



MAGAZINE

AGRICULTURAL TECHNOLOGY



Perfect mulch – High impact forces, strong bearings



Spherical plain bearings and rod ends
Concentrated hydraulic competency



Smooth running ball bearings
Clean cut in viniculture

Reliability and high-quality technology: **The LFD AGRI-HUB**



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High impact forces, strong bearings

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Bearing units are a special type of single-row deep groove ball bearings. The core competency of the LFD Group is the fully automated production of deep groove ball bearings in accordance with German standards.



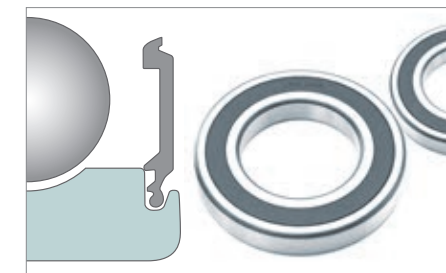
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As a result of steady growth, the demand for pallet bays has increased continuously at LFD. In a traditional storage concept, the order picking paths then tend to become longer.



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LFD's engineers have successfully further developed the existing friction double lip seal to meet the high requirements set in agriculture





Closer to the customer, improved understanding



Veit Loeffler,
Managing director of the LFD Group

Customers world-wide appreciate the products and work of the LFD Group. It safeguards success on location by means of competency and commitment. Listening to the wide range of customers, understanding them and improving continuously is of paramount importance both in our daily work as well as for application optimisation. This is only possible with highly motivated employees that are open to the feedback and requests from the customers.

For this reason, we would also like to take a look behind the scenes and present the versatile use of LFD products in agricultural engineering in our new agricultural journal.

The challenge was set to offer a new seal for bearings, which has even better resistance to the rigorous demands of the agricultural sector.

For this reason, our engineers have developed the new RPS-seal, which as a result of pressure application achieves a clearly better sealing effect and as a result features a considerably longer service life against contamination. This was tested and proven on our new service life tester, which was developed in close cooperation with a renowned university. As a result of this investment, the LFD

Group has a wide range of test stimulations and product comparisons of all common bearings with a bore diameter from 8 mm to 100 mm at its disposal.

An additional innovation that the LFD System Engineering has developed is the LFD AGRI-HUB. This is available with 4, 5 or 6 screw holes and on request with increased stone protection. We have proven the quality of this practical component in field tests.

We have furthermore invested in the service area, ensuring that we can continue to provide delivery times within a window of 24 hours. In collaboration with a leading provider for dynamic storage, we have created a new logistics structure. Our distances to the customer have been reduced by 75% and the time for the effective order picking has been quadrupled.

With this current journal we hope to provide you with an informative view into the world of the LFD Group and the applications of LFD bearings, spherical plain bearings and rod ends.

Veit Loeffler,
Managing director of the LFD Group

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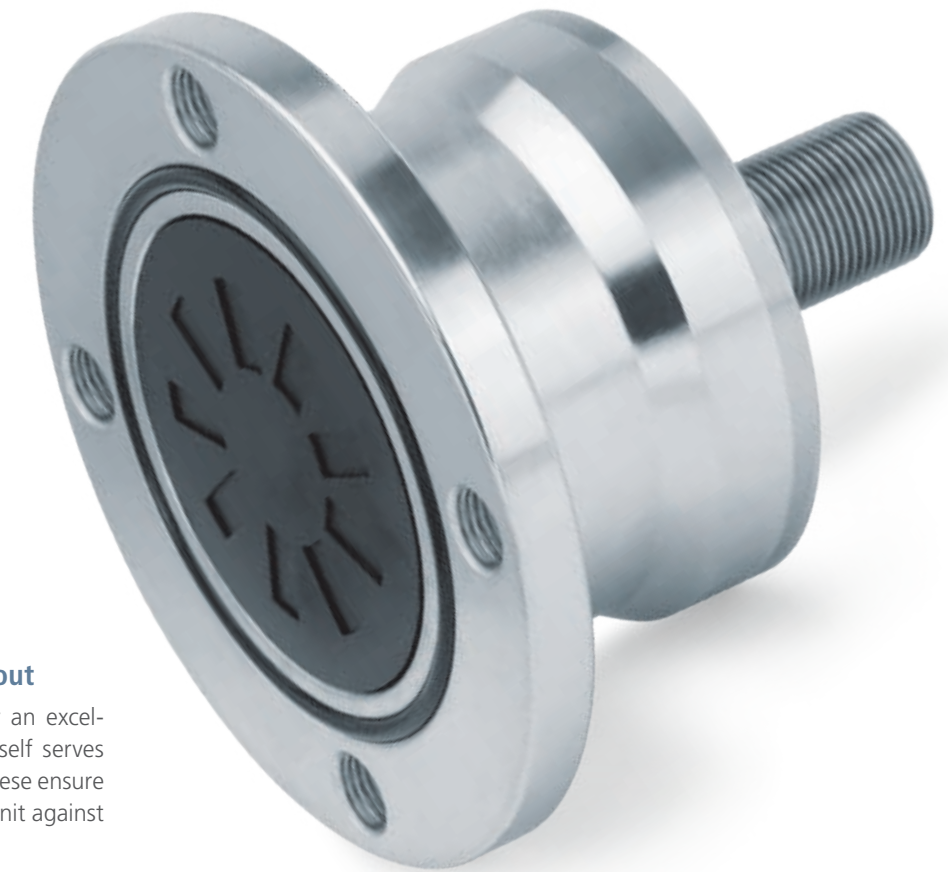




SYSTEM ENGINEERING

The new LFD AGRI-HUB

The reliability of the LFD AGRI-HUB is due to its sound craftsmanship and high-quality technology. Each quality and process step is documented and can be retraced.



Dirt, dust and moisture is kept out

The LFD AGRI-HUB is characterised by an excellent sealing system. The harrow disc itself serves as the cover of the housing. Together, these ensure an optimum protection of the bearing unit against dirt, dust and moisture.

LFD also offers this bearing unit with additional stone protection (S). As a result, field work is performed absolutely reliably. The maintenance-free LFD AGRI-HUBs allow a quick installation and removal. As a result, additional costs are reduced.

Bench tests for fatigue testing: Top ratings for quality

Compact disc harrows are tested regularly for reliability and economic feasibility. DLG has tested this with a renowned disc harrow with a separate trailing chassis and has determined excellent performance values.

