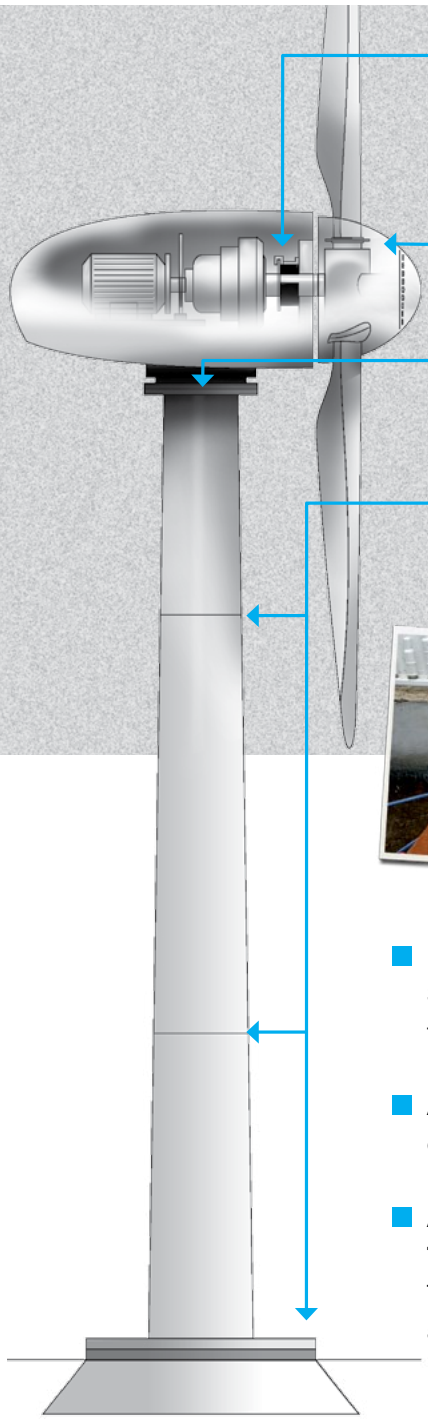
SCHAAF®

ENERGY

System solutions

For mounting and maintenance of wind turbines

SCHAAF offers specially coordinated products up to 4,000 bar hydraulic high-pressure technology for application areas such as e. g. the assembly of devices, shaft and axle connections, blade and hub fixing, axle and bearing connections. All the system solutions are according to all classification associations. The accessories like high-pressure pumps, hydraulic hoses and couplings as well as mounting documentation solutions are optimised for the functions and are thus an 100 % system solution.



Bearings / Shaft connections / Gear connections

Shaft and axle connections with different solutions as for example, with **GripLoc**, **ExpaTen** / **ExpaBolt** and **ExpaHub**, assembling and releasing of bearings and couplings with Oil Press Fit systems (OPV).

Blade and Hub Shaft connections

Bolt Tensioner (SSV) with **ExpaBolt**.

Turnable tower bearing

Bolt (SSV) and ring tensioners (RSV) for tensioning of bearings and crown gears.

Anchoring and tower bolting

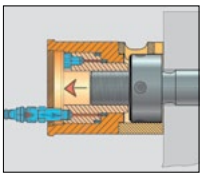
Bolt Tensioner (SSV)

- For all products **SSV**, **RSV**, **GripLoc**, **ExpaTen**, **ExpaHub** and Oil Press Fit equipment, SCHAAF offers the **Mounting-Documentation-System (MDS)** which documents tensioning, hydraulic pressures, tensioning distances and all other quality parametres.
- All SCHAAF tools have long endurance with interior safety functions which protect the operator and the plant itself. Operating safety is consistent with economy.
- All tools, high-pressure generators and accessories can be equipped with the **Tool-Service-Indicator (TSI)**, respectively, the **Tool-Management-System (TMS)**. This enables the possibilty of well-timed maintenance of the assembly parts and additionally guarantees protection of personnel and plants with low maintenance costs.

SCHAAF®

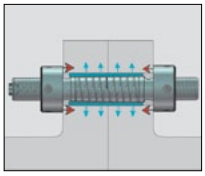
System solutions for wind energy plants

SSV and HM – The basis of axial tensioning



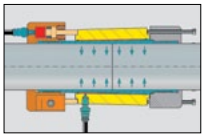
The SCHAAF **Bolt Tensioner (SSV)** and **Hydraulic Nut (HM)**, which do not tension the screws by turning, but by pure axial tensioning, have convinced already at all customer operations. Beside some standardised product lines, the design-on-demand CAD system offers quickest implementation and adjustment to customer wishes. On the basis of axial tensioning, many patent-registered special solutions have been developed in the past years.

ExpaTen – Optimal and connection rigid flanged union for two shafts



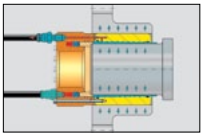
The SCHAAF **ExpaTen** bolt, which expands when tensioning and thus, guarantees adhesion and form fit, can be used anywhere where two shafts / flanges have to be connected rigidly to transfer high torques (shearing forces). Here, too, the emphasis is on increased operating safety and economy, because the **ExpaTen** bolt can be reused after years of service.
Same is valid for **ExpaBolt**. Here, the main focus is on the form fit.

GripLoc – Optimal shaft and axle connection



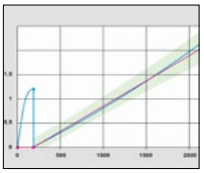
The SCHAAF **GripLoc** coupling is a form-fit coupling, which is ideal anywhere where high forces (torques) must be transferred in tight spaces, while simultaneously providing quick and easy installation conditions. The tool can be removed after installation and used for the next coupling. **GripLoc** can also be a manufactured component, i.e. a brake disc or a coupling.

ExpaHub – Economical connection of hubs and shafts, without the need for parallel keys



The SCHAAF **ExpaHub** can be used anywhere where a flange or a hub with a cylindrical ID has to be mounted on a shaft. Both conical sleeves between the flange or hub and the shaft are pressed together using a hydraulic tool, thereby generating the required radial compressive forces.

MDS – Controlling and monitoring of the axial hydraulic tensioning process of screws



The SCHAAF **Mounting-Documentation-System (MDS)** is a pressure generator which documents and monitors the tensioning process of all SCHAAF-Technologies. Thus, an 100 % proof possibility about the connection quality is warranted. The monitoring happens due to the pressure-distance-characteristic-curve. All additional quality parametres can be individually declared and the system reacts to the tensioning demands or aborts, if necessary, automatically.

TSI / TMS – Monitoring of tools for a safe and long service

SCHAAF realises customer requests and own experiences in new developments.
For example the **Tool-Service-Indicator (TSI)**, the system which detects change of load and announces maintenance or the **Tool-Management-System (TMS)**, the enhancement as a complete tool management solution.

HDE 4000-DM – Modular built-on high pressure generator without pressure intensifier

The novel **HDE 4000-DM** with integrated **Tool-Service-Indicator (TSI)**, an electrohydraulic, mobile high pressure generator, convinces with its less weight and high reliability.
The aggregate can optionally be extended with **TMS** or **MDS**.

www.schaaf-gmbh.com Visit us on the internet and convince yourself of our innovative services and products.
SCHAAF has been developing and manufacturing high-pressure hydraulic tools since 1954.

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