



Sincotec NEWS

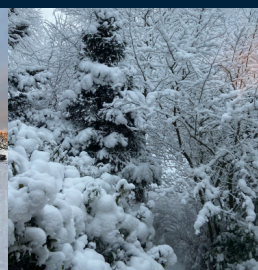
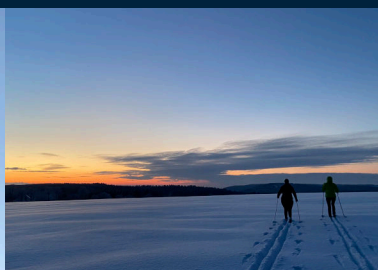
Rotating bending testing machines for every application

The product line POWER ROTABEND for rotating bending loads has grown again

Your extended arm when it comes to testing technology

30 years of testing experience and a wide range of test systems are ready for you at any time!

Dynamic high-pressure testing up to 700 bar



Dear SincoTec friends,
dear SincoTec customers,

an eventful year is behind us. The corona pandemic unfortunately still very much shapes our everyday life and especially now in winter it is very present again. Supply shortages, rising energy prices and corona regulations have become part of our daily business. The current summer gave us a glimpse of regained normality, as we had more freedom and it was possible to meet with more people at the same time again. We were also able, for example, to perform our fatigue strength seminar, go to conferences or have our annual company excursion outdoors.

The german elections in September showed that Germany wants change with a greener policy. We are curious to see how the government will be able to implement its goals, especially in the direction of climate targets.

Electromobility is being promoted by politicians in the field of mobility as

the only most promising factor against global warming.

Several questions come to the mind of the attentive development engineer:

- Are we allowed to commit ourselves to just one technology for years?
- Does it make sense to commit 10 years in advance to a phase-out of a technology that may be CO₂ and NO_x neutral by then?
- Should the specifications ban technologies?
- ... or shouldn't the specifications rather be emission limits?

The magic word is „technology openness“ both for development and in production. Electromobility is a good technology where it has its strengths, namely in urban mobility.

In many areas, we will not be able to do without the internal combustion engine in the future, but it must become cleaner, and here we are placing high expectations on e-fuels as well.

Let there be no limits in our minds, so that completely new technologies can also surprise and transform the world.

One thing is certain: no matter what the technology of tomorrow looks like, it must be operationally reliable!

With this in mind, we look forward to working with you in the coming year.

Together we will make the world safer!

On behalf of the **SincoTec-Team**

Yours sincerely,
Dr.-Ing. Joachim Hug,
Dipl.-Ing. Sven Henze,
Sabrina Hug, M. Sc.



f.l.: Managing partners
Dr. Joachim Hug, Sabrina Hug, Sven Henze

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IMPRESSUM

Responsible according to the German Press Law:
SincoTec Holding GmbH
Registered office: Clausthal-Zellerfeld
Registration court: Braunschweig HRB 110804

Executive board Dr.-Ing. Joachim Hug,
Dipl.-Ing. Sven Henze

Sabrina Hug has been appointed managing partner of SincoTec Holding GmbH with effect from August 1, 2021

Now, together with Dr.-Ing. Joachim Hug and Dip.-Ing. Sven Henze, she manages the company group



As the daughter of the founding entrepreneurial family, Sabrina Hug, M.Sc., practically grew up in the family business. Her studies in mechanical engineering at the Technical University of Braunschweig, which she completed with distinction in 2017, enable her to manage the group of companies from both the technical and the business management side.

Sabrina Hug is responsible for strategy and development, strategic controlling/finance, marketing and strategic product management for the group of companies. She has already been actively working as an assistant to the management for four years and has gained experience in many areas of the company. In her private life, she is passionate about cooking and baking, cycling, swimming and skiing in winter.

What was it like growing up in an entrepreneurial family?

As a child, I didn't perceive growing up in an entrepreneurial family because the company was founded a month after I was born. So for me, there is no life without SincoTec and it has also been natural for me as a child. My parents were always there for my sisters and me and we didn't feel that they had too little time for us.

But of course the company was always present: at lunch many conversations revolved around the company and in the past, for example, many customers and representatives also came to our house for dinner, so we were able to meet many interesting people and other cultures at an early age and they also became immersed in our family life. If there was an event, we often supported my parents. Especially during my studies I helped out with various tasks in the company during the semester breaks.

