

October 2024

Fogmaker News

Technical and market-related information for our partners



APPROVED

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FOGMAKER
INTERNATIONAL AB

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Lars Alrutz, CEO
Fogmaker International AB.

A word from the CEO

Dear Partners,

We are rushing towards next year and everyone here at Fogmaker International AB hope that we will finish this year off in a good way. We have never been as active in the market as this autumn, so we also hope for a great start of 2025.

There have been three exhibitions during the last two months. It started with IAA in Hannover with more of a long-term focus for the Truck industry and the coming BLEVE regulation. It was followed by Minexpo in Las Vegas, where we launched our new FM Approval certification for Mining & Tunneling, and finally TOC Americas in Panama for the Material Handling industry.

The interest for our product keeps growing every month and we have a good position on the global market, thanks to you, our great Partners.

We have seen an increase of the aluminum price this year and it is actually up 18% since October 2023. We will send a new price-list in the beginning of November, and there will as usual be both ups and downs. The parts that are in aluminum such as the Piston Accumulator will have an increase. The commodity parts will have less of an increase, but it depends on the raw materials they are based on.

As we continue to grow, you will meet new faces at Fogmaker. Right now we are hiring for KAM-positions that will work globally.

Lasse

Fogmaker Receives FM Approval

After almost 10 years, rigorous tests and one pandemic, Fogmaker has now received FM Approval according to the highly demanding FM 5970 standard for Heavy Duty Mobile Equipment Fire Protection Systems. The news became official at MinExpo in Las Vegas in September where Fogmaker attended.

Receiving FM approval will open doors to new customers, especially the mining industry which demands FM Approval for the fire suppression systems used in mines, but also other process industries like pulp and paper, power generation, and chemical industries. Fogmaker can now start to seriously compete with the few other FSS manufacturers that hold FM approval.

The FM approval tests are challenging and numerous, for example vibration, corrosion, temperature, and fire testing to name a few.

Since each component is tested and documented, only FM Approved Fogmaker components can be used for an FM Approved system.

Using components from other suppliers will render the system non-compliant, and can lead to no or reduced compensation for the end-customer as well as the risk of FM revoking the approval. It is extremely important that the right components are used, and to follow the instructions in the Installation and Service manual for FM Approved systems.

The FM Approved system is very similar to the standard Fogmaker system with a few exceptions. A different alarm panel with backup battery is needed. The PA uses the older type of filling since the new filling valve is not yet approved. The detector bottle is also a bit different as well as some other minor differences on other components. An update of the FM Approval is being planned to include the newest components as well but will take at least 1 year since one of the tests is a 1-year leak test. There are also different in-house quality controls needed for FM approved systems; therefore, all FM approved PAs and Detector bottles have unique part numbers. When ordering, make sure that it is clearly stated that the system should be FM Approved.



It is not possible to retroactively FM mark a system.

Designing a system according to FM 5970 requires information about both the compartment size and the airflow. Compartment size is no different from before; FM requires 2.05 L per cubic meter. What is new is that the airflow through the compartment also needs to be known. To make it easier to design the system, Fogmaker has calculators and examples ready.

Example: A 3.6 m³ compartment with an airflow of 18 m³/s will need a minimum of 7.5L and 10 nozzles. The installation must be documented according to the instructions in the manual and should be available to the customer.

Both the 65 bar Fogmaker system used for USA and Canada as well as the 105 bar used for the rest of the world are FM Approved. There are differences in the design criteria between the 65 and 105 bar system so make sure you know where the end customer is located.

More information and webinars will be announced shortly.

/Gustav Stigsohn
Product Manager



The Most Tested and Certified System in the World

How many fire suppression systems can claim to meet the most stringent industry standards globally?

The Fogmaker System is now in a class of its own. We are proud to say that no other high-pressure, water-based fire suppression system in the world holds Fogmaker's certifications. No one.

We stand as the only system with this combination of certifications:

- **FM 5970 certification:** Verified under the most challenging real-world conditions, the Fogmaker system FM-approved has undergone rigorous testing to ensure loss prevention and climate resilience.
- **UL Certification,** a mark of global safety and performance compliance, ensures Fogmaker is reliable across various industries.
- **SPCR 199 Certification** distinguishes Fogmaker as the only liquid-based system rigorously tested for vibration, shock, corrosion, and fire.
- **SPCR 197 Certification** means our detection system is highly accurate, even in the most demanding environments.
- **AS 5062-2006 and AS 5062:2016** affirm that our system meets the strict fire protection standards for mobile and transportable equipment in Australia.

