



RAILWAY INDUSTRY

Passive components and solutions
for railway industry

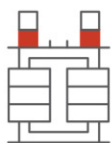
INDUCTORS | TRANSFORMERS | FILM CAPACITORS



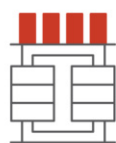
cefem-group.com

// CEFEM, specialist in passive components for energy conversion

Since 1987, our French company has been supporting hundreds of customers around the world.



Inductors



Transformers



Film capacitors



Combined components

OUR MISSION

To provide a bespoke product with the highest possible volume, weight and power ratio.

After years of R&D and experience, we are able to offer magnetic components with the following characteristics:

1 kW to
1 MW

1 kHz to
300 kHz

Up to
3 000 A

Up to
2 000 V

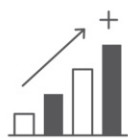
Up to
1 T

THINKING GREEN EVERY STEP OF THE WAY

Climate change has speeded up tremendously since the second half of the last century. This is why it is essential that CEFEM produces better and more responsibly. **The objective is to meet the growing needs of our societies, while respecting our environment.**

CEFEM intends to undertake actions in various sectors: railways, industry and decarbonised electrification.

The CEFEM group's goal is to provide concrete solutions to reduce the carbon footprint throughout the value chain of its solutions.



Increase the efficiency of our products



Reduce the amount of material in passive components



Recycle components after use (R&D topics)



Reuse passive components by repairing them



Use less polluting, more recyclable materials



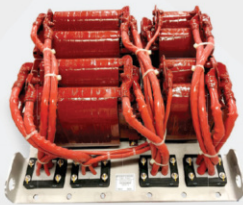
Monitor components to improve their life span

// Our products & our technical research resources

Passive components represent a dynamic area for the development of our solutions.

New materials and technologies have enabled **innovative approaches** on a continuous basis over the past years.

CEFEM is now involved upstream in the development process for its customers. This significantly reduces the time to market when developing new components. Simulation software offers a significant advantage in this process.



4 AIR-COOLED MF TRANSFORMERS IN ONE ASSEMBLY

P = 230 kVA
(2x100 + 2x15 kVA)

F = 18 kHz

Weight = 65 kg



2X2 COUPLED SNUBBER INDUCTORS

L = 500 μ H

I = 12 A

F = 22 kHz

Weight = 4,8 kg



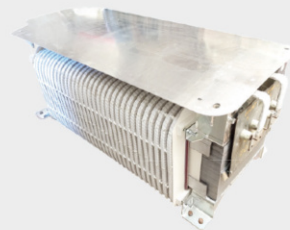
COMBINED COMPONENTS

P = 2x30 kW

P = 500 μ H

F = 20 kHz

Weight = 15 kg



LINE INDUCTOR

L = 9,5 mH

I = 484 Arms / 500 Apeak

U = 1500 Vdc

F = 300 kHz

Weight = 800 kg

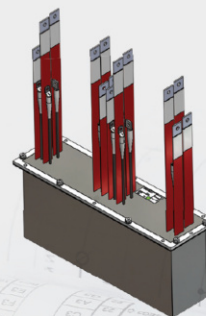


INPUT INDUCTOR

L = 4 mH

I = 120 A

Weight = 70 kg



BATTERY CHARGER TRANSFORMER

P = 20 kW

F = 20 kHz



SOLUTIONS BY CEFEM

Through the involvement of our business units, knowledge and resources, CEFEM is able to provide complete solutions to our partners. For example, we can provide a solution including passive components, electrical components and electronics.

OUR POWER BUSINESS UNIT

Providing magnetic components as well as film capacitors.

OUR PROCESS BUSINESS UNIT

Providing electrical engineering and equipment as well as energy management skills.

OUR SOLAR BUSINESS UNIT

Providing electronic equipment as well as skills in power electronics.

// Our other technologies

MF INDUCTIVE COMPONENTS




Since the creation of the company, Cefem has been in constant evolution. After low-frequency magnetic components (50/60Hz), Cefem have been focusing for more than 10 years in the development and manufacturing of medium-frequency inductive components. (from 1 to 100kHz).

In addition to being an economical option for manufacturers, this is real commitment to the environment.

FILM CAPACITORS

CEFEM Power manufactures film capacitors through its subsidiary SCR: from the reception of the metallized film developed by its design office to the winding, assembly, welding of connections, resin coating and unit control of the products.

We are able to supply capacitors for the following applications:

-  Power (AC, traction, dc-link, snubber, resonance)
-  Discharge
-  Motor run and start AC

// Our solutions to your needs

A SECOND LIFE

FOR YOUR COMPONENTS



CEFEM provides passive components for different technologies while proposing services such as **maintenance and recycling**. Whether they are made by CEFEM or not. We are constantly seeking to improve the durability of components, particularly through eco-design. For example, we are reducing the amount of resin used to facilitate future recycling.

CEFEM's passive components are used in demanding applications such as trains and underground transport.

They are found in auxiliary and traction converters and in some electrical cabinets. The units are mounted on the roof, under the cabinet and/or inside the converters.

For many years now, CEFEM has been paying special attention to technical development, quality assurance and the environment.

We work closely with our customers to provide optimised and bespoke solutions.

Thanks to years of R&D and experience in the railway industry, our components are **lighter and more efficient**, while meeting the most demanding specifications. Our experts test all the components in extreme conditions: severe climatic conditions, shock and vibration resistance, etc.



**Lighter and
more efficient**



**Severe climatic
conditions**



**Shock and
vibration**

BOIGE & VIGNAL

Acquired by CEFEM in 2016, **TRANSRAIL Boige & Vignal** has been a **reference since 1950** in the manufacturing and development of transformers as well as high-power inductors specifically for the railway industry. This acquisition reinforces CEFEM's commitment to the railway sector.

The strength, reliability and safety of the components we offer are therefore of prime importance. For you, it is a guarantee of quality. For us, it is the assurance of offering you qualitative and durable products.

Transformers and
reactors according to

**EN
60310**

Pollution degree

PD4

Fire protection
according to

**EN
45545**



The CEFEM group is expanding rapidly

We are present in several countries:
in France, Romania and India.



Professional equality between women and men
is a fundamental value of our group. That is why we are
pleased to communicate our gender equality index:

93/100



Working towards a total
decarbonised electrification
of our society. How?
By developing
and manufacturing
passive components
for energy conversion.



For more than 30 years, we have
been committed to reducing the
impact of industrial processes
on the environment and ensure
the safety of operators.
We achieve these objectives
by developing and manufacturing
safety cabinets and measuring
devices for industrial sites.



Because it is high time
to further develop renewable
energies, we manufacture
photovoltaic inverters
and install solar power plants.
We put people and the
environment at the heart
of our values. This is the main
orientation of our R&D.



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