Did you always want to study mechanical engineering and business?

No, to be honest, I was never the kind of person who knew early on what I wanted to be when I grew up. Math was always fun for me and I was clearly passionate about technology: For example, I loved going to the hardware store with my dad and tinkering with things at home, setting up my own PCs and getting electronics kits for Christmas. Of course, my enthusiasm for technology was also encouraged by my father.

After graduating from high school, I decided to choose a general technical course of study, which left everything open to me. I wanted to learn the basics, especially in the bachelor's program, and not specialize too much.

My main areas of study were also

shaped by SincoTec. General mechanical engineering, materials science and fatigue strength were my technical focal points. In my two final theses, I dealt with conducting tests to determine the dynamic strength of materials and components. In the economic field, I deepened my knowledge of service management as well as organization and leadership, as I have always found these topics very interesting. Now I can apply this knowledge very well.

Did you have the plan to join your family business?

I didn't have a „concrete plan“ to join the company on a certain date. But I didn't decline it categorically either. I could imagine it, but wanted to gain experience in other companies first after my studies. Unfortunately, this was not possible due to my mother's illness. My husband and I therefore joined SincoTec in 2018 directly after our master's degree and went through a trainee program of one year, where we got to know the different departments in the company. After that, I worked as an assistant to the management, where I was able to learn and get familiar with the company on a daily basis. Now I am responsible for strategy and development, strategic controlling/finance, marketing and strategic product management for the group. These are very exciting and future-oriented tasks that I really enjoy. It is impressive what my parents have built up and achieved over the last 30 years together with Sven Henze and our team. Thanks to our company size, we are flexible enough and can quickly adapt to other circumstances. We continue to run the company successfully with our management team and our employees and make the world safer together with our customers.

What is it like to work with your own father?

It's fun to work together with the family, but of course we also discuss certain points from time to time, where the generation gap is also clearly noticeable. However, my father and I have the same values and the same basic understanding, so in the end we always come to a good solution or decision that is fully supported by both of us.

What challenges do you see in the future?

We are in the midst of a transformation, not only internally (generation change, digitization, etc.), but of course also technologically. The new drive/mobility concepts, artificial intelligence, but also changing framework conditions present us with new challenges that we are happy to face.

I am looking forward to actively shaping the technological change with our team and our customers and to working together for a sustainable and resource-saving environment. In any case, our resonance-driven testing machines are already making an important contribution to this.

Did you know, that ...



... Emotion is now *Teams*-capable?

If desired, our Emotion software already informs users via email or SMS about events occurring on the testing machine, such as the completion of tests or the reaching of threshold values. We are looking forward to offering you an additional communication interface for the Microsoft Teams messenger service next spring.

Rotating bending testing machines for every application

The product line POWER ROTABEND for rotating bending loads has grown again

In many real-world applications, components are loaded with rotating bending, and such tests are correspondingly important and popular. For example, rotor shafts in electromobility experience such rotating bending.

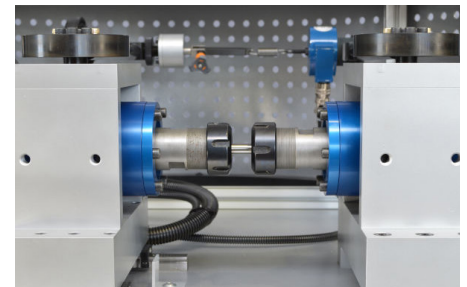
The 4-point rotating bending test systems of the **POWER ROTABEND** series are particularly suitable for efficient testing of material specimens. However, joint connections, friction welded and bonded joints as well as smaller components such as pulleys, clutches or rotors can also be examined quickly and reliably with this test system at frequencies up to 100 Hz.

