



CONSTANT THROUGH CHANGE

REVIEW OF 2020





Dear readers, dear friends of VTG,

No review of the year 2020 can ignore one major topic: the coronavirus pandemic. The virus continues to occupy center stage, as it has done so often over the past twelve months, and it still has the world firmly in its grip. If I had to sum up the past year in just one word, as objectively as I can and from a VTG perspective, I would have to choose the word “challenging”.

When we went into the first lockdown in March 2020, rapid response was the order of the day. We had to set up a professional crisis management team on the fly – a team that would both protect our staff and keep our business operations running as best as possible.

To do so, we mapped out a five-phase crisis concept, the first three phases of which focused on dealing with the immediate crisis. At this stage, we already prepared

ourselves for several successive waves and drew up a variable, agile plan of action. The two remaining phases looked to the future. And thanks to our successful crisis management response, we were able to advance both at the same time, anticipating robust solutions for the time after the pandemic.

Phase one of our crisis concept initially centered around countering the general uncertainty with a resolute response, implementing the measures prescribed by the government and, as a company, fleshing them out as quickly as possible. This was followed by phase two, which became a test of all our endurance – for VTG as a whole and for each individual employee. Every one of us was called on to be extremely flexible and resilient when a large chunk of our activities was transferred from the office to our own four walls at home. Digital solutions were needed, as was the exceptional dedication of our staff

at the repair shops, to enable us to continue meeting the needs of our customers in the usual manner and playing our important part in safeguarding supply chains. Summer brought a long-awaited breather – for the hospitals and society at large, but also for the economy and those involved in it. We were thus able to move on to phase three of the crisis concept and return at least in part to something like normality.

We are pleased to report that our crisis management proved decidedly effective. We saw this at the start of the second lockdown, when working in crisis mode already felt almost like a well-trodden path. Even stronger evidence stems from the fact that we ended the pandemic year with fleet capacity utilization of 89.7 percent, that none of our facilities had to close, that we were able to continue the seamless delivery of logistical and transport services – and that we did not record a single case of infection at the company.

As I see it, there are two reasons why we have been able to weather this crisis to date only slightly below the figures achieved in the successful preceding year. The first is our customers' confidence that we would continue carrying their precious goods safely and reliably through the chaos of the pandemic. Investors too demonstrated their trust and were able to rely on the infrastructure-like nature of our business model as a safe investment even in a year such as 2020.

The second reason for this achievement is our workforce: Over the past year, our people have once again excelled themselves. Their untiring dedication was instrumental in enabling mobile and connected work models to take root and flourish in every part of the company – models that were inconceivable ahead of the pandemic. In many areas of our business, 2020 also allowed us to tear down old barriers, completely rethink the



“We have emerged from the 2020 pandemic a more flexible, more digital VTG.”

DR. HEIKO FISCHER,
CHAIRMAN OF THE EXECUTIVE BOARD
(CEO) OF VTG AG

way we organize our work and, as a result, provide customers with even more seamless transport and logistical solutions. VTG is not the company it was at the start of the year: Today, we are a more flexible, more digital VTG.

For a company in the rail transport sector, that is no mean feat. Players in our industry tend to stick with what they know and follow their proven routine. They would rather be overcautious than too hasty. So it is not easy to map the culture of innovation we see in the digital universe onto our world of steel and wheels. Not easy, but possible – as we have been proving for years with industry premieres such as VTG Connect and the digital traigo platform that went live in 2020. Our customers can now track information about their transports in real time. Nor is this capability limited only to hired wagons: It also includes current repair shop capacity all over Europe, as well as details of restrictions arising from

measures to combat Covid-19. Innovations such as these have established VTG’s wagon fleets as the most modern and adaptable in the industry.

Even before the Covid-19 pandemic, we had set out along the road to constant change. In hindsight, the extraordinary year under review confirmed that we were on the right track. One important concept in this context is modularization. The freight wagon must be reimagined from the ground up and aligned with the needs of our customers. With this in mind, we launched an internal thinktank in early 2020. Its mission was to design an even more flexible wagon architecture across all our transport solutions. “Standard issue” is a thing of the past. In its place, we want to give our customers integrated and above all tailor-made solutions combining different assets and logistical services, preferably on an international scale. When customers approach us with even the most complex

concerns, they should be able to do so in the full knowledge that they can rely on VTG absolutely.

In 2020, we continued to chart our course as an innovative market leader, a company that is actively involved in shaping key developments in our industry. That means drawing on sustainable transport and transshipment solutions such as r2L technology, implementing digital tools such as VTG Connect and traigo, and rigorously focusing our service portfolio on the needs of our customers.

Over the past year, these considerations led me to wonder whether we need to rethink global supply chains to make them more resilient in the face of crises. The developments we have witnessed in recent months confirm to me that this is indeed so. While border crossings were closed and trucks were stuck in traffic queues, and while a single container ship running aground was

enough to bring the world’s freight traffic grinding to a halt for days on end, rail has shown itself to be a transport option with unparalleled reliability.

As if that were not enough, we now know that even when the pandemic gradually – hopefully – begins to subside, other challenges will take its place. First among these is climate change, which demands sustainable answers. By 2030, emissions in the transportation sector alone must be slashed by around 40 percent. And I am convinced that a clear pro-rail policy can make a huge contribution to achieving this goal.

