plant that has been out of service for 10 years? What would the challenges be along the way, and how would the plant's performance be when started up after the move? Not so long ago, Sprea Misr of Egypt did just that.

Instead of investing in a new plant, Sprea Misr managed to find and buy an existing **FORMOX** plant located in Slovenia. A bankruptcy there had led to the plant being shut down and out of service for about 10 years, but it remained in very good condition. In fact, it still held the original ECS catalyst load, which had only been in use for about three years.

Impressive achievement

Relocating the plant posed many challenges for Sprea Misr – see related interview (page 20) with the company's plant manager, Mohamed Baraka. Not least of all was the fact that the plant would be exposed to different operating conditions in Egypt compared with Slovenia. In addition, reviewing the service history and adapting the plant to the new battery limit conditions in Egypt were two important elements behind the success of this project.

JM provided guidance and other technical services at different times throughout the project, and once the plant had been reassembled in Egypt, Ola Erlandsson and I travelled to the site to assist during start-up. While there, we checked that the plant had been built as it should be, especially with regards to the final safety equipment. "We were positively surprised over how good the plant looked after being erected at its new site," said Ola.

"We were positively surprised over how good the plant looked after being erected at its new site."

Ola Erlandsson, Senior Process Specialist

When it was started up again the plant reached maximum capacity without anything to remark on. Some measurements were carried out which showed that all process parameters were at an excellent level. In other words, the plant worked like a Swiss watch.

Conclusion

Buying a used formaldehyde plant and moving it to a different site in a different country and with different operating conditions turned out to be quite possible. Moreover, it can be considered a good investment from both an economic and an environmental perspective thanks to the lower capital expenditure and lower CO₂ emissions compared with manufacturing a new plant. In addition, it has been shown that a **FORMOX** plant did not lose its performance, despite the move from one environment to another, even after 10 years of disuse, which is impressive in every way. However, it must also be noted that a fundamental prerequisite for this success was the high competence level of the people and management at Sprea Misr as well as the

guidance from JM and the continuous discussions and coordination between both partners.

BY



Ahmad Hameed
Process Engineer

Disassembled in Slovenia...



...reassembled at Sprea in Egypt



An interview with Mohamed Baraka

Mohamed Baraka, Plant manager at Sprea Misr since 2002, oversaw the entire plant relocation project from inspection, dismantling and shipping in Slovenia, to reassembly and startup in Egypt.



Hello Mohamed. Thanks for talking to us about the relocation project. Can you tell us how you got the idea to buy a used formaldehyde plant?

Yes of course, my pleasure. It was 2019. We had five formaldehyde plants in operation and needed to expand our capacity. They were all salt cooled reactor plants, so naturally we asked the same vendor to give us an offer for another plant of the same type. But with rising prices and the Covid breakout, the vendor closed down. We then got an offer from a different vendor, but it would take two years to finish the plant, and it was too expensive. During those discussions we heard about a JM plant in Slovenia that had been shut down in 2014.

Then what happened?

I went with my director, Mr. Hesham, our CEO, to inspect the plant and found it to be in very good condition. Also the documentation files of the plant equipment were very good. So we entered negotiations to buy only the FA2 plant. Other companies were buying other units at the site.

But this was a different technology than all your other plants.

Yes, but I knew a little about it as I had attended a training at JM in Perstorp before as we have been using JM catalysts since 2004. Now I was very happy to hear that we had a chance to get our first FORMOX plant.

Did you personally oversee the move?

I did. I went back to Slovenia in October '22 with one technician and one electrician to supervise the dismantling of the plant by a local Slovenian contractor that we hired for that. I was there for 90 days. It was very cold, and it snowed too! I'm not used to that. That created a big challenge when discharging the oil tank for shipping because it still had two to three tons of oil solidified inside. We had to first move the tank to another site where we could heat it up enough to get the oil out.

What other challenges did you face?

Another big challenge was how to discharge the catalyst from the main reactor. The manholes had been open for a long time before we arrived, so some rainwater had come inside the catalyst tubes. We had to find tools that we could use to get the catalyst out, and we also had to rent a special machine to suck the catalyst from the reactor. It took us four days just to discharge the catalyst.

And the other big sections?