The specifically used LFD angular ball bearings run fatigue tests at the customer. These tests are being followed up on in-house bench tests. So far, LFD has been certified with excellent performance values by the customers.



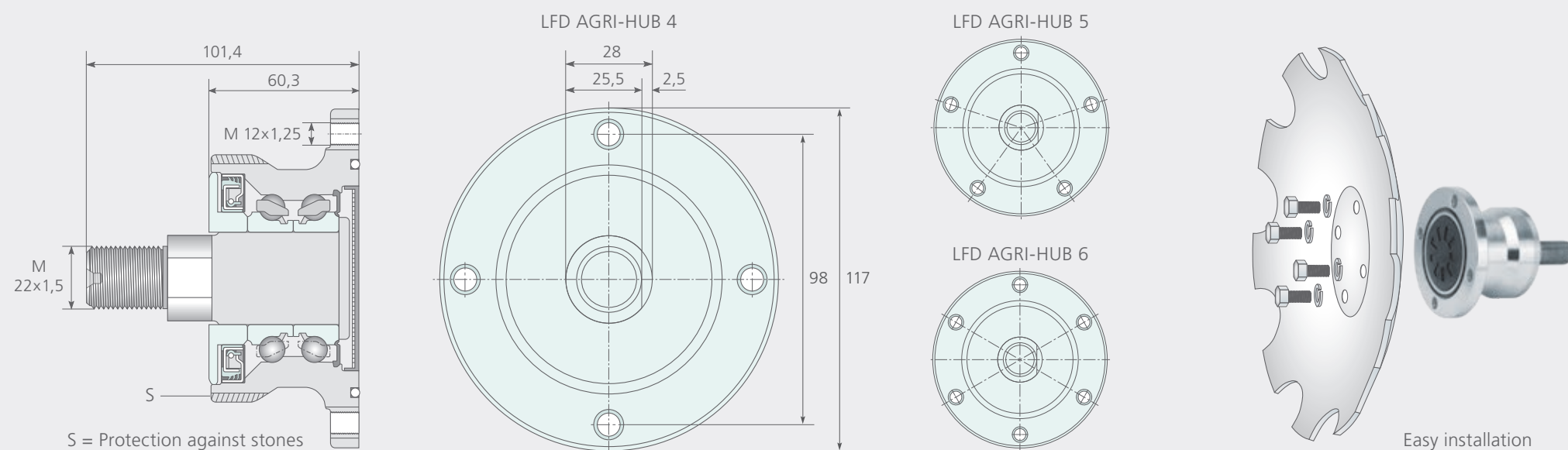
Images: © SELL MEDIA COMPANY - Norbert Sell
Plowed field in spring time with blue sky © Željko Radojko - fotolia.com

LFD AGRI-HUB Technical details

The LFD AGRI-HUB represents easy installation, mature technology and high loading capacity. These are the characteristics that the agricultural sector expects.

AGRI-HUB in tough practical fatigue testing

LFD offers evidence in practical testing: In a fatigue test, a land area of approx. 4,000 hectares was cultivated at up to 20 km/h, which corresponds to the load of a season. The challenging basic conditions for the LFD



Reliable technology

The reliability of the LFD AGRI-HUB is due to its sound craftsmanship and high-quality technology. Each quality and process step is documented and can be retraced.

Experiences from all branches of industry flow into the further development of LFD products. It requires this reliable technology down to the smallest detail in order to ensure that a good harvest is achieved at the end of a season.

Persuasive arguments

- Quick installation and removal
- Protection against stones
- Lowering of costs
- Excellent sealing
- Increase of the reliability
- Test bench support
- Certification of the quality in usage



AGRI-HUB were intensive manure, stone, dirt and dust exposure. The images depict the testing. After each use, the harrow discs with installed AGRI-HUB were fully cleaned with high-pressure washers, otherwise the manure would have hardened. These multiple high-pressure washing cycles also posed extreme challenges for the components and seals.

