Edition 39 | April 2023

wascosa **infoletter**

Latest news for the freight wagon industry

Top-notch flexibility thanks to innovative manufacturing

The new Wascosa flex freight system® 2.0 (ffs 2.0) uses production technologies that have already been used in road vehicle production for some time. With “production-oriented design”, Wascosa is moving away from classic wagon production, allowing it to significantly decrease time to market. The system offers top-notch flexibility with the superstructures, and it is perfectly tailored to customers’ needs – prepared for a subsequent installation of the Digital Automatic Coupling (DAC) and available even in small batch sizes.

Wascosa has always strived to provide the railways with innovative solutions as quickly as possible – i.e., in two years. At the same time, they should ideally be a solution that customers are currently looking for. However, since the company does not have a large development department like others do, Wascosa has to make sure that it works with the brightest minds in the market. For ffs 2.0, the development team under the leadership of Irmhild Saabel, Head of Business Development at Wascosa, is collaborating with Rudolf Hubauer from BOXmover GmbH, who is familiar with production-oriented design from road vehicle production and has been heavily involved in transferring this into wagon production over the past several years. Now, barely a year on from the start of the project, the 40-foot carrying wagons will soon be approved. The first deliveries are expected to be made to customers in mid-2024.

Anticipation and standardisation

The special thing about production-oriented design is that – as early as in the design phase – the wagon designer is thinking about how a wagon will be produced after-

Continued on page 2

Dear readers,

Innovations related to freight wagons and digitalisation are incredibly important for our industry. It's all about measurably increasing the competitiveness of rail and providing value to our customers. There is an enormous need to catch up, and our challenge is to continue to break new ground, which is why we launched our Wascosa flex freight system at the transport logistic trade fair as early as 2009. It allows us to offer our customers the ability to flexibly transport various goods with one system as part of a modern logistics system.

We are now preparing for our next milestone: New manufacturing technologies will take our system to the next level 2.0 (pgs. 1-5). We are convinced of the added value that it will bring to our customers.

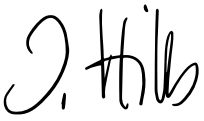
We are also proud of our collaboration with Ateliers de Joigny and Transalp Renouvellement, which has resulted in a new, automated ballast wagon, offering greater safety and efficiency (pg. 10).

Railway Metrics and Dynamics (RMD) will be exhibiting alongside us at the transport logistic trade show. Their monitoring system helps to reduce derailments and other safety risks, and their latest addition – a reversing camera – is about to make its market debut (pg. 6).

Our other trade show partners also have impressive innovations: DOT is presenting their telematics solution to protect against overloads (pg. 8), and Erciyas Rail is using innovative spiral welding technology on its tank wagons (pg. 9).

There is tremendous anticipation for transport logistic 2023, which will be making its return after a long break. I very much look forward to meeting you all in person at the Wascosa Village in Munich.

Iris Hilb



Continued from page 1

wards. In other words, the designers put themselves in the shoes of the manufacturer and specifically think about how they work, and which machines, which capabilities and with outputs are at their disposal in the production phase. "All these parameters are incorporated afterwards into the production design, which contains all the information required for production", explains Rudolf Hubauer. As a result, both the interfaces and the error rates can be reduced to a minimum. For instance, each component has an engraving that precisely defines the component's properties and where it belongs. According to Rudolf Hubauer, "In the end, the pre-manufactured modular components only need to be assembled, fastened with screws, and welded."

Faster, more cost-efficient and more flexible

Thanks to this new production technology, welding work has been reduced to approx. 65 to 100 hours. In comparison: In conventional wagon production based on configuring a production line and fixture construction, it takes up to 300 hours of work to prepare and manufacture the weld seams. Thanks to this new method, production can therefore be made cost-efficient throughout Europe – even with small batch sizes. In the words of Rudolf Hubauer: "The extensive standardisation and modularity of our concept allow us to have various local producers manufacture individual components in parallel. The individual components are assembled only in

> **"Designing something in a simple way is much more difficult than making something complicated. And we have implemented this benefit, which stems from our knowledge of how to construct something in a simple way, perfectly in the ffs 2.0."**
>
> Dipl.-Ing. Rudolf Hubauer,
> Managing partner,
> BOXmover GmbH

Photo: © BOXmover GmbH

the final assembly stage." As a result, Wascosa is no longer forced to accept the traditional processes of the approx. 10 freight wagon manufacturers in Europe and Turkey, which are all currently fully booked for the next few years. "Instead, we have a choice of 50 to 80 metal companies in Austria alone. Their infrastructure and technical capabilities enable them to produce our wagons or at least their components", says Hubauer. The figure is multiplied when you scale up to Europe, clearly demonstrating the extent to which Wascosa is gaining in flexibility and independence as a result of the new process.

Rudolf Hubauer, BOXmover, during the final assembly of the first prototype of the 40-ft. carrying wagon.

"Cycles are becoming increasingly shorter in logistics. This is why the high flexibility of ffs 2.0 is crucial. It allows Wascosa to respond to the specific logistics needs of our customers and tailor the wagon's design precisely to them as different as they may be."

Irmhild Saabel, Head of Business Development, Wascosa

Faster time to market is a major plus

A decrease in the time to market is also a major advantage of ffs 2.0. Until now, customers often had to wait a very long time with conventional wagon production – from the idea to delivery. Now, Wascosa can significantly reduce this time thanks to the modular design and the new production technology. It is the freight wagon lessor's response to a trend that has been emerging in the market for some time now, as Irmhild Saabel points out: "Cycles are becoming increasingly shorter in logistics. Customers are no longer receiving long-term transport orders and, accordingly, there is less of a willingness to invest in special freight wagons with a service life of 35 to 40 years. Both the industry and the logistics companies want to become more flexible." For logistics companies, the goods that they will transport in the future will merely play a subordinate role in a modular system like ffs 2.0, since they "only" need to invest in new superstructures if there are any changes in demand. And this is precisely where ffs 2.0 offers a tremendous variety of loading options that, depending on the type, can also be used in intermodal transport on road and rail. ffs 2.0 is also well-suited to single-wagon traffic since the wagons are very sturdy.

Customer-oriented design

Furthermore, the flexibility of ffs 2.0 allows Wascosa to become fully involved in the customer's logistics considerations and to tailor the wagon's design precisely to them – and this holds true for the payload as well. Thanks to the lower weight of the ffs 2.0 carrying wagon, the customer can transport greater loads and therefore increase the efficiency and profitability of their logistics. "When the payload and the permissible volume per train are higher with our system than with a conventional wagon, it's extremely appealing to the customer", explains Irmhild Saabel. "But what's more important for the future, however, is the enormous flexibility that our system offers in terms of specifically addressing our customers' logistical needs..."

Please read the article on the Wascosa Advance Module on page 18 to find out how Wascosa systematically analyses customer needs.