What does this mean for you?

Unmatched reliability in protecting even the most critical assets. The Fogmaker system is the only one with this level of global certification. Our high-pressure water-based mist technology ensures superior cooling, re-ignition prevention, and environmental safety with 100% PFAS-Free liquid agents.

We're not just certified—we're approved at the highest level and verified by the most respected certification bodies in the world. Trust in a system that is unrivaled worldwide.

/Mario Flores

Segment Manager, Mining and Tunneling



MINExpo in Las Vegas

Fogmaker R&D worked very hard to get the FM Approval in time for MINExpo that took place in Las Vegas on September 24-26, and the wonderful news were ready just in time to be announced at the show.

Fogmaker International shared a stand with North American partner USSC, and in addition to a large team working the show, the board also attended. We were delighted to be able to show that years of hard work have paid off.

It was a good trade show that both gave solid leads and served as a platform to tell the world that Fogmaker has joined a small number of fire suppression systems with FM Approval.



On the photo, left to right: Lars Alrutz, Maria Glosax, Johan Stark, Mario Flores, Gustav Stigsohn, Johan Bjerstedt, Andreas Svensson, Fredrik Rönqvist

IAA Transportation in Hannover

Fogmaker International took part in the IAA Transportation show in Hannover, September 16-22. We shared a stand with other Scandinavian companies and informed the industry about upcoming ADR rules - rules for transports of certain types of dangerous goods - that will require trucks to have fire suppression.

ADR stands for Agreement concerning the International Carriage of Dangerous Goods by Road and these rules currently cover more than 50 nations.

We had many interesting visitors to the stand, including the Swedish Ambassador in Germany. German partner Fischer also joined us for a couple of days.



Above: Ingo Ubrich and Gerrit Winter from German partner Fischer, and Fredrik Rönqvist from Fogmaker International.

Right: Andreas Isberg from System Design and Support at Fogmaker International, Veronika Wand-Danielsson - Swedish Ambassador in Germany, and Fredrik Rönqvist.



TOC Americas in Panama

This is a trade show for ports and material handling, and Fogmaker International AB shared a stand with our new subsidiary, Fogmaker Brazil LTDA, and South American partner Gestión Cuatro, SpA.

This too was a good trade show with many new connections from port operators to potential partners.

Fredrik Rönqvist, segment manager for Material Handling, took part in a panel discussion and held a presentation on fire safety in ports, with an emphasis on the new challenges of electric port equipment and keeping fire suppression environmentally friendly.

Visitors to Fogmaker's stand emphasized that port equipment sometimes burn and that fire suppression is imperative to saving both lives and investments.



Samuel Caparotti from Fogmaker Brazil and Patricio Bellolio from Gestión Cuatro.

Interview with Fredrik Rönqvist and Gustav Stigsohn in Baltic Transport Journal

Interview with Fredrik Rönqvist, Segment Manager for Material Handling, and Gustav Stigsohn, Product Manager, Fogmaker

Never compromise

by Przemysław Myszk

There is time and place for fire: in a fireplace, a bonfire during midsummer, or as part of an artistic performance. Conversely, one would very much like to avoid property catching fire, including costly machinery engines. We are talking with Fogmaker's Fredrik Rönqvist and Gustav Stigsohn about their company's system, what makes it stand out, and the latest eco-friendly version. We also put the spotlight on Fogmaker's history, values, and sustainability efforts. In closing, we're discussing lithium-ion battery fires and what we can currently do about them as a first response.

■ How did Fogmaker come about?

The company got started in 1995 by the inventor Kennerth Samuelsson in Växjö in Southern Sweden. He was interested in rally car racing and noticed that the fire suppression systems weren't really fit for the job. Kennerth came up with a new solution that essentially gave birth to Fogmaker. The system we offer today is still based on that initial innovation, refined throughout those nearly three decades.

The beginnings were rough, to say the least, and the company struggled to stay afloat. Back then, we sold five-six systems per year versus today's 32 thousand. The development hasn't been linear. Things got rolling in 2004 when Fogmaker entered the bus market. The last ten years were a real boom – the business truly exploded. That makes us confident when setting ambitious annual targets, which even if we miss by a small margin of, say, one million euros, it does not throw us off balance.