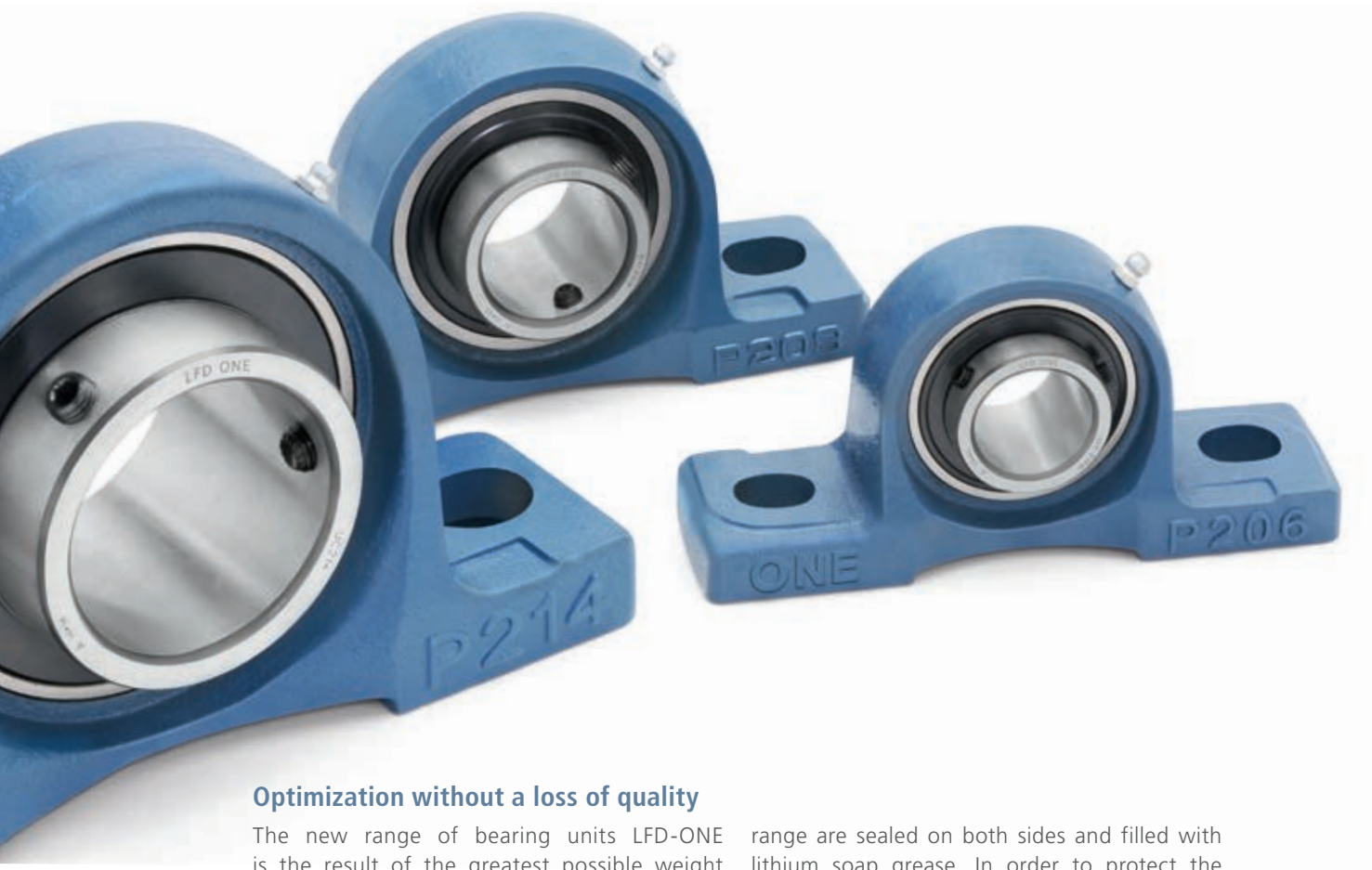




Weight reduction saves energy

The LFD-ONE bearing units

Bearing units are a special type of single-row deep groove ball bearings. The core competency of the LFD group is the fully automated production of deep groove ball bearings in accordance with German standards. For this reason, the LFD expertise is correspondingly large in this segment.



Optimization without a loss of quality

The new range of bearing units LFD-ONE is the result of the greatest possible weight optimization, without neglecting stability and strength. The outer rings are spherical, so that the bearing can be adjusted in the concave housing. The bearing units of the ONE

range are sealed on both sides and filled with lithium soap grease. In order to protect the bearing optimally against the challenging conditions encountered in agriculture, additionally a centrifugal disc is installed, which prevents damage to the underlying sealing lips.



Weight reduction of almost 20%

With a UCF 212, the LFD engineers have been able to reduce the weight of the insert rolling bearing unit by 771 grams without suffering a loss of performance. This corresponds to a weight reduction of almost 20%. Because a multitude of bearing units are installed in agricultural machines and soil cultivation equipment, the saving potential is correspondingly large. But here, as a result of the weight reduction, savings are not only achieved in regard to fuel and emissions.

After all, at the UN climate conference in Paris the limitation of global warming resulting from human activities was decided.

The LFD Group has optimized the design of the bearing units and in this manner provides its contribution. In the course of this, LFD has oriented itself on a rule of thumb used by the automotive industry. This states: 100 kilograms less weight = 0.4 litres reduction of fuel consumption.



Images: © SELL MEDIA COMPANY - Norbert Sell



Safeguarding quality control: **Test run of up to 300% of the capacity**



A new rolling bearing bench test for the testing under both pure radial load as well as a combined radial and axial load meets the highest requirements for the service life assessment of bearings according to predefined specifications – beyond 100% of their capacity.

In this manner, the efficiency of the bearing is safeguarded. However, all LFD bearings are already documented during production and are tested for quality. The bore, external diameter, the bearing play – all these aspects are tested. Furthermore, structure-borne noise measurements are performed. In doing so, the bearings are ready for delivery and are of consistent and representative

quality. In this manner, products for agricultural engineering are produced with a long service life, corrosion resistance, smooth operation, maintenance-free properties and energy efficiency.

Dedicated automated production lines guarantee bearings of consistently high quality. The new roller bearing test bench WAH 1402, which can be utilised for the testing of bearings under both pure radial load as well as a combined radial and axial load, was developed and constructed in such a manner that bearings can be examined within specific geometric limits.

The detection of the service life end is performed either with the registration of broadband or frequency-selective characteristic values and their calibration with set limit values. The automatic deactivation system is controlled by means of the evaluation of the structure-borne noise and temperature signals from the outer rings of the test bearings. Simultaneously, the registration of the bearing signals offers the basis for corresponding detailed examinations and a precise diagnosis.



Images: © SELL MEDIA COMPANY - Norbert Sell

Service life tests possible

For the comparison with the theoretically determined values, cylindrical roller bearings, taper roller bearings and deep groove ball bearings are generally subjected to service life testing. By means

As a rule, temperatures of below 80 °C are set in regard to the sealing materials used on the test bench; the seals are designed for maximum temperatures of 100 °C. When the target temperature planned for the test has not been achieved, additional heating or cooling is provided. The test bench is fitted with four bearings and the temperatures are measured accordingly by four sensors. The vibration signals are registered by three sensors.

Sensitive technology with maximum capacity

of repeat runs, a performance classification is also possible with other European makes. In addition to the geometric comparisons, the practical service life test in this manner provides specific confirmations on the performance behaviour of the bearings under the defined force and temperature loads at a constant speed.

The pressure of the hydraulic cylinder is also regulated. In order to keep the hydraulically applied forces as constant as possible, an equalisation depot is available in the form of a pressure vessel. In the event of a minor pressure drop the depot is refilled accordingly utilising a pump.



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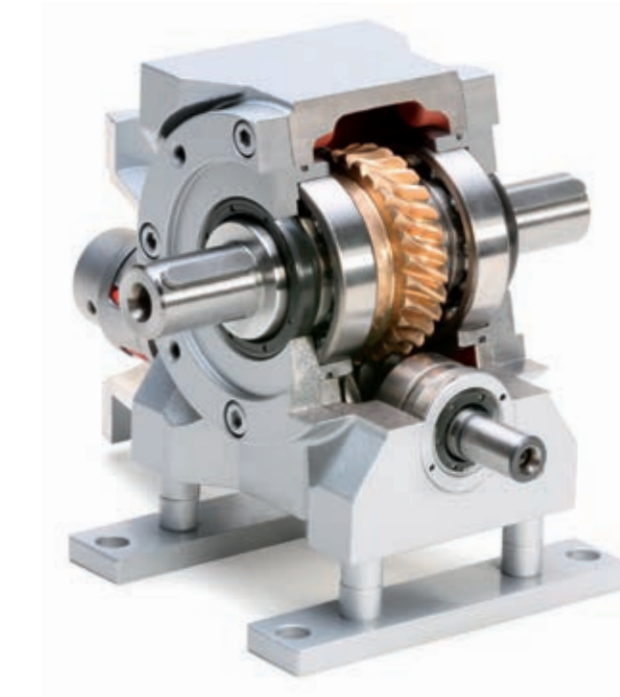
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The test bench measures the vibrations on a wide band with the use of sensors and in this manner independently detects possible damage. Frequency-elective measurements are of course also possible and more precise, as it is even possible to determine the respective component based on the frequency.