Photo: © BOXmover GmbH

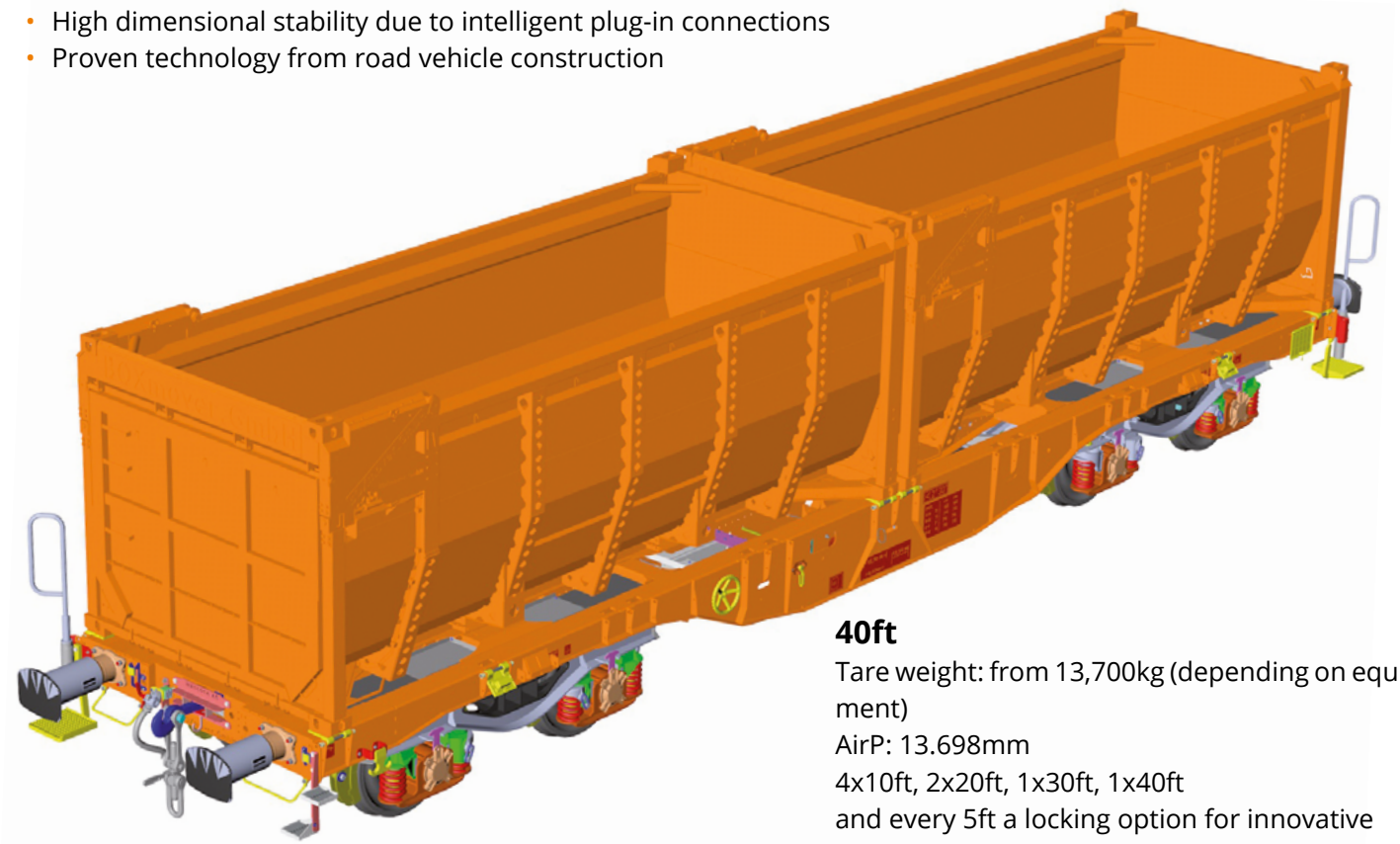
12 months after the start of the project, the finished prototype of the 40-foot carrying wagon was on the rails.

Photos: © BOXmover GmbH

Production-oriented design – the best of two worlds combined:

- High-strength fine-grain structural steels (S700) are laser cut and edged (Standard formats) and plugged together
- Bolted joints eliminate the need for jigs and fixtures
- Virtually no weld seam preparation (only around 20 out of 250 components)
- High dimensional stability due to intelligent plug-in connections
- Proven technology from road vehicle construction

Overview and efficiency comparison of the Wascosa flex freight system® 2.0: See on page 20.



40ft

Tare weight: from 13,700kg (depending on equipment)
AirP: 13.698mm
4x10ft, 2x20ft, 1x30ft, 1x40ft
and every 5ft a locking option for innovative superstructures, and UIC loads.

Greater flexibility in procurement and above all a faster time to market

After only a year spent developing them, the prototypes of the Wascosa flex freight system® 2.0 (ffs 2.0) are ready to be presented. As was clear in an interview given by Iris Hilb, CEO of Wascosa, the company confidently expects the ffs 2.0 to be a success in both existing and new transport markets. For her, success is measured by the added value brought to the customer, to whom Wascosa offers intelligent wagons and digital solutions. Consequently, Iris Hilb is looking forward to presenting a wide range of innovations, from freight wagons to the accompanying telematics and sensors, to visitors to the Wascosa Village at the transport logistic trade fair in Munich at the beginning of May.

Ms. Hilb, you have been the CEO of Wascosa since the beginning of the year. What does the company's latest innovation mean for you?

The ffs 2.0 modular system is a concept that offers clear benefits for our customers' logistics systems. The larger container delivers a greater payload compared to traditional wagons. Smaller containers can be transhipped and warehoused, allowing for the development of new logistics concepts. The consistent standardisation of the carrying wagon with conventional container spigots allows for the container to be changed which means greater wagon utilisation.

A lot of the innovation is in the carrying wagon, precisely due to its impressive modular design. It enables greater flexibility in procurement and above all a faster time to market, which is a key factor for our customers. Until now, we have had to deal with long lead times.

Which markets will you be entering with the system?

First of all, we want to progress in existing markets, where we already detect great interest in areas such as recycled steel, which is experiencing strong growth and where payload and volume play a key role. Wascosa has an extensive wagon fleet and thus access to many segments that were previously served by traditional freight wagons.

> **"We want to do more than just lease wagons; we want to offer added value with intelligent wagons and digital solutions. That is the standard that we are setting for ourselves."**
>
> Iris Hilb, CEO Wascosa

Do you also see the potential to enter new markets?

Yes, without a doubt. When put in perspective, the ffs 2.0's design, with its separation of container and wagon, also makes it easier to enter markets that for example are evolving because of climate concerns or are undergoing structural change. Examples include the transport of hydrogen, batteries, etc.

We look forward to presenting our ffs 2.0 wagons and various containers at the transport logistic trade fair. What's more, you'll be able to see the additional digital solutions based on telematics and sensors. All these innovations will be on display exclusively at the Wascosa Village at the transport logistic trade fair.

When will we see the shift in Wascosa's portfolio?

In the next 2 to 5 years, we plan to ramp up the technology so that ffs 2.0 with the corresponding container carrying wagons will be adequately represented in our fleet portfolio.

To ensure that we can achieve this goal we will be working with new partners who can bring fresh ideas and allow us to break new ground – with the company BOXmover being a prime example.

However, the most important thing is to focus on the customer and specifically on improving their logistics with this new technology. We want to do more than just lease wagons; we want to offer added value with intelligent wagons and digital solutions. That is the standard that we are setting for ourselves.

Riding the IoT train

Railway Metrics and Dynamics has developed a cloud-based, real-time technology platform that monitors the entire railway system, including the infrastructure and the individual behaviour of each wagon. The main sensors, the PMUs, are complemented by a rear-view camera that provides real-time image data directly to the driver, and a kingpin lock sensor that verifies that all freight trailers are properly loaded.

Jan Lindqvist, CEO Railway Metrics and Dynamics

Every year, a large number of freight trains derail in Europe. The majority of derailments are due to defective infrastructure or rolling stock. The costs to operators and infrastructure owners are enormous.

The Swedish company Railway Metrics and Dynamics (RMD) has a complete platform for real-time monitoring of components and can solve many of these problems. They use advanced, state-of-the-art sensors (PMU) and ancillary equipment to continuously monitor railway operations, making them more efficient, safer and more punctual.

Fit and forget solution – the key element

Each individual PMU contains a microcontroller with a CPU, two accelerometers, a GPS tracker and a battery. The life of the battery depends on how it is used and the amount of data it transmits, but in practice it lasts up to six years. The key to this

Photo: © RMD

The RMD performance monitoring device installed on an intermodal wagon.

The RMD monitoring system detects and identifies a multitude of errors both in the vehicles and in the infrastructure.