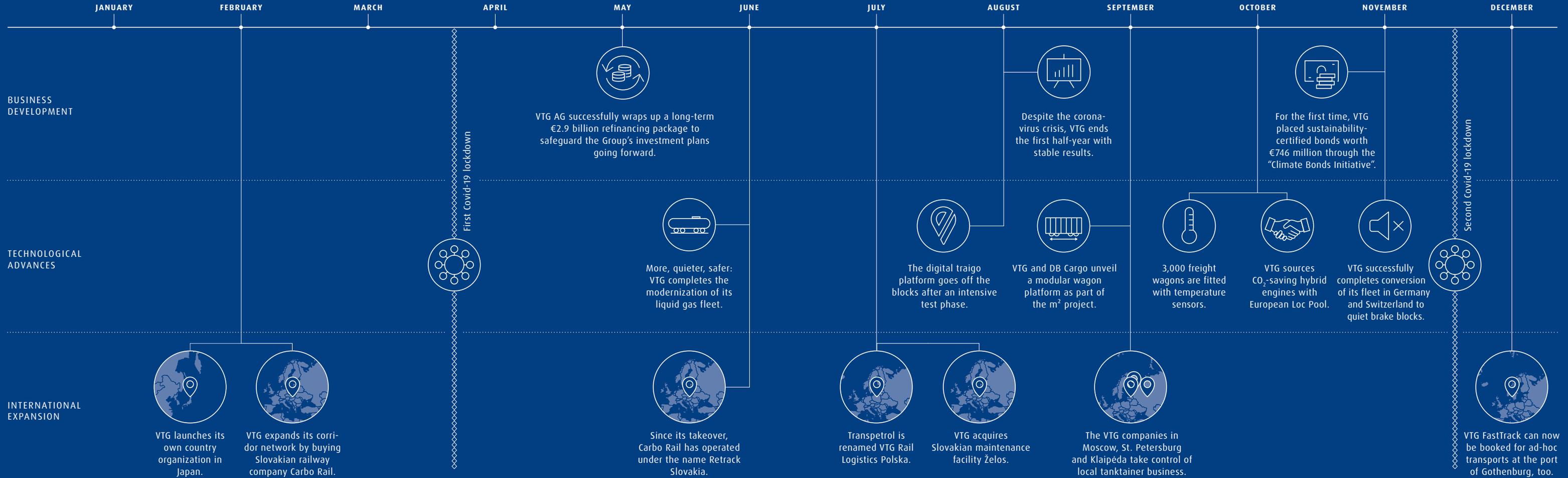
In writing this, I would remind the reader of what I said at the outset: There is no question that 2020 was a challenging year. But we have come through this challenge with flying colors, emerging from it even stronger. We can be proud to have delivered such healthy results in such a

turbulent year. Yet we must not forget that the uncertainties of the past year are still with us as the current year unfolds, and that we as a Group must work hard on our profitability. That is why we must use 2021 to stabilize our business and get our wagons moving profitably for the long haul. This in turn will require carefully focused investment, the further optimization of our processes and a critical look at costs. That said, if we retain our attitude of forward-thinking and a clear mind, the next annual review will undoubtedly be a positive one.

Kind regards,

DR. HEIKO FISCHER
CHAIRMAN OF THE EXECUTIVE BOARD
(CEO) OF VTG AG

2020 TIMELINE



ALWAYS ON THE MOVE



VTG delivered stable results in the pandemic year of 2020. It also placed a bond on the capital market that was oversubscribed several times. The key to this success? Sound crisis management and resolute investment in both sustainability and technological innovations that add value for customers.

“Numbers are pretty boring, really – if you fail to recognize their beauty and don’t speak their language,” Mark Stevenson asserts. “My job is to interpret that language and communicate its message to banks, shareholders and investors.” If that is so, Stevenson must have been fairly convincing in 2020: Defying the Covid-19 pandemic and global fears of recession, VTG’s Chief Financial Officer successfully sealed a €2.9 billion refinancing deal with a Standard & Poor’s rating. And part of the deal involved placing a €746 million “green bonds” on the market – a placement oversubscribed several times over.

“That’s how you know that the market sees VTG’s business model as very stable. And you can see how the image of the rail industry as a whole has changed,” says Stevenson, who joined VTG in 2015. “When I started out in rail logistics 25 years ago, you could consider yourself lucky if a bank scratched together a 50 million Deutsche Mark loan for you.”

Rail is the backbone of international freight transport: That has become abundantly clear during the pandemic over the past year. Airplanes were grounded. Ships were not allowed to leave port. Lines of trucks at border crossings grew ever longer. But the goods trains kept rolling. VTG was one of the players that were instrumental in keeping supply chains intact. Thanks to professional crisis management and the phenomenal dedication of our people, operations continued, repair shops stayed open (subject to strict hygiene measures) and the wagon fleets continued to ride the rails. That is not to say that the pandemic left rail unscathed: Wave after wave of infections, ever-changing stipulations, unilateral decisions by national and regional authorities and unforeseeable consequences for different industries all made 2020 a veritable roller coaster ride. Relief at having got through the first six months on an even keel gave way to months of uncertainty. Yet the year-end

Green assets:
The modern wagon
fleet proved
its worth during
Climate Bonds auditing.

accounts for 2020 give reason for cautious optimism: At €1,218 billion, revenue was only slightly below the previous year's record figure. EBITDA edged down to €492 million, and fleet capacity utilization was still up at 89.7 percent. Another pleasing development was that the workforce increased to 2,100 people.

VTG is thus well placed to face the challenges that inevitably lie ahead. With the market palpably nervous, it is all the more important to build on our own strengths and seize new market opportunities. Especially for long-distance consignments, Oksana Janssen, Chief Operating Officer (COO) Eurasia & Far East, notes that many customers who used to regularly use container ships shifted their transports to the rails in 2020. That made life incredibly busy for country organizations such as VTG Rail Logistics Polska, which takes charge of trains run by Chinese state railways when

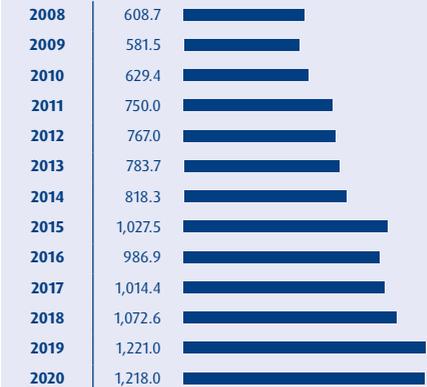
they cross the Belarussian border into Poland. "East-West traffic along the New Silk Road has increased substantially," says Barbara Dudek, Sales Manager at VTG Rail Logistics Polska. "We are already handling four times as many trains as we did three years ago. A new service to Munich was also added during the pandemic, and our Chinese partner is planning further train connections." It would be difficult to cope with such challenges without having local experts on the ground. "You need someone who knows which loading terminals along the border have the capacity to handle the rising volume of traffic, for example."

At a time when news broadcasts reserve all their superlatives for "the biggest crisis since World War II", it seems strange to be talking about growth. Yet it is in crisis that a company shows how adaptable it really is – and whether it has the right answers to the questions of the day.



REVENUE
1.218
BILLION EUROS

REVENUE (IN € MILLION)



After two record years in a row, revenue edged down again for the first time but remained healthy given the prevailing pandemic.

Greater transparency: traigo gives visibility to pandemic-related restrictions on supply chain and repair shop operations.