300% theoretical capacity as a performance benchmark

The results from these test runs – the precise specifications on the service life of bearings under a specific load – serve both the accompanying serial production as well as the further development of the products. Similarly, the targeted testing on behalf of the customer is possible in order to verify the usability for customer



applications. In the course of the tests, LFD fully exhausts the performance limits and in this manner even the slightest material deviations have an effect.

LFD does not only want to achieve the theoretical possible, i.e. the 100% requirement. For this reason, the test run is not completed when 100% is achieved, but instead each test run is



Images: © SELL MEDIA COMPANY - Norbert Sell

performed up to 300% of the efficiency. First the theoretical service life expectation is determined according to the failure probability defined by a standard and this is set as the 100% service life. The performance behaviour of

the bearings is verified in the testing on the test bench under the determined conditions for force, speed and lubrication and ended without damage occurring at the upper limit of 300% service life by LFD.



Images: © SELL MEDIA COMPANY - Norbert Sell, ERO-Gerätebau GmbH

Smooth running ball bearings Clean cut in viniculture

The extensive basic equipment of the ERO trimmers ensures a fast installation and comfortable, quick working. After the connection of only two hydraulic hoses and the power supply, the Profi Line type is operational. Additionally, even with high performance and vehicle speed they require very little maintenance.



The deep groove ball bearings made by LFD Wälzlager GmbH provide a frictionless run of the turbo cutters, which are brought into sufficient rotation via a hydraulic motor and a V-belt.

For example, the replacement of the integrated LFD bearings or the re-tensioning of the V-belts, which safeguard a maximum transfer of power, is not necessary and with approximately 28 litres the system requires little oil.

Turbo-rotation of the blades

The Elite Comfort type offers a comfort control with Joystick control, as a result of which only a single acting control valve and a pressure-free return on the tractor is required.



Increase of productivity



The model variants L and straddle are available in a one-sided or two-sided version. All cutting elements are each equipped with a separate collision protection. The user can select the respectively suitable cutting unit from the seven different cutting lengths of 100 cm to 195 cm.

For the safe movement on public roads, the cutting elements can be retracted completely and the top blades can be folded rearwards. An optimal view when working and driving on public roads is

also ensured. Great value was placed during the development of the stainless steel side component to ensure that the drive train is absolutely maintenance-free. During the design phase, cutting forces as well as axial forces during operation were measured and taken into account. The extensive adjustment options of the ERO trimmer allow the use in all types of training. It can be attached to both narrow tractors as well as plantation or standard tractors. Large areas with wide rows can also be processed quickly and effortlessly.



Images: © SELL MEDIA COMPANY - Norbert Sell, ERO-Gerätebau GmbH



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Perfect result at a high speed

The two cutting units can be adjusted independently from each other both in height as well as in inclination and can be moved laterally, enabling trouble-free working in terraces. All models are tested in accordance with DIN EN 706.

Smooth running thanks to LFD bearings

The 35.5 cm long, especially treated stainless steel turbo blades prevent the deposit of cutting residue on the blade (Teflon effect).



An ideal cutting pattern is achieved due to the treated blade steel and rounded blade shape with a suction effect. The shape of the blades prevents the coiling up and cutting of the wires. Due to the suction effect of the blades, no cutting residue remains in the foliage wall, even small shoot tips and leaves are captured.



The utilised LFD deep groove ball bearing and rod ends are characterised by the consistent, reliable quality and are also suitable for stronger loads, which can occur in daily use. In this manner, LFD produces products for agricultural engineering with a long service life, corrosion resistance, smooth operation, maintenance-free properties and energy efficiency. These properties play a decisive role in the trimmers. Application optimisations are possible with LFD.



Images: © SELL MEDIA COMPANY - Norbert Sell, ERO-Gerätebau GmbH



LFD: The new RPS-seal

LFD's engineers have successfully further developed the existing friction double lip seal to meet the high requirements set in agriculture. They have successfully developed a stronger sealing effect with only a slight increase of the friction moment.

The challenge

Bearings in the area of agricultural machinery must meet high requirements in practice. In the course of this, contamination by manure, soil, dust, etc. are daily occurrences. In daily use, additionally stone impacts can occur and high-pressure cleaning is an enormous challenge for any seal. The objective was to achieve a higher sealing effect with similar energy efficiency and in this manner to enable an increase of the service life under environmental influences.

The development

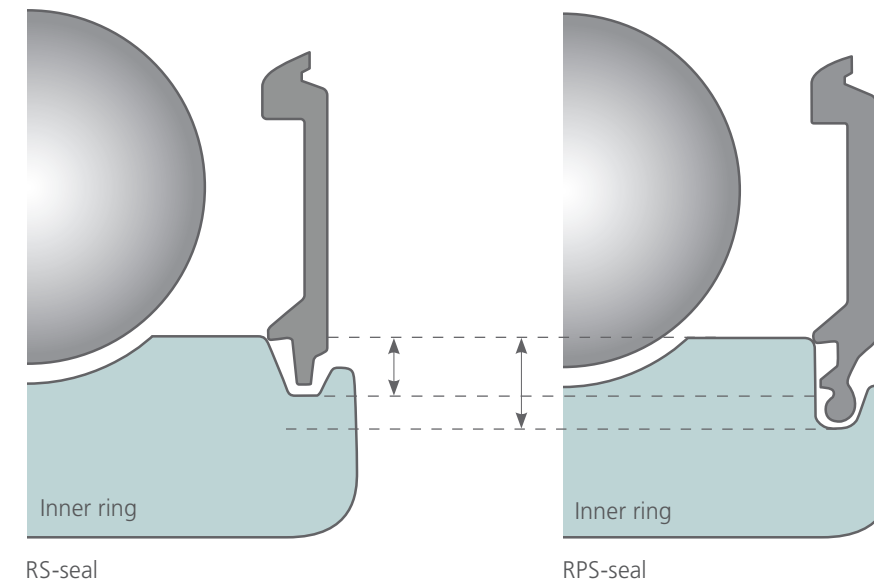
In order to achieve the desired objectives, the existing double lip seal made of NBR material (acrylonitrile-butadiene rubber) with sheet steel reinforcement was developed further. The design was reinforced at various points and in sections a larger elastic capacity for distortion was created. As a result of this desired distortion, an additional sealing chamber is only created in the event of pressure application by rocks or a high-pressure water jet, which additionally prevents the ingress

of dust or moisture. The challenge was to avoid the creation of additional friction in running operation without pressure application and in this manner to increase the service life. This has been successfully implemented.