1. Train status

- Abnormal wagon behaviour
- Wheel flats (wheels deformed by friction)
- Instability
- Broken springs
- Reduced wheel conicity
- Maintenance warnings for wheels and springs
- Security warnings if reduced speed or emergency stop
- Trailer fastening safety system
- Rear-view camera
- Wagon registration
- Comfort and energy index

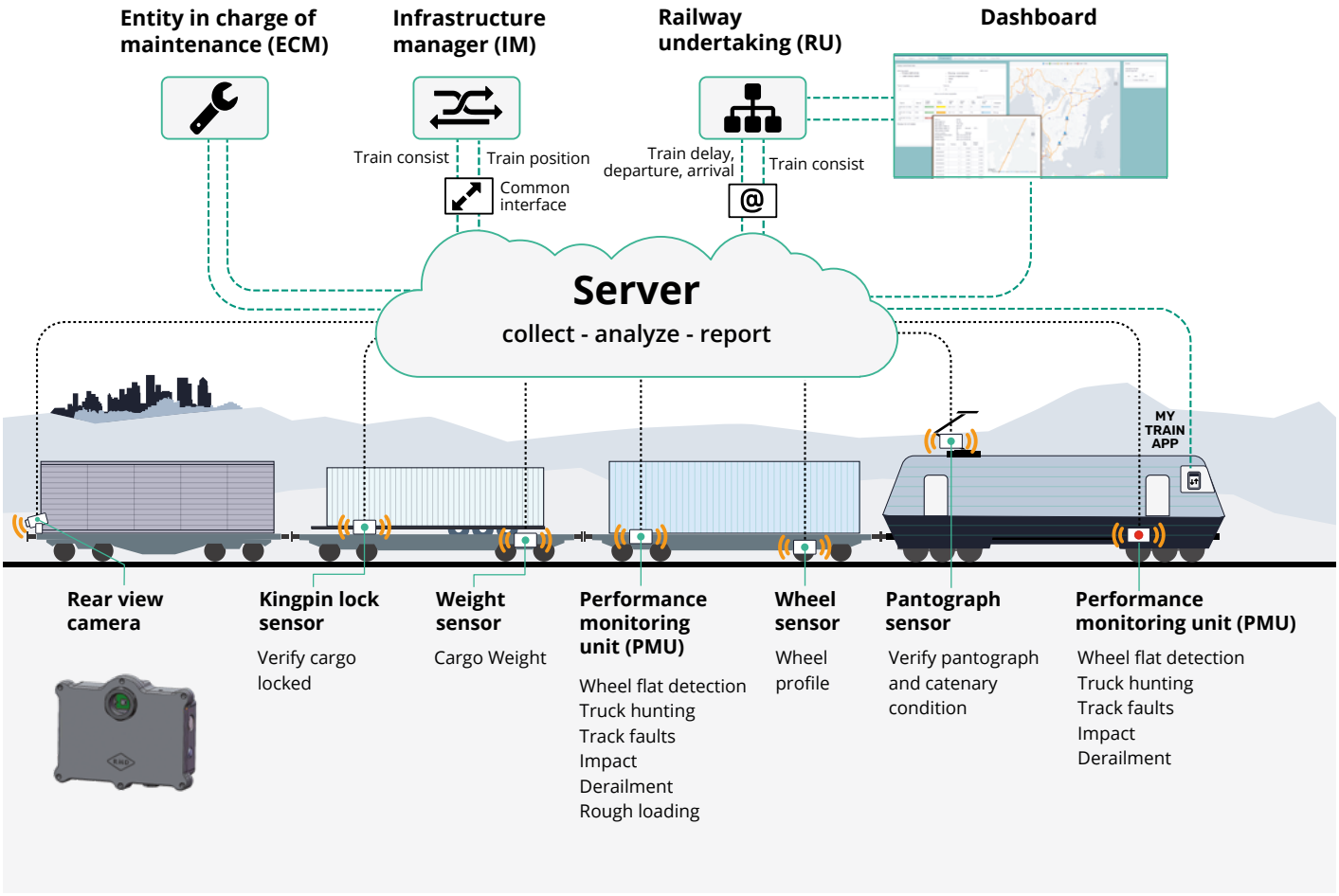
2. Infrastructure

- Broken rail
- Heat distortion
- Predict rail degeneration
- Predict maintenance of power lines
- Ballast defect

3. Positioning

- Traceability
- Inventory control
- Geofencing

An overview of PMU technology – with a rear-view camera at the end of the train composition



The status monitoring technology is suitable for end users from the entire sector: from fleet owners to railway companies and even maintenance companies and infrastructure operators. Source: RMD

long life is the 'sleep mode' function: in this mode, the device analyses acceleration patterns based on predictive data models until it detects an error. Only then does it "wake up" from sleep mode and send the recorded data to the machine learning lab to solve the problem. In the event of an emergency, the driver and traffic control are notified immediately.

Innovative rear-view camera provides real-time video

The monitoring system is complemented by a rear-view camera at the end of each train. The rear-view cameras are based on WebRTC technology, which means they can transmit video to the driver's dashboard in near real-time, as long as there is an internet connection. This technology is supported by all major platforms and modern web browsers including Apple, Google, Microsoft and Mozilla. The rear view camera is battery powered and can be recharged by the driver in the cab when not in use.

More safety, less manpower

Thanks to the real-time transmission, the driver can see 1:1 on the instrument panel what the camera at the rear of the train is filming. This eliminates the need for an additional person to act as a signalman, standing unprotected at the rear of the train. This has huge safety benefits, while at the same time reducing the need for railway staff by half. Another unique aspect of the solution is that traffic management or others who need to view the images can simultaneously access the video stream from a remote location using the RMD dashboard. In addition, all train reversals can be stored for as long as the customer wishes. In the event of an accident, the stored images can be viewed and provide important information about the cause of the accident.

Rear-view camera ready for series production

In March 2023, the rear-view camera successfully passed its first test on a real train. RMD is now running a pilot project with two cameras on a freight train in regular service. RMD will start series production of the first rear-view cameras in the third quarter of 2023.

About Railway Metrics and Dynamics

Railway Metrics and Dynamics (RMD) is a Swedish IT company based in Stockholm. RMD develops and sells a cloud-based real-time asset management system with patented technology, based on advanced algorithms and artificial intelligence. For rail operators, the company's systems enable them to operate with greater efficiency, safety, punctuality and profitability.

More about RMD:

SCAN ME

Telematics: Protecting against overloads with the “Load Assistant”

Many of the needs of digitalisation simply cannot be met by GPS devices on-board. In fact, there is a growing demand for networked communication via a number of sensors on the wagon that are precision fitted and connected to the cloud via a gateway. The innovative “Load Assistant” use case for transporting timber or scrap is a prime example.

Philipp Tarter, Owner and CEO, DOT Telematik und Systemtechnik GmbH

Loading timber or scrap poses a challenge: The aim is to optimise the utilisation of the wagon. This means that it should be loaded up to its load limit but not overloaded, which could be very costly. Furthermore, the wagon needs to be evenly loaded, and, when it comes to timber, an additional factor is that you cannot measure its weight by volume because moisture significantly affects its mass. It’s a similar case with scrap where you can’t really be sure of the weight just by making a visual assessment. To prevent the risk of overloading, wagons today often have to be taken to a distant weighbridge. This step can be avoided using the Load Assistant.

The loaded mass is continuously displayed

The Load Assistant uses connected “on-board” sensors to measure the load and any possible overload. In principle, the measurements need to be made on all four sides of the wagon so that any asymmetrical loads can easily be dealt with. Furthermore, a display continuously shows the loader the mass that has already been loaded (one update per minute) in percentage terms up to 100%. The display, which is installed on the sides of the wagon to make it as visible as possible, also reports any overloads immediately.

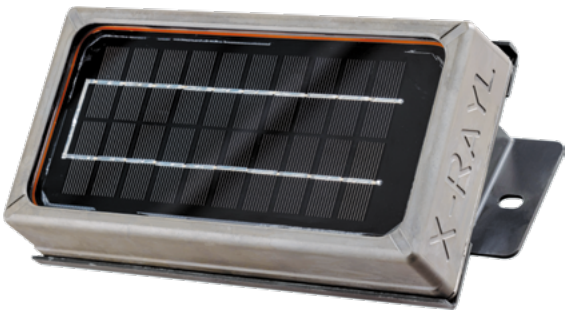
Danger of overloads can be avoided with Load Assistant.

