
EXPECT THE BEST ADVICE WITH BÄCHLI AG'S VAST EXPERIENCE

BÄCHLI AG

BÄCHLI IS A SWISS TECH COMPANY THAT SPECIALISES IN THE DEVELOPMENT AND PRODUCTION OF ELECTROTECHNICAL COMPONENTS. THE COMPANY'S RANGE OF PRODUCTS COMPRISES HIGHLY SPECIALISED TRANSFORMERS, CHOKES AND WINDING PRODUCTS OF ALL KINDS THAT ARE USED IN DIFFERING INDUSTRIAL PRODUCTS AND ESPECIALLY IN THE RAIL SECTOR.

Our mission is to create the most optimal solution for your needs.

Find the right combination of solutions poses a great challenge to many engineers, such as in the development of a train. Legislative restrictions, the technical standards, mechanical and electrical requirements and your demands, in terms of design, size, efficiency, cost, etc., are just some of the many considerations required in order to develop the optimum solution for you.

Bächli AG is an expert in finding these solutions for all of your needs. We do not merely sell standard, cookie-cutter products, but instead offer solutions that are tailored specifically to your needs. We will work together with you, step by step, to develop a bespoke solution in the form of a technical service or product for you.

We will first define a preliminary concept for your product solution based on the technical specifications you provide us. The concept includes the technical requirements for energy efficiency, weight, heat, size, price, lifetime cost (including maintenance) and the mechanical implementation in the form of CAD drawings. We also provide consistent

and reliable support throughout each product's lifecycle. After which, we will provide a standard quotation for the developed product.

You may request changes to the technical or mechanical specifications of the product during the offer phase. During this period, Bächli engineers adapt the basic concept and develop it further into a finalized detailed design. After the design is approved, we move into the project planning phase which includes the planning of production documentation and tool construction, the prototype construction, type and series testing, as well as series production.

Energy Efficiency

In addition to electrical specification and legislative requirements, the properties of the transformer/choke can be modified based on other various needs. However, this is a fundamental decision which greatly influences the product design. Bächli AG is capable to design inductive components according to different parameters such as space requirements and design, energy losses and required cooling capacity, sales price pressure and operating cost control.

We would like to present the following four designs to you in greater detail:



SUSTAINABLE 202 DESIGN

COMPACT

LOW LOSS

AFFORDABLE



SMART-E-POWER® 203 DESIGN

COMPACT

LOWEST LOSS

AFFORDABLE

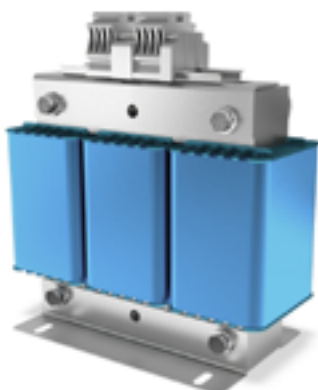


COMPACT 204 DESIGN

MOST COMPACT

LOW LOSS

AFFORDABLE



STANDARD 201 DESIGN

COMPACT

LOW LOSS

MOST COMPETITIVELY PRICED

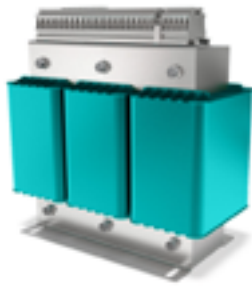


Figure 2, Bächli AG

Smart-E-Power®

is a standard developed by Bächli which stands for extremely efficient inductive components. Products with this standard are characterised by the lowest possible losses. The maintenance costs are therefore reduced to a minimum. Moreover, you can be assured that these products produce very low noise emissions.

High-quality materials are employed in our design. The core losses are minimised by utilising grain-oriented transformer laminations and a specially designed Unicore core. Active contribution to environmental sustainability and energy efficiency are key tenets of our business. As such, achieving an efficiency of over 99% with an output of 25 kVA is one of our achievements.



Figure 3, Bächli AG

Sustainable series

Our second series "Sustainable" is also another resource-saving product. Our naming of the series as "Sustainable" clearly demonstrates the focus of this design type. Additionally, it achieves a high degree of efficiency. Hence, the lifecycle costs and CO2 emissions are minimised.



Figure 4, Bächli AG

Compact series

If you require a solution that is as small and light as possible, the Compact series is the best solution for you. Depending on your requirements, the product can be adjusted in terms of its physical dimensions so that it makes the most efficient use of available space. The use of high-quality materials is also guaranteed and clearly reflected in the product quality. Due to minimised noise generation, these products can be used in a wide range of applications.

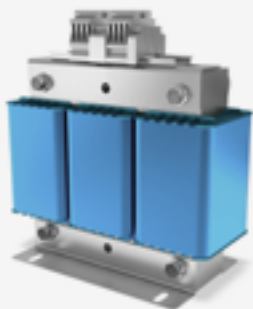


Figure 5, Bächli AG

Standard series

If cost effectiveness is the most important criteria for you, the Standard series is the right choice for you. Standard materials are used for models in this series.

There is a high degree of quality awareness. All four series meet the required standards and regulations.



Dedication to environmental sustainability through sustainable design

We aim to be an environmentally sustainable business through reduction of losses and thus decreases in CO₂ emissions. In doing so, we can achieve not just a reduction in greenhouse gas emissions, but also a greater potential for saving operational costs for you.

All inductive components, including transformers, experience losses in the form of thermal heating. Despite extremely high levels of efficiency of up to 99% in some

cases, across Central and Northern Europe, transformer losses are approximately 5.7% on average. The lost energy has to be produced and consequently, consumes more natural resources. Every kilogram of CO₂ emission saved protects the climate and our environment.

The CO₂-equivalent (CO₂-e) describes the connection between losses (in Watts, W) and actual amount of CO₂ produced (in kilograms, kg) during energy generation. According to IWR/2013, in Switzerland, Northern and Western Europe, one kilowatt-hour of electricity (1 kWh) corresponds to 590 grams of CO₂.

Example of a charger connected to the mains:



Figure 6, Bächli AG

Figure 6 demonstrates the CO₂ emissions of the different series in the case of a 20 kVA transformer:

CO₂ emissions in kg/year*



Figure 7, Bächli AG

Generally, transformers have a long expected lifetime of about 30 years or more. Due to an increased energy efficiency, their lifetime can be extended and thermal stresses on surrounding components as a result of transformer losses is reduced. This results in lower operating and maintenance costs. Additionally, the use of high-quality materials also ensures lower maintenance costs.

Energy costs in 10 years based on CHF 0.12/kWh



Figure 8, Bächli AG

Figure 8 above shows the energy cost savings for a 20 kVA transformer.

The higher acquisition costs can be compensated for with the operating and maintenance cost savings over just a few years. We see it as our responsibility to invest in environmental sustainability to secure a liveable future for our future generation of children.