

Special print

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Forst&Technik



Grappled – the first
real comparison of
timber loading cranes

presented to you by:



EPSILON TIMBER & RECYCLING CRANES

Comparative test for Z-timber loader cranes

Flying high

All of the prominent timber loader crane manufacturers in Europe use our comparative test



Forst & Technik
Review

So far there have been only few ways to directly compare timber cranes. As a customer, if you were not lucky enough to have the chance of trying different models yourself, your only option was to rely on the information contained in the manufacturer's catalogue. Asking other drivers everyone is convinced to ride the best brand, of course. Together with the editors of the Trucker magazine, we tried to assemble, for the first time, an objective comparison.

It took several months to turn this spontaneous idea, while drinking some Weissbier together, into the action of a three-day testing event. First and foremost, the companies of course had to join in and agree to a public examination of their advertisement promises. This turned out to be surprisingly easy — we were charging open doors at all the well-known manufacturers in Europe. Palfinger-Epsilon, Hiab-Loglift, Kesla, Tajfun-LIV and Penz immediately signalled interest. Even Cranab, who just re-entered the market for timber loading cranes after a long absence, wanted to see whether their new design would prove competitive. In the end they did not participate however, as they could not supply a crane model fitting the testing parameters. At the round table we determined together, that during this test première, only variants of Central Europe's most common crane type should be pitted against each other. Currently, these are 12 metre-tonne Z-cranes with approximately 8 m outreach and a single telescope extent. Unfortunately, Cranab does not offer such a setup yet, because they focused on a double telescope system first. So we finally ended up with five contestants:

- Epsilon M 12 Z 83 (with Master Drive and hydraulic servo control)
- Kesla 2110 Z 80
- LIV 120 ZX 84
- Loglift 125 Z 80
- Penz 12 Z 79

The next order of business was detailed planning of the test procedure. After all, we wanted to produce meaningful data based on hard facts, to the extent possible. Last but not least, a suitable testing ground had to be found where five trucks could move about easily at the same time, timber was readily available and measurements of all kind could be taken. A big Thank You at this point to the company Egger in Brilon, who provided us not only with their outdoor storage area, including timber, but also their cafeteria on the rainy first test day. We would also like to extend our thanks to Philipp Forstwerkzeuge, with its new CEO Peter Schwanitz, who offered us a roof over our heads on the testing grounds and took care of the catering.

What we measured

First of all, we collected some important data on all the cranes. The individual results can be found in the table on page 4.

■ The weight of the “naked” crane, i.e. without grapples and rotators, but with oil. This measurement was already quite complicated to carry out. However, the results allowed us to straighten out age-old



The lifting capacity was measured at three different outreaches: 3 m, 5 m and 7.5 m

Sometimes you have to get the timber up from underneath. This was simulated here



Measuring the slewing force

Maximum outreach, measured accurate to the centimetre



How far can you throw? Moving out the heavy bundle, until the crane descends

suspicious against the numbers in the catalogues.

■ The effective outreach when lifting from the ground.

■ Correct hydraulic pressure (we readjusted, if necessary).

■ The actual lifting capacity at three different outreaches: 3 m, 5 m and 7.5 m. These measurements were taken using extremely heavy bundles of logs.

■ Whilst standing on a ramp, the cranes had to show what they could lift at 7 m outreach, 1.5 m under the vehicle level.

■ Slewing torque sloped to the vehicle.

■ Last but not least, every crane had to move out a large grapple load of 1.38 t as far as possible. In this discipline, the holding force of the main boom cylinder counts most.

We invited a whole range of expert testers to examine the handling and ergonomics of the different models. In order to assure operating the movement controls wouldn't pose an additional hurdle, a uniform control setup had to be agreed upon. We decided on the modern European dual-axis joysticks. Unfortunately, in Germany seasoned operators often still operate using the traditional "piano controls" with 4 or even 5 levers. However, with the growing proportion of crane cabs, hydraulic servo-control or even electric joysticks, this number will certainly decrease in the future.

The test drivers

■ Michael Kunz is the son of Jürgen Kunz, from Miltenberg, Bavaria. He brought the test vehicle with the Loglift crane.

■ Hermann Oberascher drives for Ebner in Salzburg, Austria and carries out many tests



for Epsilon. In the mountains, a lot of timber has to be sorted besides cable cranes, so for him, a particularly sensitive crane control is very important.