Moreover, the geometry and the surface finish of the groove cut was further optimized at several points in order to among others achieve a better gliding effect and to increase the effectiveness of the labyrinth effect of the seal. Both further developments of the component resulted in the new RPS-seal or – with two-sided use – in the 2RPS-seal.

The performance

Of course the bearings were tested on LFD's own test benches. As a reference, a 6005-2RPS bearing was tested under the following parameters: 3000 rpm at a load of 3000 N. In the course of this, during the comparison of a double lip seal with the 6005-2RS, only a slight increase of the operating temperature was measured, showing



that the new RPS-seal by LFD has a similar friction moment. Subsequently, the bearings were tested on the test bench of a renowned manufacturer of agricultural machinery using pressure application by means of a water jet, similar to that encountered among others during the cleaning of equipment in practice.

Finally, the bearing was utilised in a field trial in Russia under the most difficult soil conditions. The simple conclusion of this field trial is: It just keeps on running...

Offer

LFD currently offers the RPS-seal for the ball bearings 6004, 6005, 6204, 6205, 6206, 6305 and 6306 as standard. On request, the seal can also be developed for other sizes.



Images: © SELL MEDIA COMPANY - Norbert Sell, Tractor preparing land © Dusan Kostic - fotolia.com

Perfect mulch High impact forces, strong bearings



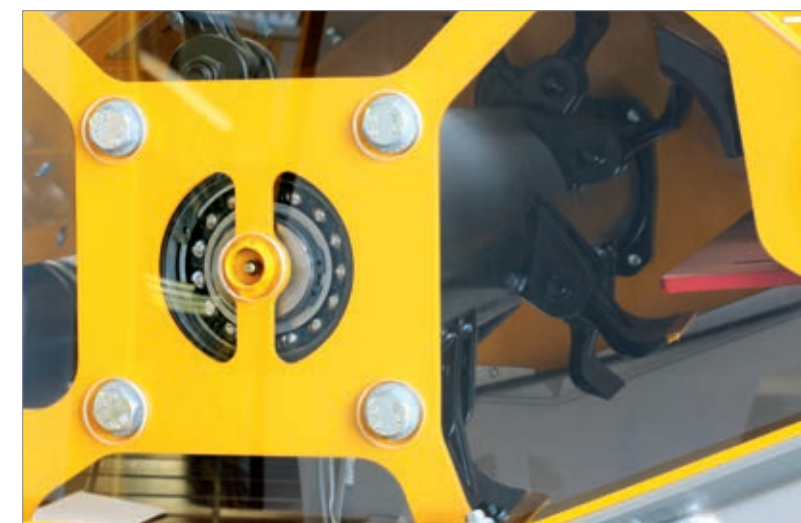
The MU-Pro Vario mulching machine by Muthing has been designed for up to 220 hp of pure drive power. This is the engine output that can be utilised at the propeller shaft on the respective working width. This already provides an indication of the rate of output that the large installed LFD ball bearings must absorb at the rotor shaft.



Reliable capacity

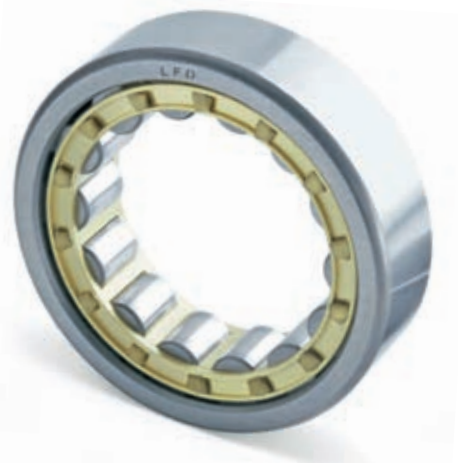
Because it is a rotating pruning hammer tool, merely the considerable impact forces lead to an additional high load characteristic of LFD bearings and the machine.

The correct selection of bearing material determines the reliability and the capacity of a bearing in operation. An important characteristic for the selection of bearing material is the hardenability of the rings and rolling elements, as this is a very important factor for the loading capacity and fatigue strength of a bearing.



Images: © SELL MEDIA COMPANY - Norbert Sell

Loadable bevel gear system



An oil-filled bevel gear system is positioned on top of the housing, which docks directly to the propeller shaft of the tractor. Such drives are low-loss and are most likely to provide the driver with information whether a tractor is about to reach the performance limit. Cornfields are renowned as a tough challenge for mulching machines. Traditional wear parts in

this permanent application would initially be the pruning hammers, however in a cornfield these have a reliable operating time of 100 - 150 working hours. This translates to a reliable operating area of approx. 300 hectares with a mulching machine with a width of 3 metres and perfect mulch can be achieved on the cultivated area in only a single pass.



Images: © SELL MEDIA COMPANY - Norbert Sell



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Considerable cutting speed



The mulching machine works with heavy pruning hammers, which are self-sharpening due to their geometry. Especially hardened steel has been used, which has the necessary toughness to prevent cracking in the event of the impact with rocks. The holders of the flails are arranged tangentially to the rotor shaft, ensuring that no frontal contact occurs with foreign bodies, but instead an easy lifting of the rotor is facilitated. As a result, the impact force is divided into two components; one is the remaining impact force, the other is the component that is deflected.

A comb bar installed in the housing allows all material to easily pass, which has already been sufficiently broken up. In contrast, the patented so-called "Müthing shark fin" ensures that material, which is still too long-fibred for a rapid decay, will be fed to the rotor once again in a second step and will be broken up further.

Each of the pruning hammers has an own weight of 1.1 kg and impacts with a considerable cutting speed of 55 m/sec on the material to be processed.

Special labyrinth seal

The MÜthing-Starinth roll bearing, installed in the larger model lines, is comprised of a labyrinth seal and two taper roller bearings. In this manner, the bearings are kept clean as a result of the lubricating action.

LFD guarantees bearings with a consistent high quality with its own automated production lines. For verification, optimization and new developments, the LFD Group has equipped its own development laboratory with the latest measurement technology of renowned manufacturers and has installed heavy-duty service life test benches at the Dortmund location.