The machines in the load levels 100, 200, 400 and 800 Nm are uniquely

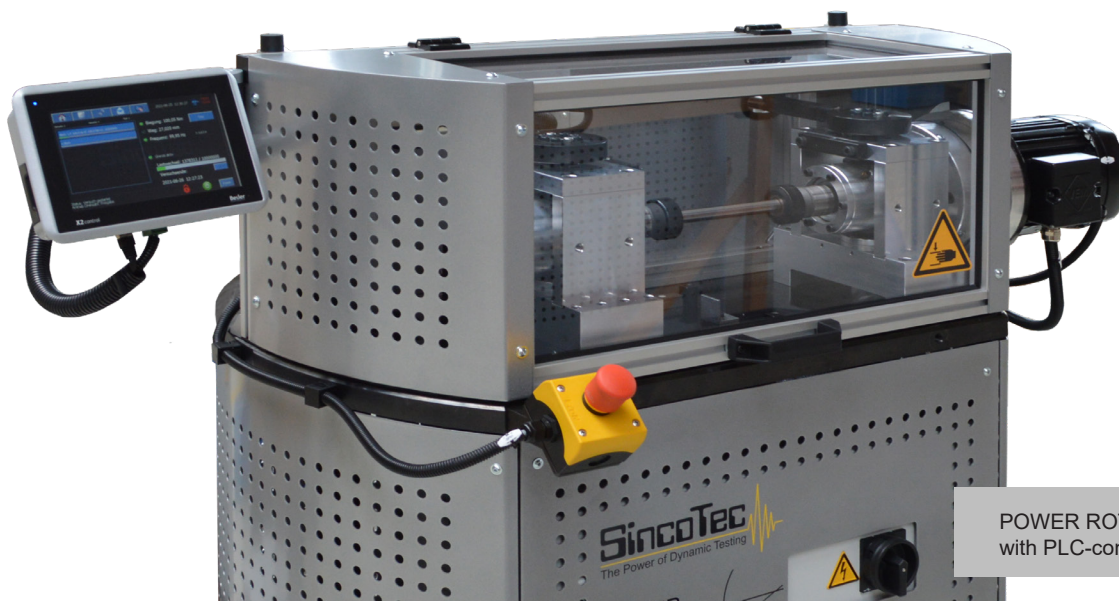
equipped at SincoTec as standard with a PLC control and continuously electrically adjustable bending moment. During a test, the bending moment can thus be kept constant (for example, when the specimen heats up) and block programs are also possible. With the **POWER ROTABEND torque** system, a torsional alternating load can also be superimposed phase-synchronously.

Adaptations to special specimens such as drills e. g. are possible. Solutions for the simulation of environmental conditions are available for all systems. A highlight is our induction heater for tests under precise adjustable temperature.

Do you have any questions about our **POWER ROTABEND**? Then please contact our technical sales department.



Example use case:
4-point rotating bending of torsion bars



POWER ROTABEND
with PLC-control

Did you know, that ...



... in DIN 50113:2018 (topic: Testing of metallic materials - rotating bending test) SincoTec's POWER ROTABEND is schematically illustrated? The authors of the study took the machine as a template for an optimal technical implementation of the load application.

Step by step on the way to a prosthesis testing standard

SincoTec hands over specially developed foot prosthesis testing system to research project partner Berlin Cert GmbH

Prosthesis feet are aids worn close to the body that are intended to give amputees back the quality of life that many non-amputees take for granted: mobility in everyday life.

For this purpose, it is important that prosthetic feet not only withstand the stresses like a „classic wooden leg“, but also that their functional characteristics can be adapted as optimally as possible to the individual mobility requirements of the patient. An elementary challenge for orthopedic technicians, providers and prosthesis manufacturers in this context is that a suitability assessment has so far only been possible through elaborate, non-standardized patient trials that are difficult to compare - a uniform standard that could be used to describe and compare the performance of prosthesis systems therefore still needs to be further developed.

The ISO working group TC 168 has been working for some time on a pre-standard (ISO/TS 16955), which is intended to deal precisely with this description of the functions of prosthetic feet. One of the results of their work is that the accuracy requirements for the testing machines to be used for this purpose and their metrological equipment must be significantly higher than those of the systems currently available on the market for performing tests in accordance with ISO 22675. As part of a BMWi funding program WIPANO („Knowledge and Technology Transfer through Patents and Standards“), a multidisciplinary project group was put together to concretize the methodology for prosthetic foot characterization, develop a suitable testing technique and draw up a resulting standard proposal for the ISO working group.