The connected sensors form a “local cloud”, which wirelessly combines all the sensor data, displays the relevant information at the right place (smartphone or tablet) within minutes, and sends it to the global cloud via a gateway.

Wireless installation anywhere

Thanks to the use of robust wireless technology (BLE), wireless installation is possible in any workshop or even out in the open. The X-Rayl® System has already been fitted to over 50,000 freight wagons Europe-wide, has a service life of over 10 years, is very sturdy, and has the highest-level certifications (ATEX, UKEX, IECEx).

Display of the load in percent with an X-Rayl® Sensor Display SS3DSP-D.



X-Rayl® Solar Pointer S3 as gateway.

Photos: © DOT

About DOT Telematik und Systemtechnik GmbH (DOT)

Founded in 2003 by Dipl.-Ing. Philipp Tarter, and today a financially strong and independent Austrian family-owned company based in Vienna, DOT is a pioneer in the field of digital telematics devices and sensor technology in the logistics industry, specialising in the railway sector. The X-RAYL® system which DOT developed and patented has allowed innovative digitalisation concepts be successfully adopted by the customers, many of whom are household names. The entire production the hardware and software is carried out at the modern facility in Leobendorf near Vienna, where DOT operates a photovoltaic system with an output of 178 kWp, which allows DOT to be sustainable and completely self-sufficient in energy. State-of-the-art technology, the highest quality standards and a motivated team are the cornerstones of the success. With over 50,000 operational solar-powered systems, DOT is one of the leading providers of telematics in Europe.

More about DOT:

SCAN ME

Spiral welding technology for tank wagons

Erciyas Rail uses innovative spiral welding technology as an efficient way of producing tank wagons. In addition, this allows for a stronger structure than with standard, welded tanks.

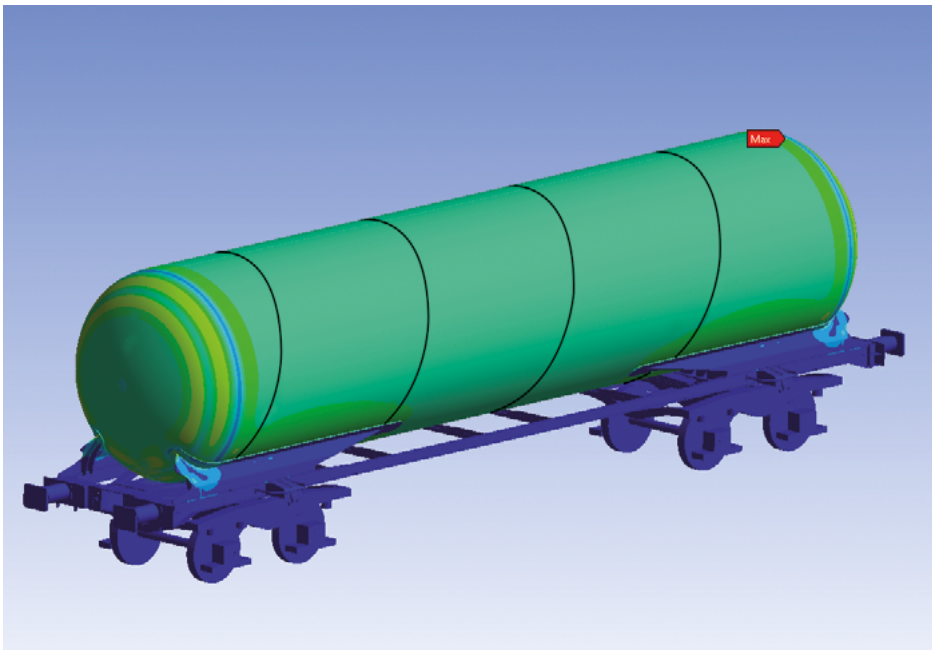
Nilüfer Sila Topyildiz, Sales Engineer, RC Endüstri

Tank wagons are manufactured via spiral welding in the same way as pipes are: An automatic submerged arc welding process which is performed simultaneously inside and outside and controlled using ultrasonic technology. In addition, with spiral-welded tanks, sandblasting and painting can be performed in the pipeline in the same work step.

Erciyas Rail successfully used spiral welding technology on a special design for tank wagons for transporting light mineral oil for InnoTrans in 2022. The demo tank wagon was created in collaboration with sister company Erciyas Steel Pipe, one of the world's leading pipe manufacturers. To provide the angle for easy emptying, the tank was cut through the middle and welded again. Spiral welding technology is also suitable for compressed gas tank wagons. In this case, additional work not needed to provide the angle.

Photo: © Erciyas Rail

Presentation of the innovative technology the InnoTrans 2022.



Graphic: © Erciyas Rail

Illustration of the finite element analysis of a 95m³ Zag RTC.

Spiral-welded design provides a stronger structure

A finite element analysis has confirmed that a spiral-welded design results in a structure that is 13% stronger than a standard-welded tank when it comes to stress coefficients. Erciyas Rail has already applied for RID certification and a patent for 62 m³ spiral-welded tanks. Prototypes for approval purposes will be provided in the near future.

About Erciyas Rail

The predecessor to the company currently operating under the name RC Endüstri Ulasim Araclari was founded in 2003 under the name "RC Engineering" and provided maintenance and repair services for wagons for the domestic Turkish market. In 2011, the first railcar body (hopper) was produced. After the company was acquired by Erciyas Holding in 2016, it was renamed RC Industry (RC Endüstri) and from then on, the company went from strength to strength as a rail freight wagon builder. In the following years, the company established itself as a manufacturer of TSI-certified Y25 and H-type bogies and different type of wagons which it now supplies to various European manufacturers. RC Industry is becoming Erciyas Rail building on our legacy of innovation to boldly redefine the possibilities of freight transportation for the generations to come.

More about Erciyas Rail:

SCAN ME

A star is born - Breaking new ground with our automated ballast wagons

Thanks to the help of Ateliers de Joigny and Transalp Renouvellement, Wascosa can now offer a safer and more efficient automated ballasting wagon for use in the growing infrastructure and construction markets throughout Europe.

The Fanps 2.0 automated ballast wagon will be on display at the transport logistic trade fair in Munich from 9 to 12 May 2023.

In 2017, Wascosa acquired 197 Fanps wagons. In order to consolidate its position in the ballasting and other aggregates transport market for infrastructure projects and major construction sites such as the TELT Euroalpin tunnel between Lyon and Turin, Wascosa started exploring new, innovative applications for these wagons in 2019. It was clear that the construction and renewal of railway infrastructures across Europe were the key to the ecological transition and the planned shift to rail-based transport.

Contribute to making track renewal faster and safer

In its bid to develop a 2.0 or even 3.0 wagon, Wascosa worked closely with the leading manufacturer Ateliers de Joigny and end user Transalp Renouvellement. Transalp Renouvellement is one of the main specialists in «Fast Railtrack Renewal», a technique that allows the complete replacement of rails, sleepers and ballast over a distance of about 1 km in the course of one night shift lasting only 6 hours. Thanks to this innovation-driven partnership, Wascosa was able to fulfil its CSR objectives and develop a wagon which would be much safer for the track renewal teams to operate, in what are often poor weather conditions and extremely high time pressure.

In June 2021 the Wascosa automated ballast wagon prototype underwent several weeks of tests in Fast Railtrack Renewal operations near to Le Havre. The wagon lighting system and the radio control system were enhanced thereafter.

Already during their first joint brainstorming session, Jean-Claude Lé, Technical Manager at Transalp, Luc Le Formal and Richard Gant of Wascosa France identified 13 significant innovations for the new generation 2.0 automated ballast wagon and the decision was taken to build a prototype to put the theoretical work to the test.

"The fact that Transalp provided a very detailed description of its needs meant Wascosa was able to produce the automated ballast wagons that the market was looking for," recalls Luc Le Formal. The project centred on the creation of a fully radio-controlled automated wag-

on thus avoiding the need for operators to manually open the hoppers and the cylinders which direct the discharge of ballast either between or outside the rails.

