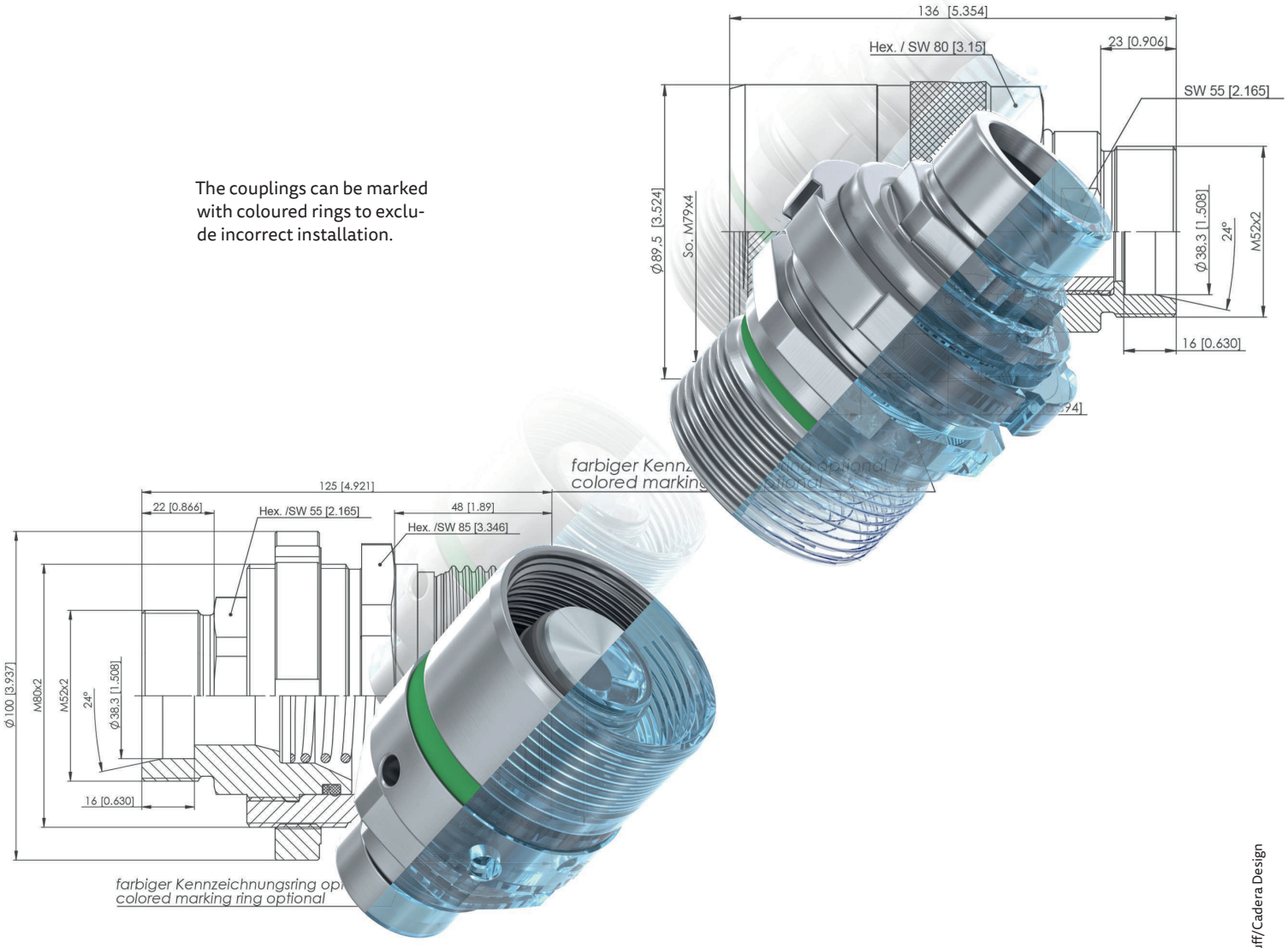
TUBE COUPLINGS

Agile giants with hydraulic drives

SPMTs can be combined into large platforms. Stauff offers a special coupling type for joining the hydraulic systems of several modules: the QRC.RH tube couplings.

The couplings can be marked with coloured rings to exclude incorrect installation.