Mark Stevenson sees the freedom VTG has carved out for itself on the capital market as a crucial factor: “Our corporate bond helped us sew up a refinancing package totaling €2.9 billion in 2020 – and that on terms that few other companies could dare to hope for.” A solid, lasting foundation was thus laid for the company’s ongoing development – an expression of the market’s trust in the continuing stability and resilience of VTG’s business model.

To Stevenson’s mind, the EU Commission’s Green Deal presents the greatest challenge to capital investment: “The Commission wants rail’s share of freight transport to nearly double from 16 to 30 percent by 2030,” he notes. “Even if they only manage 22 or 23 percent, that is still an increase of one third. And that won’t happen with traditional wagons. It will mainly be with intermodal wagons, of which there are far too few on the

EBITDA
492
MILLION EUROS

EBITDA (IN € MILLION)



Although the weak economy and nervous markets weighed on EBITDA, it was still only slightly below the record result reported in 2019.

market. So, we are going to need a massive new-build program if the Green Deal is to come anywhere near being fulfilled. As a market leader, we are rising to this challenge.”

Indeed, few companies on the market are as far down this path as VTG. While some players are only now beginning to invest in container wagons, VTG is already plugging the last few gaps in its intermodal traffic. The new m² wagon concept, jointly developed by VTG and DB Cargo, has a large part to play in this strategy. The length of this modular platform can, for example, be adjusted before being put into use by the customer to fit special tanks for which a conventional flat wagon would be too long and that would otherwise force the operator to travel with empty spaces. The m² wagons will enable trains to run to full capacity, giving users a valuable cost benefit.

This co-development with DB Cargo is not the only innovation VTG launched during the pandemic in 2020, however. The official launch of the digital traigo platform marked another major step forward. For the first time, customers can now constantly track the current status of their transports and digitally manage the fleet they have rented. At a time of such great uncertainty, traigo injects much needed transparency and certainty into the business.

To take just one example: Since April 2020, VTG has been posting live and free information on traigo about restrictions to supply chain and repair shop operations throughout Europe. Where do restrictions apply? Where is capacity available? “Above all in the current situation, rail freight traffic is vital to keep goods flowing. And the repair and maintenance facilities all over Europe are fundamental to the rail system. Without them, nothing goes,” says Sven

Wellbrock, Chief Operating Officer (COO) Europe & Chief Safety Officer. “That’s why we want to give every player in the industry a clear overview of repair shop capacity.”

In the year under review, VTG and its partners put still more innovations onto the rails. For instance, the company signed a leasing agreement with engine provider European Loc Pool for up to four hybrid engines that are more powerful than conventional models but generate fewer CO₂ emissions. In conjunction with sensor specialist Nexxiot, VTG also fitted around 3,000 freight wagons with temperature sensors to ensure no-gaps monitoring for sensitive, high-value goods and transmit information about them in real time.

On the capital market, too, it clearly pays to invest in a sustainable, climate-friendly fleet: In 2020, VTG was able to place its €746 million corporate bond as a “green”

bond in compliance with the criteria promulgated by the Climate Bonds Initiative.

“When we started planning for our bond in 2019, we reckoned that obtaining this certification would be so much work that we just didn’t have the time,” Stevenson says. In the eyes of investors, “rail” is not automatically “green”. Ironically, it was the “break” enforced by the global pandemic that gave VTG the time it needed to complete the certification process after all. In April 2020, the capital markets were in such turmoil that it made no sense to go ahead and place a bond. “Instead, we put together a bridging loan in super-fast time,” Stevenson recalls. “That, too, testifies to our standing with the banks as a stable company.”

With interim financing in place, VTG was able to go ahead with the time-consuming Climate Bonds certification process. “The decisive factor for classification is: What

CAPITAL SPENDING IN 2020

293.5

MILLION EUROS

CAPITAL SPENDING (IN € MILLION)



* Peak attributable to AAE acquisition

** Peak attributable to NACCO acquisition

In 2020, VTG once again invested in its wagon fleet and in new technologies to drive digitalized, climate-friendly rail freight traffic.



CONTRACTUAL CAPACITY UTILIZATION

89.7%

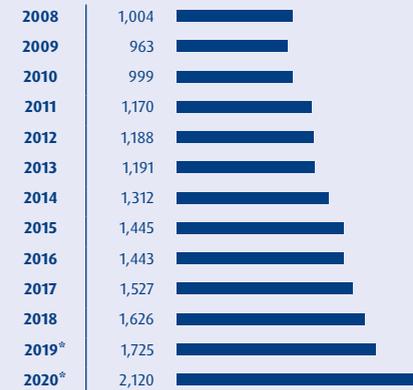
CONTRACTUAL CAPACITY UTILIZATION



Constant high levels of wagon fleet capacity utilization underscore the importance of rail as a reliable mode of transport – even (and especially) in a crisis.

AROUND
2,100
 EMPLOYEES WORLDWIDE,
 OF WHOM 1,500 WORK IN GERMANY

EMPLOYEES



*Including non-consolidated companies

A firm foundation for solid growth:
 Our workforce has more than doubled
 over the past ten years.



In 2020, VTG AG continued to invest extensively in a modern fleet of freight wagons.

freight do our wagons carry?” Stevenson explains. “And because we use intermodal traffic more than any other provider, we have a large share of green assets on our balance sheet.”

VTG’s commitment to innovation and flexibility is manifestly not confined to its wagon fleet, but also applies to corporate financing. For its Climate Bond, the company set up a Common Terms Debt Platform. Still a rather unusual construct in Germany, this platform is a lot of work to begin with but ultimately gives a company extraordinary room to maneuver. “When you have a Common Terms Debt Platform, you only have to define your financing terms once. You can then solicit tranches at different prices and with different maturities from various investors.”

It was worth the effort: Together with its many innovation projects and the refinancing package concluded in 2020,



“The Green Deal is the biggest challenge to our industry. We are rising to this challenge as the market leader.”

MARK STEVENSON,
CHIEF FINANCIAL OFFICER

Off the water and onto the rails: VTG has been handling more East-West transports during the pandemic.

the company now has a firm foundation on which to tackle the challenges that lie ahead in the coming years. Logistics will obviously be a different ball game after the pandemic. The questions is how far-reaching the changes will be. “Digitalization will become even more important,” says CEO Dr. Heiko Fischer, “and for customers, digital solutions will yield crucial improvements, making the flow of goods and their freight transports so much more efficient and transparent.” Above all, sustainability will once again occupy the foreground: “This is where rail can be of central importance.”