Long story short, Fogmaker has risen from a handful of people and scant sales to a workforce of 100 and a yearly turnover of 40 million euros. There's still a lot of room for business growth, in- and outside Europe. Fogmaker will be significantly bigger in three-to-five years.

■ What makes up the company's sales base?

Without a shadow of doubt, buses continue to be our sales engine, especially the European market. We are obviously very strong on our home turf here in Sweden, but concurrently see growth potential in overseas markets, particularly North America. Obtaining approvals is the single most time-consuming thing when expanding our offer. We are, after all, talking about safety equipment that simply must work when push comes to shove. That is why different certification authorities take their time to validate the system's reliability and efficiency. This process may take up a few months; it may consume an entire decade in the most extreme case. Given the legal green light, which on average takes six-to-12 months, it's mainly footwork, footwork, and even more footwork by us and our dealers.

We are also increasingly focusing on attracting customers from other industries, be it material handling, forestry, construction equipment, agriculture, mining & tunneling, and, of course, the port sector. Regarding the latter, we've joined the Port Equipment Manufacturing Association. This move gave us greater visibility in the

market and channeled more interest into our work. We have also observed a noticeable rise in safety awareness throughout the port business, not only in fire suppression systems but across the board.

■ What drives the company at its core?

Fogmaker is driven by expertise, commitment and integrity, the three values that resonate the most with our employees. We aspire to be the most knowledgeable people when one approaches us to talk about fire suppression systems for machines and vehicles. We are committed to doing our best in ensuring that clients get all the information, feedback, and support they need. Integrity is about trustworthiness across everything we do – that the company is a good employer, that customers are taken care of, but also that everything is alright with our supply chain: Fogmaker does not tolerate any dodgy business. Whenever we appoint a new dealer, we always go above and beyond to make sure there's no workplace mistreatment, bribery, child labour, illegal material sourcing, etc., involved. Luckily, as Fogmaker has grown over the years, it has become easier to vet and distinguish between the partners we want to work with and all the rest.



Gustav Stigsohn, Product Manager



Fredrik Rönqvist, Key Account Manager



Photos: Fogmaker

We have also launched the Fogmaker Academy to help the people wanting to work with the company know us: both the system and our values. In most cases, partners come to us to Sweden, with occasional trips in the opposite direction. Technicians who want to work with our system need to be certified by our trainers.

■ Can you walk us through what is your solution and how it works?

One could say that we have one product: the Fogmaker fire suppression system. Then again, the solution is so universal it's scalable and modular, from small to big applications. For the port business, that means it can be installed inside a forklift or on the biggest mobile harbour crane or a quay gantry.

The system is also customisable and our company will be more than happy to assist clients in getting the optimal set-up for whatever is in their machine park. The operational environment plays a crucial role here, too. We recommend our clients from the port and mining businesses to have a system with a higher degree of stainless steel to account for the salty conditions they're operating in.

Fogmaker is more than keen to assist companies in their fire suppression journey. As we only do machinery and equipment, our focus lies there. Upon client request, we will investigate what and where they're operating. That step includes risk analysis and designing the particular set-up together with the customer's team. Here, we are often asked why experts in fire suppression need

help, but the customer's team are the specialists who know their machines inside out. Their aid is invaluable. Whatever we discuss during these phases is protected by a non-disclosure agreement: all the details and designs are kept safe. Altogether, the port and shipping sectors are well aware of the many perils a fire can bring upon them. We at Fogmaker are ready to help guide them in doing their best to save lives at sea and in harbours, as well as to avoid property damage and costly downtime.

