



COIL INNOVATION
POWER INDUCTORS





COIL INNOVATION THE COMPANY

Coil Innovation specializes in the design, manufacture and sales of air-core, dry-type reactors that are utilized in the generation, transmission and distribution of electrical power as well as industrial applications such as electric arc furnaces.

The Company was founded in July 2004 as a private limited company (GmbH) by a team of three persons, all of whom possessing a wealth of industry experience and product knowledge. Together they hold the majority of the Company's shares, with the remainder being controlled by two strategic partners, both of which are key suppliers of Coil Innovation.

The headquarters of Coil Innovation is situated in Eferding, a small village in the heart of Upper Austria, in a facility built on a site approximately 32,500 m² (350,000 ft² or 8 acres) in area. Since the start of production in May 2005, the company has undergone multiple expansions and improvements and now houses 5,000 m² (54,000 ft²) of production area and 1,000 m² (11,000 ft²) of office space where more than 100 highly qualified employees are engaged in the development, design, manufacture and sales of air-core dry-type reactors. More than 95% of the high quality reactors manufactured by Coil Innovation are exported to customers all over the world.

Coil Innovation has a well established international sales network with partners in numerous countries. In May 2014, in Raleigh, North Carolina, Coil Innovation USA, Inc. was officially opened as the Company's US headquarters.

OUR HISTORY INNOVATION AND EXPANSION

Formation of Coil Innovation GmbH
2004

Building construction | production set-up
2004 | 2005

Start of production | first reactor deliveries
2005

1st Company site expansion
2006

ISO 9001 & 14001 /
OHSAS 18001 certification
2006 | 2007

2nd Company site expansion
2008

3rd Company site expansion
2011

Formation of Coil Innovation USA, Inc.
2013

4th Company site expansion (storage area)
2015

5th Company site expansion
(parking & storage area)
2017

ISO 45001 certification
2018





Online-Conductor-Processing



COIL INNOVATION THE MISSION “INNOVATION & QUALITY”

Coil Innovation, awarded with the “Leitbetriebe Austria” Membership (“Leading Companies Austria”, a platform of Austrian top performers), is strategically aligned to Innovation and Quality.

The implementation of this mission is realized among other reasons, by an advanced reactor design process utilizing 3D-CAD software as well as by Coil Innovation’s modern winding production technology that employs an integrated online-conductor-processing to shape and insulate the coil conductor prior to winding onto the mandrel. At the core of this patented process is an adaptive control system that links the winding machine to the conductor-processing unit in order to produce a highly compact and dimensionally accurate winding.

Many clients, having visited the ultra-modern reactor production facilities in Eferding, have witnessed the high level of innovation and quality in the design and production of air-core dry-type reactors and can attest to Coil Innovation being the technological market leader.





COIL INNOVATION QUALITY, ENVIRONMENT, HEALTH & SAFETY

Coil Innovation is built on an effectively integrated, ISO-certified management system which satisfies all requirements on quality and environmental protection as well as employee health and safety aspects.

This integrated management system has been certified according to:

- ISO 9001: 2015 Quality Management System
- ISO 14001: 2015 Environmental Management System and
- ISO 45001: 2018 Occupational Health and Safety Management Systems

When it comes to air-core reactor product quality and performance records, Coil Innovation outperforms all competitors. By adhering to the slogan “Excellence through Ingenuity” Coil Innovation delivers the highest quality products and services. A comprehensive testing program alone cannot guarantee quality. It is the implementation of innovative processes and the commitment of all Coil Innovation employees that creates quality throughout all stages of planning, engineering and manufacturing. Another integral part of Coil Innovation’s corporate culture is to constantly strive to responsibly optimize all product designs and processes in order to minimize the Company’s environmental impact, including its efforts to minimize its carbon footprint. Coil Innovation is a member of the “Klima-Allianz” of the Senate of Economy and is a certified “Carbon Neutral Company”, i.e. all of its unavoidable emissions are compensated through the purchase of high-quality emission reduction certificates.