Mark Stevenson sees every crisis as a chance to learn. “Obviously, you always make plans for a crisis. You work through worst-case scenarios for every form of financing. But when the crisis actually strikes, it still catches you off balance. The trick is not to panic and freeze, but to swiftly respond to any and every change.”



APPROXIMATELY
94,000
RAIL FREIGHT WAGONS

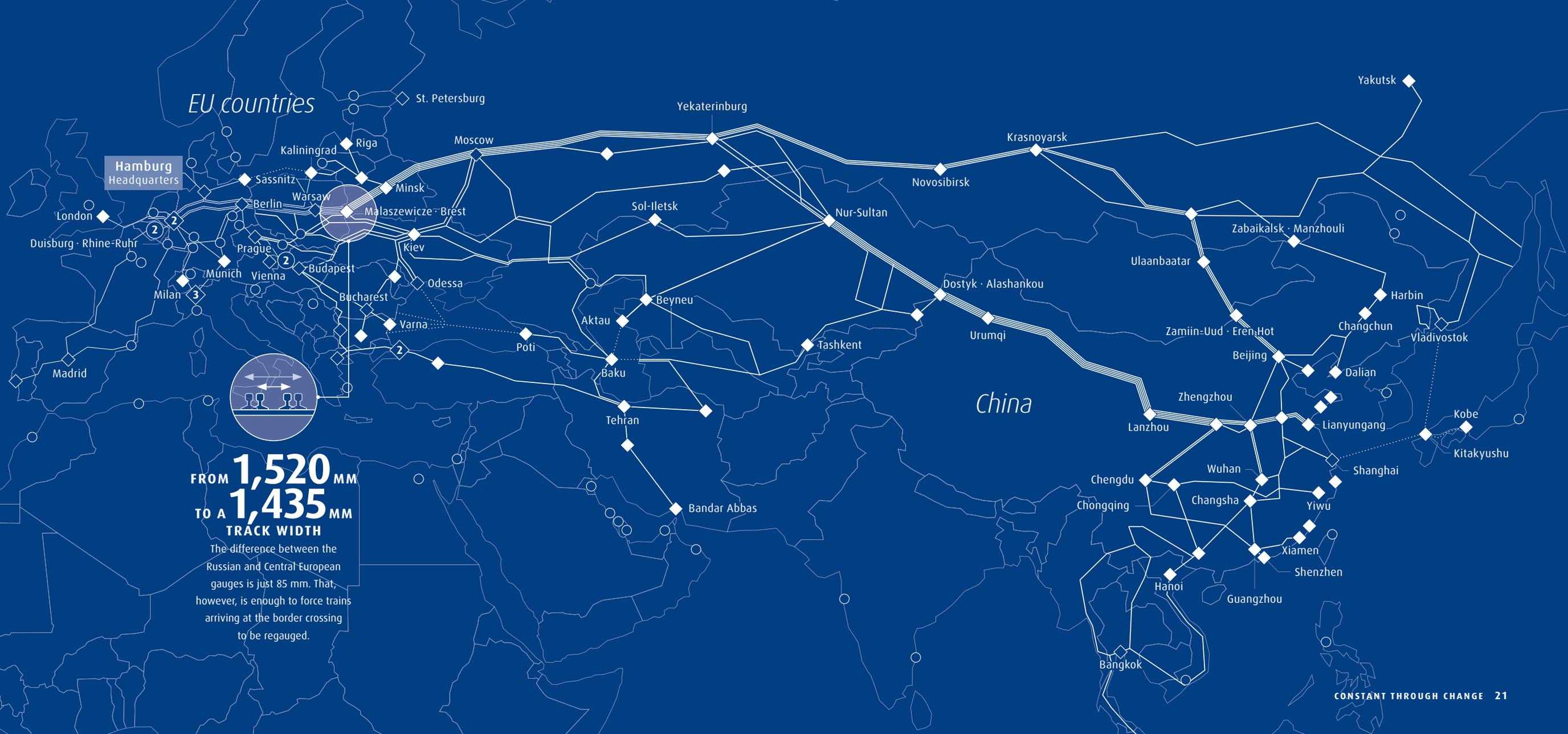
NO. OF WAGONS



Gases or liquids, steel or timber:
VTG’s rail freight wagons carry just about any goods you can think of.

SWITCHING GAUGES IN BREST – GO EAST, GO WEST

The New Silk Road links up some 140 rail stops as it wends its way from China to Europe, with more being added all the time. Two of them are at Malaszewicze in Poland and Brest on the Belarussian side. For a large proportion of rail freight, this is a pivotal node between East and West – hence the crucial significance of this stretch. Why? Because this is where Russia’s broad gauge meets Europe’s narrow gauge. Or, to be more precise, where the Eurasian rail network meets its European counterpart. For us at VTG, this stretch of line holds even greater significance, embodying growing convergence across the markets of Europe, Eurasia and the Far East – all of which are served by the seamless, integrated transport offerings of a potent VTG brand.



- VTG locations
- ◇ VTG locations and corridor junctions
- ◆ Corridor junctions



LISTEN CAREFULLY, THINK AND ACT HOLISTICALLY

Standard solutions are passé: In 2020, VTG sharpened its focus on delivering transport solutions – flexible combinations of assets, logistics and digital services – that are tailored to different customers’ individual needs.

When coming back from a meeting with a customer, Sven Wellbrock is himself often surprised at the logistical solution that emerged. “Traditionally, every business unit had its own relationship with the customer, so it also had its own concept of what the customer needed,” the COO Europe & Chief Safety Officer says. “But when we now swarm out as ‘One VTG’ across the divides of our business units, offering the customer an integrated portfolio of services, we realize that that concept is incomplete: Customers have needs we didn’t know about. And they didn’t know that we have solutions for them!”

Ask questions and then listen: Sven Wellbrock spent a lot of time doing both in 2020. His objective? To establish VTG

as a provider not of piecemeal assets or services, but of integrated solutions. “We no longer ask which wagon we can hire out to you today, but what are your real transport needs.” It is often passing remarks that make Wellbrock and his team sit up and take notice. One forwarding agent, for instance, complained about unreliable timetables and the hassle of processing the transportation of cars to Romania. The purpose of the meeting was actually to talk about maintaining the customer’s wagons. In the end, however, VTG had developed an end-to-end traction solution with its own engine, complete with digital monitoring in real time. “The customer had no idea we can do all that,” Wellbrock says. “And he would never have found out if we hadn’t listened to him so carefully.”