Images: © SELL MEDIA COMPANY - Norbert Sell, Müthing GmbH & Co. KG Soest



New dynamic storage logistics concept: Saving time and space



As a result of steady growth, the demand for pallet bays has increased continuously at LFD. In a traditional storage concept, the order picking paths then tend to become longer.

The customer base of the LFD Group includes a number of storage logistics specialists, whose knowledge was utilised successfully. The analysis of the sequences showed that in the framework of the order picking time, 78% consisted of walking or driving (forklift trucks) and only 22% was comprised of actual order picking.

Reach trucks at LFD require an operating width of 3 metres between the high racks. Until now,

43% of the hall surfaces could not be used for the storage of goods. On the basis of these findings, a completely new logistics concept was developed.

Warehouse logistics

With new intelligent dynamic storage systems for pallets (dynamic storage), the facilities are used more intensively and forklift movements have been reduced. By using gravity in the skewed



storage rack level, a diverse range of articles can be processed more quickly and with less personnel and operating costs. The same system was implemented with a "carton flow" solution for the access of small quantities. This type of storage reduces distances dramatically and increases order picking times significantly, because LFD customers more frequently order smaller batch sizes as well, in order to reduce their own capital commitment.

the assistance of an MDE unit. In the course of this, the most efficient paths are calculated. Errors are avoided with the matching of barcodes at the storage position on the shelf. With the completion confirmation of the order picking process, the forwarding agent is informed on the pick-up and the customer automatically receives a notification for the shipment tracking.

Conclusion

With the change-over of the LFD logistics, the pallet capacity has been increased by 15% during the first step. As a result, the costs of storage have been lowered per pallet position. The distances have been lowered to 26% and the effective order picking time has been increased to 74%.

The path to industry 4.0

With the change-over of the hardware in the warehouse, LFD has simultaneously implemented an adaptation of the IT. All specialist warehouse personnel are guided through the warehouse with



Images: © SELL MEDIA COMPANY - Norbert Sell, Man's hand holding a barcode scanner © Anton Mikhmel -fotolia.com



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Spherical plain bearings
and rod ends

Focused hydraulic competency

Hydraulic cylinders are constructed in different types and performance classes. Kandziora Metallbearbeitung GmbH located in Niederlangen distinguishes itself by the fact that many of the processed components originate from their own in-house production.



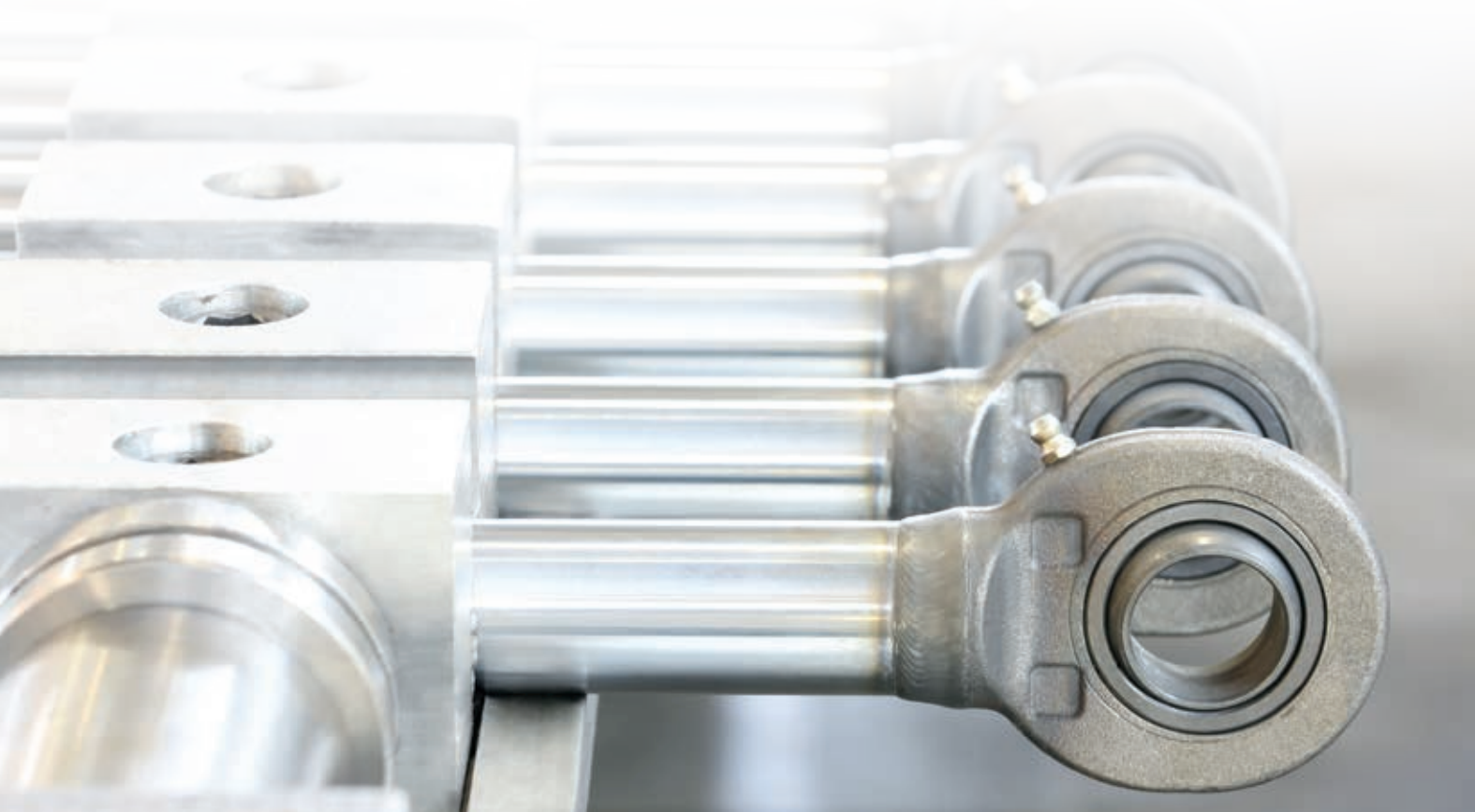
As a result, the highest standard can be guaranteed on all levels of the production line. Mainly LFD rod ends of the type GF ... DO and GK ... DO are used; when higher load factors are required, spherical plain bearings of the type GE ... FO are utilised, usually in welded versions on piston rods and cylinder bases. Both companies agree on the important matters: Kandziora and LFD both place a great value on the highest possible quality and traceability of their own products.

