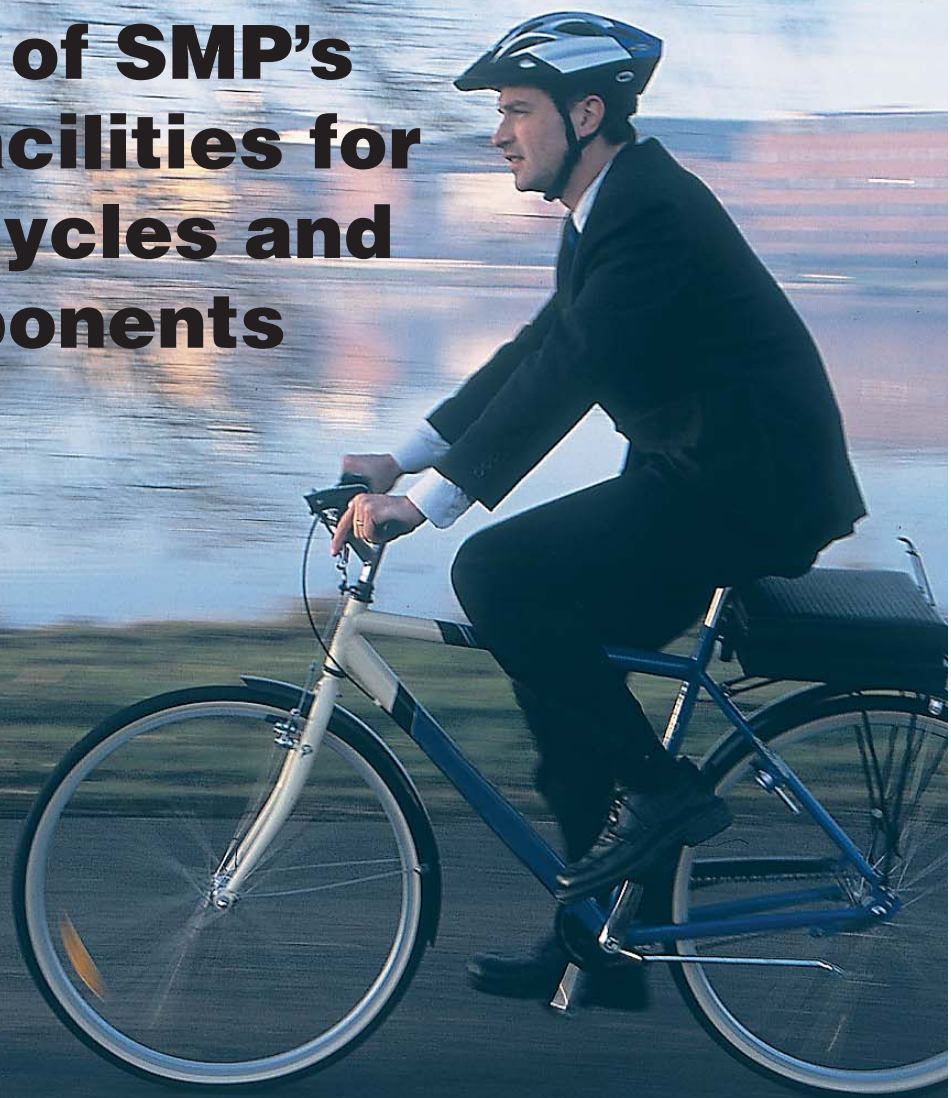


Presentation of SMP's accredited facilities for testing of bicycles and bicycle components



SMP

The Swedish Machinery Testing Institute

First to offer accredited EN-testing of bicycles

SMP Svensk Maskinprovning (The Swedish Machinery Testing Institute) was the first testing institute in the world to offer accredited testing according to the EN-safety standards for bicycles that were published late in 2005.

SMP is the leading company in Scandinavia for safety tests of bicycles and bicycle components. Several major manufacturers and/or their Scandinavian representatives have used the services of SMP: *Shimano Europe, Trek, Cycleurope, Skeppshultcykeln* and several others.

SMP was very active in the development of the EN-standards for bicycles and are still active in the relevant working groups. Thus, SMP has expertise knowledge of the European standards and this is confirmed by our accreditation. Our testing laboratory for bicycles is situated near Malmö in the very south of Sweden.