Occupational health & safety is also anchored in Coil Innovation’s company policy and codes of conduct. This is reinforced through internal training, monitoring systems, risk management work and reviews. With this foundation in place, Coil Innovation builds innovative approaches for advancing a safe work environment and sustaining a culture of safety.



COIL INNOVATION PATENTED INNOVATIONS

The R&D vitality of Coil Innovation is verified by a number of patented innovations:

- Patented winding manufacturing technology (online-conductor-processing)
- Patented low-noise design (silent coil technology)
- Patented seismic design for heavy coils (pendulum suspension mounting)
- Patented 3-phase arrangement of thyristor-controlled reactors (TCRs)
- More patents are pending

Sound requirements have become increasingly stringent as substations and residential areas encroach upon each other. In 2008, Coil Innovation introduced its patented low-noise air-core reactors to the market place. Since then, many of Coil Innovation's low-noise reactors have been supplied to installations around the world.

Low-Noise Thyristor-controlled Shunt Reactors





COIL INNOVATION TEST LABORATORIES

Coil Innovation has invested in modern test laboratories, such as a high-voltage test laboratory and an industry leading acoustic test laboratory. These testing facilities include:

- Impulse voltage test system
- AC high voltage test system
- Test system to perform AC load tests, consisting of a transformer aggregate, a rotary power converter system, a capacitor bank and precision instrument transformers
- Test system to perform DC load tests, consisting of a transformer aggregate, a rectifier and precision current shunts
- Fibre optic temperature measurement system and thermovision camera
- Programmable AC power source, high precision watt meter and high precision microohmmeter
- Sound and vibration measurement systems, including harmonic current excitation and laser vibrometers



COIL INNOVATION PRODUCT PORTFOLIO

Air-core dry-type reactors provide a linear response, i.e. they retain constant inductance at varying current. This is an important feature for numerous reactor applications. Furthermore they are essentially maintenance free and environmentally friendly. Coil Innovation offers cost-effective air-core reactor solutions, which include ...