That also took a lot of time. We had to figure out how to discharge and dismantle the three packed absorber sections, which we did with the help of documentation that JM sent to us. Many of the pipes were too long to load into a container, so we had to do a lot of cutting. We used the insulation to protect them during transport. The catalyst inside the ECS still had many years of operation left and we planned to reuse it in Egypt, but it had to be discharged and packed in drums before transporting. Another challenge was that the entire instrumentation was new to us as well.

Then of course you had to transport everything.

Yes, it was a lot to arrange. There was the big equipment – two absorbers, ECS, main reactor, methanol vaporizer, oil tank and HTF-condenser – as well as about fourteen shipping containers filled with steel structure, parts and equipment. It all had to be transported by sea from Koper port to Alexandria port in Egypt. But the two absorbers were so long, 19 meters, that they had to remain at the Koper port for four months until a suitable ship could take them.

How did the reassembly in Egypt go?

Very well. We began the last week of April '23 and it took us about five months. Of course, we had to weld together all the pipes we had cut. We bought new KH catalyst for the reactor, loaded it according to the catalyst supply and services agreement with JM, and checked all the tubes, which took a couple of days. Finally, we were ready to start the plant in November, just over a year after beginning to dismantle it.

And the start up?

Everyone was of course curious about how it would go. Ahmad and Ola from JM came for a couple of weeks to look everything over. Once they were satisfied, we started it up. Everything went very smoothly and the plant started up without any problems. Afterwards, Ola and Ahmad took some process measurements, and the plant has been running great ever since.

BY



Charles Hodgdon
Editor

and the plant has been running great ever since.

Paraformaldehyde cleaning and the importance of venting vapours



All UFC plants and many formaldehyde plants are using caustic continuously. Caustic is also often used during paraformaldehyde removal. But the risks associated with caustic are sometimes underestimated.

In the previous issue of Informally speaking we included a couple of articles related to paraformaldehyde and working with caustic. In this issue we continue along that line, specifically about the importance of venting vapours when doing so.

The dissolving of paraformaldehyde is an exothermic reaction, causing the temperature of the washing water to increase. The temperature can reach boiling and it is important to make sure that formed vapours can escape from the vessel being washed. Otherwise, there can be an over pressurisation of the vessel and unexpected releases of vapour and entrained liquid if the vapours are not vented sufficiently. When adding caustic to the washing solution, JM recommends doing so in a small dose and waiting until the reaction has slowed down before adding more. It is also recommended to vent the vapours to a scrubber to minimize the formaldehyde emissions.

Flammable formaldehyde solution and solid dry para

Concentrated 55% formaldehyde solution with 1% methanol has a flashpoint of ~72°C. It will vary a little with the methanol concentration. The paraformaldehyde washing liquid will in most cases be above 70°C, and it is therefore important to keep the concentration low. JM recommends not to go above 10-15% formaldehyde during a para cleaning to prevent the formed vapours from becoming flammable. It can be necessary to replace the washing liquid several times during a para clean.

Keep in mind that it is still recommended to have an Ex zone around the vessel being washed even if the plant is not in operation. Solid dry paraformaldehyde will also burn if it is exposed to an open flame. This can be a risk if hot work is performed on a vessel containing paraformaldehyde.

Formation of hydrogen also a risk

In addition to the above dangers, it is known that hydrogen can be formed if paraformaldehyde is exposed to a high concentration of caustic solution. The hydrogen, or hydrogen with a mix of formaldehyde/methanol vapours, can then form a flammable atmosphere in an unvented vessel during washing. JM recommends that the washing liquid have a caustic concentration below 4-5% and that the vessel always be vented from the top. This is especially important when cleaning storage tanks. There have been examples where the igniting of vapours during cleaning has caused an entire tank roof to fly off.

For detailed instructions on how to safely remove paraformaldehyde from the various vessels in your formaldehyde plant, please to contact your JM Technical Service representative.

BY



Ola Erlandsson
Senior Process Specialist



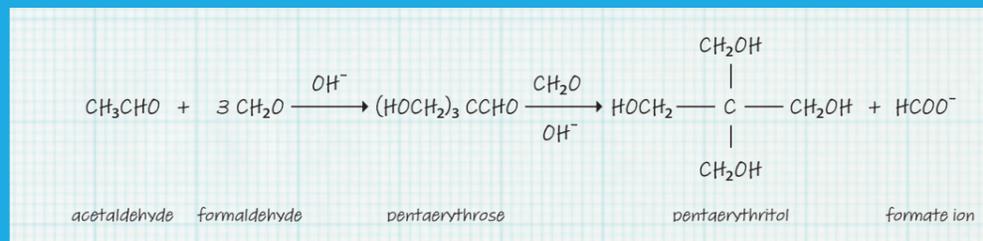
Polyols or polyhydric alcohols – what are they?