NEW for 2009!

Testing of EPAC-bicycles according to EN 15194

SMP is an affiliated company to SP Technical Research Institute of Sweden, which is an internationally leading research institute, e.g. in the field of EMC testing. Together, we now offer also complete testing (mechanical, EMC etc) to the new EN-standard EN 15194 for electrically power assisted cycles (EPAC).

Product Safety

The new Product Safety Directive 2001/95/EC was decided in December 2001 and implemented in the member states in 2004. The basic idea of the directive is that producers shall be obliged to place only safe products on the market.

A product shall be presumed to be safe as far as the risks and risk categories covered by relevant national standards are concerned, when it conforms to voluntary national standards that implement European standards.

Thus, it is essential for producers to know that their products (e.g. bicycles) fulfil the safety requirements in the European safety standards. Such knowledge can only be acquired by carrying out tests. Market acceptance will increase when such tests have been carried out by an accredited third-party testing-laboratory. The first safety standards for bicycles were published late in 2005:

- EN 14764 City and trekking bicycles
- EN 14765 Bicycles for young children
- EN 14766 Mountain bicycles
- EN 14781 Racing bicycles
- EN 14872 Luggage carriers

Test facilities at our Malmö-laboratory

SMP is accredited for all tests specified in the EN-standards but also performs other tests that have been adapted to suit customers' needs. Fatigue tests, static load tests, brake-tests, tests of bicycle components and luggage carriers, etc., are all specified in the new standards. SMP can also offer tests to international standards and internal company-standards.

Examples of SMP's test facilities:

- | | | |
|--------------------|------------------------------|----------------|
| ● Brakes | ● Frames | ● Seat pillars |
| ● Luggage carriers | ● Handlebars/Handlebar stems | ● Wheel axles |
| ● Pedal spindles | ● Crank assemblies | ● Forks |



SMP's brake-test rig



Fatigue testing of frames



Fatigue testing of crank assembly



Fatigue testing of seat-pillar

Brakes

In SMP's brake-test rig all the EN-standard brake tests can be performed (static, performance, heat-resistance) at dry and wet conditions on both back-pedal brakes and hand operated brakes. In the work with the new European standards, SMP contributed with modifications and improvements of the methods and is therefore very well acquainted with the latest development in testing of brakes.

Frames and crank assemblies

SMP has developed and designed machines for the new fatigue frame-tests. For example, the design ensures that the force on one pedal-spindle is not applied until the force on the other pedal-spindle has dropped to less than 5 % of the peak force. The machine can also be used for fatigue testing of crank assemblies in accordance with the EN-standards.

Seat-pillars and forks

SMP uses a high-frequency machine for the testing of seat-pillars and front-forks. The test frequency varies between 15 and 20 Hz.

Luggage carriers

SMP has two rigs for lateral and vertical fatigue tests of luggage carriers. The same equipment can be adapted for testing of child seats according to EN 14344 and for testing of the attachment points for the luggage carrier on the frame.

Handlebar/handlebar stem

The test machine for fatigue testing of handlebars and handlebar stems has also been developed and designed by SMP in order to fulfil the requirements of the EN-standards. The machine can perform both in-phase and out-of-phase fatigue tests.

Wheels and pedal spindles

Fatigue testing of pedal spindles is carried out in a machine which allows various loads to be applied. SMP has also developed a machine for fatigue testing of wheel axles.

Static tests and impact tests

Apart from the test rigs for fatigue tests, SMP has equipment and machinery for various static tests and impact tests of frame, fork, handlebar-stem, drive-system, brakes, chains, dynamos, gear-shifting systems etc. New equipment is continuously developed to fit the needs of SMP's customers.