Source: Stauff/Cadera Design

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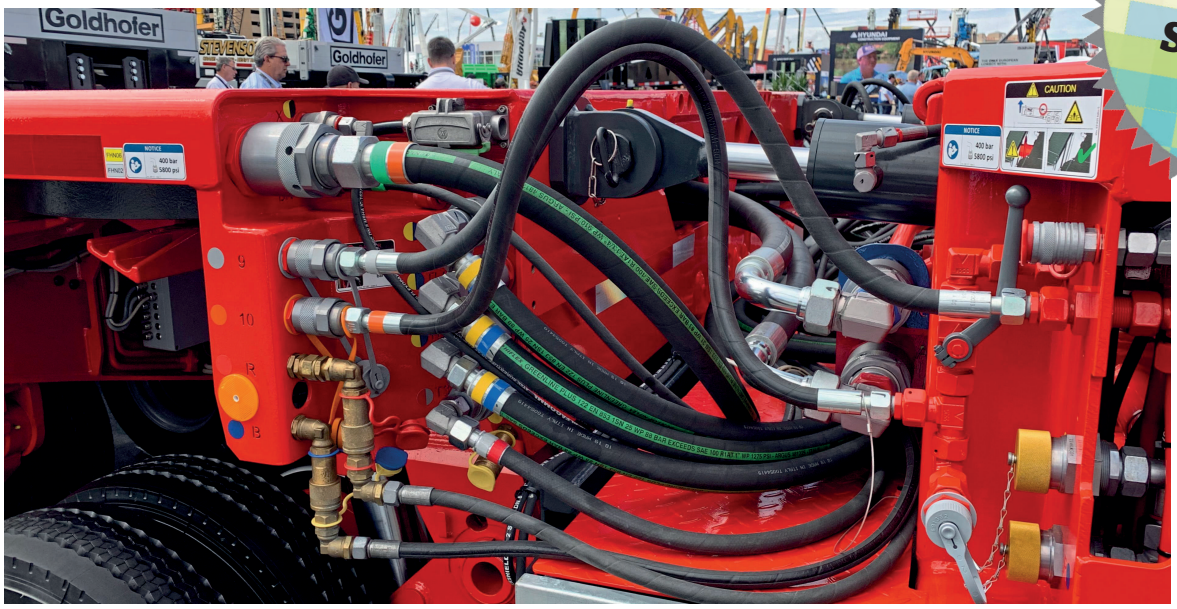

Source: Stauff

Challenge for the hydraulic line systems: The SPMT can be used to connect platforms in longitudinal and transverse directions.

Self-propelled modular transporters (SPMTs) are used where other transport vehicles reach their limits. They are impressive technical solutions for transporting or moving oversized and heavy loads. They can manage even narrow roads and tight corners, manoeuvre in small spaces and handle uneven terrain. The transported goods can be, for example, modules of wind turbines or bridges, large ship parts such as hulls, engines and superstructures, or generator turbines.

The hydraulic systems are crucial for the special function principle of the heavy duty transporters: They are used not only for lifting and lowering loads, but also they also transfer the drive power from the powerful internal combustion engines – the powerpacks – to individual wheels or wheel groups. This creates the special steering agility that enables the SPMTs to manoeuvre precisely straight ahead, laterally or diagonally or to rotate entirely, for example at construction sites or in warehouses. The hydraulic line systems are accordingly complex.

For their sophisticated design, renowned international SPMT manufacturers chose to work in cooperation with Stauff. They benefit from the support provided by Stauff Engineering when designing new or optimising existing systems, assemblies and modules. That the product portfolio is designed and manufactured in house also works to the customers' advantage. One example are the QRC-RH tube couplings that play a crucial rule in the design of self-propelled heavy-duty vehicles.

High pressure resistance also when decoupled

The maximum operating pressure of 420 bar is frequently reached in the self-propelling modules. One special challenge for the hydraulic line systems in SPMTs is the option of joining several modules lengthwise or crosswise to create large platforms. Unlike other coupling types, these tube couplings are designed to permanently withstand the extreme static and dynamic pressure loads even when decoupled.

This is based on the following principle: Tube couplings are screw-to-connect couplings that seal on both sides and have flat-face valve tappets. The smooth face side prevents the formation of drops and, in the opposite direction, the ingress of dirt and air into the hydraulic system. Leak oil losses as well as unwanted air inclusions are reduced to a minimum, usually making subsequent venting of the hydraulic system unnecessary. Threaded connections between the male tip and female body provide a larger contact surface between the two, achieving a more even distribution of the generated pressure when compared to push-to-fit connections. Once fully joined, all internal parts have minimum play even in the event of strong vibrations or pressure peaks, which substantially reduces the risk of material fatigue.