It has been said before, but it is worth saying again: formaldehyde is a fantastic little molecule that can be converted in many ways to produce a big variety of what we normally refer to as downstream products. In this issue of Informally speaking, we will have a closer look at Polyols, or more correctly, Polyhydric alcohols. The more interesting ones for formaldehyde producers include pentaerythritol, trimethylolpropane and neopentylglycol, colloquially often called PENTA, TMP and NPG (or NEO). All of them are pivotal compounds in various industries due to their unique chemical properties.

This is PENTA

Penta was first reported in 1891 by German chemist Bernhard Tollens, but it was the Perstorp company that launched the first commercial manufacturing in the 1940s, in the small village of Perstorp, Sweden. The chemical formula for penta is $C(CH_2OH)_4$ and the molecular weight is about 136 g/mol.

The breakthrough in Perstorp marked the beginning of widespread commercial production and utilisation of penta in various applications. The manufacturing process of penta starts from acetaldehyde and formaldehyde. The alkaline catalyst used is normally sodium or calcium hydroxide.



Typically the following steps are involved:

- Acetaldehyde aldol condensation to form pentaerythritol tetra-acetaldehyde.
- Cannizzaro Reaction under alkaline conditions to form penta.
- Purification where the crude penta is purified through processes like crystallisation, filtration, and distillation to obtain high-purity penta.
- A hydrogenation step can be used as an option where the already purified penta can undergo further purification by converting remaining aldehyde groups to hydroxyl groups.

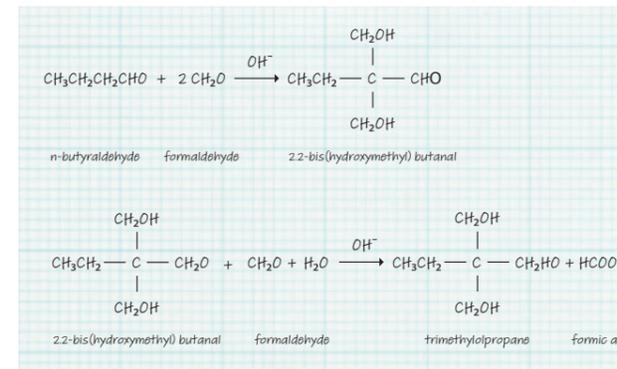
Na-formate is a coproduct when sodium hydroxide is the catalyst, and the proportion of the resulting products is determined by the reactant ratios. When the molar ratio of formaldehyde to acetaldehyde is increased, the amount of "dipenta" decreases and "monopenta" increases. The existing different commercial grades of monopenta consists of mainly the monoverison with up to 10% dipenta and traces of "tripenta." Also the purified coproducts dipenta and tripenta exist.

This is TMP

This polyol, trimethylolpropane, was first commercially manufactured in the US by Celanese in the 1940s. They were one of the pioneers in developing the industrial process for TMP production. The chemical formula is $CH_3CH_2C(CH_2OH)_3$, and its molecular weight is about 134g/mol.

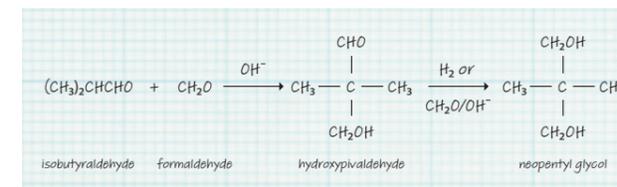
The manufacturing process of TMP starts from n-butyraldehyde and formaldehyde. Either NaOH, KOH, or $Ca(OH)_2$ is used as the base. Typically the following steps are involved:

- Aldol condensation where formaldehyde reacts with n-butyraldehyde under basic conditions.
- Cannizzaro reaction of the intermediate aldehyde with additional formaldehyde.
- Purification through processes such as distillation or crystallisation to obtain high-purity TMP.



This is NPG

Neopentyl Glycol, also known as NEO, is the latest addition to the polyols family presented in this article. This time it was Eastman in the US who was first. They began commercial production of NPG in the early 1960s. The chemical formula is $C(CH_3)_2(H_2COH)_2$, and its molecular weight is approximately 104 g/mol.