“Few customers are now willing to do without real-time data.”

SVEN WELLBROCK,
CHIEF OPERATING OFFICER EUROPE &
CHIEF SAFETY OFFICER

The radical customer orientation applied by VTG in these pilot projects is based on concepts such as design thinking, which we know from the digital world. “In the early days, we quickly found out that not everything can simply be mapped onto our industry,” Wellbrock acknowledges. “So, we adapted the tools for our own purposes and are now reaping handsome rewards.”

One key to the development of integrated solutions has been to dovetail the Rail Europe and Rail Logistics business units. That will continue in 2021. Another key is one of VTG’s traditional strengths: its international orientation. “Other providers have an international presence but a national mindset,” Wellbrock explains. “One country organization buys wagons or even an engine, but the others can’t access it.” Not so at VTG: “We spread the capacity

utilization risk for our assets across a broad geographical space.” To facilitate this approach, already-close cooperation between Europe and Eurasia & Far East was further intensified in 2020.

Oksana Janssen is still fascinated by how big that space is even after all her years at VTG. “When we move plant engineering parts between Russia and China, they cover thousands of kilometers,” the COO Eurasia & Far East says. “And we can track them in real time all the way – by road, sea or rail. That is pretty impressive.”

VTG’s ability to handle complicated, long-distance transports as full-service offerings is a strength that Janssen intends to anchor more firmly on the market. The Silk Road & Project Logistics, Rail Russia and Tanktainer business units stepped up their mutual



Where are my wagons?
VTG continued to digitalize its fleet in 2020 to provide customers with even more live data for monitoring their rented wagons.

VTG's tank containers are ideally suited to intermodal traffic and can reach any destination in the world, with any mode of transport.



collaboration in 2020, which in turn reinforces VTG's capability to develop cross-border transport solutions that fit every customer requirement. One important step to make this full-line expertise more visible on the market has now been taken: In 2020, VTG Tanktainer began operating in Moscow, St. Petersburg and Klaipėda under its own name – it no longer works via agents. "We need to let our USPs do the talking," Janssen insists. "Lots of firms can get a container from A to B. But there aren't many who have a network on both the European and Russian sides. We have access to all the players who know how to deal with everything and can master every challenge – from gauge switches to customs handling. We've got all the assets and the logistical expertise – the engines, the wagons, the personnel. And we can even cover the last mile to final destinations that don't have railway sidings. All the pieces of the puzzle have to fit together perfectly."

"In the past, the complexity of long-distance rail transports has kept many customers from even considering this medium for long-haul transportation between the West and the Far East," Janssen admits. The 2020 coronavirus pandemic could change all that, however. "Other modes of transport have not been available, and maritime freight rates have surged. That makes rail more attractive, and we have seen a sharp increase in rail traffic along the New Silk Road, via which we currently serve around 150 destinations."

Is the 'coronavirus push effect' merely a temporary phenomenon? "Some of these transports will undoubtedly go back to maritime routes," Janssen concedes. "But we also believe that many customers will come to appreciate how much faster rail is and how straightforward things are when VTG handles their transports." Current market analyses point to annual growth



"The surge in maritime freight rates is making rail more attractive."

OKSANA JANSSEN,
CHIEF OPERATING OFFICER EURASIA &
FAR EAST

Janssen and Wellbrock are determined to raise VTG's visibility as a player in the cross-border transport solutions space.

of between three and seven percent on the Silk Road through 2030.

Putting together full-service packages for challenging transport assignments is one of VTG's USPs. Another is our special expertise in the movement of liquids and chemicals. "For example, we can monitor the status and position of our tank containers very accurately, because most of them already have VTG Connectors," Janssen explains. These connective sensors have become firmly established in project logistics activities, too. Plant engineering parts and other expensive special freight goods are fitted with VTG Connectors so that customers can track them live in transit.

"Few customers are now willing to do without the real-time data", Sven Wellbrock

reports. But the picture is less clear for other digital innovations. "That's something else we learned in 2020: Not everything we have to offer in terms of IT solutions already fits in with customers' business models. As a provider, you must never be blinded by the brilliance of your own tools. You always need to listen and understand what customers want - and what they don't want."

In the current economic climate, he says, what customers want most of all is flexibility: "They are constantly having to adapt and readapt to changing demands, so our assets have to be able to do the same." The innovative modular solutions that VTG unveiled in 2020 are only one response to these needs. Another is its work on integrated logistical solutions that simplify

the transition from road to rail. "To take one example: We and a partner are working on a transport and transshipment technology that will allow every trailer to be lifted by crane and transferred to the rails: Semitrailers are driven onto a platform which a terminal crane can then lift onto a pocket wagon."

VTG believes this solution will make the modal shift between road and rail easier. "Our customers will then have other options if the price of diesel goes up, say, or if a country implements policy measures to get more goods off the roads and onto the rails," Wellbrock says. "We are working on harmonized and efficient transport concepts," Janssen adds, "so that we and our customers can quickly respond to changes even beyond national borders."

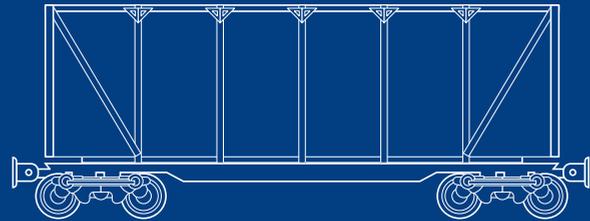


LONG-DISTANCE RUNNER WITH THE SPEED OF A SPRINTER

Reliable, but less flexible: That is still how many people see rail freight. And if you have ever stood and watched a 750-meter block train pass through, you may indeed have a hard time imagining that such a Colossus can be part of a fast-moving and fully digitalized logistical chain spanning rail, road and water. Yet – surprise, surprise – rail freight is today actually driving innovation, thanks in part to the activities of market leaders such as VTG. VTG and its partners are pulling out all the stops to make wagons ever more flexible and meet the needs of just-in-time logistics. The m² prototype presented in 2020 by VTG and DB Cargo is a prime example of this constant progress. Thanks to the innovative construction of the m² prototype, a much more stable connection is created and superstructures of up to 75 tons can thus be used on humps. This means that the entire range of wagons can be used in single-wagon traffic.