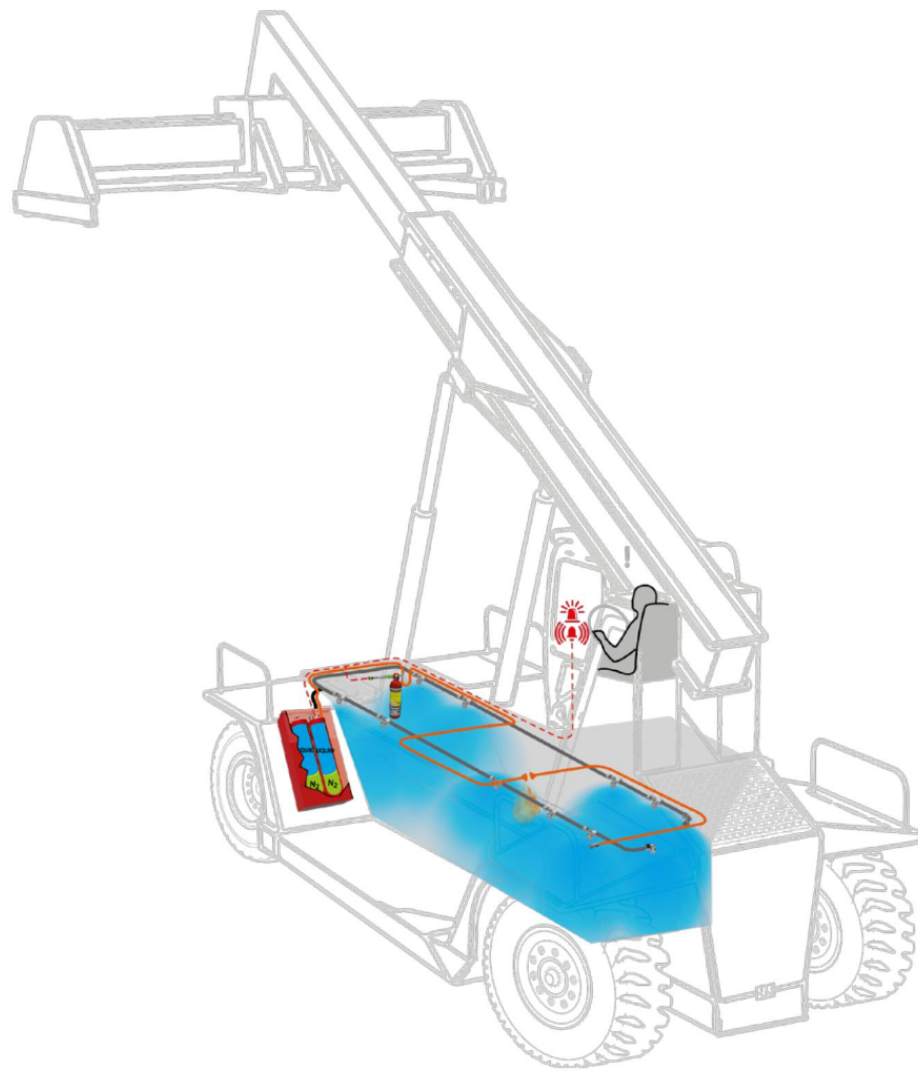
Our solution is an investment for years. First, if checks and maintenance are carried out properly, the system is ready for action indefinitely. There are annual check-ups, small service after five years, and a big one after a decade. We are catering to the automotive sector's demand of ten-to-15-year-long serviceability, but there are 'Fogmakers' that have 20 or 25 years under their belts and are still in excellent condition. Worth adding is that ours is a multi-use system. After suppressing a fire, it naturally needs to be cleaned, refilled, and its parts checked and replaced if need be. But when that's done, the system can be used again. The aftermarket is well taken care of.

We like to use the fire triangle to explain how our high-pressure, water-based mist system works. Fire needs three components to break out: heat, fuel, and oxygen. As such, Fogmaker's solution attacks all of them. Water is the best agent one can use for cooling in enclosed spaces, like engine rooms. The water-based mist evaporates, taking off heat by creating a steam that also gets rid of oxygen (one liter of water can create 1,700 litres of steam). High-pressure goes hand-in-hand with the system's longer activation time: more heat is taken out through a longer period (typically 45-60 seconds compared to 20 for low-pressure solutions).

Another crucially important feature distinguishing our system is its 'mechanical' nature, meaning it's operational 24/7/365 independent of any source of electricity. Our liquid also contains certain additives, including a foaming one. It functions as a chemical fire blanket over a pool of fuel, preventing it from fuming, hence igniting. There are anti-freeze agents (salts), too, that ensure readiness when it's cold; and, as an added value, these also increase the overall efficiency of fire suppression.

■ What difference brings the Eco I version of your fire suppression system?

