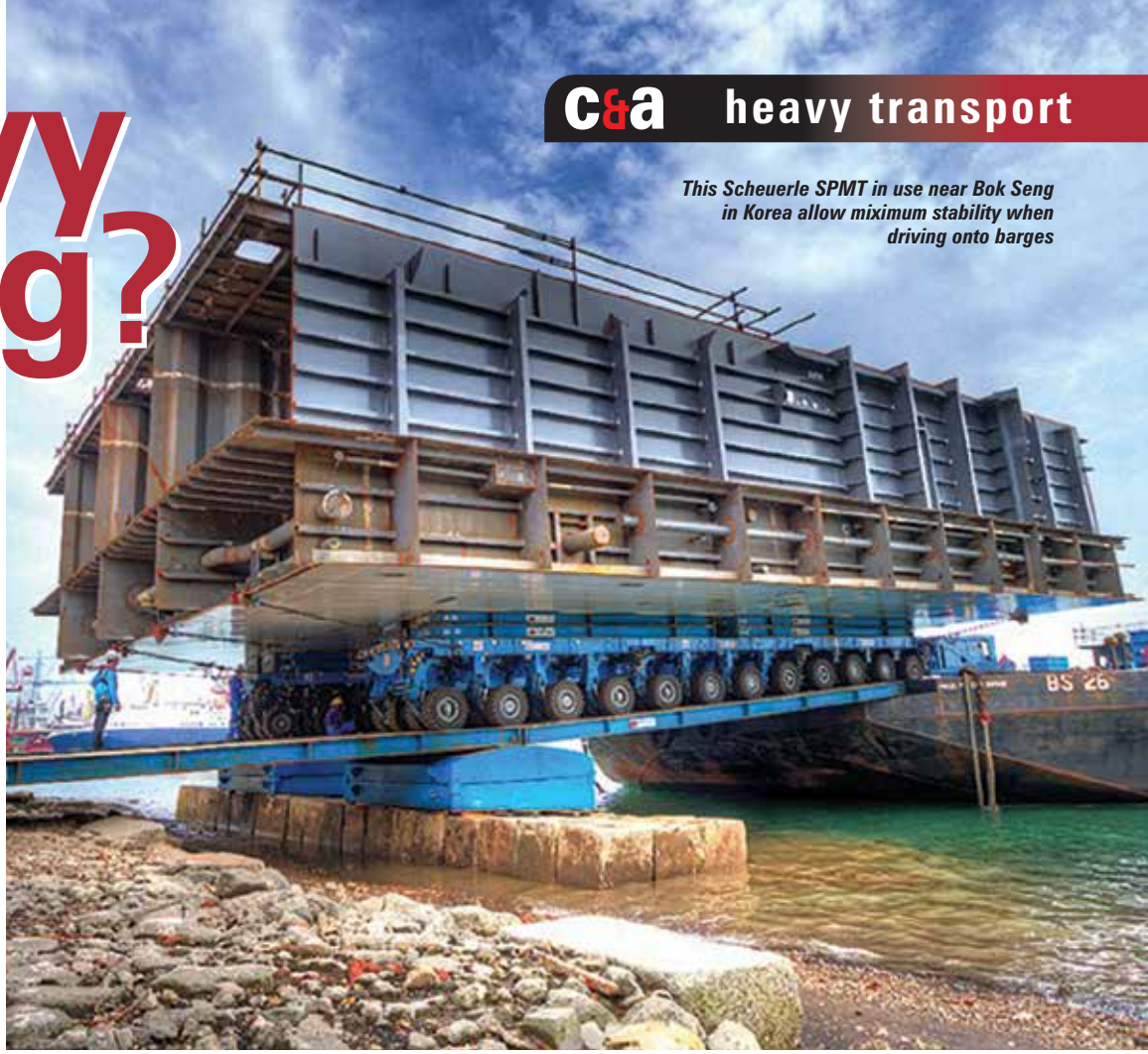
# Heavy going?



*This Scheuerle SPMT in use near Bok Seng in Korea allow miximum stability when driving onto barges*

**The general trend for crane lifting capacities has been on the up for several decades. Not long ago a 100 tonner was considered large, now it is a mid-sized taxi crane with most sizeable crane rental companies owning numerous cranes up to 300 tonnes with many more having 500 to 1,000 tonners at their disposal.**

**Crane capacities have grown to cope with the increasing size of modular components which allows clients to use larger off-site pre-fabricated elements resulting in improved quality and quicker installation helped by the reduced number of lifts required on site.**

However it is not just the cranes that have to cope with this increase in size and weight. Moving components from the place of manufacture to the point of installation has also meant that heavy transport contractors have also had to raise their game - adding new equipment to cope not just transporting the mega components within the confines of road, rail and water restrictions but also loading and unloading them from the transporter.