For this reason, the hydraulic cylinders and spherical plain bearings are continuously further developed according to all requirements set by the customers and the market. Similar considerations apply to each individual work step such as cutting, welding, assembly and coating, as only regular optimization will lead to optimal solutions.

Optimal consistent quality

At LFD Wälzlager GmbH an optimal consistent quality is especially important for agricultural engineering and other mobile machinery and is safeguarded on the one hand by means of the installed in-house laboratory facilities and on the other hand by the service life test benches located at the Dortmund location.

With the use of the latest 3D CAD software as well as complex kinematics and flow simulators, the engineers and technicians of the Kandziora company in this manner develop powerful hydraulic cylinders, which meet all set requirements.



Images: © SELL MEDIA COMPANY - Norbert Sell

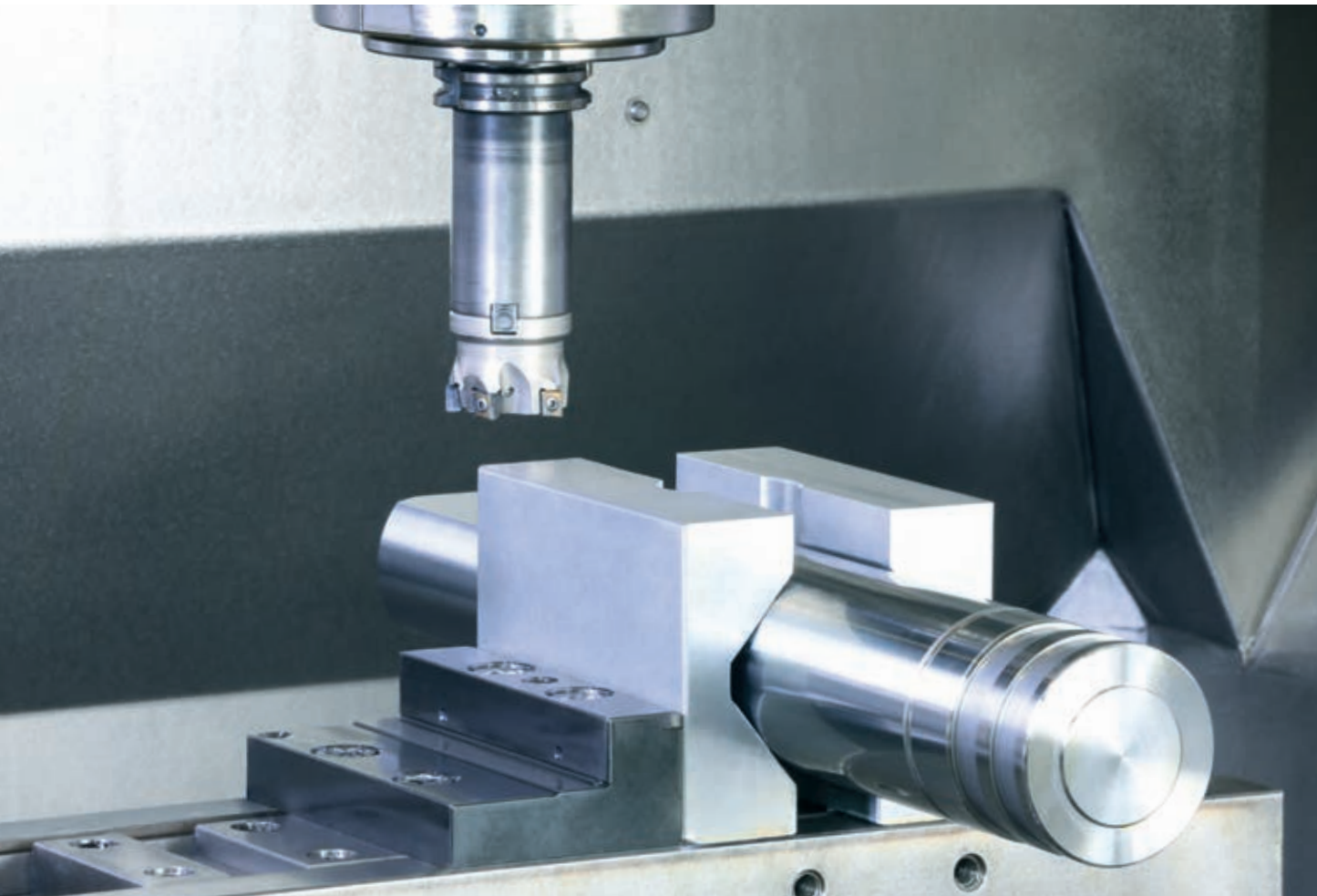


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The production location offers a surprisingly large in-house manufacturing depth with high fabrication competencies as well as computer-based machinery and plant facilities. This includes CNC machine tools, systems for heat treatment, electro-plating and painting facilities, automatic assembly and testing equipment.

In-house production with the greatest precision

The greatest precision can be guaranteed in the area of the required surface quality and measurement tolerances for the individual components of the hydraulic cylinders due to the machining with simultaneous 5-axis machining centres. These can all be produced in-house and addi-