The liquid in the latest iteration of our system is free of per- and polyfluoroalkyl substances (PFAS). After three or four



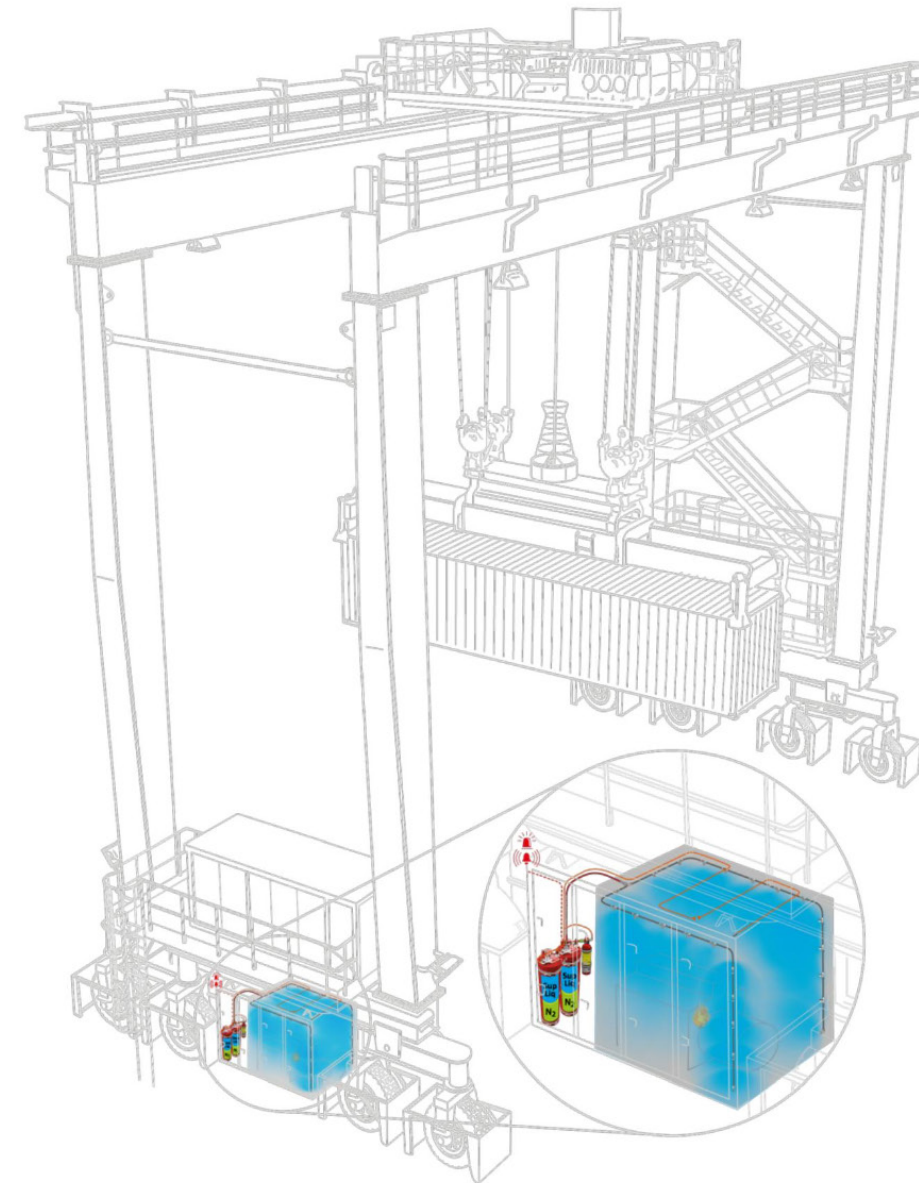
years of development and experimenting with alternatives (neither of which satisfied us), we decided that an in-house-made PFAS-free solution was the way to go. It wasn't a simple swap, PFAS for environmentally friendly components, and we also had to adjust the nozzles to make systems with Eco I as efficient as the standard version. We burned diesel counted in cubic metres during the final fine-tuning tests to make sure the new product doesn't compromise on performance. Eco I was designed with the environment in mind and is GreenScreen Certified™ at the silver level. PFAS are extremely stable, non-biodegradable molecules that make their way into groundwater and then end up in plants and animals – and in humans as we consume them.

The EU is also debating on banning PFAS chemicals, with the decision likely to be made next year. We therefore wanted to be fully prepared for a PFAS-free future potentially coming in 2026-27.

