

CN

EN

版本 1
Edition 1

新一代能源

FOR NEXT POWER
GENERATION

未来绕组

FUTURE
WINDING

电感绕组产品性能优化的新维度

The new dimension of performance optimization
of inductive winding goods

MADE BY BLOCK    

BLOCK 
perfecting power

未来标准

FUTURE STANDARD

LR3-AE 进线电抗器 LINE REACTORS

测量电压
Rated voltage

3 x 400 Vac

测量电流
Rated current

3 x 63 A – 3 x 900 A



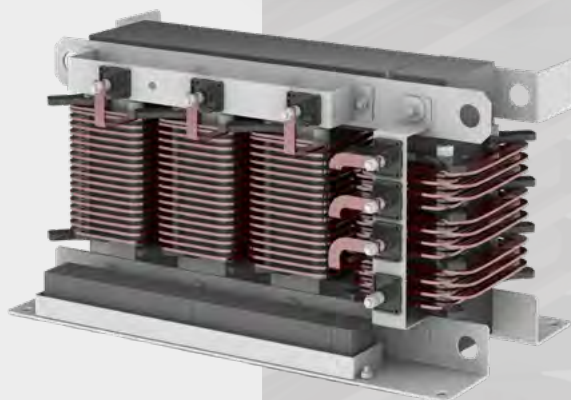
SF4-AE 正弦滤波器 ALL-POLE SINE FILTERS

测量电压
Rated voltage

3 x 500 Vac

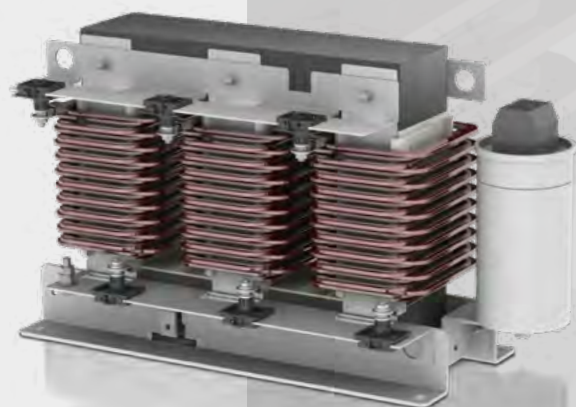
测量电流
Rated current

3 x 6 A – 165 A (400 V ≥ 4 kHz) /
3 x 5,2 A – 145 A (500 V ≥ 4 kHz)