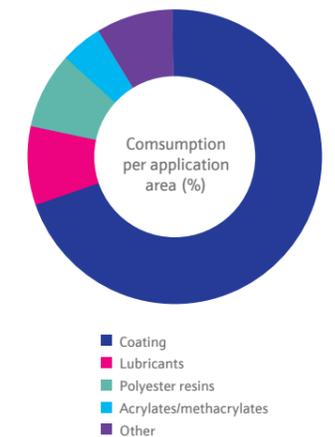


NPG is produced by the aldol condensation of isobutyraldehyde with formaldehyde, normally followed by a catalytic hydrogenation or by reduction via a crossed Cannizzaro reaction with more formaldehyde.

The applications

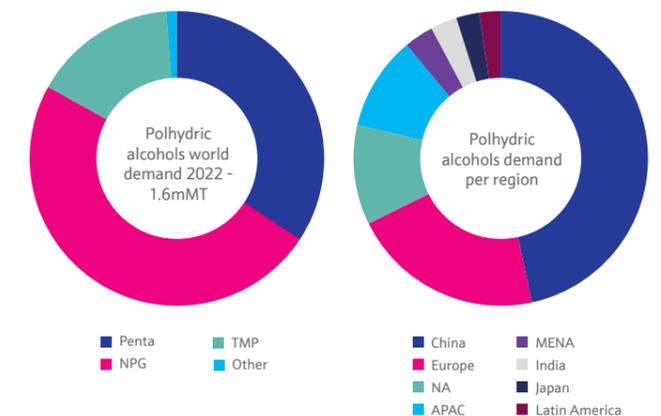
Demand for these polyols is very much influenced by general economic conditions and follows the patterns of the leading world economies. Consumption depends primarily on construction, remodelling and automotive production, as well as OEM, as coating resins account for about 2/3 of global consumption of this type of polyols. Penta is widely used for making alkyd resins, NPG as a key ingredient for polyester resins and coatings. TMP finds use in the production of polyurethanes and plasticisers. All of them are also important ingredients in different types of lubricants.

Other areas of use are in the synthesis of pharmaceuticals and adhesives. Coating resins manufacturers usually blend the different products to balance properties and costs. For instance, TMP is used as a branching agent in polyester resins. NPG is used as an important part of polyester resins and is used to produce powder polyester coating resins.



Where is the demand – and how much?

Today, China is the leading producer of these polyols, followed by Europe. China is also highest on the list regarding demand, followed by Europe and North America. Looking at the different products, NPG accounts for almost 50% of the global demand, one third is Penta, and the remaining share is TMP.



Conclusion

In 2022 the total global demand was approximately 1.6 million metric tons, and the world consumption is forecasted to grow at a rate of about 3.5% annually over the coming 3-5 years. The main driver for this growth will probably be penta and NPG in China. The demand in Europe probably will remain stagnant as long as energy costs stay high which has a severe effect on the automotive industry. In general, TMP and NPG will grow faster than penta in most regions.

Interestingly, the demand for powder coating is expected to grow above GDP in Europe and North America because it is seen as more environmentally friendly than liquid coating.

BY



Lars Andersson
Global Market Manager
Formaldehyde - Plants

Oxalic acid - an effective solution for rust-free surfaces

In formaldehyde plants, maintaining optimal conditions isn't just about appearances; it is also crucial for safety, productivity, and quality assurance. Among the array of substances used for this purpose, oxalic acid comes to light as a standout cleaning agent, offering exceptional rust removal efficiency while posing less harm compared to other alternatives.