In addition to two prosthesis manufacturers, Ottobock SE & Co. KGaA from Duderstadt and Mecuris GmbH from Munich, the Stuttgart-based Fraunhofer Institute for Manufacturing Engineering and Automation (IPA), the testing laboratory Berlin Cert GmbH, which is accredited for testing medical devices, and the measurement technology specialist ME-Meßsysteme GmbH from Hennigsdorf, SincoTec Test Systems GmbH has been actively involved in this project group since 2018 to support the realization of this project as an experienced developer of special test systems.

Together with the project partners, a testing machine concept tailored to the task of prosthetic foot characterization according to ISO/TS 16955 was developed, which at the same time continues to be capable of meeting the more conventional fatigue strength testing according to ISO 22675. Subsequently, the SincoTec Test Systems team designed and technically implemented a testing system that is unique worldwide. After an internal test and validation phase, the system could be handed over to the project partner Berlin Cert GmbH in mid-2021 for the performance of serial measurements. At present, serial measurements on various prostheses are being carried out there as envisaged in the project, whereby thanks to the total of three independently controllable servo-electric drives of the test system, all four partial tests of the pre-standard can be tested in one machine setup. These include:

- The characterization of the step-on and lift-off behavior of the prosthesis in the heel, midfoot and toe areas.
- The determination of the so-called „roll-over-shape“ (ROS), which

describes dynamic properties of the prosthesis during the rollover process from the heel to the toes, i.e. classic walking.

- Determination of the torsion characteristics during rotational loading of the prosthesis about its vertical axis.
- The determination of the frontal plane characteristic, which is relevant for walking parallel to inclined slopes.

In the interface area to the patient, occurring forces and moments are recorded at high frequency with a special multi-axis transducer from the project partner ME Meßsysteme GmbH and are thus available for evaluation, analysis and quantitative comparison of different prosthesis types. One of the special features of the test system is that it can be operated in a stable manner without guideways that move along with the prosthesis, so that there are no disturbance variables that could falsify the characteristics. This is made possible by a specially developed repositioning device, which acts on the prosthesis exclusively during the so-called flight phase between the actual steps, and a control algorithm specially designed for the system, which was integrated into the SincoTec TestPilot controller.

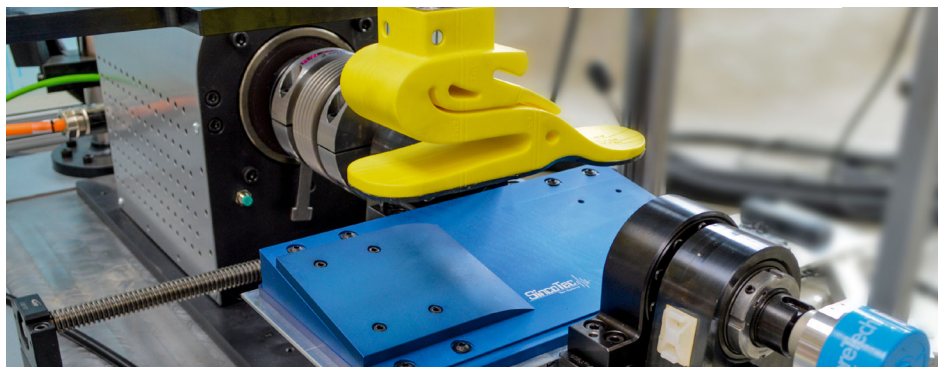
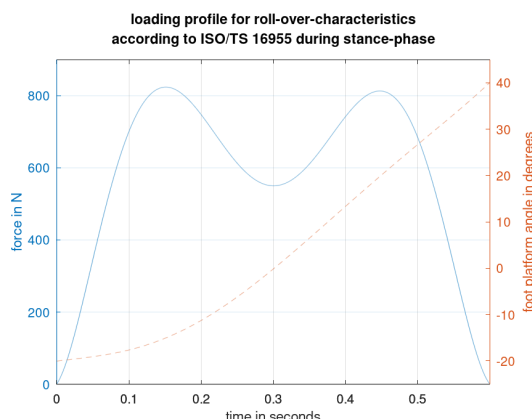
The series measurements envisaged in the project are now being carried out. Thus, a decisive step has been achieved on the way to developing the fundamentals of the targeted ISO 16955.