CURRENT LIMITING AND NEUTRAL GROUNDING REACTORS

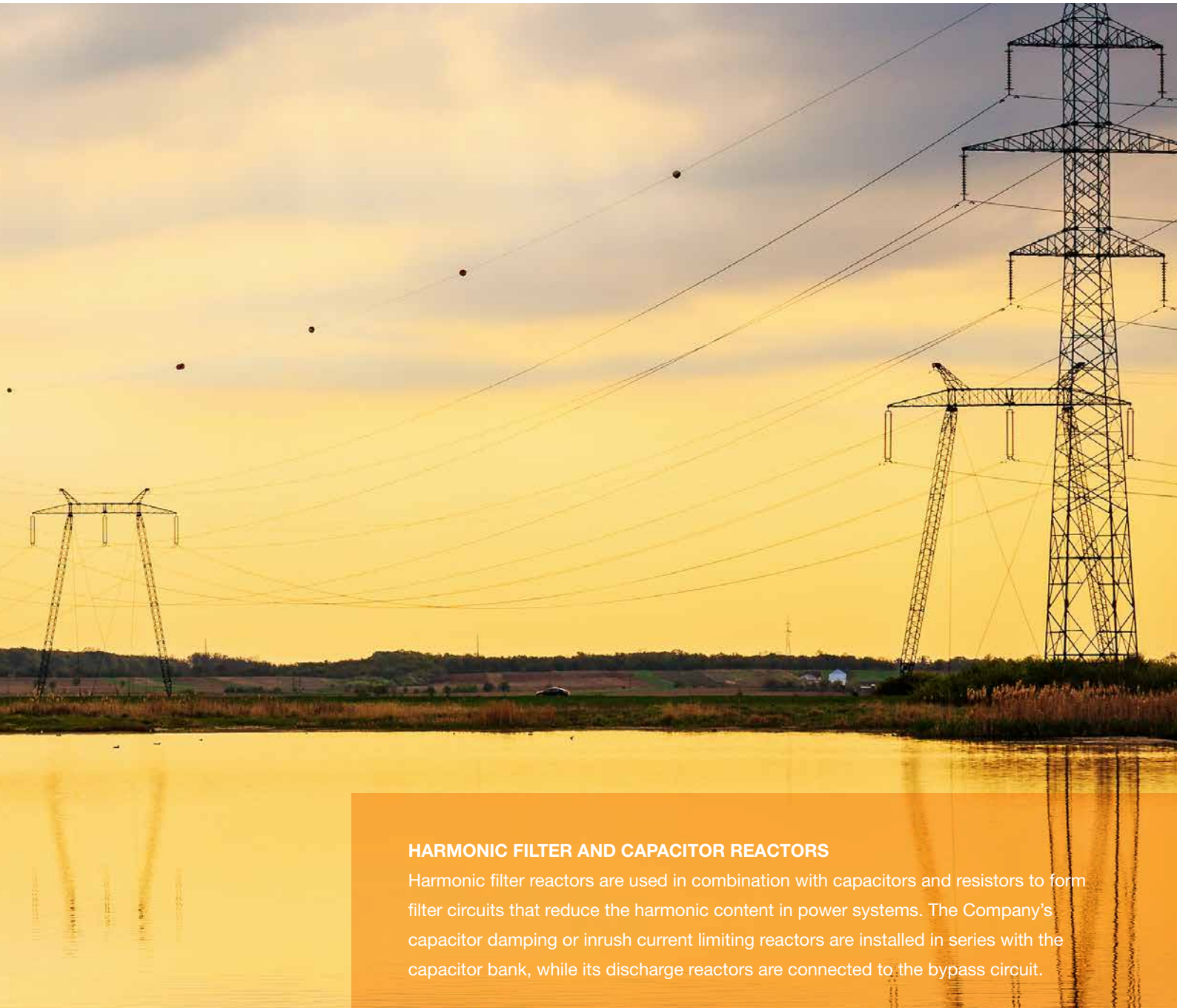
Current limiting reactors are needed to limit short-circuit currents to a level compatible with the capability of other system components. The product range includes load flow control, load balancing and bus-tie reactors. They can be installed up to the highest system voltages (765 kV). The Company supplies neutral grounding/earthing reactors that are connected between the neutral of the transmission network and ground/earth in order to limit the line-to-earth fault current.

345 kV Current Limiting Reactor



Neutral Grounding Reactor





HARMONIC FILTER AND CAPACITOR REACTORS

Harmonic filter reactors are used in combination with capacitors and resistors to form filter circuits that reduce the harmonic content in power systems. The Company's capacitor damping or inrush current limiting reactors are installed in series with the capacitor bank, while its discharge reactors are connected to the bypass circuit.



225 kV Filter Reactors

COIL INNOVATION PRODUCT PORTFOLIO

REACTORS FOR SHUNT AND FACTS APPLICATIONS

Coil Innovation's shunt reactors are used to compensate capacitive reactive power generated by lightly loaded transmission lines or underground cables. They can be connected to the transformer tertiary winding or directly to the high-voltage (HV) bus or transmission line with system voltages up to 500kV.

Flexible alternating current transmission systems (FACTS) application includes several types of reactors thyristor-controlled shunt reactors (TCR), thyristor-switched reactors (TSR), thyristor-switched capacitor reactors (TSC), thyristor-controlled series capacitor reactors (TCSC), and mechanically switched shunt reactors (MSR).