Pay attention to the pall rings in the methanol vaporizer

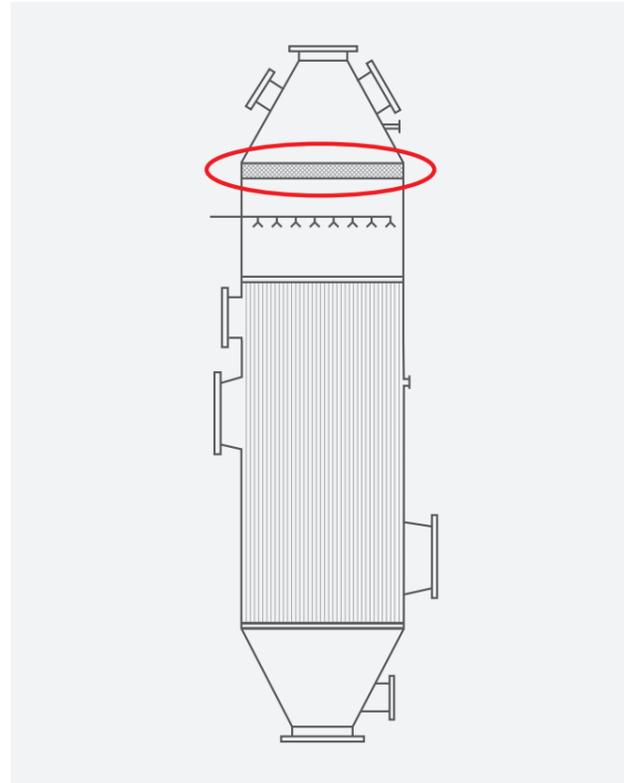


Figure 1: Pall rings are in some designs located in the top of the vaporizer

As mentioned in the Autumn Winter 2012 edition of Informally speaking and at conferences since, experiments have shed light on an intriguing discovery in methanol vaporizer maintenance: the catalytic effect of iron deposits on combustion. Through controlled experiments, it was shown that iron deposits on stainless steel can enhance combustion processes, which could lead to a deflagration in the formaldehyde plant. The pall rings are typically located in the top of some vaporizer designs to improve the vaporisation of methanol.

The primary aim of these experiments was to examine the impact of iron deposits in vaporizers. The setup involved slicing used packing material with iron deposits and loading it into a 1/4" reactor. A comparative analysis was conducted using clean packing material as a reference.

Experimental conditions included a mixture of 12 vol% O₂, 12% MeOH, balanced with helium, with temperatures ranging from 150 to 350°C. These parameters were selected to simulate real-world vaporizer operating conditions.

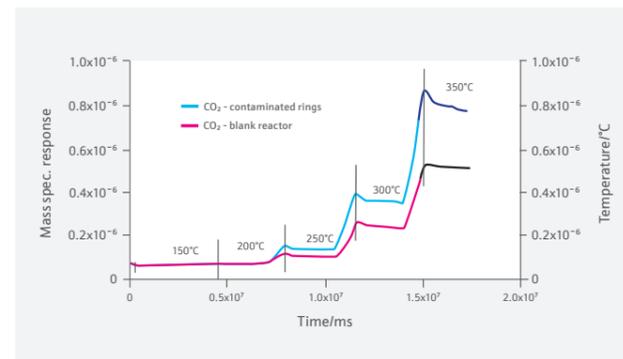


Figure 2. Pall rings with iron oxide deposits generated more CO₂ than clean pall rings



Figure 3: Pall rings – new (left), with iron oxide deposits (middle), and after a fire (right)

In essence, the experiments revealed how iron deposits in vaporizers can play a role in enhancing combustion. This emphasises the importance of thorough equipment inspection. If rust buildup is detected, it's crucial not only to identify the cause but also to incorporate oxalic acid cleaning into the maintenance shutdown plan. Adhering to strict safety and environmental precautions, along with site-specific procedures, is essential for effective implementation.

Oxalic acid

Oxalic acid (C₂H₂O₄) is a naturally occurring organic compound found in various plants like spinach, rhubarb, and beets. Industrially, it's synthesised through the oxidation of carbohydrates or glucose. This colourless, odourless crystalline solid is highly soluble in water, with a versatile range of applications from metal cleaning and rust removal to bleaching and pharmaceutical production.

Oxalic acid plays an important role in the cleaning and maintenance of some formaldehyde plant equipment. Its remarkable ability to dissolve rust, scale and stains makes it a valuable tool across various sectors, from metal fabrication to textiles and wood processing. However, it is imperative to prioritise safety and environmental responsibility when using oxalic acid, adhering to proper handling, disposal, and regulatory guidelines. By doing so, the chemical industry can harness the full potential of oxalic acid while minimising risks and environmental impact.

To assist you further with maintaining your formaldehyde plant we have written a Technical Information document about stainless steel cleaning with oxalic acid. Contact your technical representative at JM, or login to the **JM-LEVO** Formaldehyde Portal to get access to the full oxalic acid cleaning document.