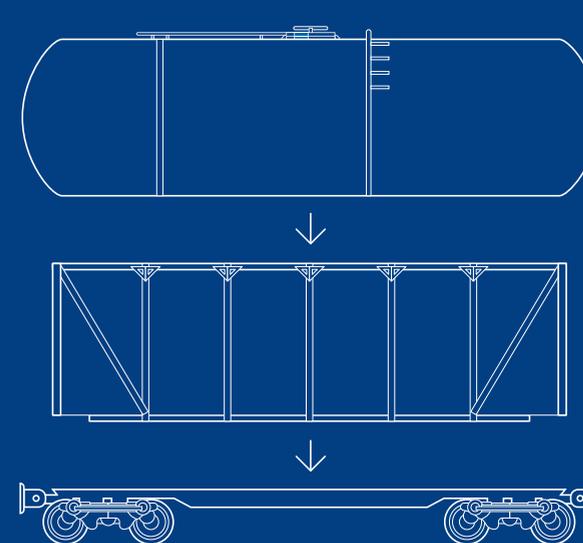
CONVENTIONAL FREIGHT WAGON

Wagons with permanent, welded-on superstructures – many of them box-shaped – are the traditional workhorses of the rail freight trade. They include roof-less freight wagons (to carry waste and sand, for example), hopper wagons (for grain, for example) and weather-proof covered wagons.



INTERMODAL FREIGHT WAGON

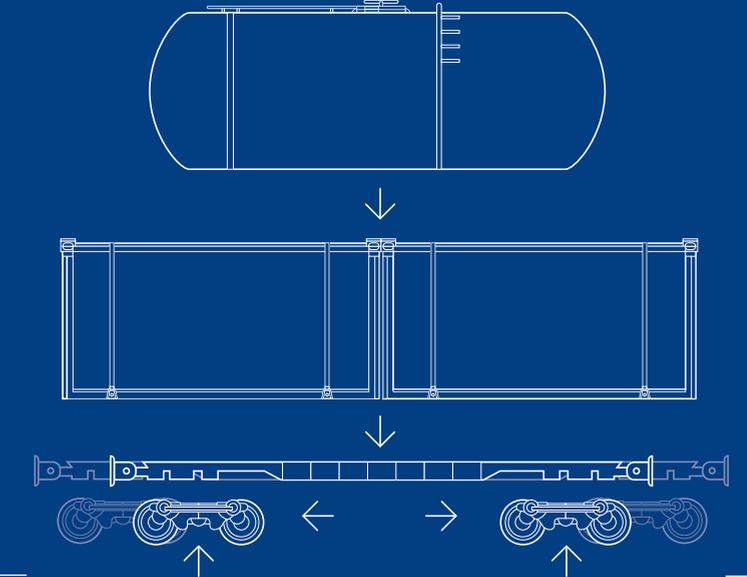
The triumph of standard containers has brought road and rail closer together. Cranes can transship cargo from truck to flat wagon. Thanks to tank containers, liquid cargoes too can be transferred. And the r2L system now even allows normally non-craneable semitrailers to be hoisted onto the rails.



MODULAR FREIGHT WAGON

Up to now, freight wagons have always been built and licensed for a fixed length. The modular m² platform changes all that, however:

Developed jointly by VTG and DB Cargo, this versatile system enables wagons to be shrunk to 34.7 feet or stretched to 74.3 feet and configured with an array of bogies, wheelsets and brake sets – tailoring them perfectly to all kinds of different applications and special needs, in other words.





Breaking with tradition: Torben Jaeger and his team are rethinking logistical challenges from the ground up.

ANY LENGTH, ANY SUPERSTRUCTURE

A new wagon architecture from VTG makes rail freight more flexible than ever, opening up the possibility of tailor-made solutions that customers have never seen before.

Torben Jaeger's team found the emblem of their forward-looking project on eBay, of all places: a modular VTG tank wagon dating back to the company's earliest days in the 1950s. "It was standing in a farmer's yard. We are now smartening it up and making it our mascot," Jaeger says, "because it reminds us that VTG has always had a modular mindset."

Jaeger took charge of VTG's Modular Solutions unit at the start of 2020. The mission of this internal thinktank is to radically rethink the

freight wagon, including all related services and business models. "Modularization has long been a trend in our industry. It's just that we never called it by that name," Jaeger notes. "Our container carriers and tanktainers are themselves modular offerings with which we make logistics more flexible."

Yet a substantial volume of rail freight is still carried on wagons that were built, licensed and hired for a specific purpose: to transport coal, agricultural produce, materials for recycling or chemicals, for example. "This kind of specialized vehicle has a service life of around 40 years and is fighting a losing battle on the market, because flexibility is of the essence these days," says Dr. Hanno Schell, Head of Technical Innovations at VTG. "Customers have ever more specific requirements, so fast availability and extensive variability are crucial factors."

VTG is working on new kinds of freight wagons that can be flexibly adapted to different

applications. In some cases, it is partnering with companies such as DB Cargo to this end. "The first step was to separate the superstructure from the underframe," Dr. Schell explains. "Think of a customer who transports sugar beet at harvest time: In the past, their wagons would have spent the rest of the year standing idle in the depot. Now, we can simply remove the superstructure and use the underframe for something else."

What does that mean for VTG and its customers? "It means we no longer think in terms of wagons and products, but solutions," Jaeger says. "If a customer calls and asks for 120 wagons, we first try to find out more details about what they need: Where are the wagons to be deployed and what for? What logistical challenges must be overcome? What exactly has to be transported from where to where, and how frequently?" Engaging in detailed analysis can bring to light aspects that a pure-play wagon hire firm would probably have overlooked.



“We no longer think in terms of products, but in terms of solutions.”

TORBEN JAEGER,
HEAD OF VTG EUROPE SOLUTIONS

“But we are logistics experts, too. We know the system inside out, so we can explain to the customer that the cost of the wagons and superstructures may look more expensive on an Excel spreadsheet, but that this yields advantages in other places. It could be that larger payloads can be carried, for example, or that loading and unloading can be speeded up. There are so many different ways to optimize rail freight transport, which is why it is so important to look at each individual situation on its own merits.”

Modular wagons are tremendously helpful when you need to develop customized solutions: “Instead of 120 wagons on permanent hire, the customer might only choose 100 platforms but hire a larger number of superstructures in which goods can also be stored temporarily. That saves money and is more flexible. And we have 20 more wagons to devote to other purposes.”

Joined-up thinking:
VTG’s efforts to modularize freight transport transcend the boundaries of individual departments.