Stauff offers the QRC-RH tube couplings in five nominal sizes from DN 10 to DN 25. The female body and male tip of the coupling have a standard connecting thread and a 24-degree inner taper as per DIN 3861 (type W) as standard. These CEL and CES connections enable easy, safe and yet leak-free joining of the coupling halves with tubes or tube connectors and with hoses.

All common connection sizes between 8L and 42L are available in the Light Series (CEL) and between 10S and 38S in the Heavy Series (CES). Additional connection variants (for example imperial internal threads, SAE flange connections) and connection sizes are available on request. For manufacturing its range of tube couplings made of steel, Stauff is the first manufacturer in the market to consistently use the proven Stauff zinc/nickel coating. It offers reliable corrosion protection that

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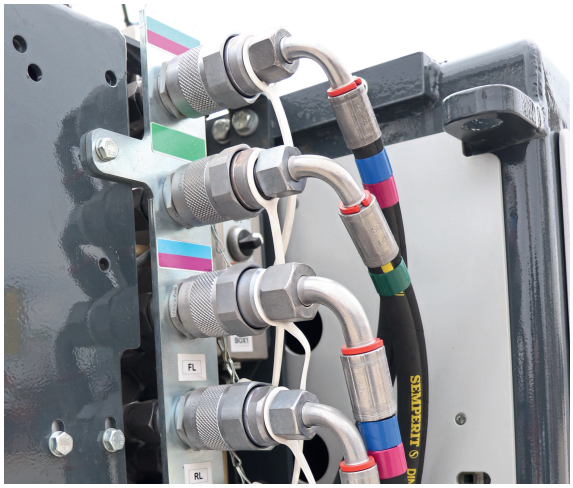
FACT

Leak oil losses and air inclusions are reduced to a minimum.

Source: Stauff

The tube couplings resist the extreme pressure loads in the SPMT even when decoupled.



Source: Stauff

The tube couplings use the principle of screw-to-connect couplings that seal on both sides and have flat-face valve tappets.

meets all applicable legal requirements while going beyond the previous market standards.

Coloured marking rings are available as an optional feature for the tube couplings. Each of the two couplings halves has a groove into which the coloured rings can be inserted. These allow installation and operating personnel to directly identify which mobile half has to be joined to which fixed half. The company is continuously enhancing the QRC-RH range with a view to high-end applications such as the SPMTs, but also for drilling rigs and other complex areas of application.

INFORMATION

Construction without traffic jams

A special example of the success of the Stauff Line range and of the collaboration already during the concept phase is the mobile bridge built for the Swiss Federal Roads Office (ASTRA), the "Astra bridge": It makes it possible to guide traffic above roadworks rather than around them. While traffic flows over the bridge at 60 km/h, road construction can be carried out underneath the bridge on a 100 metre long section. Once the work has been completed, the bridge is hydraulically lifted by ten centimetres and moved 100 metres to the next work section via remote control. The bridge is 257 metres long, 7.57 metres wide and 4.65 metres high. Cometto, the Italian manufacturer of SPMTs, developed the entire hydraulic line system with Stauff Engineering and procured all components from the supplier's portfolio.

Each component counts

What is true for any hydraulic system is particularly crucial when it comes to SPMTs: Leaks and breakdowns cause high costs and, in the worst case, can delay the carefully planned project schedule, for example when roads need to be closed for transporting wind turbines from the factory to the installation site. Hydraulic line systems have to be designed and manufactured with the appropriate level of safety, robustness and ease of service.

With Stauff Line, the globally active company with headquarters in Werdohl offers a range of components for hydraulic lines: clamps, tube and hose connectors, hose ends, flanges, quick release couplings, valves, test couplings and other test accessories for inspection and maintenance as well as customised products, from prototypes to large production runs. All steel components are protected against corrosion with the zinc/nickel coating mentioned above. This product portfolio is developed and manufactured in house and all parameters are coordinated. This offers technical advantages, while procuring everything from a single source facilitates logistics at the OEMs' production and installation sites.

On request, Stauff Line includes consulting from Stauff Engineering already during the development phase of the hydraulic line systems. The manufacturer recommends this cooperation as mobile and stationary machines and systems are being designed in ever greater detail for very specific applications. The requirements governing the hydraulics and hydraulic line system are correspondingly diverse. Stauff takes on the responsibility from design to implementation with its own products. *(dm)*