

DIRK ZEDLER

CARGO BIKES – A SUCCESS STORY WITHOUT A DARK SIDE?

Rapidly increasing numbers of cargo bikes are being sold and used on the road. What do dealers and manufacturers have to learn from the first product recalls and the continued testing of car magazines and automobile associations?



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One look at our roads on any day shows that the demand for cargo bikes has increased immensely in recent years. According to the industry association Zweirad Industrieverband e.V. (ZIV), the sales numbers of cargo bikes in Germany rose from approx. 60,000 in 2018 (of which 39,200 were electrified and 20,900 were not) by 72 percent to 103,200 in 2020 (78,000 electrified, 25,200 not), and by another 62 % to 167,000 in the last year (120,000 electrified, 47,000 not).

All the while the segment is becoming more diversified. The traditional models with two wheels and one cargo area in front of the rider are increasingly getting competition from new and interesting variations. Two wheels at the front and one at the rear, or the other way around, tilting technology or not, four-wheeled designs with cargo area or cargo box systems – the possibilities seem limitless.

The term 'cargo bike' has actually lost some of its pertinence by now, since we see these bikes used more and more to transport children. When transporting kids, widely accepted as one of the groups most in need of protection, all parties involved – designers, sales teams and customers – have a special duty of care. With that in mind, it seems positively reckless that most models sold come with underpowered (drum) brakes and wooden boxes to seat the children. Manufacturers even deck out their ad copy with images of several youngsters sitting in one box, not belted in, arms hanging out so that hands can easily reach into the spokes.

It is these models that provoke the ire of many players from the automotive industry, who waste no time in taking up arms against this up-and-coming bike segment. As they see it, they have been making strenuous efforts to protect children in the event of an accident while the bike industry

is jeopardising the youngsters' health in the most negligent ways. Something the car lobbyists conveniently ignore in all this is that the actual hazard for children in the road does not come from bikes but motorists.

Statistically, the number of accidents involving these bikes is still close to negligible. And yet, every accident with severe consequences is one too many, and the sensationalist crash tests performed by the likes of DEKRA and ADAC are causing immense damage to the image of transportation bikes. We as bike manufacturers, but also as advisers to our customers, should use our insights by recommending and advocating for more active features like bright daytime running lights and strong (disc) brakes, as well as passive safety devices, such as solid seats with three-point or (better yet) five-point belts and headrests. If we're being honest with ourselves as an industry, the safety of child seats and cycle trailers for children has overtaken that of transportation bikes in recent years.

Transportation bike standard DIN 79010

From an international point of view, there is currently no EN or ISO standard regulating the safety of a transportation bike. The only existing standard is DIN 79010:2020-02, developed in Germany. This standard sets out requirements for the fatigue strength and, as far as the transportation of passengers is concerned, makes reference to EN 15918:2017 for cycle trailers for children. One can be assured that reading and, better yet, implementing these requirements will be worthwhile.

Like for all other bike and e-bike categories, the standard provides a minimum of safety and usability. But more than that it cannot do.

Due to the vast diversification of the segment, it cannot cover all

models. For instance, models with a standard wheel in the front and an extended rear, commonly referred to as 'longtails', are experiencing strong growth. The large racks can take on spacious panniers, the bench provides enough space for one or two kids or a combination of child and cargo.

Bikes with a short front and a long rear offer a riding experience that is much closer to that of a 'traditional' bike (at least when not loaded with cargo) while taking up less parking space compared to the popular bikes whose cargo space is in the front, often called 'Long John bicycles'. But this does not mean they don't have quirks of their own.

Failure in use despite successful DIN 79010 testing

The centre tube breaking during a ride, with both mother and child going down: a scary thought that unfortunately has already become reality.

Some of the damage cases in the field, i.e. during use, occurred with transportation bikes that been successfully tested by their manufacturers in accordance with DIN 79010.

Our experts performed field tests to look for root causes and found harmful loads that the standard tests had failed to reproduce. As a result, we were able to reproduce these failures from the field in the lab only after developing our own testing systems specifically for such cargo bikes.

For a two-wheeled cargo bike with the wheels in a single line, the standard sets out four different dynamic load tests for the frame. In contrast to this, our experience shows that the damage mechanisms found in longtails up to now can be reliably precluded only after 42 different test loads with 11 different load types.

This can already be seen as proof that the staggering variety of transportation bikes needs not just brilliant developers but also the committed test engineers to match. Other load types must be added to the ones specified in the standard's requirements and each load type from the standard must be adapted to fit the special needs of each transportation bike category or design. In other words: Lumping Long-John bikes and longtails together when it comes to testing is dangerous and could lead to disaster.

Let us take pleasure from the fact that the cycling world is becoming more diversified every day. But let us also be careful and professional and only bring transportation bikes into circulation that are safe in all respects. This will make us less prone to attacks from the car lobby, which keeps trying to give transportation bikes a worse name than they deserve. Dealers, for their part, would do well to ask their suppliers if and how their cargo bikes were tested. ■ Dirk Zedler



Dirk Zedler (photo©Bernd Lammel)

DIRK ZEDLER

Since 1993, Dirk Zedler has been an analyst and expert witness on bicycle accidents and product failures for courts, bike and insurance companies, and private individuals. He got his start in the industry by working for a large bike shop from 1986 on, and now holds the respected advanced engineering degree known as "Diplom-Ingenieur."

Courts have recognized Zedler as an officially appointed and sworn expert on bicycles since 1994, and on electric bicycles since 2014.

The Zedler – Institute for Bicycle Technology and Safety has used this wealth of knowledge, derived from his and his teams work in thousands of court proceedings and expert's reports not only in Germany but from the US to all over Europe, to enhance research and development in the bicycle industry.

The Institute sets the standards for the bicycle industry. It develops and builds testing equipment that is used by manufacturers to improve the riding performance and safety of their bikes, and by leading European bicycle magazines to test them. The Institute's work provides a basis for European and American manufacturers to communicate with their Asian suppliers. Manufacturers can buy test equipment from the Institute or use its state-of-the-art testing labs.

The Zedler Institute also prepares risk analyses, conformity papers, workshops, recall papers and user manuals for bicycles and pedelecs. These manuals, now available in more than 40 languages, help consumers use their bikes properly — and in many cases have protected manufacturers from liability.

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