Oxalic acid cleaning made easy: A guide to restoring stainless steel

This powerful solution can breathe new life into tarnished stainless-steel surfaces such as: packing rings, demister pads, equipment walls, and heat exchanger tube sheets. But using it requires some careful steps. Here's a simple guide to help you clean your stainless steel with oxalic acid while keeping everything safe and sound:

To begin, prepare the oxalic acid cleaning solution in a container large enough to fully submerge all of the parts intended for cleaning. This solution can also be applied to equipment surfaces as needed. After allowing sufficient time for rust removal through soaking, scrub the surfaces with a plastic brush. Next, rinse the surfaces, neutralise them if necessary (using a caustic solution, for example), rinse once more, and then allow them to dry. Ensure that the cleaning and neutralising solutions are properly disposed of.

Use caution

While oxalic acid is an effective metal cleaning agent, it is essential to exercise caution when using it. Always wear appropriate PPE.

BY



Lucas Freitas
Regional Technical
Service Engineer

After four decades in the business, Eddy Lee is leaving the stage



Eddy, known by many for his charismatic personality and smile-inducing impersonation of Pavarotti, made his first trip to Perstorp to learn about FORMOX technology back in 1983. At the time he was working for a formaldehyde producer in his home country of Indonesia. Little did he know then that one day he would be instrumental in bringing the technology to China. Now, over forty years later, Eddy has handed over the baton to Van Fu Shen and is heading into retirement.

Eddy's long career with JM has been a remarkable journey. When I asked him about it, one of the first things that came to mind was how it all began – with one very unexpected, but memorable phone call in 1995.

The phone rang in the middle of the night," Eddy says as if it were yesterday. "It was Max Henning, 'Mr. Formaldehyde,' on the line, and he sounded very excited:

Eddy! Do you remember the promise you made me?

I'm sleeping Max. What are you talking about?

Two years ago, at the methanol conference in Singapore? You said, 'Max, forget Indonesia. The market is saturated. You must take FORMOX to China.'

Eddy recalls how Max had been reluctant about China back then, saying he didn't know enough. So Max asked Eddy to promise to help if ever they should try. 'Why not,' Eddy said, and then forgot about it. Eventually a first licensing contract for China was signed and Max made the call to recruit Eddy.

The Three Musketeers

Eddy, Max and another well-known accomplice, Bob Crichton (see Autumn 2019 issue, page 10) began travelling around China and Asia.

"We felt like the Three Musketeers," Eddy says with a chuckle, "visiting a lot of formaldehyde prospects, some in very remote areas, and travelling long distances by train," he recalls fondly.

On one trip Eddy noticed a newsletter announcing an upcoming conference for China's formaldehyde producers. After talking to the organizer, Eddy managed to get an invitation. He and Max would attend, and they would also get a chance to speak about FORMOX technology.

"Usually Bob did all the talking," he says, "he was a very convincing speaker. I didn't know how I would do it, so I thought I should try speaking like Bob, only in Chinese. Max and I snuck into the hall the night before so that I could practice in front of him. The next day I was worried about my Chinese not being very good and said to the audience, 'If you do not understand me, please stop me and tell me.' No one did. Later at lunch, I was surprised when some attendees approached me and said in their heavy local accents, 'I am from the province of so-and-so, and you speak better Chinese than me.'"

Suddenly everyone in China knew FORMOX, says Eddy. It happened overnight.

Many delightful conferences

As many people have witnessed over the years, Eddy loves to sing and has often delighted conference participants with his impression of Pavarotti performing "O sole mio".

"I have enjoyed all the conferences over the years and what I have appreciated most has been all the interactions with customers and building relationships over a long period of time. Arranging Formaldehyde Asia in 2023 together with Van Fu Shen was a wonderful opportunity for me to host one last time before I retire, and I was glad to meet up with many old and new faces there in Bali.



Eddy and Max in the first row at the 2001 Formaldehyde China Association conference where FORMOX became known overnight.

Now I also got to attend this year's Formaldehyde China conference in Nanning, and that was also very special as my last opportunity to say goodbye to my good friends.



Eddy pictured alongside Peng Zhang (l) and Terry Qian (r)

From China back to Southeast Asia

After Formox set up a representative office in Beijing, Eddy's attention was turned back to Southeast Asia and Oceania, which has been his focus ever since.

"In the early days I had to do a lot myself. I even loaded reactors. By hand of course. I was put in charge of the APAC region where I did everything from sales to administration and technical service. But I cared about the customers and felt that they should be able to get solutions to problems faster than what I alone, or sometimes with the help of a borrowed process engineer, could deliver. So already early on, along with a couple others, I encouraged the creating of a Technical Service department."