■ Julian Reith comes from the similarly named forestry company based in Arnstein, Bavaria. In this company, drivers are switching between timber trucks and forest machines, which is why for them the dual-axis joystick is the control interface of choice.

■ Florian Stark has been employed with Trohorsch in Altmannstein, Bavaria, for six years. He was originally an excavator operator. He brought the Penz vehicle with him.

■ Ben Wortmann is a private entrepreneur in Meschede, North Rhine-Westphalia. He drives an Epsilon.

■ Andi Ziefle from the Black Forest is the owner of the "Black Pearl", a 750 HP-Volvo, which has a Kesla-crane with a cab installed.

Objective or a matter of taste?

Besides the mere measurements, all operators had several hours to get to know each crane and experience their characteristics. This began with assessing the ease of access, not taking into account the mounting of the cranes on the truck chassis, of

course. Depending on the wheelbase there is a lot of variety in the spatial conditions and some buyers evidently do not place as much value on easy access. Once the operator is at the controls, the seating position and good overview are the most important aspects. Every control is operated a little bit differently, depending on lever design and arrangement. If the control valves are adjusted appropriately, a smooth steering experience is most likely to be achieved.

The bottom line

None of the participants actually failed in this test. The Epsilon crane with its extraordinary seat design and the excellent joystick controls is setting the bar high for its competitors. However, this sophisticated technology also comes at a price. Our testers were very pleasantly surprised by the new LIV crane. Given its cost-effectiveness, it could become a serious competitor. The Loglift remains the first choice for those looking for the strongest crane without compromise. If the comfort of a cab is what you're looking for, the Kesla provides a good basis at a good weight. The Penz is something for the tradition-conscious looking for expertly crafted, classic technology.

Tab. 1: Crane test measurements

Manufacturer		Epsilon			LIV			Loglift			Kesla			Penz				
Model		M 12Z 83			120 ZX			125 Z 80			2110 Z 80			12Z 79				
approx. price for end-customer (plus VAT)		34 500 € (Classic) 38 000 € (Master)			34 900 € (incl. LED)			35 400 € (incl. LED)			33 700 €			35 800 €				
		Target	Actual	Diff.	Target	Actual	Diff.	Target	Actual	Diff.	Target	Actual	Diff.	Target	Actual	Diff.		
Weight [kg]	net, w/out grapple, rotator, with oil	2340	2365	101 %	2270	2462	108 %	2250	2250	100 %	2130	2210	104 %	2400	2385	99 %		
	Grapple	Type			FG53			G 043			X 53 + Säge			pro G40			L 52	
	Weight [kg] incl. rotator	315			320			(305 + 120)			345			325				
Hydr.-pressure	1. circuit	260	262		280	280		250	256		260	259		255	270			
	2. circuit	251			265			254			260			268				
Lifting capacity [t]	3 m	3,63	2,91	80 %	3,09	2,93	95 %	3,35	3,27	98 %	3,33	2,72	82 %	3,75	2,47	66 %		
	5 m	2,16	1,93	89 %	2,04	1,88	92 %	2,18	2,10	96 %	2,04	1,71	84 %	2,34	1,87	80 %		
below level	7,5 m	1,43			1,33			1,56			1,25			1,46				
	7 m	1,51	1,65	109 %	1,53	1,52	99 %	1,6	1,65	103 %	1,43	1,39	97 %	1,63	1,64	101 %		
Reaching out [m]	1,38 t bundle	7,30			7,14			6,90			6,68			7,32				
Slewing torque [kNm]	measured at 4 m outreach	28	30,2	108 %	26	28,2	108 %	29	31,4	108 %	23	28,6	124 %	25	26,3	105 %		
Max outreach [m]	nominal/effektive	8,31	8,04	97 %	8,40	8,15	97 %	8,00	7,69	96 %	8,10	7,69	95 %	7,83	7,60	97 %		
Sag of boom	[cm], folded	72	75		71	80		80	80		79	80		69	70			

Penz 12 Z 79

The workhorse

The Austrian manufacturer is not too strongly represented in Germany. In its home market the situation is quite different and also in Germany's eastern neighbour countries, the red logo from the Murtal region can be seen very frequently.