With several 3,000 tonne cranes now available it would appear that capacities have caught up with the increasingly heavier module sizes in the oil and petrochemical sectors, at least for now. Longer boomed, increased capacity crawler cranes can now cope with the larger and higher wind turbines. But is the transport sector also able to cope? Many European countries transport larger items via water along their river and canal systems. While others, such as the UK have little option but to use the road system. In the UK the Highways Agency has a water first policy for loads over 150 tonnes however the lack of investment in maintenance and development over a long period of time has forced most large loads onto the road. The very fact that the UK has had to deal with moving large loads by road is the reason girder frame trailers are more popular than in the rest of Europe which is able to transport more large items via water.

*The Goldhofer-Greiner 550/600 tonne G² | K 600 highgirder bridge trailer concept is based on a completely new modular system and covers an enormous range of applications with a span of more than 52 metres and a total length of about 89 metres (without drawbars and tractors)*

For the last year or so, Europe's largest capacity girder bridge trailer was the 550 tonne Scheuerle STB 550 which was purchased by UK heavy transport company Collett. The Scheuerle STB 550 features a 5.2 ratio between payload and deadweight as well as having flexible modular combinations.

However a partnership between German trailer and bridge manufacturers Goldhofer and Grainer has seen the launch of the 550/600 tonne G² | K 600 high girder bridge trailer with the first unit sold to Kahl Schwerlast of Germany. The trailer is designed for configurations with a maximum of two by 24 axles and a load capacity of up to 550 tonnes, but it also offers several options for loading extremely heavy items such as generators, transformers, motors, turbines and reels.

The load can be set on top of the main girders, by using load hangers with cross beams or direct coupling of transformers to the Z-girders without the main beams or using the support bogies for loading without the help of a crane. As a result, it is possible use the G² | K 600 as a side girder deck, a vessel bridge, a high girder bridge or a self-supporting transformer transporter. In addition, the bridge girders can

A 640 tonne transformer moved to Avonmouth docks in Bristol by Allelys Heavy Transport

be used independently as a fly-over bridge with a 36 metre span.

The Goldhofer-Greiner concept is based on a completely new modular system and covers an enormous range of applications with a span of more than 52 metres and a total length of about 89 metres (without drawbars and tractors). According to Kahl Schwerlast managing director Andreas Kahl that makes it faster and more efficient in obtaining permits for exceptional moves. One of the main issues in Europe and Germany especially, is the increasing number of roads and bridges in poor condition, where permissible axle loads have been reduced for safety reasons. Coupled to the fact that items to be transported are getting bigger and heavier means that in most cases the authorities will only issue heavy load permits after a long and complex application process and in many cases, long detours have to be made. Sometimes permits are simply refused and this is the reason why 400 tonne mill stands are no longer produced in one piece in Germany because it has become almost impossible to transport them to and from the ports.

The required number of axle lines on the platform combination can be adjusted quickly and easily to the size of the load. Bridge width is infinitely adjustable between 1,620 and 6,200mm (clear load width) and the vertical stroke in the loading section is 2,145 mm. The bridge can be used in combination with Goldhofer's heavy-duty modules in the THP series and the hydrostatically powered self-propelled PST/SL-E transporters, with the option to increase the number of axle lines from 2x10 to 2x24 in split and parallel combinations.

The Scheuerle STB 550 is ideal for carrying transformers but its capacity is much larger than transformers currently being built, thus giving manufacturers the option to design larger ones if required. And being modular the trailer can be used throughout Europe, adapting to local regulations and axle load/dimension restrictions, etc.

Before starting out, an enormous amount of work goes into the planning and clearing of over-sailed and swept path areas along the route. Well-travelled heavy load routes - such as from Stafford to Ellesmere Port in the UK - often have easily removable street furniture and flattened kerbs, allowing the transport to drive across roundabouts where necessary.

The biggest load ever transported on UK roads was a 640 tonne transformer moved to Avonmouth docks in Bristol by Allelys Heavy Transport in 2013. The overall length was 100 metres, with a width of five metres. Planning took a team of six nine months.

## 3D swept path analysis

Many UK companies provide two dimensional Swept Path Analysis reports, using Ordnance Survey Mastermap Data. These are undertaken as a matter of course when surveying potential transport routes to create a digital journey, highlighting any problem areas or 'pinch points'. However, Collett's Consulting Division has developed its own three dimensional Swept Path Analysis software providing a visual demonstration of the transport route and advanced reporting capabilities.

The software allows users to accurately identify height limitations, evaluate vehicle movements and provides an accurate representation of a vehicle and load's movement throughout any chosen transport route. All potential routes can be rendered in 3D using accurate geographical data and can provide clients with a visual rendering of their transport project. All the models used in the software are accurately rendered to depict the specific tractors and trailers available its fleet with each one possessing precise vehicle movement characteristics and true steering geometry. However any move begins with getting the load onto the trailer and ends with it being unloaded and positioned as close to the final lift as possible. For many transport companies this involves skidding and jacking and when these fail a large mobile crane.