Modular wagons also make for more efficient repairs: “If a container is defective, we don’t necessarily have to send the whole wagon to the workshop. We now have the option of putting a new container on the platform so that the customer’s transports can continue while the other container is being repaired.” The transportation of corrosive products, for instance, can be made more cost-effective thanks to the same concept: “We used to have to write off the entire wagon after 15 years. Now it is only the superstructure.”

Dr. Schell nevertheless points out that separating the superstructure from the underframe was only the first step. The new m² wagon concept unveiled jointly by VTG and DB Cargo in 2020 does not stop there: “We are now also developing modular underframes. The m² platform lets us adjust a wagon to any length. We might supply customers with 35-foot vehicles and then find that their needs have changed after five years. In that case, we can convert the





“We can deliver new wagon sizes in a fraction of the time it used to take.”

DR. HANNO SCHELL,
HEAD OF TECHNICAL INNOVATIONS

wagons to a length of 74 feet – or any measure in between.” In principle, the same could be done with conventional wagons too: “Manual vehicle conversion is also possible in theory,” Dr. Schell admits. “But the wagons would then have to be relicensed, which is a long and expensive process.” By contrast, the m² wagon is filed with the European Rail Authority (ERA) for every conceivable length and superstructure from the word go: “So, when a customer comes to us wanting a wagon with a different length, we can provide it in a fraction of the time, because we do not require any new tests or licensing procedures.”

Modifiable lengths are only one of the innovations VTG and DB Cargo are bringing to market in the shape of m². The platform also has a new anchoring technology for the superstructures – a minor detail at first glance, perhaps, but one that opens up all kinds of new possibilities for flexible rail freight.

“Up to now, we only had what are known as spigots to anchor a modular superstructure to the platform,” Dr. Schell says. The problem, he adds, is that spigots can only withstand forces up to a certain point. Wagons that use spigots are therefore unsuitable for single-wagon traffic, which accounts for a sizable proportion of freight traffic. “Single-wagon traffic is what you have when trains arrive at a transshipment yard and then get split up and reassembled.” During this process, the wagons are rolled down a gentle incline (called a hump) for a controlled impact with the train they are to be hooked up to. Spigots are too weak to withstand the resultant forces, which is why wagons that use them can travel only in block trains that stay in a fixed formation and are loaded and unloaded in full at the terminal.

The m² platform features a toothed rack structure that makes anchoring much more stable. “Superstructures up to a weight of

75 tons can thus be used on humps,” says Dr. Schell. As a result, the full spectrum of wagons, lengths and superstructures can now be used for single-wagon traffic. “That could be the key lever to get more freight onto the rails.” The transportation of liquids is a good example, as Andreas Petersson-Lehmann, Managing Director VTG Tanktainer, explains: “The system enables us to put customer-specific combinations of tank containers and carriers together to create an optimal payload for the customer. When hired wagons are returned, they can then be reshuffled into new combinations that best meet the individual needs of the next customer.”

Dr. Schell expects the license for m² to be approved in summer 2021, after which VTG and DB Cargo will commit to the first small-series production run. And the next new developments are likewise already in the pipeline. The first m² platform will be a four-axle underframe with a range from

35 to 74 feet. A two-axle model with a 34 to 47-foot range should follow shortly. Work is also underway on a dedicated telematics concept for the modular platform: “Rail transport is no longer a black box. Today, we can track our wagons by the minute. And we are currently working on useful ways to channel data from the superstructure and underframe into the world of digitalized rail freight.”

Torben Jaeger believes that modularization and digitalization are fundamentally changing the face of rail: “Conventional wisdom saw roads as ‘flexible’ and rail as ‘stable’. But we are now becoming increasingly flexible and customer-centric ourselves. I can give customers whichever superstructure they need and formulate logistical concepts that fit their supply chain like a glove. I can provide genuine end-to-end consulting.” We have come a long way since VTG hired out its first tank wagon.

“The future belongs to modular combinations, and not just for tank containers.”

ANDREAS PETERSSON-LEHMANN,
MANAGING DIRECTOR VTG TANKTAINER

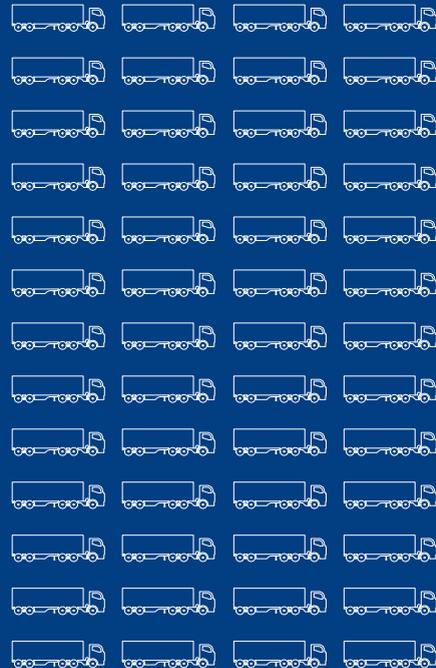


GOING GREENER: WHY RAIL IS KIND TO THE CLIMATE

Under the terms of its Green Deal, the EU Commission wants to slash greenhouse gas emissions in the transport sector by 90% between now and 2050. However, this goal can only be reached if environmentally friendly means of transport sharply increase their share of the modal split. The plan is for rail alone to double its share of European freight traffic. VTG AG is actively committed to this Herculean task, playing a pivotal part in making rail fit for its key role in this sustainable future.

ONE FREIGHT TRAIN CAN REPLACE UP TO
52 TRUCKS

Source: VDV (Association of German Transport Companies)



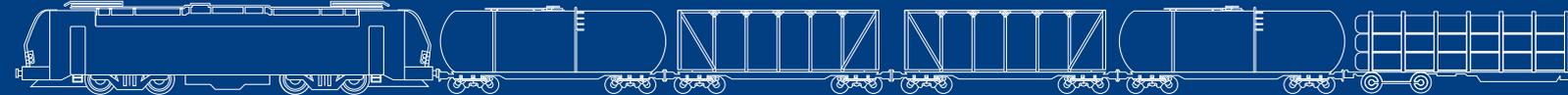
A FULLY LADEN FREIGHT TRAIN GIVES OFF
7x FEWER CO₂ EMISSIONS THAN SHIPMENT BY TRUCK

Moreover, rail is responsible for only 3.8% of society's secondary transport costs – compared to a 94.5% bill for road traffic. Accidents are the biggest single cost factor here (at 41%), while negative climate impacts account for 18%.