In our test, the 12 Z was one of the heavier cranes, although it measures slightly below the factory specifications. When it comes to lifting power, the brochure is quick to boast. These claims could not be reproduced during the test. The absolute values are also only average, which is, in part, due to the lack of an elbow lever in the design of the main boom joint. However this construction offers a different benefit: because of the slim design, the Penz has an unbeatably clear front view. At the same time, it tends to become quite fast with a steep standing main boom. The slewing gear also works very fast.

The testers commended the comfortable access and good seating position. The control levers divided opinions: Recommended as smoothly operable by some, others disagreed because it was necessary to "row" with the long levers if you wanted to make quick movements. A suspension seat and hydraulic servo control



Hermann Oberascher commends the good overview on the Penz

Hybrid: the Penz indeed has a rotary distributor on the base of the crane. However, other than that, the pipes were predominantly exterior. Access is very convenient.

can also be ordered for this Austrian crane.

The Penz is a hybrid when it comes to the hose system. The test crane was equipped with an (optional) rotary distributor in the base of the crane. However, besides from that, the pipes were on the outside. These are largely made of metal, which makes for a very neat appearance. However, if a hydraulic line were to be damaged, hitting a stanchion for example, it is much more difficult to repair on site than in the case of flexible hoses.

It stuck out that on this crane, the light on the outer boom, which lights the work area of the grapple, was missing. However, according to its owner, Florian Stark, the high-intensity lights at the seat and the main boom are sufficient.

Ben Wortmann on the Loglift 125 Z 80



An often-expressed criticism of the Loglift is the exposed hoses. These also prevent a longer access ladder

Here you have to be quite a climbing artist



Loglift 125 Z 80

The quick powerhouse

The Loglift crane fitted pretty much all stereotypes that exist about this brand. It was the strongest and one of the lightest cranes in this test, by quite a margin. At the same time, the testers noticed that it also drives quite fast. But with 2x80 l the test vehicle offered plenty of pump capacity, too. On the other hand, it was obvious that we were dealing with the oldest layout in the group. Therefore, the ergonomics weren't quite as well received. The exterior hose package on the column necessitates a very short ladder, which, in comparison with the others, simply lacks an entire step. The resulting climb in the overhang is completely out of date. Arriving at the top, the narrow work area was even called an "ejector seat" at one point. The levers worked quite well

and smoothly, but were located quite low and far away, in typical Loglift style, which leads to stooping for some. In addition, the operating elements are in the way on entry.

The classic design can also be recognised in the exposed hose system, which one may consider an aesthetic horror. Yet it is functional, after all. In particular, the control valves right under the seat allow for a relatively small slewing radius. This is an advantage with very long loads. Loglift already showed where they are heading at the KWF-Meeting 2016 with the new 140 Z and 150 Z cranes. The ergonomics were evidently improved there. Or we could just wait for the Hiab HiVision glasses and dispense with top seats at all in the future.

Julian Reith on the Kesla 2110 Z 80



Andi Zieffle looks around on the left. Unfortunately, on the right-hand side, the hoses impair the field of vision

The buyer of this Kesla 2110 Z only had rather simple steps installed for access. This did not meet with much approval amongst the testers. The hose system is pragmatically functional



Kesla 2110 Z 80

Small, but to be reckoned with

By name, the Kesla is only a 10-metre-tonne crane. However, judged by its technical parameters, it is quite suitable for this line-up. Despite a small performance deficit, it quickly drew attention to itself in several ways. The effective lifting power was only slightly behind the others, even if the catalog data — especially in close range operation — were somewhat optimistic. The slewing torque on the other hand was considerably higher in reality than on paper. The Kesla also didn't have any problem standing up for itself in the discipline of reaching out with the weight.

Finnish pragmatism is obvious in the design of this crane. There is not a redundant part to be found. Following this principle, the hydraulic hoses are installed in a purely functional way. What many a tester may call a "catastrophic tangle", may prove as very easy to maintain for others. In the case of a leak, the defective part is immediately localised and very easy to repair. This can be more complicated in other, fully encapsulated systems.