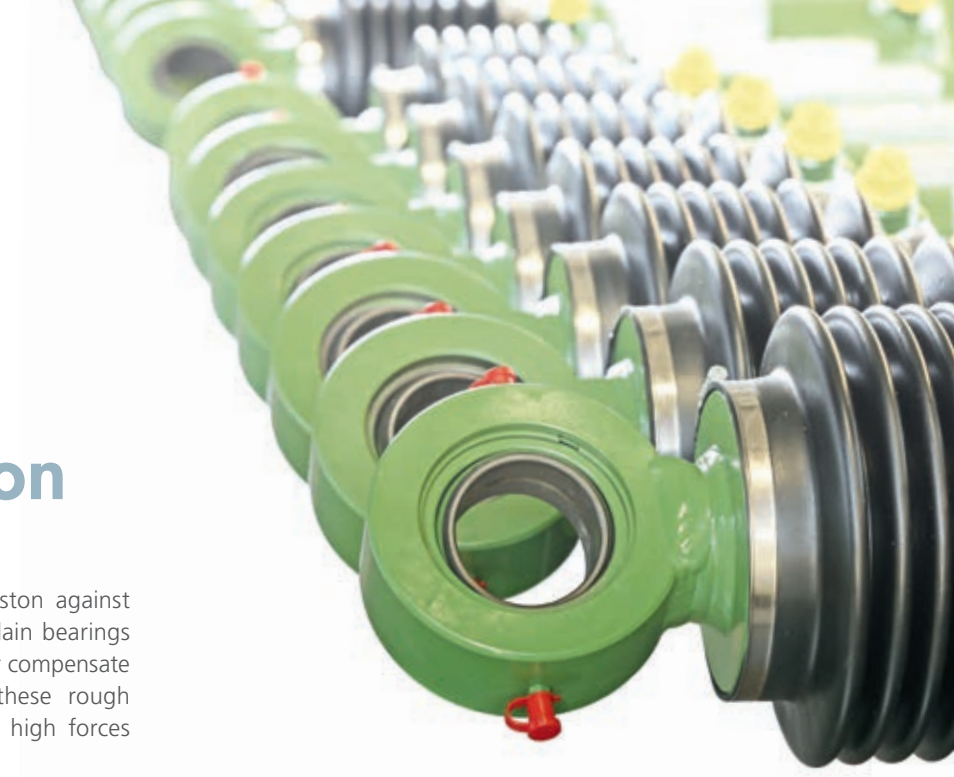
tionally special application-specific requirements can be immediately included in the planning and then implemented. The hydraulic cylinder with rod ends and spherical plain bearings of the LFD Group have versatile applications in agricultural engineering, in construction equipment, in disposal technology, in commercial vehicles, mining, forestry as well as in the offshore area.

Welding robots are utilised during the fabrication of the hydraulic cylinders in order to ensure even, oil-tight weld seams under consideration of the various areas of use of the hydraulic cylinders. When using hydraulic cylinders in machines that are utilised in an environment with a high occurrence of dust, dirt, moisture as well as pieces of rock, Kandziara for example makes use of

Experience meets innovation

a gaiter in order to protect the piston against external influences. The spherical plain bearings of the LFD Group are utilised in order to compensate possible alignment errors under these rough conditions, but also to absorb the high forces that occur.

LFD spherical plain bearings prevent lateral forces from being transferred to the cylinder in order to counteract a possible risk of the buckling of the cylinder and also to protect the seals against excessive wear.



Images: © SELL MEDIA COMPANY - Norbert Sell

Self-loading feed mixer wagon V-MIX Fill Plus LS self-loader

As a German owner-managed company, BvL Maschinenfabrik manufactures feed mixer wagons with a separate loading device and an additional cutting tool at its production location in Emsbüren.



Images: © BvL Maschinenfabrik GmbH & Co.KG

In the LS version, the V-MIX Fill has its own cutting unit with an active blade system. It easily cuts through any ensilage. Ensilage slices of up to 40 cm are smoothly and cleanly cut out of the ensilage wall.

Self-removal and loading

The self-loader V-MIX Fill Plus LS is an all-round talent and takes care of removal, loading, mixing

and feeding all-in-one. This provides enormous work comfort for the farmer. The cutting unit of the self-loading feed mixer wagon ensures a perfectly smooth cutting surface. In this manner, oxygen ingress into the ensilage is prevented as far as possible and the risk of reheating is minimised.

The lowering mechanism supports the easy cut with little pressure. The machines are equipped



The LFD flange bearings are installed outside of the machines, facilitating a possible re-lubrication, safeguarding easy maintenance. In regard to the cooperation, BvL design manager Markus Postmeier confirms LFD provides both reliable bearings as well as good support.

“We have encountered no problems in this regard and are very satisfied,” Postmeier states in an interview.

Power mixing auger optimally utilised

The centrepiece of the feed mixer of the V-MIX range is the power mixing auger. It ensures a particularly gentle and smooth mixing process, as a result of which the structure of the feed in the mixing container is maintained as well as possible. The mixing augers in the mixer wagon’s container can be adjusted optimally for the different feed types by means of blade adjustment.

with reliable LFD flange bearings manufactured in accordance with both German as well as international standards and are fitted with ball bearings as well as spherical plain bearings and hydraulic pivot heads, installed in an easily accessible manner.

LFD bearings support the smooth operation and compensate possible misalignments by means of bearing units.

The power mixing augers in the vertical type are optimally adapted to the shape of the mixing container. The conical and slim auger shape enables a high volume capacity as well as an extremely easy and structure-gentle mixing process. In this manner, the full size of the mixer wagon can be utilised, irrespective which container volume is present, without having to forego the required homogenous mixing quality. Entire round and square bales are easily dissolved.

High variant variety



Wide product range of feed mixer wagons

BvL offers one of the widest ranges of products in feed technology of livestock. Irrespective whether these are external loaders, self-loading mixing wagons with a built-in cutting unit or self-propelled with patented structure roller. Solutions are also offered for individual stables with stationary mixing technology. Feed mixer wagons by BvL are available in a size of 3.5 m³ to 46 m³ or mixers fitted with a single auger or up to three augers.

In the dual or triple auger mixing wagons, the asymmetrically arranged mixing wedges in the container ensure the feed exchange between the individual mixing augers. An optimal material flow with a high volume utilisation is combined with low power requirements as a result of the arrangement of the mixing wedges.



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Patented EDS system doses precisely

The EDS system (Exact Dosing System) ensures a quick and even discharge even without a conveyor.



Tensioning station for the rubber belt of the conveyor, with two-hole flange bearing and protective cap

On the left: V-MIX Fill Plus LS self-loader with built-in cutting unit in the rear
Images: © BvL Maschinenfabrik GmbH & Co.KG

As a result of the asymmetrically arranged discharge openings, the feed is laterally set down in a swath without being run over.

Discharge systems and accessories

Feed mixer wagons are adjusted by BvL according to the conditions at the respective location. In regard to the discharge, the farmer can choose between an EDS discharge door, which is fitted at the sides or in the rear of the machine or a cross conveyor, which is positioned at the front or rear of the machine. Combinations from these discharge methods can also be implemented.

BvL self-loaders can generally be equipped with a cross conveyor at the front or rear. The dual auger mixers of the V-MIX Fill Plus LS range also offer the option of a lateral EDS discharge door.

Additional options in regard to discharge are the feed slide (powered either mechanically or hydraulically) or in the form of a conveyor elevator, which correctly transports the feed into feed troughs.



Drive of the propeller shaft of the tractor to the mixer gearbox with protective cap for the propeller shaft

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