Successful prototyping and testing

By June 2021 the Wascosa automated ballast wagon prototype, complete with its load indicator and a 10 x LED lighting system fitted by Ateliers de Joigny, was ready to be tested. The various safety features such as 360° LED lighting, safety flashing lights and sound insulated ballast discharge systems underwent several weeks of tests in the Fast Railtrack Renewal operations that Transalp Renouvellement was conducting near to Le Havre. Feedback from all the teams during a special test of all the systems in the night of 4 to 5 August 2021, was used to determine potential improvements.

Although the performance of the prototype met the general expectations from the start, it was agreed that the wagon lighting system could be improved by adding 4 additional LEDs which would allow the train formed from the automated ballast wagons to be illuminated from beginning to end. In order to meet the extremely high degree of precision required for the ballasting work, the radio control system were made even more responsive.

The prototype went on show for the first time in September 2021 in Montceau-les-Mines, at the Mecateamcluster, which is the flagship event for the railway construction industry in France. With its distinctive orange Wascosa livery, the automated ballast wagon prototype was the stand-out attraction for a great number of visitors from across the railway infrastructure construction industry. The international press was also on hand to capture the moment when Wascosa and its customer Transalp Renouvellement signed their first rental contract for 30 automated ballast wagons which were delivered in early 2022.

Off to the next level

Since then, Wascosa and its partners have continued developing further systems which will take the performance of the automated ballast wagons to the next level: cameras will allow information to be gathered on the operation of the ballasting systems and an anti-dust system will be installed. Both systems should be ready in the near future. Visit our stand FM 704/6 at transport logistic and see these latest innovations in action.

Video:
The Fanps 2.0 automated ballast wagon in operation

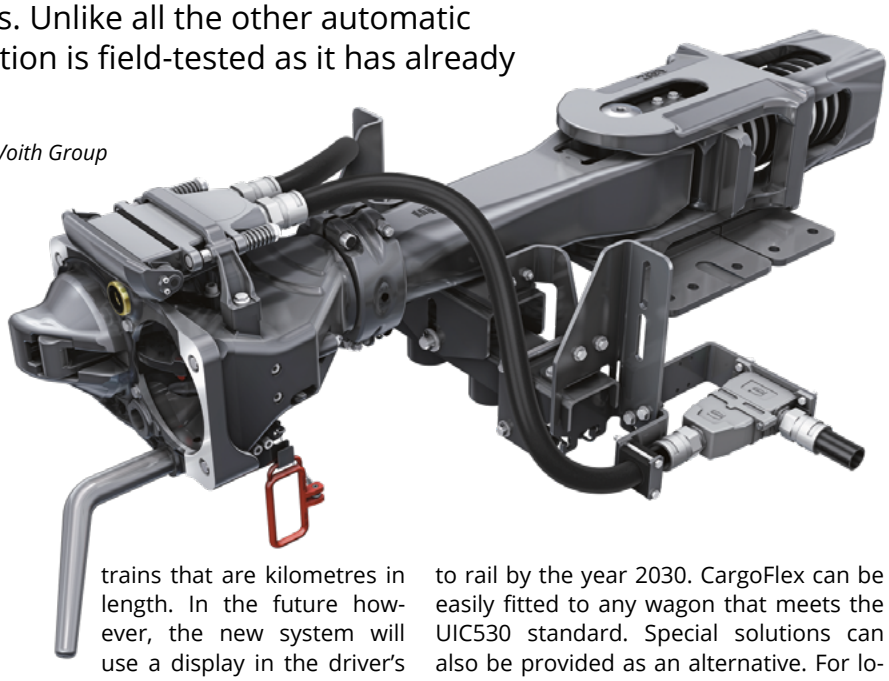
SCAN ME

Objective achieved:
The automated ballast wagon makes the work of the track renewal teams significantly safer.

Coupling our way into the 21st century

Voith's CargoFlex has proven itself to be the best performing solution in the EU's digital automatic coupler test program. It is extremely robust and comes with very impressive safety features. Unlike all the other automatic couplers that were tested, this solution is field-tested as it has already been in use since 2019.

Niklas Weidert, Key Account Manager Freight Couplers, Voith Group



During the test programme for introducing digital automatic couplers as a standard for European freight transport (DAC4EU), various coupling systems were tested under extreme conditions in Sweden, Switzerland and in DB Cargo's climatic chambers in Minden: Voith's CargoFlex Type Scharfenberg demonstrated extremely high robustness all around. Even at temperatures of minus 40 degrees Celsius and half a meter of fresh snow, it worked perfectly thanks to technical modifications at the front of the coupler. Furthermore, the tests demonstrated that CargoFlex significantly increases the safety of the freight wagons by reducing the risk of derailment. As a result, it also scored the highest marks for safety when compared to the other tested couplers thus helping to make the Scharfenberg principle the new Europe-wide standard in rail freight transport.

Excellent reliability and time savings

With CargoFlex, the air, power and data lines can also be securely connected without any complex controlling or manual operations being necessary. The result is that things are safer for train workers and the automatic brake testing alone saves them a tremendous amount of time: Currently, staff need to walk back and forth along trains that are kilometres in length. In the future however, the new system will use a display in the driver's cab to show the locomotive driver in just a matter of minutes, whether the individual brakes are working properly. In order to develop the system further, Voith has started a partnership with the Austrian company PJ Monitoring (PJM).

Effortless retrofitting

CargoFlex is also top of the class when it comes to fitting the system: This can be completed in just one hour, which has huge advantages when you consider that roughly 450,000 freight wagons and 23,000 locomotives need to be retrofitted if the EU is to shift at least 30% of all goods to rail by the year 2030. CargoFlex can be easily fitted to any wagon that meets the UIC530 standard. Special solutions can also be provided as an alternative. For locomotives, Voith offers CargoFlex Hybrid for gradual retrofitting to DAC: It can be used to both manually couple onto tow hooks and with automatic coupling. Both CargoFlex couplers have already been in commercial use since 2019.

Photos: © Voith

CargoFlex has been in commercial use with SBBCargo since 2019, which means that it is field-tested.

About the Voith Group

The Voith Group is a global technology company. With its broad portfolio of systems, products, services and digital applications, Voith is the standard setter in the energy, paper, raw materials and transport & automotive markets. Founded in 1867, the company today has around 21,000 employees, sales of € 4.9 billion and sites located in over 60 countries worldwide making it one of the largest family-owned companies in Europe.

More about Voith and the DAC:

SCAN ME

Innovations from Wascosa and its partners at the transport logistic 2023

The "Wascosa Village" at the international trade fair for logistics in Munich from 9 to 12 May 2023, is the place to find out all about the various innovative solutions from Wascosa, RMD and other partners which promise to take efficiency and quality in the rail freight transport market to the next level. We will have two market-ready prototypes on display to introduce our Wascosa flex freight system® 2.0 and automated ballast wagons. Our motto "Still going new ways" also shows just how committed we are to innovation. This year, Wascosa will be participating in this major rail industry event for the 10th time. We'll also have news about the planned expansion of our wagon fleet, and we'll be organising some exciting events where visitors will be able to see innovation at work and make those industry contacts. So, make sure you drop in at our stand where we look forward to seeing you!

The "Wascosa Village" is located in the **outdoor area of the fair, stand 704/6** and you can see our wagons on **tracks 3/3.** Tickets for the fair area available online.

transport logistic 2023:
The international trade fair for logistics, mobility, IT and supply chain management is a business platform that offers the opportunity to exchange ideas and experiences on the global logistics and transport industry.

Date: 9 - 12 May 2023

Location: Trade Fair Centre Munich, stand 704/6
You can access the «Wascosa Village» via the east entrance.

Opening times for visitors:
Tuesday to Thursday,
9:30 a.m. to 6 p.m.
Friday 9:30 a.m. to 4 p.m.

