

New frame fatigue tests with head tube loading

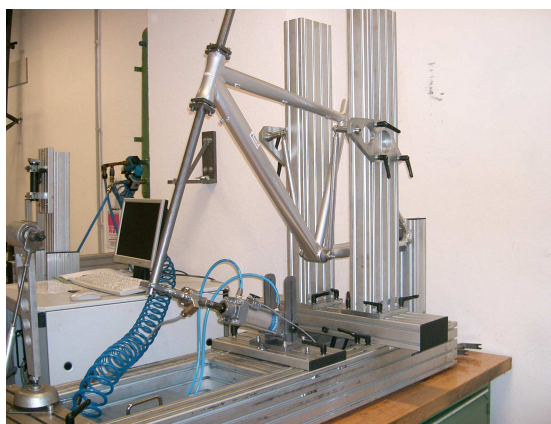
The latest developments in sports mountain biking are not without their consequences. As disciplines such as freeride and dual slalom become ever more popular, new forms of frame failure are increasingly occurring. Alongside the currently-tested loads imposed by out-of-the-saddle pedalling and saddle forces, under certain circumstances fork-related forces (from jumps, obstacles or braking) can also be critical for the frame. In some cases it has been noted that fatigue cracks occur in the head tube joint region – cracks which had not been picked up by the existing set of tests.



In response to many customer requests EFBe therefore performed numerous test runs over the winter, with the aim of reproducing these new failure modes (as pictured above) on our test equipment.

Now, with immediate effect we can add the 'Head Tube Loading' loading condition as a third frame test. Force is applied along the main axis of the bike at right angles to a dummy fork of 450mm axle-to-crown measurement (see test stand image). The reaction forces are taken up vertically at the bottom

bracket, and resultant forces at the rear axle. EFBe recommended performance levels for this loading situation can be found in the attached 'Head Tube Loading' order form.



This form of loading is particularly of interest for freeride or dual slalom frames etc, where shock loading is a dominant factor. The first EFBe recommendations are now also available for such applications.

EFBe Full Frame Test

In the first instance we have restricted our frame testing to those loading conditions which, in practice, have most often led to failure. The excellent analytical power of these tests is confirmed to us by our partners on an ongoing basis.

With the introduction of the new Head Tube Loading frame test an even more complete frame evaluation is now possible - via the EFBe Full Test. By testing all three failure-relevant loading conditions (out-of-saddle pedalling / saddle loads / head tube loads) fatigue fractures in all critical areas can be ruled out to the desired certainty. This concept of targeted testing of separate loading conditions follows, incidentally, the same operating procedure as cycle safety standards, such as, for example,



the European Standards currently under development. In the EFBe Full Test all three tests are carried out in sequence on the same test sample.

As an EFBe Partner you can take the opportunity to have your frames comprehensively tested immediately with a Full Test (see attached 'EFBe Full Test' Order Form). In the summer you can then promptly be added to the new Internet Databank and take advantage of the new certificates and Quality Level logos (see below).

Until EUROBIKE the introductory price for the complete EFBe Full Test is 980 EUR. All three tests will always be conducted at the same Quality Level. If premature failure occurs, only the tests which have been carried out will be charged for. Naturally the individual tests can still be ordered separately, as before.

Internet Databank, Certificates and Quality Level Logos

Our well-proven system of website listings, certificates and Quality Levels is to be retained, but it will convert from the out-of-saddle pedalling test to the EFBe Full Test. That means that there will in future be a new Databank for frames which have withstood a Full Test at one of the three EFBe Quality Levels. The current listings for out-of-saddle pedalling on the website will after August 2005 no longer be maintained. However they will remain viewable for at least a year.

The EFBe Full Test will, at the same time, form the basis for newly designed certificates and Quality Level frame logos. Current certificates and logos will be discontinued. From August 2005 only the new certificates and Quality Level logos for the EFBe Full Test will be available.

A declaration of conformity from the manufacturer is a requirement for certification - just as with the current out-of-saddle pedalling certificates. In any case the certificate's validity is limited to one year - so before a year has passed (from the test date) a follow-up test must be successfully completed. Otherwise, after a year has passed, no further certificates or logos should be placed in circulation.

City and Touring Frames

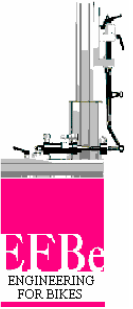
It will in the future also be possible for frames in these categories to showcase good test results in the Internet Databank. Certificates and Quality Level logos for promotional purposes will be available, just as with MTB and racing frames, from August 2005.

Separate test reports

After repeated requests we have introduced separate test reports for all tests. That means that when a component undergoes a number of tests in sequence, several reports will be generated. Successive reports will contain a note about the previous tests. This increases the amount of paperwork, but has the advantage that follow-up tests which turn out negative do not automatically appear in the report.

European standardisation

After national objections to the European Standards proposals have been dealt with by the relevant technical committee at CEN (without involving experts from the working group), the standards proposals should now shortly be made public. We recommend that you examine them intensively, not only because of their technical relevance, but also because of the serious political importance of EN standards



(which could at any time come into legal force by EU directive). For some considerable time EFBe has carried out tests according to the latest EN methods and will if necessary promptly evaluate any changes in the proposals.

Because of the asymmetrical tolerance specification for test forces (from 0 to +5%), nominal values in fatigue tests can be 'fudged'. Nominal values should be set at the midpoint of the tolerance band. For a test at 1000 N (0/+5%) for example, the nominal force value is 1025 N and the average test force must lie between 1000 und 1050 N.

In contrast, EFBe test forces are specified at +/- 1 %. That means that for a nominal force of 1000N, the average test force is between 990 and 1010 N.

Seatpost test in TOUR March 2005

The EN seatpost test loads a racing bike seatpost alternately forwards and backwards, although it is known that in use seatposts are not significantly loaded in a forwards direction, and also that DIN 79100 only envisages a rearwards loading. EFBe has once again addressed this question with an evaluation of in-use loading, which was carried out as part of a joint project with TOUR magazine. The measurements confirm it: the EN seatpost test for racing bikes does not properly reflect the real demands on this component. We therefore advise against use of this EN Standard test, because it can lead to damaging failure verdicts regarding the service life of seatposts.

The TOUR test also once again confirmed that the tightening torque of the seat clamp bolt or bolts can be of critical relevance for long term durability. Thus a seemingly trivial detail such as greasing the screw threads can have a significant impact on safety.

Company news

Your current contact person, Frau Degenhardt, is leaving us from 31st March 2005. In the future Frau Tiedemann will be on hand with advice and answers to your questions.

Feedback

We strive to always inform you about important news, and to let you know about our plans in good time. If you have any criticisms or suggestions for improvement, please do let us know. We depend on this feedback to further improve our products and services.

Attached:

EFBe Full Test Order Form
Head Tube Loading Order Form