## Transforming transportation

In 1983 Scheuerle was also responsible for developing a vehicle that would fundamentally change the heavy haulage industry. The SPMT - Self Propelled Modular Transporter - with its container-sized design allowed manufacturers to take a completely new approach regarding the cost-effective production of oversized installations.


The Split Type can be split and connected to create three-file combinations

Today, industrial production modules reach weights of up to 15,000 tonnes and more and can be handled through the use of SPMTs.

The TII Group - which now includes Scheuerle, Nicolas and Kamag - claims to be the global leader in the manufacture of self-propelled modular vehicles with 70 percent of all transports over 3,000 tonnes and 90 per cent of all transports over 5,000 tonnes are carried out with its SPMTs. The deigns have improved dramatically since their launch, and now comprise SPMT SL, Widening Solutions, and SPMT Light.

Swept path analysis is useful for planning transport routes highlighting any problem areas


SPMT Light

If two vehicles are too wide and one vehicle too narrow, the SPMT SL (Split Type) can provide the solution because it can be split in the middle and then connected to create three-file combinations. The SPMT Widening Solution can quickly telescope or extend using a scissor system to match the size of the load, giving maximum stability and easy handling. The SPMT Light has its own integrated power pack and being extremely maneuverable is ideal for transporting loads around yards.

Other special SPMTs are also available and include increased capacity up to 60 tonne axle loads, more rapid SPMTs with top speeds up to 22kph for transporting loads over longer distances, and units for working in extreme temperatures often reaching -40°C. The eight axle module has also recently replaced the existing two, three, four, five and six axle standard bogies.

Today, the original Scheuerle SPMT product name is used as a generic term for all types of modular transporters, as well as for driven modular platform trailer combinations. In total, there are an estimated 35,000 self-propelled axle lines from the TII Group in use worldwide.

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This is the first heavy transport feature in Cranes & Access. We aim to cover more transport related items in the future and will look at the new trailers coming available on the market for transporting equipment such as aerial work platforms and smaller cranes - possibly later in the year.

# 550 tonne girder bridge trailer

**Collett Transport's new 550 tonne capacity girder bridge trailer kicked off with the collection, transport and delivery of a 156 tonne steel casting from Sheffield Forgemasters to the Port of Goole for its onward journey to Antwerp.**

The casting will form the drop hammer in a large counter-blow forging press to manufacture titanium forgings. Meticulous planning of the route was required which included a motorway lane closure for part of the journey, allowing the whole vehicle combination to travel Eastbound on the Westbound carriageway, in order to avoid weak structures. Collett completed the move the following day.

The Scheuerle STB 550 was used with two four-axle ballast (8x4) tractors to pull and push the combination, together with two 10 axle Scheuerle Intercombi modules in two-file configuration. The project also used Collett's newly acquired four axle 'power booster' module which assists with and pulling power and is compatible with the Scheuerle Intercombi and Eurocombi modules.

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# Cometto developments

**Since the early 1950s, Italian company Cometto has manufacturing road semi-trailers, modular heavy trailers, SPMTs and Transporters. Among its modular systems, is the MSPE modular Series which can create different configurations of trailers according to the specific loading needs. The advanced electronic system and dedicated Cometto software allow plus or minus 135 degree steering angles with each independent suspension connected to the computer through a dedicated encoder. This allows the MSPE to move in every direction.**

The MSPE range has a load capacity up to 60 tonnes per axle line (MSPE Evo2) thanks to the high quality steel frame, specific suspension type and special tyres.

The company has also developed a full range of Power Packs including a Full-Hybrid Power Pack - the first power unit to provide an alternative to traditional diesel systems. Recently it launched the new brand Cometto HT (Handling Technology) which includes Cometto EMT (Electric Modular Transporter) and Cometto Exstream (Electric Modular Transporter ATEX Certified). The new concept in terms of noiseless, zero emission, safe and clean transport inside buildings. EMT and Exstream are fully electric self-loading modular transporters, 100 percent battery driven, designed for indoor and outdoor use with a capacity of up to 100 tonnes.

# New widening trailers

**International heavy transport specialist ALE has increased its services in Australia thanks to a new fleet of flexible trailers featuring Goldhofer's newly developed hydraulic width adjustment system to adhere to the different weight/width restrictions for road transport throughout Australia.**

The company has already taken delivery of forty axle lines fitted with this system, as well as a range of accessories including goosenecks and ramps. The new modules have a wheelbase of 1,800mm with adjustable widths of 3,480mm, 3,700mm, 4,000mm, 4,500mm and 4,900mm. As a result, the various vehicle combinations can be used at maximum axle loads in all six Australian states. Specifically designed hydraulic beams fixed to the middle and to each end of the trailer deliver the width change, achieved by just two men in less than an hour and without the use of a crane or lifting equipment.