In the case of the test vehicle, access to the crane was extremely spartan in nature. The steep metal steps aren't much fun for anyone, except perhaps from a financial point of view. The actual

ladder of the crane on the other hand mainly received praise because of its slip-proof and durable appearance, which it owes to its galvanised finish. It should be noted that the view offered from the seat is a clear indication that the Finns design their cranes predominantly for use with cabs. Having all the hoses routed to one side is ideal in that case, but combined with a rear mounted seat, the bundle of hoses is unfortunately directly in the operator's face on the right-hand side. In addition, the front electrical systems are also partly blocking the field of vision.

The controls made it clear that the crane was practically sent straight out of the box to our test. Apart from the the short levers installed by default, many testers described the valves as feeling stiff and the controls therefore as "rough". However, Kesla offers three different lengths of levers and the speed of the slewing mechanism can be adjusted manually. This is an advantage if different drivers are using the same vehicle. The gradual automatic speed increase was met with divided responses. Some consider it practical, others prefer to always have a consistent speed for their movement rhythm.

Epsilon M 12 Z 83

The top dog

The top-selling timber loader cranes in Germany currently originate in Elsbethen. Austria. Looking at the M 12 Z with the Master Drive seat, this shouldn't come as a surprise. All testers agreed that in terms of ergonomics and operator friendliness, this crane is in a different league than its competitors. The hydraulic servo-controlled joysticks operate with phenomenal accuracy, although they give no immediate feedback on the current load state of the hydraulics due to their design. The experienced operators, who had gotten used to different controls over many years, were amazed by the short time required for familiarization with the joysticks and our untrained "guest operator", Peter Schwanitz from Philipp, found the Epsilon the most intuitive to master among the different cranes.

In the meantime, the testers had sufficient opportunity to try out handling of the individual crane models





Convenient access to the top seat is easily achieved with the Epsilon crane

Florian Stark on the Epsilon M 12 Z



The suspension seat felt comfortable and promised security straight away, without the usual strain on the back while loading. Only one of the testers found fault in this, criticizing the fact that this also leads to the seat feeling a bit constricting and making it necessary to put more effort into reaching certain vantage points. Adding the weather protecting Eps hood results in an even higher level of comfort. The electromechanical folding mechanism makes for a clean workplace and protects the joysticks, when driving the car through rain. In practice, the cover isn't always folded down by the operators when they move on to the next woodpile however, which may have led to the loss of some covers already.

Judged only by the numbers, the Epsilon was appealing, but not outstanding. The complex design of the seat was clearly noticeable in terms of weight, whereas the Classic Drive model would be a whole 140 kg lighter according to information from the manufacturer. At close range, the M 12 does not fully achieve the stated lifting capacity; then again, it is quite strong further out and also moves the benchmark package quite a long way out.

The technical efforts are reflected in the price, though. As in many other ways, the Epsilon is situated above the other participants in the test in this regard, at least with the Master Drive seat.



Despite the exterior hoses at the crane column, the LIV 120 ZX appears very orderly



LIV positions its outer boom cylinders differently to the competition

Michael Kunz on the LIV 120 ZX



LIV 120 ZX 84

The underdog

With the LIV crane, there were a number of surprised comments from the testers, who were very impressed by its performance. Although it was still a model from the "pilot series", it's already apparent that the Slovenians managed to create a well thought out product. This begins with the tidy appearance, with appealing covers for the control blocks and largely internally routed hoses. In addition, the crane benefits from the long wheelbase of the Pavic setup, giving ample space for the climb up. From a relatively low seating position, all the drivers praised the smooth, round controls. LIV breaks new ground in geometry with counter-rotating the linkage for the outer boom cylinder. Although it is not directly reflected in the measurements, there is the subjective impression that this has improved the holding force of the outer boom. Vice-versa, the suspicion was expressed

that a swinging load might strike the crane more easily. The lifting cylinder of the main boom, which brings its connections out of the danger zone by simply positioning them on the other side, is definitely better protected. The LIV was the only contestant to fully cover its hoses even in the outer boom joint. This is of benefit with the 80 cm sag in the folded-up position, instead of the specified 71 cm.

The LIV was one of the stronger cranes in the testing line-up and almost measures up to the promised specifications. However, it is also the heaviest piece of machinery and is a whole 8%, or 190 kg, above the paper value. With an average price of just under 35,000 €, supplied with LED-lights and an additional bottom-mounted support leg operation as standard, it is also a financially interesting offer.

Heinrich Höllerl ■



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