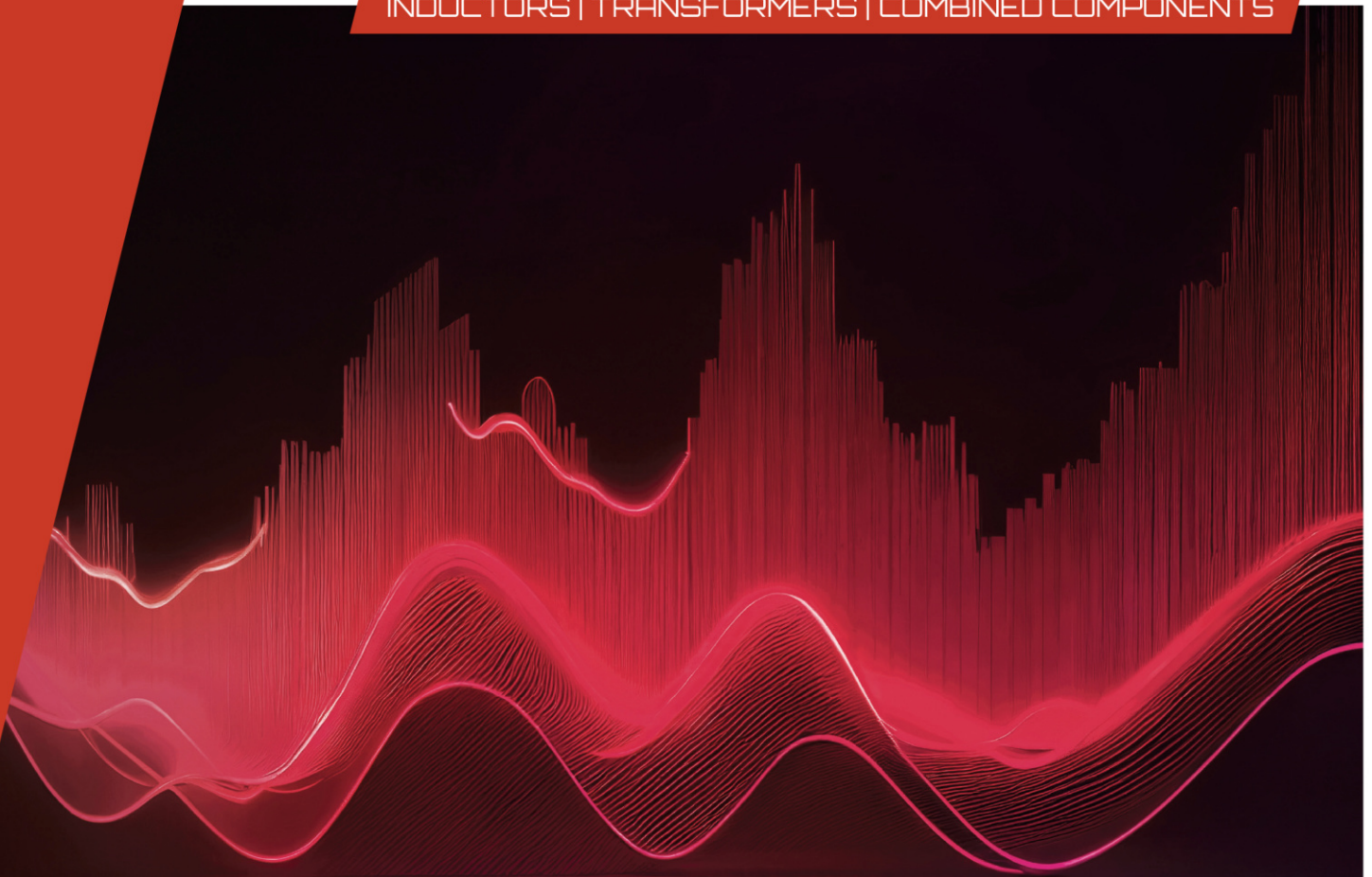




MEDIUM FREQUENCY

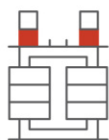
Inductive components
for medium frequency applications

INDUCTORS | TRANSFORMERS | COMBINED COMPONENTS

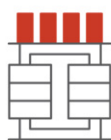


// CEFEM, specialist in medium frequency inductive components

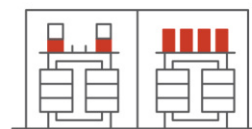
Since 1987, our French company has been supporting hundreds of customers around the world.



MF Inductors



MF Transformers



MF 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

MF INDUCTIVE COMPONENTS

Since the creation of the company, CEFEM has been in constant evolution.

After low-frequency magnetic components (50/60 Hz), CEFEM have been focusing for more than 10 years in the development and manufacturing of medium-frequency inductive components : from 1 to 100 kHz.