SF3-AE 正弦滤波器 SINE FILTERS

为您在研发
For you in development



可降低
up to

30%

的成本
lower costs

由于在设计和构建方面整合了最新的科学发现，以及最先进的绕组和制造技术支撑下，并且使用铝作为基础的绕组材料，使得BLOCK能够确保新产品系列的最佳性价比。

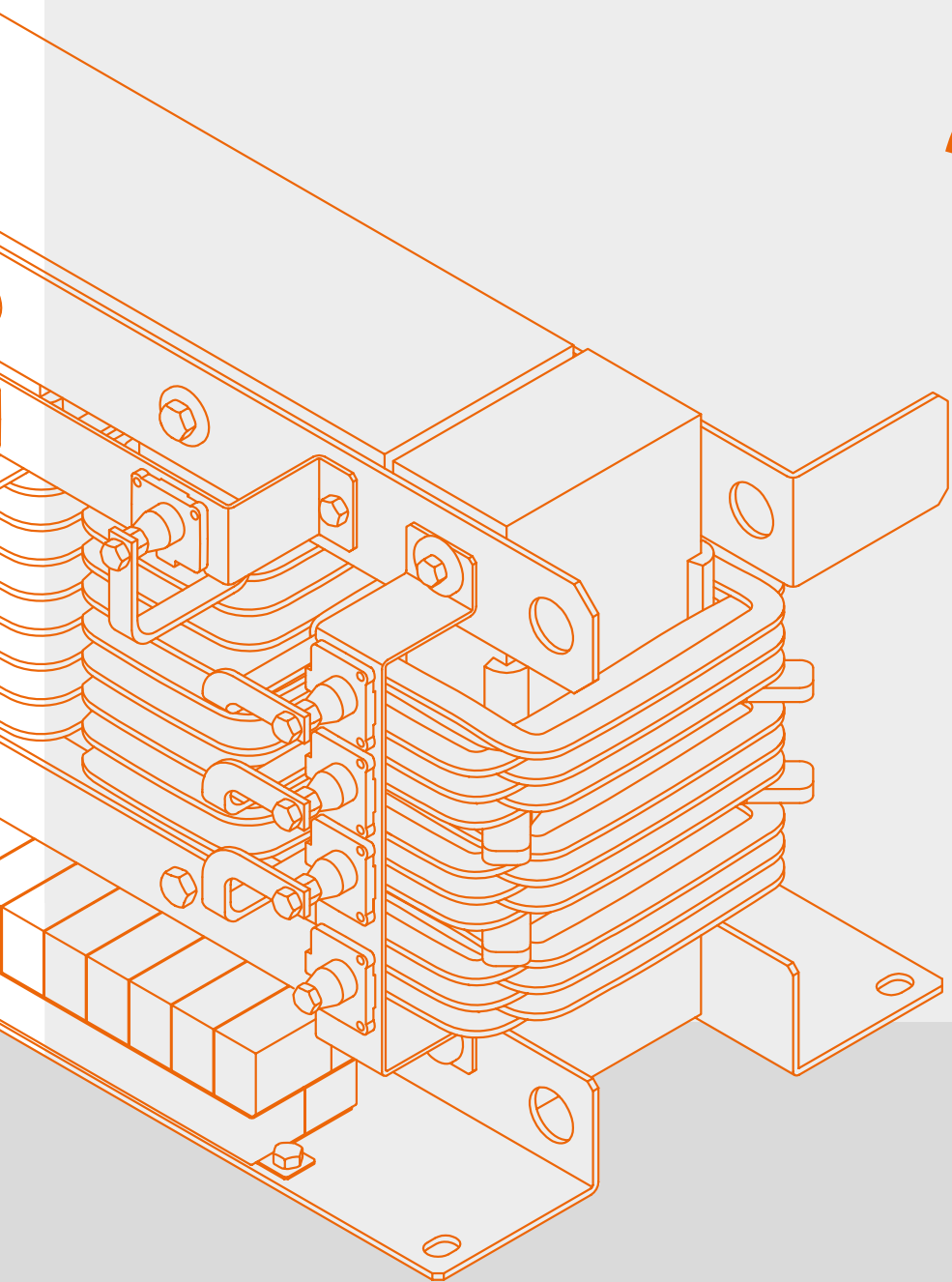
With the integration of the latest scientific findings in design and construction, alongside state-of-the-art winding and manufacturing technology, and the use of the winding material aluminium as a basis, BLOCK has been able to ensure an optimal price-performance ratio for the new product series.

未来新绕组技术的优势

ADVANTAGES OF THE NEW FUTURE WINDING TECHNOLOGY

由BLOCK设计的Future Winding绕组技术开创了电感绕组产品性能优化的新空间。绕组结构的多元设计为产品带来了新优势：散热导体表面最大化，同时通过绕组结构创建冷却通道，以及在开关频率上升的情况下最小化邻近损耗，实现最佳的冷却效果-这只是新技术的优势之一。

BLOCK's new in-house developed Future Winding technology is taking performance optimization of inductive winding products into a new dimension. The extraordinary variability in the design of the winding structure comes with a number of benefits for winding products: Optimal cooling by maximizing the heat emitting conductor surface while also creating cooling ducts via the winding structure and minimal proximity losses with rising switching frequencies are just some of the strengths of this state-of-the-art technology.



SiC, GaN 宽禁带技术的电感解决方案

为了低局部放电的可控磁场分布
controllable field distribution for low
partial discharge



更长的使用寿命

LONG LIFE

通过全新的卷边绕组技术Future Winding可以由单层线圈结构实现更高的感应率。优势在于不需要额外的绝缘层，甚至可以省去芯线的基础绝缘层。不会出现传统结构电感线圈产品的绝缘材料老化问题，最大限度延长使用寿命。

Thanks to the new edgewise Future Winding technology high inductivity can be realized with a single-layer winding structure. The benefit is that additional layer insulation, and possibly even basic insulation to the core, is not needed. Aging effects in the insulation materials – as are typical with the conventional structure of inductive winding products – no longer occur, which maximizes service life.

自由式

FREESTYLE

全新的BLOCK卷边绕组技术实现了可变的线圈结构设计，可以精准地匹配芯线的几何形状，使用占优势的空气冷却流。

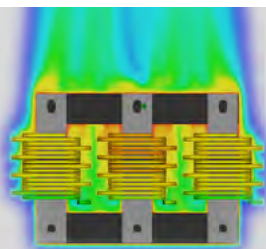
Due to the variable configurability of its winding structure, the new edgewise Future Winding technology can adapt accurately to the core geometry and prevailing flow conditions of the air cooling system.