Supported by:



Federal Ministry
for Economic Affairs
and Climate Action

on the basis of a decision
by the German Bundestag



Calibration piece of the project partner Mecuris on the SincoTec foot prosthesis testing machine

Your extended arm when it comes to testing technology -

30 years of testing experience and a wide range of test systems are ready for you at any time!

In today's world, it is important not to lose focus with all the new technologies. For years, the main development effort was focused on the internal combustion engine. In the meantime, a competition has been started between the internal combustion engine, battery-electric and fuel cell-electric drive systems. One thing is obvious: All concepts cannot be pursued with the same intensity as before.

A decision often has to be made as to whether development should be channeled into maintaining existing products or not being left behind when it comes to new products. There is often a lack of space or testing equipment to tackle both. It is therefore often worth questioning whether standard tests still need to be carried out by the company itself or whether these are better left with an experienced testing laboratory so that the company can concentrate on its core competencies.

In the past, it was difficult to outsource tasks. The delivery for the test parts took too long and the processes at the service provider were too far away.

„Just going to the test bench“ was not possible and short response times were difficult.

In the meantime, however, same-day delivery is no longer a rarity, and video conferencing allows a direct view of the test machine from the desk.

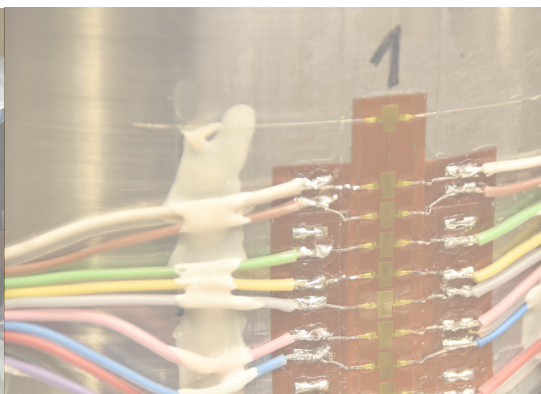
We therefore offer you „the testing laboratory next door“ as a package and reduce the distances between you and us via express delivery and video conferencing, e.g. for the pre acceptance of the test.

Take advantage of our spacious lab with testing machines for all types of loads and our experience from over 400 projects annually in 30 years of SincoTec.

This leaves you with the greatest possible control over your standard tests and keeps your back free for the upcoming new developments.

Our offer for you:

- Reduce space and personnel costs
- Access to testing machines with all load types
- Live connection for test acceptance
- 24/7 support for testing tasks
- 30 years of testing experience



Did you know, that ...



... components can still fail after 30 million load cycles, especially with friction and corrosion?

Dynamic high-pressure testing up to 700 bar -

Full throttlet testing!

Powerful mobile hydraulics are used in large construction machines such as **large excavators** or diaphragm wall cutters. A core component from the hydraulic system is the pressure accumulator, which can be in the form of a piston accumulator, for example, which operates with several hundred bars of gas pressure. This might be familiar from the heating or drinking water system in residential buildings. Often membrane accumulators, mostly spherical, are hanging on the wall. However, the pressure here is only a few bar.

In a construction machine, a „load change“ on the pressure accumulator usually occurs when the machine is switched on in the morning, when the accumulator is „charged“, and switched off in the evening, when the pressure is released again. Thus, there is at least one load change per day. Pressure fluctuations also occur in the hydraulic system during operation, resulting in load changes on the pressurized components. The load changes generated by operation tend to have a smaller amplitude, but occur much more frequently.

With a typical service life of a pressure accumulator of 10 years, this adds up to several thousand to millions of load changes, which place a great deal of mechanical stress on the overall system during its lifetime.