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

Choosing medium frequency means:



The lightness



The compactness



The price



Using less raw materials

FROM 50 Hz TO

> 5 000 Hz

// Examples of medium frequency inductive components

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

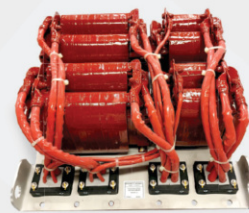
New materials and technologies have enabled **innovative approaches** on a continuous basis over the past years.

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.



3-PHASE INDUCTOR PACKAGE

L = 150 μ H
I = 80 Arms
I Ripple = 10 A
F = 10 kHz



4 AIR-COOLED MF TRANSFORMERS IN ONE ASSEMBLY

P = 230 kVA
F = 18 kHz
Weight = 65 kg



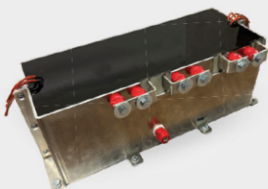
MF TRANSFORMER

P / I = 9 kVA / 500 A
F = 50 kHz
Weight = 2,5 kg



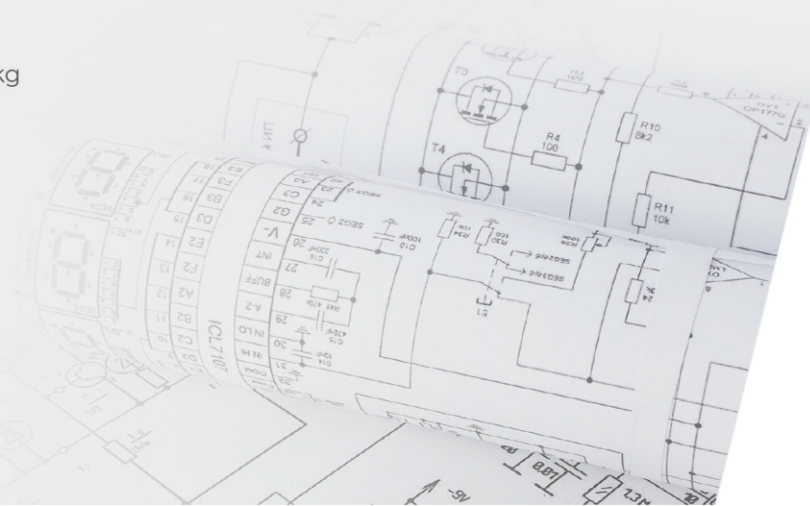
LOW LOSSES INDUCTOR

L = 85 μ H
I = 273 A
I Ripple = 44 A
F = 7 kHz



HF INDUCTANCE & TRANSFORMER

P / L = 36 kVA / 5,4 μ H
F = 40 kHz
Weight = 9 kg





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

RAILWAY

CEFEM's passive components are used in demanding applications such as trains and subway s. Thanks to years of R&D and experience in the railway industry, our components are lighter and more efficient while exceeding the needs of the most demanding specifications. Our experts focus on thoroughly testing all components, including extreme weather conditions, shock and vibration resistance, and more.

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.

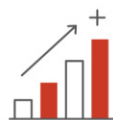
We are able to supply capacitors for the following applications:

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

// 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

// Tailored design for ultimate performance component

COOLING ❄️

As the frequency increases and therefore the size of the components decreases, heat dissipation is a parameter that must be considered. Even without additional fans, our optimized designs allow for high power densities. Air cooling is therefore the most economical option. However, if a more compact solution is required, power density can be significantly increased by adding a fan. Low weight and simple cooling are the advantages of air-cooled winding products.



Air cooled



Air forced



Water cooled



Heat sink

At CEFEM, we consider several factors, such as the environment of the component, its constraints, in order to provide the solution that fits perfectly in your system while operating efficiently.

Depending on the requirements, whether high saturation resistance, frequency-stable inductance, low power dissipation, high power density or high short-term power, any type of winding can be combined with any type of core.

With our wide selection of materials and solution concepts, we always offer you the optimal solution for your application.

With a wide range of winding and core materials, we can develop and manufacture transformers and inductors tailored to your needs.

❶ Ferrite

❷ Iron Powder

❸ Amorphous

❹ Litz wire

❺ Nanocrystallin

❻ Aluminium Foil

10

23

35

50

100th Magnetic steel

LOSSES MANAGEMENT



CEFEM Power manages losses resulting from the rise in medium frequency. Thanks to meticulous work by our engineers, as well as calculation and modelling software, we are able to reduce these losses.

OUR MARKETS

CEFEM provides MF components to several markets with a focus in **railway, new energies, naval, power quality and industry.**

CEFEM is your ideal partner: from advisory services to the designing process of medium frequency magnetic components, we are with you every step of the way.





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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