电位控制

POTENTIAL CONTROL

通过特定的线圈结构会出现更多或更少的寄生电容以及瞬态过电压各线圈间的电位差。可能导致导体绝缘层破损，引起线圈短路。使用Future Winding可以控制寄生电容，通过改变单个线圈间距控制电位。可避免导线绝缘层破损及线圈短路。

The specific winding structure results in more or fewer parasitic capacitances and, therefore, in the case of transient overvoltages, differences in potential between the individual windings. This can damage the conductor insulation, potentially leading to a winding short. Future Winding variably controls such parasitic capacitance – and, thus, the potential across the winding – through the partial spreading of individual winding sections. This prevents damage to the conductor insulation and accordingly any winding shorts.



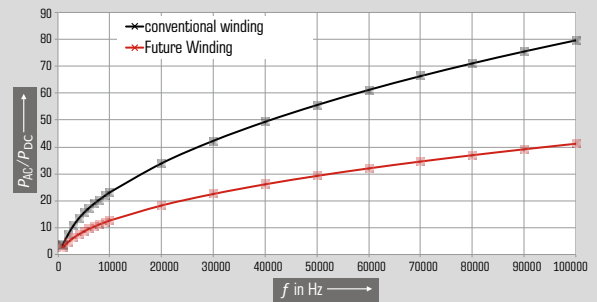
新型卷绕设计，散热性能极佳
excellent heat dissipation due to new winding design

较低的损耗

LOW LOSSES

通过改变线圈结构的导体间距可以降低导体中因开关频率产生纹波电流引起的邻近效应损耗，尤其在高频时效果显著。该效应在未来使用基于SiC和GaN的半导体技术时意义重大。同时可以替代传统线圈技术中昂贵的高频线。

Varying the conductor spacing in the winding structure effectively reduces proximity losses in the conductor that are generated by ripple currents from switching frequencies, particularly as frequency increases. This effect is significant, especially for future applications of SiC- and GaN-based semiconductor technologies. It also represents a potentially cost-effective alternative to the use of expensive high-frequency litz wires in conventional winding technologies.



通过优化线圈结构最小化邻近效应
minimized proximity effect through optimized winding structure

高电流密度

HIGH CURRENT DENSITY

线圈结构设计的灵活性，可以最大化导体发热表面使用占优势的空气冷却流。可达到高电流密度和实现导线材料（铜或铝）的有效设计。从而可以减少建造体积、重量和成本。

Due to the flexible design of the winding structure a maximum of the conductor's heat-emitting surface is exposed to the prevailing cool air flow. The result is a high current density and efficient use of the conductive material (CU or AL), reducing structural volume, weight and costs.

冷却效果

COOLING

放大的导体表面结合间距扩大的线圈，通过线圈结构产生的冷却通道实现整体产品的最佳冷却效果。尤其在强化风冷的情况下，新的绕组技术Future Winding可以充分发挥其优势 - 电感线圈产品性能优化的新空间。

The combination of increased conductor surface, spread of the winding, and cooling ducts created via the winding structure enables optimal cooling of the entire product. The new Future Winding technology shows off its strengths with forced air cooling in particular, taking the performance optimization of inductive winding products into a new dimension.



高达
up to
250%
以上电流
higher current density

使用未来绕组技术节约成本

REDUCED COSTS THROUGH FUTURE WINDING

Future Winding绕组技术的纯技术优势可以大幅度节约电感线圈产品的成本。基于良好的导体冷却效果可以使用更便宜、更轻的铝替代铜作为导体材料。不需要昂贵的绝缘材料，省去为产品添加绝缘材料的加工步骤。加工线圈-工业4.0的理念-自行设计的绕组机器全自动化生产。结合创新连接理念实现了自支撑线圈结构。技术性能和价格优势使本产品成为电感线圈产品中的佼佼者。

In addition to its purely technical advantages, the new Future Winding technology has a lot of potential for reducing the costs of inductive winding products. Due to the optimized cooling effect on the conductor, significantly affordable and lighter aluminum can be used instead of copper as the conductive material. This also does away with costly insulation materials and the corresponding production steps to install this insulation. Windings are produced in a fully automated process on in-house designed winding machines – in line with Industry 4.0. Combined with the new innovative connection concept, the result is a self-supporting winding structure. All these strengths deliver inductive winding products that are best-in-class for technical performance and price.

全球化的公司 A GLOBAL COMPANY



□
总部和生产基地
Headquarters and
production sites

■
生产基地
Production
sites

■
子公司
Subsidiaries

●
全球代理
International
agencies

●
生产代表
Manufacturing
Representatives

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