"Today I am feeling very happy and proud to see my colleagues in China are doing so well. I am also confident that my successor, Van Fu Shen, and our newly installed local technical support, Aizaq, will continue to serve our customers in the Asia-Pacific region even better in the future."

What's next for you?

"Writing, singing, reading the stack of books I've been collecting, and travelling," says Eddy. "I promised my wife I would take her to places where I have been over the years. And to visit friends I have made of course."

Thank you, Eddy. We wish you a long and enjoyable retirement!

Bob Crichton remembers...

"Eddy has meant a lot for the business in Asia generally and for me personally in Malaysia, Brunei, Taiwan, Japan and Korea. I especially remember the outstanding job he did at the Formaldehyde Asia conferences over the years; my last (Hua Hin 2013) was particularly memorable. The key thing with Eddy is the support and help he has always given to both customers and colleagues. He's an enabler, always looking after his customers' best interests. Formox is Eddy. Eddy is Formox."



BY



Charles Hodgdon
Editor

Training



Operator training was conducted in January 2024 for Junzheng in Inner Mongolia, China. The training took place in preparation for the startup of a new FT3 plant, which was scheduled to happen sometime in the spring of 2024.

Customised **FORMOX Formaldehyde Process Training** was conducted in February for EGGER in Romania. The training took place at The Gerald's Hotel in Radauti and was tailored to suit the customer's specific needs. JM's Birgitta Marke, CT Commercial Licensing, Formaldehyde, Marion Kugler, Regional Sales Manager, and Will Breeze, Senior Technical Service Manager delivered the training with the assistance of EGGER team member Stefana Nanovschi, whose translation work was crucial to the success.



According to feedback from the participants, the training was well received and allowed for good and constructive discussions within the team. Some participants said that this was the best training they have ever attended! Some mentioned that they would like to be out in the real plant to see the actual equipment, more turbocharger focus and real case troubleshooting – something we of course will take into consideration for future trainings.

Projects and start-ups



Photos from two of many startups. The first is of the Hengli plant I, which was started up in Feb 2024. The second photo shows the project team during the commissioning of three plants at one time for Junzheng in Inner Mongolia, China this summer.

New Projects

Agreements have been signed with customers in:

- Australia for an FS3 plant.
- Turkmenistan for an FS1 UFC plant.

Ongoing projects

In the design phase:

- Yumen, Gansu, China for three FT3 plants.
- Qingtongxia, China for two FT3 plants.

In the shipping or construction phase:

- The replacement of an ECS Steam Generator to Thailand is in the shipping phase.
- Tangshan City, Hebei, China, for a FT3 plant.
- Chuzhou City, Anhui Province, China for one FT3 plant.
- Wujiaqu City, Xinjiang, China for two FT3 plants with scheduled start-up in December 2024.
- Jingzhou City, Hubei Province, China for two FT3 plants with planned start-up in February 2025.

- Nanchong, China for two FT3 plants with scheduled start-up in November 2024.
- Egypt for an FS2 UFC plant with Suez Methanol Derivatives Co as the end user.
- Korla, China for one FT3 plant with scheduled start-up in September 2024.
- Sichuan Province, China, for a new FT3 plant with scheduled start-up in September 2024. This will be their second FT3 plant on this site.
- Poland, for expansion of an existing FS3 Formaldehyde plant to a combined UFC-plant.
- Changji, China for one FT3 plant.
- Nantong City, Jiangsu province, China for one FT3 plant with scheduled start-up in January 2025.
- Fujian Province, China, for a new FT3 plant with scheduled start-up in January 2025. This will be their second FT3 plant on this site.
- Nantong, Jiangsu Province, China for one FS3 and one FT3 plant with scheduled start-up in October 2024.
- United Kingdom, for an FS1 High Pressure plant with scheduled

start-up in September 2024.

- Shanxi Province, China for two FT3 plants.
- The FS3 plant for a customer in Europe is in the construction phase.
- Xinjiang, China, for three FT3 plants with planned start-up in 2025.
- The project for an FS2.5 plant to a customer in India is approaching start-up in August 2024.

Start-ups

- The project for supply of a replacement ECS reactor/preheater for a customer in Germany went on stream in January 2024.
- The project with a customer in Wuhai, China, for three FT3 plants successfully went on stream in early 2024.
- The project with two FT3 plants for a customer in Dalian, Liaoning, China had the first plant on stream in February and the second in July 2024.
- The three FT3 plants for a second customer in Wuhai, Inner Mongolia, China, were all successfully started within the month of July 2024.