Organiser:
Messe München GmbH,
Messegelände, 81823 München,
info@transportlogistic.de

For more information visit:
www.transportlogistic.de/en

Our co-exhibitor 2023:
- Railway Metrics and Dynamics (RMD)

Our innovations partners 2023:
- DOT Telematik
- Erciyas Rail

Graphic: © transport logistic

Optimising train operations in combined road-rail transport

Innovative solutions derived from research are what are needed if we are to succeed in shifting more freight transport to railways using combined road-rail transport. As part of their goal of increasing the efficiency of train operations, the chair of Management and Logistics at the Technical University of Darmstadt are researching various optimisation ways related to the transhipment terminal interface.

Prof. Dr. Ralf Elbert, Professor in the chair of Management and Logistics, and Hongjun Wu M.Sc., Research Associate, chair of Management and Logistics, Technical University of Darmstadt

Due to its economic competitiveness, combined transport has previously been used between major economic hubs which can offer direct trains. As a result, the service offering was limited to locations with lower volume and very scattered traffic flows. To boost the potential of combined transport in all regions, a major junction was created at the Hannover/Lehrte location: known as the "MegaHub". The MegaHub serves as an interface for the transhipment of combined transport, and allows for the formation of single-destination block trains with loading units from many different origin train stations – no shunting necessary. The goal is to use innovative techniques to enable the speedy transhipment of loading units and significantly accelerate overall transit time.

Increasing the efficiency of train operations

On the subject of this innovative fast transhipment terminal, the chair of Management and Logistics at the Technical University of Darmstadt is conducting a research project entitled "KV-HUB – Pilotierung und Test neuer innovativer KV-Produkte und Verfahren unter Einbindung der Mega-Hub-Schnellumschlaganlage in Hannover/Lehrte" [Transhipment hub – piloting and testing of new, innovative transhipment products and processes involving the MegaHub fast transhipment facility in Hannover/Lehrte] in collaboration with Kombiverkehr GmbH & Co KG. It is funded by the German Federal Ministry of Transport and Digital Infrastructure as part of the "Zukunft Schienengüterverkehr" [Future of rail traffic] federal programme. The research project aims to improve the efficiency of transport services linked to the transhipment hub and to develop its potential for accommodating more transport orders. Research is being conducted on three optimisation issues:

1. Optimising routes to minimise the overall transit time of all loading units in the network,
2. dentifying additional terminal-to-terminal relations for further integration into the MegaHub concept and
3. minimising delays by making the appropriate scheduling decisions in the event of disruptions.

Previous research has found that the developed optimisation processes simultaneously choose both the best trains and the best transhipment terminals for several transport orders to minimise the overall transit time for all orders. The results of the experimental research studies show that more than 85% of orders can be de-

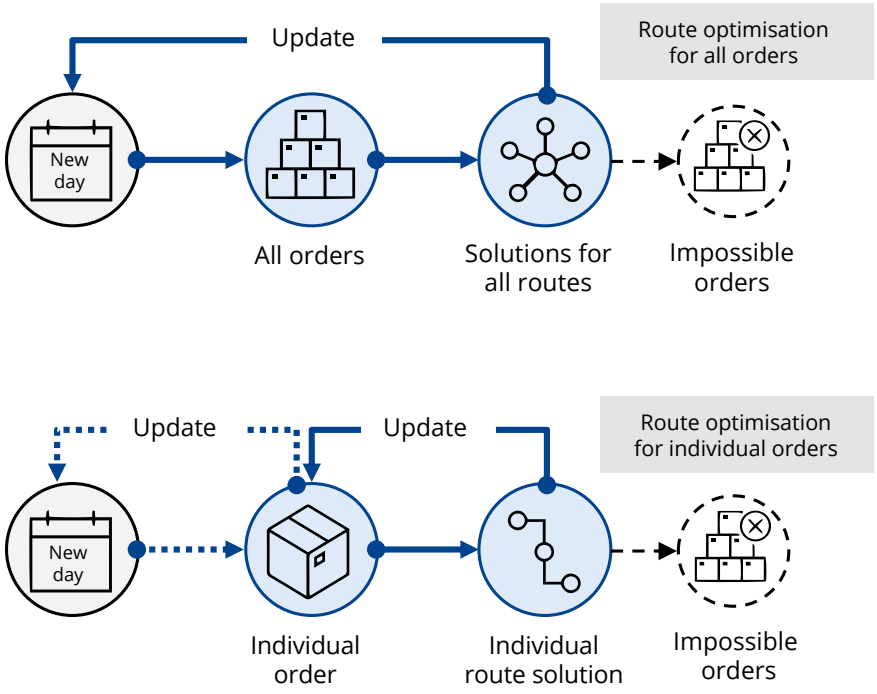
The fast transhipment facility at the MegaHub in Hannover/Lehrte.

livered within three days after the routes have been optimised – a transit time that is acceptable to customers.

Improved goods assignment while simultaneously optimising routes

Furthermore, simultaneously planning the routes of several orders also has a positive impact on capacity bottlenecks, e.g., due to a strong increase in orders and limited train capacities. In the case of bottlenecks, simultaneous route planning results in improved loading unit assignment to different trains compared to individual route planning, and as a result, the loading units are delivered to their destination terminal with faster overall transit times and fewer transhipments. It even increases the average capacity utilisation of the trains which are used. However, accepting a greater number of orders also results in longer response times for customers, which could increase the risk of losing certain customers. As such, the intermodal operator must selectively evaluate this possible conflict in order processing.

To summarize, the first optimisation problem in the KV-Hub project has been resolved based on the fixed train schedule. The solution process offers the ability to make better use of the limited resources in the main combined transport flow. However, this gain in efficiency is still limited and continues to be improved by subsequent optimisations to the train schedules and real-time scheduling processes whenever disruptions occur. By increasing the efficiency of train schedules, the KV-HUB project is helping to develop an attractive and environmentally friendly combined transport offering that takes into account business needs and increases the potential for developing new combined transport offerings for low-volume regions.



Route optimisation process for individual orders and multiple orders. Source: TU Darmstadt.

Funded by:

Federal Ministry for Digital and Transport

on the basis of a decision by the German Bundestag

Photos: © Johannes Rentschler, TU Darmstadt

Payload efficient grain transports to Italy

By mid-2023, Wascosa will have delivered a total of 300 grain hopper wagons to the leading Italian railway forwarder in grain transport – Ferest Rail. Thanks to their reduced length, Ferest Rail can now reach more destinations with 2,500 gross tons.

Shortly after the opening of its branch office in Milan, Wascosa announced that it had signed a contract in September 2021 with the Italian railway forwarder Ferest Rail to deliver 300 new grain hopper wagons. The wagons will be delivered every month in batches of 40 until approx. mid-2023. Ferest Rail plans to use them for transporting grain to Italy especially from Eastern Europe. In the words of a very proud Sandra Vukic, CEO of Ferest Rail, "As a result, Ferest Rail will increase its transport capacity by 40% and become the largest rail forwarder on the Italian market with a fleet of over 1.100 wagons."

> **"Wascosa has optimised the 300 new grain hopper wagons to exactly fit our needs. We can now make shorter trains, even for our customers who previously could not receive 2,500 t gross trains."**
>
> Sandra Vukic,
> CEO Ferest Rail

Lower tare weight allows for a greater payload

Greenbrier Europe's factory in Arad, Romania (formerly Astra Vagoane) was commissioned to build the 300 Tagnpps wagons. Compared to the other wagons in Ferest Rail's fleet, the new 95m³ grain hopper wagons are shorter and have a lower tare weight. Because they weigh less, the new wagons can transport greater amounts of goods, "thereby optimising the ratio of permissible gross weight to the transportable payload on the railways", confirms Sandra Vukic.

> **"In addition to having economic advantages, this also benefits our customers, who are incidentally all connected to the railway network. It eliminates the need to use lorries over the last mile, thereby allowing Ferest Rail to reduce the CO_2 footprint from transporting goods to a minimum."**
>
> Sandra Vukic,
> CEO Ferest Rail

"In addition to having economic advantages, this also benefits our customers, who are incidentally all connected to the railway network. It eliminates the need to use lorries over the last mile, thereby allowing Ferest Rail to reduce the CO_2 footprint from transporting goods to a minimum", explains Sandra Vukic.