Fatigue testing of front forks



Fatigue testing of pedal spindles



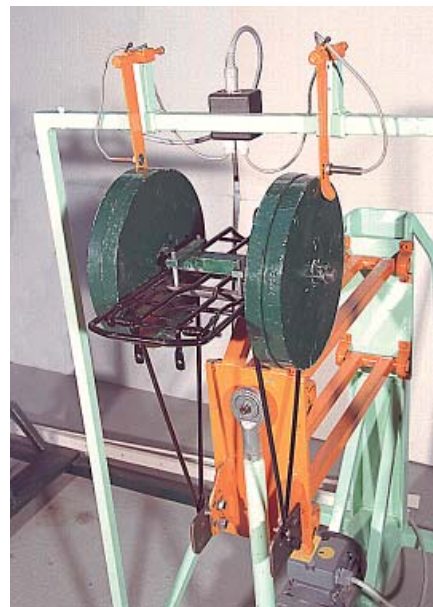
Fatigue testing of handlebar/handlebar stem



Lateral fatigue test of attachment points on frames



Fatigue test of front-mounted basket



Lateral fatigue-test of luggage carrier

SMP's history

On August 7, 1896 Gustaf De Laval wrote a donation letter to the Royal Agricultural Academy. He donated 100 000 SEK in order for the Academy to establish an official testing institute for, primarily, agricultural machinery.

In October 1897 the first board meeting of Statens maskinprovningar (The National Machinery Testing Institute) was held. This is also held to be the birth date of SMP. The Testing Institute came to play an important role for the mechanisation of Swedish farming, since more or less all new machines were tested.

Initially SMP had testing sites in connection to the Agricultural College. i.e. at Alnarp outside Malmö and at Ultuna outside Uppsala. In the mid-fifties a testing site was also established outside Umeå in the north of Sweden. Thereby, SMP had a nation-wide field of operation which, for geographic reasons, was suited for testing of turf-management machinery, farming machinery and forestry machinery.

Even though 100 000 SEK was a lot of money at the time in question, they eventually could not finance the increasing amount of testing activities. The Swedish Government therefore began to contribute economically so that the tests could be subsidised for Swedish machine manufacturers and importers. The subsidy was given to the manufacturer provided that he accepted that the test-results were officially published in SMP's own test-publication which at times had a large amount of subscribers.

In 1975 SMP expanded dramatically when it was given the task of building an organisation for nation-wide inspection services of e.g. excavators and other earth-moving machinery. In 1985 SMP was also given the responsibility for tractors.

When Sweden decided to join the EEC, a natural consequence was that the Machinery Directive would be implemented in Sweden. In order to meet the market needs SMP established a unit for certification which since the start in 1995 has helped numerous manufacturers to adapt their machinery to the regulations for CE-marking. Today over 50 Swedish manufacturers have received EuroTest-certificates which show that the machines have been inspected by an independent third-party which certifies that the machine fulfils the essential safety and health requirements in the directive.

Since 1995 SMP no longer performs official tests of farm machinery since the Government no longer supports that kind of testing. SMP now mainly offer its services to small and large industrial manufacturers and SMP's inspection services nowadays encompass much more than earth-moving machinery.

Since July 1, 1996 SMP is an affiliated company to SP Technical Research Institute of Sweden which has approx. 950 employees.

SMP today

A comprehensive organisation for impartial inspection, testing and certification

Today SMP is a modern institute which has small and large customers among manufacturing companies all over Sweden, in Europe and also in other parts of the world. They consult us on questions of the safety of both new and old machines, and also on environmental questions such as noise, vibrations, exhaust emissions etc. SMP's unique competence in inspection, testing and certification offers an overall solution concerning safety throughout the production process: from the machines used in the factory to the finished, and often CE-marked, product.

Our accreditation is our clients' assurance

As an SMP client you can be completely confident that our work complies with very high standards of quality. We are accredited by SWEDAC (The Swedish Board for Accreditation and Conformity Assessment) and we satisfy the requirements in the EN 45000 series and the ISO 17025. For SMP as a testing, inspecting and certifying body this is the equivalent of the ISO 9000 for the manufacturing and services sectors.

SMP - a network of contacts

SMP has a wide network of contacts in Europe through its active participation in the EU's work on standardisation and harmonisation, among other activities. In addition we have established co-operation with testing and certification organisations in both Europe and North America.

SMP's Mission Statement:

It is the business of SMP, as a third party, to verify that products and means of production come up to the safety and environmental standards that apply within the client's company and outside. A personally committed staff results in long-standing client loyalty.



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