*ALE's flexible trailers featuring Goldhofer's newly developed hydraulic width adjustment system*

# Transformer journey

**ALE won this year's ESTA Transport Job of the Year (over 120 tonnes) with the movement of a 310 tonne transformer from the UK manufacturer in Stafford to Ellesmere Port for onward shipped to India. Part of a larger project to move 23 transformers, the 70 mile route involved travelling through residential areas.**

The operation was also the first outing for ALE's new Trojan tractor unit. Designed and built in-house with a 72 tonne design weight, the Trojan has a maximum road speed of 48mph and can pull a gross combination weight of 300 tonnes at a gradient of 14 percent and 500 tonnes at seven percent. One of the main features of the vehicle is its ability to link up multiple tractor units in a command and drone convoy. The steering, vehicle braking, electrics, engine and transmission on all tractor units are synchronised by computer, ensuring each vehicle is matched for gear, RPM and torque.

Vehicle braking, engine compression-braking and transmission retardation can also be controlled identically, resulting in no limit to the number of vehicles in the convoy. The Trojan 8870 has four axles with 8x8 drive and uses an in line six cylinder 700h Volvo Penta Euro 5 engine, mated to an Allison fully automatic six speed transmission with integral torque converter, PTO and retarder. Dana twin steer front axles and Kessler tandem rear axles with a Kessler auxiliary transmission with two speed transfer case with built-in torque proportioning giving one third power to the front two axles and two thirds to the rear. The engine/transmission combination is said to reduce emissions and provide fuel savings of 40 percent. The route is well-known as part of the heavy high load network. With areas along the route being developed and changing with the addition of new housing estates and traffic islands, the size of this particular load meant an up to date survey was critical to ensure the latest infrastructure detail was known.

*ALE won this year's ESTA Transport Job of the Year (over 120 tonnes) with the movement of a 310 tonne transformer from Stafford to Ellesmere Port using ALE's new Trojan tractor unit*

The ALE logistics team worked with local authorities, utility companies and respective Police forces to negotiate a convenient movement date avoiding possible clashes with public events and peak shopping periods. With the option to add cameras, the Trojan's enhanced visibility made it ideal for driving the convoy. Cameras were added onto the load for monitoring and on the back neck so the steersman in the cab could view the whole convoy, seeing what the driver can see and vice versa. The team consisted of three tractor drivers, two steersman, one project manager and three escort vans.

# New three axle doll bogie

**Collett has also taken delivery of a three axle Doll Bogie trailer, built in Germany the three axle, hydraulic steering Bogie features a 55 degree steering angle and a combination carrying capacity of more than 60 tonnes.**

As technology has developed the benefits of bogie trailers appear to have been overlooked, although they are the ideal solution for transporting long, heavy loads, such as concrete bridge beams, but with the advent of more modern steering trailer technology, the 'old Bogies' had almost vanished from the heavy hauling scene. However using a Bogie trailer can offer several benefits including increased ground clearance, extra stability and excellent manoeuvrability. Adaptable to a 60 tonne capacity with the addition of a four axle tractor, the Doll also features remote control and automatic steering controls, providing a sturdy, stable and easy to handle solution which can also be used for wind turbine components.

Already earning its keep, the new Doll Bogie has been transporting fourteen, 40 metre long steel beams each weighing 50 tonnes from their point of manufacture in Northallerton, North Yorkshire to Middlesbrough for coating before moving on to their delivery point in Chester.


*The three axle, hydraulic steering bogie features a 55 degree steering angle and a combination carrying capacity of more than 60 tonnes*


*The Doll Bogie is ideal for transporting long, heavy loads, such as steel bridge beams.*

## Tomislav Sajko takes Ultralight Combi

**Zagreb-based Tomislav Sajko Int Transporti has taken delivery of the Ultralight Combi from Scheuerle for its heavy transport operations. Measuring 2.55 metres wide and with a very light dead-weight, the trailer is ideal for the poorly maintained and narrow roads frequently found in the Balkans. Sajko uses a combination of a gooseneck, one two-axle module and two three-axle modules allowing a 3 + 5 combination to be assembled. The combination will soon be complemented by a 250mm high slab deck.**

Trying to make the lightest possible unit Scheuerle minimised the dead weight in all modules whilst keeping the coupling capability and full compatibility with the company's InterCombi and Euro Combi series. The Ultralight Combi series has the U0 (InterCombi compatible) and U1 (Euro Combi compatible) versions. The U2 version was developed for use with all equipment of the InterCombi series.


*Ultralight Combi delivered to Tomislav Sajko Int Transporti in Zagreb*