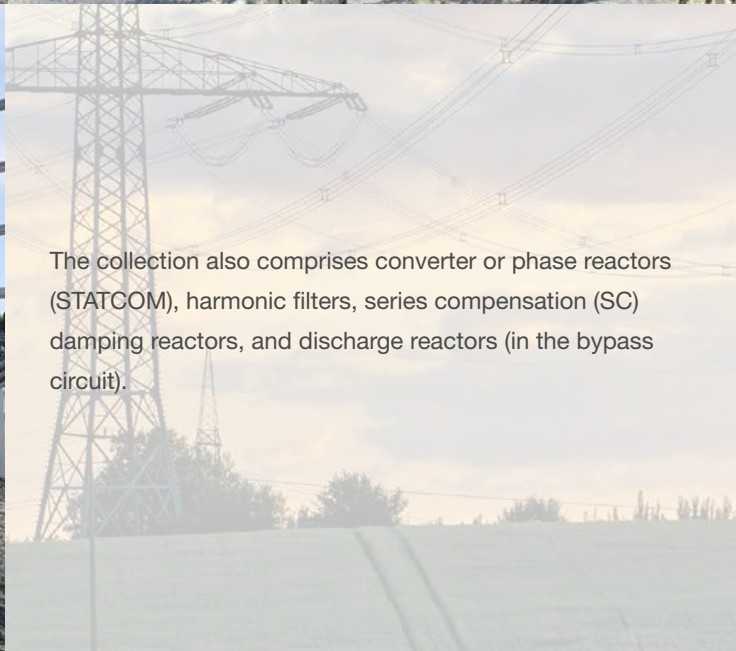
20 kV Shunt Reactors



Thyristor-controlled Shunt Reactors



STATCOM Reactors



The collection also comprises converter or phase reactors (STATCOM), harmonic filters, series compensation (SC) damping reactors, and discharge reactors (in the bypass circuit).



400 kV MSCDN Reactors

REACTORS FOR MECHANICALLY SWITCHED CAPACITORS WITH DAMPING NETWORK

The concept of mechanically switched capacitors with damping network (MSCDN) represents a cost-effective solution to provide reactive power compensation and harmonic control. A typical installation consists of large capacitor banks, large reactors and damping resistors, arranged as a C-type harmonic filter directly connected to the high-voltage system. Reduced losses are achieved at fundamental frequency by means of a resonance between the reactor and an auxiliary capacitor.

REACTORS FOR HVDC AND UHVDC APPLICATIONS

High and ultra-high voltage direct current (HVDC / UHVDC) transmission schemes are used for bulk power transmission. The systems are also used for back-to-back and sea cable interconnections, as well as for the grid connection of renewable energy facilities such as offshore windfarms. Depending on the converter technology, LCC (line-commutated converters) or VSC (voltage source converters), these schemes include smoothing or converter reactors, AC and DC harmonic filter reactors and PLC-noise filter reactors.

Smoothing reactors reduce the ripple current magnitude that is present in a DC system.

AC Filter Yard of an HVDC Converter Station



Smoothing reactors are installed in HVDC schemes with system voltages up to 1100kV and may reach 250MVar equivalent power ratings (50Hz equivalent power) per coil unit.

HVDC Smoothing Reactor (600 kV on the left / 800 kV on the right)

COIL INNOVATION PRODUCT PORTFOLIO

REACTORS FOR INDUSTRIAL AND MOBILITY APPLICATIONS

Reactors for industrial applications may be, for example, smoothing reactors used in power electronics applications such as variable speed drives and uninterruptible power supply systems (UPS). Smoothing and converter reactors are further used for mobility applications, such as for railway converters. Typical industrial applications are Static Var Compensation (SVC) and STATCOMs employed in steelworks or smelting operations with electric arc-furnaces (EAF).

In the power supply of electric arc-furnaces (EAF) series reactors may also be installed, called arc-furnace reactors or sometimes buffer reactors. The function of these reactors is to help optimize the power factor for the purpose of stabilizing the electric arc during the melting process and to reduce the electrode consumption. They are typically equipped with taps for inductance adjustment.