Founded in 2019, Ferest Rail is today already the market leader in Italy for the transport of grain by rail. The company transports a very wide range of grain types – from grain for cattle feeding to premium grain for consumers. Currently, most of the grain comes from Eastern European countries, mainly Hungary, Slovakia, Croatia, Serbia, Romania, and Ukraine. The grain is transported to the northern regions of Italy such as Piedmont, Emilia Romagna, Veneto and Lombardy. Apart from agricultural and nutritional goods, Ferest Rail also transports chemical, steel, automotive, and raw material goods. In the future, Ferest Rail will also be looking to transport from France, to Netherlands and Germany.

The grain transported by Ferest Rail largely originates from Eastern European countries and is for delivery to Italy's northern regions in the Po valley.

Udine as a hub

The maintenance of the 300 new grain hopper wagons will be coordinated and managed by Wascosa AG. Against this backdrop, Wascosa recently added TS Traction and Service (a partner of InRail) to its network of specialised workshops. Like Ferest Rail, the company is headquartered in Udine, where traffic has significantly increased over the past few years and where it also occupies a strategic position for supplying customers and terminals in the northeast.

Wascosa's Tagnpps grain hopper wagons are much shorter and lighter compared to Forest Rail's other wagons.

Benefits of Wascosa's 95m³ tagnpps grain hopper wagon

- Optimised payload of 70.1 tonnes (highest payload of any 95m³ grain hopper wagons currently available on the market).
- Perfect for products with a high bulk density such as wheat, corn, barley, rye, or beans.
- Relatively short overall length of 14,800 mm.
- Lighter and more efficient loading thanks to a loading opening with a width of 800 mm.
- Faster and more efficient unloading thanks to wider loading openings compared to other wagons on the market.
- Easier to handle thanks to a wagon roof that can be operated from the ground.
- Using the optional sampler unit, load samples can be quickly and easily taken.

About Forest Rail S.p.A.

The group began its operations in Italy in 2007 as Forest Logistics Srl. At the time, the company was involved in national and international transport and has since successfully developed solutions for road and rail transport in various European countries. The new company Forest Rail Srl was founded at the beginning of 2019, by spin-off of the Forest Logistics railway business unit, as part of a strategy to develop national and international rail transport. Nowadays, Forest Rail specialises in rail transport solutions that are tailored to the needs of various sectors. In addition to the agricultural and food industry, the company also serves the needs of the steel, chemical, automotive and building materials industries.

More about Forest Rail:

SCAN ME

Advance Module for optimised logistics

Wascosa always uses solutions that deliver the greatest-possible benefit to our customers, not only in terms of technical innovations but also in terms of services. The Advance Module offers industrial companies and railway undertakings a systematic approach for optimising their logistics.

In order to deliver a clear benefit for the customer, it is important to factor in physical processes in railway logistics, the requirements for transporting goods, or the customer's logistics management.

The solution – designed from the customer's perspective

Involving the customer's experts along with transparency regarding customer requirements ensures that the solution is a perfect fit. For example, if high availability is the customer's top priority, then having a certain percentage of spare wagons or superstructures in its fleet can be the solution.

Digital services – moving beyond wagons

Wascosa is now expanding the development of innovative concepts to digital services as well. Using a professional and structured approach, we are developing digital solutions for logistical challenges in railway logistics – with customers and for customers. Wascosa has an experienced partner network at its disposal to ensure that we can deliver. We highly recommend that you read the Railway Metrics and Dynamics article on page 6 and the DOT telematics and system technology article on page 8.

Are you interested in innovative wagon concepts or digital solutions for improving your logistics? Contact us today!
T +41 41 727 67 67
info@wascosa.com
www.wascosa.com

> **"The most important aspect of customising is designing the solution from the customer's perspective, and that is what sets Wascosa apart. We are not just a leasing company which simply provides an asset; we go further and develop optimised solutions which meet the customer's needs and offer real added value. Digital solutions are becoming increasingly important and will continue to be a key part of our wagon offering in the future."**
>
> Iris Hilb, CEO Wascosa

Digital services – Innovative new developments in grain wagons for Glencore

For Glencore (known as Viterra today), Wascosa had originally built large, light grain wagons for transporting high volumes of light grain types. As the product portfolio moved towards heavier grain types, Wascosa – together with Glencore and Greenbrier – developed a shorter version of the wagon, which is now enjoying considerable success with Ferest Rail. For more information, please take a look at the article on the preceding double page.

Calendar of events

Due to the uncertain world situation, changes in dates are still possible at short notice.
It is recommended to consult the individual websites of the organisers for the firm dates.

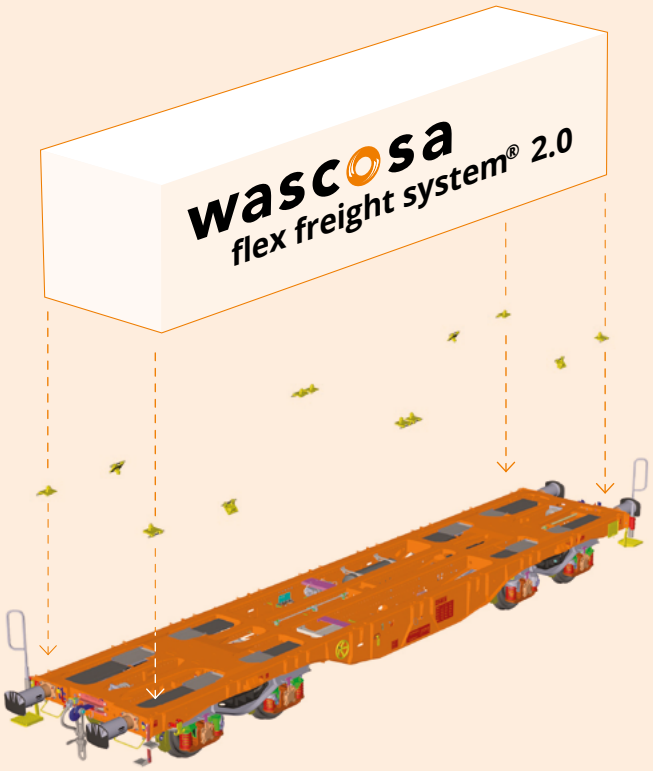
Date	Event	Location	Website
09.-12.05.2023	Transport Logistic	Munich, GER	https://transportlogistic.de/en
16.-17.05.2023	Smart Rail Europe	Brussels, BE	https://smartrailcongress.com
23.-24.05.2023	Group Meeting and Summer BBQ	London, UK	www.rfg.org.uk
24.-26.05.2023	2023 ITF Summit	Leipzig, GER	www.itf-oecd.org/itf-2023-summit
06.-07.06.2023	Railtech Belgium 2023	Brussels, BE	www.railtechbelgium.com
07.-08.06.2023	Global FRMCS Conference	Paris, FR	https://uicfrmcs.org
13.-15.06.2023	Multimodal	Birmingham, UK	www.multimodal.org.uk
14.-16.06.2023	UNIFE General Assembly	Madrid, ES	www.unife.org
15.06.2023	International Level Crossing Awareness Day (ILCAD)	Warsaw, PL	https://ilcad.org/
15.06.2023	UIP Keepers' Summit	Nice, FR	https://uiprail.org
15.-16.06.2023	AWP / UIP Geral Assembly	Nice, FR	https://uiprail.org
21.06.2023	VDV Annual Meeting	Leipzig, GER	www.vdv.de
21.06.2023	VPI General Assembly and Get Together 2023	Dresden, GER	www.vpihamburg.de/en
22.06.2023	23rd Technical Information Event	Dresden, GER	www.vpihamburg.de/en
06.-07.09.2023	RailFreight Connects 2023	Bremen, GER	https://events.railfreight.com
06.-07.09.2023	Project Cargo Summit	Bremen, GER	www.projectcargosummit.com
06.-07.09.2023	8th Railway Forum 2023	Berlin, GER	www.railwayforum.eu
07.07.2023	102nd UIC Gereral Assembly	Paris, FR	https://uic.org/events
07.09.2023	RFG Awards Dinner	London, UK	www.rfg.org.uk
14.09.2023	BahnVerstand: Basel GCU Practice Day 2023	Basel, CH	www.bahnverstand.ch
16.-22.09.2023	European Mobility Week 2023	Europe	https://mobilityweek.eu
20.-21.09.2023	CRSC General Assembly and Information Event	Lucerne, CH	www.crsc.eu.com/en
25.-28.09.2023	EPCA Annual Meeting	Vienna, AT	https://epca.eu
05.10.2023	RFG Annual Conference	London, UK	www.rfg.org.uk
10.-12.10.2023	Intermodal Europe	Amsterdam, NL	www.intermodal-events.com
18.-20.10.2023	International Supply Chain Conference 2023	Berlin, GER	www.bvl.de/en
07.-09.11.2023	10th International Transport & Logistics Exhibition	Warsaw, PL	https://translogistica.pl/en
15.-16.11.2023	Intelligent Rail Summit 2023	Not yet defined	https://events.railtech.com
29.-30.11.2023	European Silk Road Summit	Budapest, HU	https://events.railfreight.com
29.11.-01.12.2023	Rail Live 2023	Madrid, ES	www.terrapinn.com
15.12.2023	103th UIC General Assembly	Paris, FR	https://uic.org/events