New faces & colleagues

Perstorp



Alexandra Bahtiri
Operational Procurement
Business Partner

New Technical Service Engineer for APAC



Aizaq Syazwan began his career as a Site Engineer for API-650 tank fabrication and later turned to Chemical Engineering as a Process Engineer & Senior Production Engineer for Formaldehyde plants.

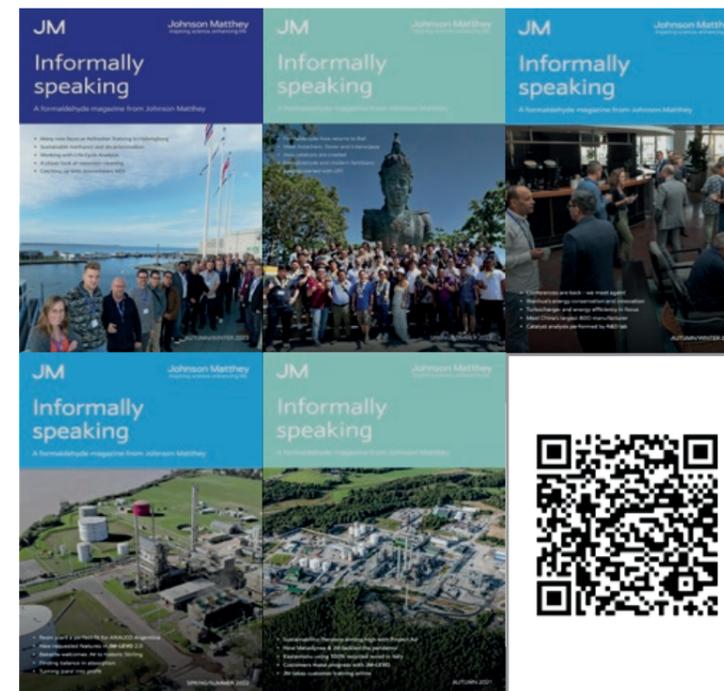
"I am a graduate of Chemical & Process Engineering College with over five years' experience in formaldehyde plant operations. I am thrilled to have joined the JM team here in Malaysia and the invaluable insight I have gained through my prior experience will undoubtedly aid me in delivering the exceptional customer support that JM is known for. I am a sport devotee who takes pleasure in endurance sport, which helps me to maintain my fitness and well-being."

New Catalyst Sales Manager for China



In January of this year, Shaoze Yang, a Process Engineer at JM since 2021, joined the business team in his new role as Catalyst Sales Manager.

"After experiencing the successful start up of several formaldehyde plants in China, I am very happy for this opportunity to work even more closely with our customers. I have a Bachelor's degree in Chemical Engineering from Zhejiang University of Technology and a Master's degree in Refinery Design & Operation from the University of Manchester. I am a huge fan of football games, a coffee addict and also interested in movies, video games and photography. Biking is my newest hobby, and sometimes I commute to work on my tiny folding bike."



A formaldehyde magazine from Johnson Matthey

The newsletter Informally speaking aims to provide information about formaldehyde in an informal forum and is published twice annually by Johnson Matthey for its customers and contacts in the formaldehyde business. The information included herein is part of our customer service and in no way entails or implies any undertakings, legal responsibilities or liabilities.

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JM

Supporting our customers

Johnson Matthey seek to cultivate a long-term, mutually beneficial relationship with our formaldehyde customers. Helping you to achieve a trouble-free, profitable operation using our established FORMOX™ process technology and catalysts.

In addition to our Centre of Excellence and catalyst production in Sweden complemented by our comprehensive sales and engineering team in China, we have regional sales and technical service & support teams in the Americas, Asia and the Middle East to help meet every customer need and query.

We believe in making our proven formaldehyde expertise available to our customers at our conferences, in our biannual **Informally speaking** magazine and through our world-class technical service & support, including comprehensive operator training, plant audits, feasibility studies for capacity expansion or plant modernisation, as well as through our JM-LEVO™ Formaldehyde Portal.

Johnson Matthey's catalyst R&D program is intensive with ongoing projects. We have the capacity for sophisticated simulations, advanced pilot studies and even full-scale testing at selected plants. Our aim is maximum efficiency, to give you the most formaldehyde output for the least input of methanol.

With a range of solutions available, our team will help you select the right path for your journey.

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