Thyristor-controlled Shunt Reactor for Industrial Application



PLC Reactors (Line Traps)



POWER LINE CARRIER REACTORS (LINE TRAPS)

Power line carrier (PLC) technology is a traditional, economical and reliable method of power systems communication. When connected in series with the transmission line, PLC reactors (line traps) present low impedance at power frequency and maintain high impedance at power line carrier frequencies (30kHz-500kHz). The international sales of line traps produced by Coil Innovation are handled by the company ARTECHE located in Spain, which has an exclusive agreement with Coil Innovation.

TEST REACTORS

Test Reactors are installed in high-voltage and high-power test laboratories. Typical applications are, for instance, current limiting or synthetic testing of circuit-breakers. Often adjustable inductance is required for these reactors.

COIL INNOVATION'S CAPABILITIES

Coil Innovation's air-core dry-type reactors are employed at the highest power and voltage levels. Reactors for AC applications may reach reactive power ratings up to 200 MVar/240 MVar (50 Hz/60 Hz) per coil unit and may be installed at AC system voltages up to 765 kV. In the case of DC applications, the equivalent 50 Hz/60 Hz AC power may even reach 250/300 MVar per coil unit, and the DC system voltages could reach 1100 kV.

Coil Innovation can further provide approved solutions for high seismic requirements.

345 kV Current Limiting Reactors, 234 MVar per Single Stack



Earthquake-resistant 230 kV Current Limiting Reactors



LOGISTIK-PARTNER DER
COIL INNOVATION GMBH

PASSION FOR
.....
EXCELLENCE



www.fml-logistics.at

Tel.: +43 (0) 732 / 272 200 | Mail: office@fml-logistics.at

growing
together
with customized solutions

leitnerleitner
tax audit advisory



beograd
bratislava
budapest
graz
kecskemét
linz
ljubljana
praha
salzburg
sarajevo
wien
zagreb
zürich
sofia

Coil Innovation started with an idea and a business plan. In order to become a successful company, it needed experienced experts with whom specific topics could be discussed at eye level and who would help make the right decisions.

We are proud that Coil Innovation has been relying on the tax and business expertise of LeitnerLeitner since the very beginning.

Are you interested in learning more about the expertise of LeitnerLeitner's advisors? Then please contact Lothar Egger or Brigitte Mühleder. They look forward to hearing from you.



Lothar Egger
Tax Advisor | Partner
t +43 732 7093-224
e lothar.egger@leitnerleitner.com



Brigitte Mühleder
Tax Advisor | Managing Director
t +43 732 7093-262
e brigitte.muehleder@leitnerleitner.com

www.leitnerleitner.com

New markets mean new financial options

From the first hour on Sparkasse OÖ is the financial partner of Coil Innovation and accompanied the firm with special solutions (e.g. growth financing) to one of the most successful enterprises in the region. An important competitive advantage for every firm is flexibility – especially for global trading firms. International trade triggers advantages as new customers and suppliers, but also disadvantages like foreign exchange risk and credit risk. Sparkasse OÖ assists you to decrease these risks and establishes solutions with you, which are matched to your individual requirements.



For more information do not hesitate to contact our expert Wolfgang Feichtlbauer!

Wolfgang Feichtlbauer
Corporate Account Manager
wolfgang.feichtlbauer@sparkasse-ooe.at



SPARKASSE
Oberösterreich

#glaubandich



COIL INNOVATION
POWER INDUCTORS

COIL INNOVATION GMBH

Nikola-Tesla-Straße 1
A-4070 Eferding

Phone: +43 (0) 7272 75200
Fax: +43 (0) 7272 75200-100
E-mail: office@coilinnovation.at
Web: www.coilinnovation.at

COIL INNOVATION USA, INC.

125 Edinburgh South Drive, Suite 201
Cary, NC 27511

Phone: +1 (919) 659-0300
Fax: +1 (919) 234-0188
E-mail: office@coilinnovation.com
Web: www.coilinnovation.com



The GoZee app
makes the brochure
come alive

GoZee: Get started in 30 seconds

1. Go to App Store or Google Play, enter "GoZee" in the search field and download the app to your smartphone or tablet.
2. Open the app and use it on pages with the GoZee icon.