Source: Rail Alliance



ALL FORMS OF TRAFFIC TOGETHER GENERATE
25% OF THE EU'S TOTAL GREENHOUSE GAS EMISSIONS.



BUT ONLY 0.4% OF THESE EMISSIONS ARE CAUSED BY RAIL TRANSPORT.

Not only that: Rail is the only mode of transport that reduced both emissions and energy consumption every year from 1990 through 2017 while steadily increasing its use of renewable energy.

Source: Statistical Pocketbook 2020



2 MILLION TONS OF CO₂ ARE AVOIDED EVERY YEAR BY PROMOTING INTERMODAL TRAFFIC.

Which has, in fact, been happening for 20 years. Swift transitions from road to sea to rail are also a consequence of technological advances in intermodal transport that simplify the task of loading and unloading every conceivable cargo.

Source: BMVI (German Federal Ministry of Transport)

TEAM SPIRIT

We need each other. That is as true in logistics as it is in overcoming the social and ecological challenges of our day. It is in this spirit that VTG strives to bring people together – and bring out the best in them.



Towering role models:
The professional basketball players at Hamburg Towers are ambassadors for the club's youth work.



Staying fit during the home schooling break: The Towers give sports tuition to schoolchildren via Twitch and Zoom.

When the Hamburg Towers basketball team were forced to stop playing during the Covid 19 pandemic, the same question was on everyone's lips: How would the club's sponsors react? "Having VTG, our Connecting Worlds partner, come right out and say 'We stand by the club, because reliable team play with your sponsors is especially vital in a time of crisis' sent a very powerful message," says the team's co-founder Jan Fischer.

This support gives the top-flight club financial stability. But it also ensures continuity for the important youth work done by the Towers in a less prosperous part of Hamburg. More than just a basketball club, Hamburg Towers is an offshoot of the "Sport ohne Grenzen" ("Sport Without Borders") organization, which has been using the sport to also teach young people social skills since 2006. "That kind of thing costs money. So working with a professional team opens up completely

new opportunities, because you have greater visibility," Fischer says. "On top of which, when professional basketballers stand in front of you and talk about healthy eating and positive teamwork, about discipline and dealing with setbacks, that makes a far greater impression on the kids."

In the very first season in which VTG became the club's Connecting Worlds partner and thus its main sponsor, the team, based in Hamburg's Wilhelmsburg district, won the second division title and was promoted to the easyCredit BBL League. VTG was convinced not only by the club's sporting potential, however, but above all by the strength of its youth work. "VTG understands what we are doing," Fischer says. "They are always there with a listening ear when we come up with new ideas." One such idea was for a virtual training program: live training on the Zoom and Twitch video platforms for schoolchildren who want to stay fit during the home schooling break.



Ambition: Abdulai Jallah completed his apprenticeship ahead of time and is now working to become a master craftsman.

The inclusive VTG RailTrain program helps young people get their career started. The fourth annual intake is already up and running – and one of the first graduates is on his way to completing a master qualification. Abdulai Jallah came to Germany from Liberia in 2014. Three years later, he began his apprenticeship as a construction mechanic as part of the first RailTrain intake.

The program is open to young people for whom a variety of obstacles make it more difficult to find an apprenticeship. “RailTrain is a school of life,” says program manager Thomas Mombrei. “It’s not just about the course content: It’s also about values, dignity and respect.”

The program is also supported by external lecturers, a social education worker and two instructors – creating ideal conditions for people like Jallah who are keen to find

their way in life. “When you start out, three and a half years sounds like a really long time,” Jallah admits. “It is hard to stay on the ball for such a lengthy period.” That said, the youngster completed the apprenticeship ahead of time and now works in the mobile repair shop service. He enjoys the independence and responsibility that the job gives him. And he is already planning ahead: “I want to earn further qualifications,” Jallah says. “My main aim is to become a master craftsman.” VTG will continue to support him as he works toward this goal: The company is footing the bill for his master qualification and has released the 23-year-old to devote himself to his education.

All RailTrain graduates from the first intake passed their final exams and have found permanent employment – some at VTG itself, others at other companies or with cooperation partners.

Recognition: Dr. Peter Tschentscher (at left), Mayor of Hamburg, commending the VTG RailTrain apprenticeship program on a visit in September 2020 to see the fourth intake get underway.



“VTG RailTrain is a tremendously successful model and is actively supporting young people in our city.”

DR. HEIKO FISCHER,
CHAIRMAN OF THE EXECUTIVE BOARD
(CEO) OF VTG AG

VTG's most impressive logistical achievement is repeated day after day in an orchard next to the railway line that runs through Hamburg's Othmarschen district. The four colonies of bees sponsored by VTG live here and contribute to preserving biodiversity. "Unlike many wild bees, honeybees do not stick to just one plant. They pollinate everything that produces nectar and pollen," says beekeeper Sylvia Linn, whose start-up "Honigwerk Hamburg" ("Hamburg Honey Factory") looks after the four colonies. Out in the country, however, bees encounter an increasingly restricted habitat: "Because of monocultures, bee colonies often live in surroundings with only a few flowers, so keepers have to feed their bees even in the summer." By contrast, cities like Hamburg with lots of greenery and open spaces are a veritable El Dorado. And Linn insists that you can taste the diversity that comes from so many different flowers: "The honey here has a very complex bouquet of flavors!" She never ceases to be fascinated by the insects' untiring diligence. In its short lifespan, a single bee

collects half a teaspoon of honey, for which it flies an average of 85 kilometers and pollinates as many as 1,000 flowers per day. "When you think that a bee colony needs about 80 kilograms of honey a year to feed itself, and that we then still get to harvest 20 to 30 kilograms, that is pretty impressive."

For VTG, that makes it all the more critical to raise awareness of the importance of these insects, and of biodiversity in general. One sweet but compelling argument is the VTG honey that staff and customers can try out, along with other environmentally friendly products made of beeswax, for example. The swarm intelligence of these airborne logistical specialists, not to mention their environmental compatibility, is a perfect match for VTG's sustainable and mobile "packaging and transport solutions" for rail freight. Lastly, bees are also the principal pollinators of crop plants. As such, they are instrumental in ensuring that our basic needs are met – just like rail freight transport is for the flow of goods within Europe.



Land of plenty:
VTG's bees encounter
a rich diversity of
flowers in Hamburg's
parks and gardens.





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CONNECTING WORLDS
WITH MOBILE INFRASTRUCTURE