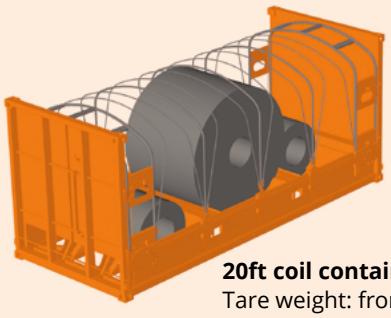
Impressum

Publisher	Wascosa AG, Werftestrasse 4, 6005 Lucerne, Switzerland
Contact	T +41 41 727 67 67, infoletter@wascosa.com
Concept, text and design	Taktkomm AG and Wascosa AG
Translation	Interserv AG, Zurich
Printing	Druckerei Ebikon AG
Print run	5,000 copies
Produced	Appears twice a year in German and English
Photos	Unless stated otherwise: Wascosa AG

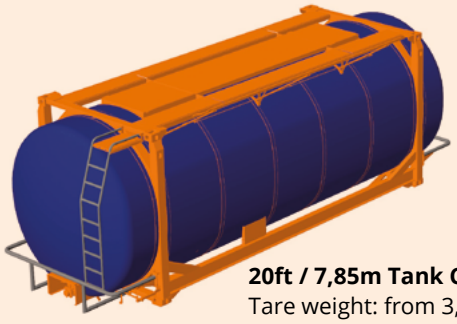
Customer-oriented design with short time-to-market

The **Wascosa flex freight system® 2.0** currently consists of a 40-foot Sgmmns(s) carrier wagon and various superstructures. One, two or four **superstructures in 10-, 20-, 30- or 40-foot lengths** can be flexibly locked onto the carrier wagon by means of container pins. The system is suitable for block trains or single wagon transport and is Digital Automatic Coupling (DAC) compatible.





20ft coil container
Tare weight: from 3,400kg
Max. Gr: 37,000kg
CSC approval

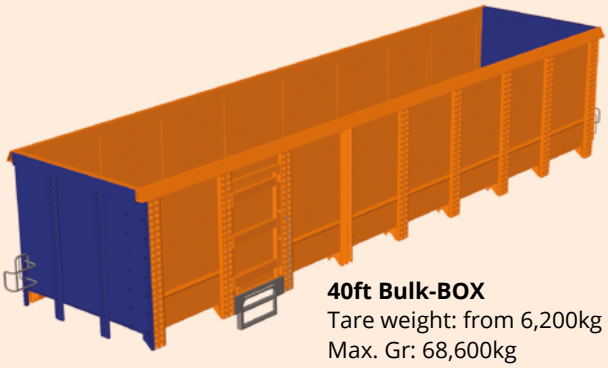


20ft / 7,85m Tank Container
Tare weight: from 3,800kg
Max. Gr: 37,000kg
CSC approval

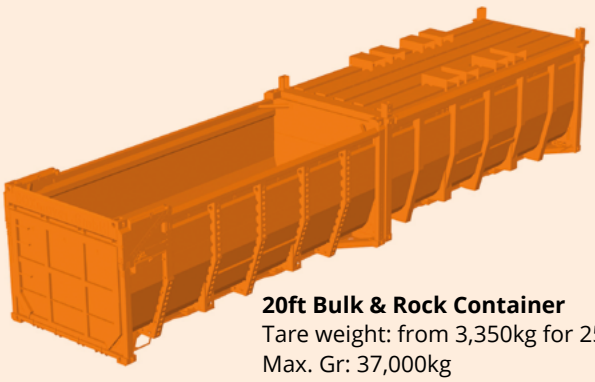
Efficiency comparison with a conventional freight wagon

	Standard Eanos	ffs 2.0 Bulk L
Use	TEN GE	TEN GE
Brake system	S	S (SS)
Profile	G1	G1
Single transport	Yes	Yes
Length over buffer	15,740 mm	13,700 mm
Tare weight	23.1 t	21.4 t (15.2 t wagon + 6.2 t container)
Loading area	39.4 m²	33.5 m²
Loading volume	82.5 m³	77.0 m³
Max. payload	66.9 t	68.6 t
Volume 400 m train	25 wagons = 2,063 m³	29 wagons = 2,233 m³
Payload 400 m train	25 wagons = 1,673 t	29 wagons = 1,989 t

Added value: +19% payload



40ft Bulk-BOX
Tare weight: from 6,200kg
Max. Gr: 68,600kg



20ft Bulk & Rock Container
Tare weight: from 3,350kg for 25m³
Max. Gr: 37,000kg
CSC approval

On track for success: The Wascosa flex freight system®

To be seen live at transport logistic 2023 in Munich on tracks 3/3 in front of the Wascosa Village, stand 704/6.

The concept behind the Wascosa flex freight system® was launched back in 2009 when Wascosa presented an open, modular bulk freight wagon at the transport logistic trade fair. There will soon be around 1,000 Wascosa modular freight wagons travelling throughout Europe.

"The order for the innovative BASF tank containers was our breakthrough. In the last two years alone, we have doubled the number of basic wagons from 500 to 1,000 while also increasing the number of market areas and customers. This means that the Wascosa flex freight system® has finally arrived on the right track for success. The many enquiries from all over Europe demonstrate that the flexibility and efficiency of the system is both convincing and in great demand," explains Irmhild Saabel, Head of Business Development at Wascosa.

BASF has already replaced a large share of its chemical tank cars with Wascosa's new freight wagon systems. Modular wagon concepts are also becoming more and more popular in other market segments such as bulk freight, timber or steel. In addition to solutions for heavy tank containers in single wagon networks, numerous other applications are now part of the Wascosa portfolio, e.g. the transport of hot steel slabs.

Pure flexibility: from hot steel to rail construction

Currently, a larger series of Wascosa flex freight systems® with different superstructures for rail infrastructure construction is being delivered to Great Britain. This means that almost 1,000 Wascosa modular freight wagon systems will already be in use – flexibly, with a variety of customers, and in numerous markets and countries.

The Wascosa flex freight system® in use with superstructures for steel transport and rail infrastructure construction.

Published in Wascosa infoletter No. 36, November 2021, on page 12.

TRANSPORT LOGISTIC MAY 9 – 12, 2023 IN MUNICH

TRANSFORMING CARGO

VISIT US
AT THE
WASCOSA VILLAGE
FM 704/6

INTRODUCING
FLEX FREIGHT SYSTEM 2.0®

wascosa