As things stand, Eco I is slightly more expensive, but that's CAPEX only; operation-wise, the cost is the same. Eco I must also get new certification as the liquid composition is different.

A lot of effort, time, and money went into developing Eco I, but interestingly enough, clients began asking for it faster than we first expected.

■ **And what is the company doing on other sustainability fronts?**



We have got the ISO 14001 environmental management certification. Our diesel vehicles run on hydrotreated vegetable oil, while others are hybrid or electric (with all internal transports being electrical, plus bicycling is highly encouraged). We have also changed much of the lighting to LED. Our buildings have the overall B score on an energy efficiency scale from A to G (with the latter given for the worst performance). We also recycle; our system is mostly made of aluminium and we try to source recycled materials as much as possible. We keep air business travelling to a minimum.

The supply chain team checks the suppliers not only for the best price and quality but also scrutinises their environmental practices and footprint. That and the fact our supply network is relatively short, meaning Fogmaker doesn't have to use air freight to a considerable degree (that's also because our system goes without electronics). That also had the added benefit of COVID not affecting us all that much. In fact, none of our clients had felt the impact (also because we usually keep our stocks high).

■ **How do battery fires differ from other ones?**

As things stand today, it is virtually impossible to suppress a lithium-ion battery fire. We aren't aware of any solution capable of doing that. Stating otherwise should be a red flag for any client planning to invest in a fire suppression system. Fogmaker has been very upfront and integral in sharing that inconvenient for some message.

Curiously enough, hybrid or fully electric vehicles do not burn so often as those with combustion engines, but if they do, such events immediately hit the news headlines. Statistics show that more than half of the fires start outside the battery packs. The focus in such instances is on suppressing the fire before it reaches the batteries.

Extinguishing a battery fire is so difficult because the whole thing is encapsulated. The source of fire is, therefore, almost absolutely obscured. The best what the fire suppression industry can do now is to cool down the batteries with a water-based mist for as long as possible to buy time to evacuate people, save other vehicles, or isolate the burning one for firefighters to employ other measures. The long activation time of our system proves very handy in such situations. ■



Sustainability

Fogmaker Discloses Data to Drive Climate Action

The CDP Database will soon publish Fogmaker International's sustainability data for 2023.

CDP is a not-for-profit charity that operates the global disclosure system for investors, companies, cities, states, and regions to manage their environmental impacts. Recognized as the gold standard for environmental reporting, CDP holds the richest and most comprehensive dataset on corporate and city action in the world's economy.

Fogmaker International's ambition is also to produce an annual sustainability report that can be easily shared with interested parties.

R107 with Eco 1

We have talked about Eco 1 many times in Fogmaker News and other communication channels, and it is important to us that all partners are aware of coming changes. There is a PFAS ban in the works in Europe and the proposed legislation covers practically all PFAS substances. Fogmaker's original suppressant contains small amounts of PFAS.



The ban is expected to come into force in 2025 at the earliest with a general transition period from 18 months, depending on application. For fire suppression systems for vehicles and machines, 18 months is the most likely transition period since there are PFAS-free alternatives already available. This means that even besides Fogmaker's own sustainability goals of phasing out PFAS from our suppressants, there will be a time when we cannot provide suppressants with PFAS. This is likely to happen as early as 2026.

We recommend that vehicles and machine models currently in production switch to Eco 1 systems as soon as possible. Fogmaker aims to make the transition as smooth as possible for all customers, but we will not be able to supply older liquids when it's no longer a legal option.

It is particularly important to inform OEMs where the systems are installed in production. Most of these are currently bus customers and this involves the R107 certificate.

R107 systems with Eco 1 are not the same as R107 systems with Fogmaker's original suppressant.

Partners who joined us for the 2024 partner days got some information during the conference and have received one e-mail with an information video about R107 with Eco 1, and one with a training video and a link to a quiz. Partners who weren't at the partner days will receive these items shortly. Please make sure that everyone involved at your organization watches the video and takes the quiz.

If you have questions, contact us at insidesales@fogmaker.com





Annual Fogmaker Day

November 1

In 2023, Fogmaker established the annual Fogmaker Day. It falls on November 1st and most of the staff will have time off. This means lower production and shipping capacity during this week.

Happy fall, or spring if you're in the south!



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I N T E R N A T I O N A L A B