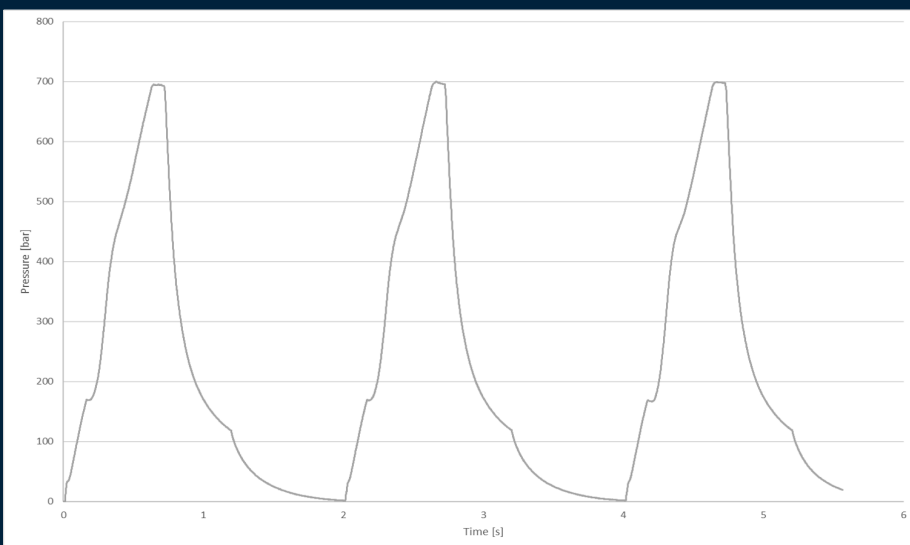
The failure of a pressure accumulator in a large construction machine involves firstly an immense safety risk and secondly sometimes very high failure costs. As a rule, a replacement machine is not available on site and repairs are also costly.

A special feature of the test setup developed at SincoTec is that after the pressure has been built up, the pressure can be reduced to atmospheric pressure (i.e. 0 bar relative pressure compared to atmospheric pressure) and high test frequencies can still be achieved. By reducing the pressure down to atmospheric pressure, it is also possible to specifically investigate the behavior in the event of a fault, e.g. in the event of damage to the diaphragm in diaphragm accumulators.

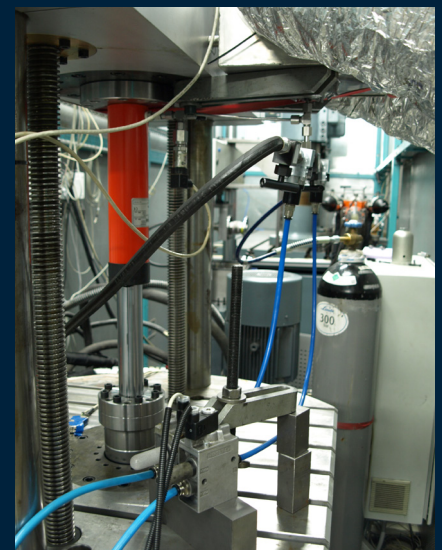
In the current testing stage, a dynamic pressure that permanently changes between 0 and 700 bar was success-

fully approached with a frequency of 0.5 Hz. However, the test setup still has some potential for expansion. Work is already underway to increase the pressure level and the test frequency.

At present, tests are being carried out with nitrogen. An extension to other gases is already being planned. A next project will deal with the use of hydrogen as a medium.



Exemplary test cycle in the test lab



Prototype in the test lab

Our annual company excursion

Exploring the beautiful Harz mountains with DiscGolf and flying discs

After a good and solid breakfast at SincoTec, this year's company outing took the form of a hike and a sports activity, where the weather also played along. For this purpose, the employees were drawn into different teams. One group hiked along beautiful hiking trails to Altenau, a village close to Clausthal. In the meantime, the other group played DiscGolf in Altenau.

Teamwork was required here. Not only the difference in altitude on the course itself was a challenge: additional challenges during the courses,

such as throwing with the weak hand, throwing under the leg, turning 1x in a circle before throwing, made the whole thing an exciting task.

During the hike, the employees were given the task of collecting suitable material in the forest for the construction of a flying disc, which they were to present at a later date. The disc had to consist of at least three parts so that innovative joining techniques had to be used. After the arrival of the hiking group, all employees met for a common lunch snack.

After arrival at SincoTec, an award ceremony took place, where the teams

presented their self-made Frisbees. Besides a short explanation and presentation came the biggest challenge: the first flight. After an exciting and thrilling day spent together, the delicious barbecue was a successful and well-deserved conclusion.



SincoTec trade fair dates 2022

Be part of it!

21. - 23. June

Automotive Testing Expo Europe in Stuttgart

05. - 07. September

Automotive Testing Expo China in Shanghai

