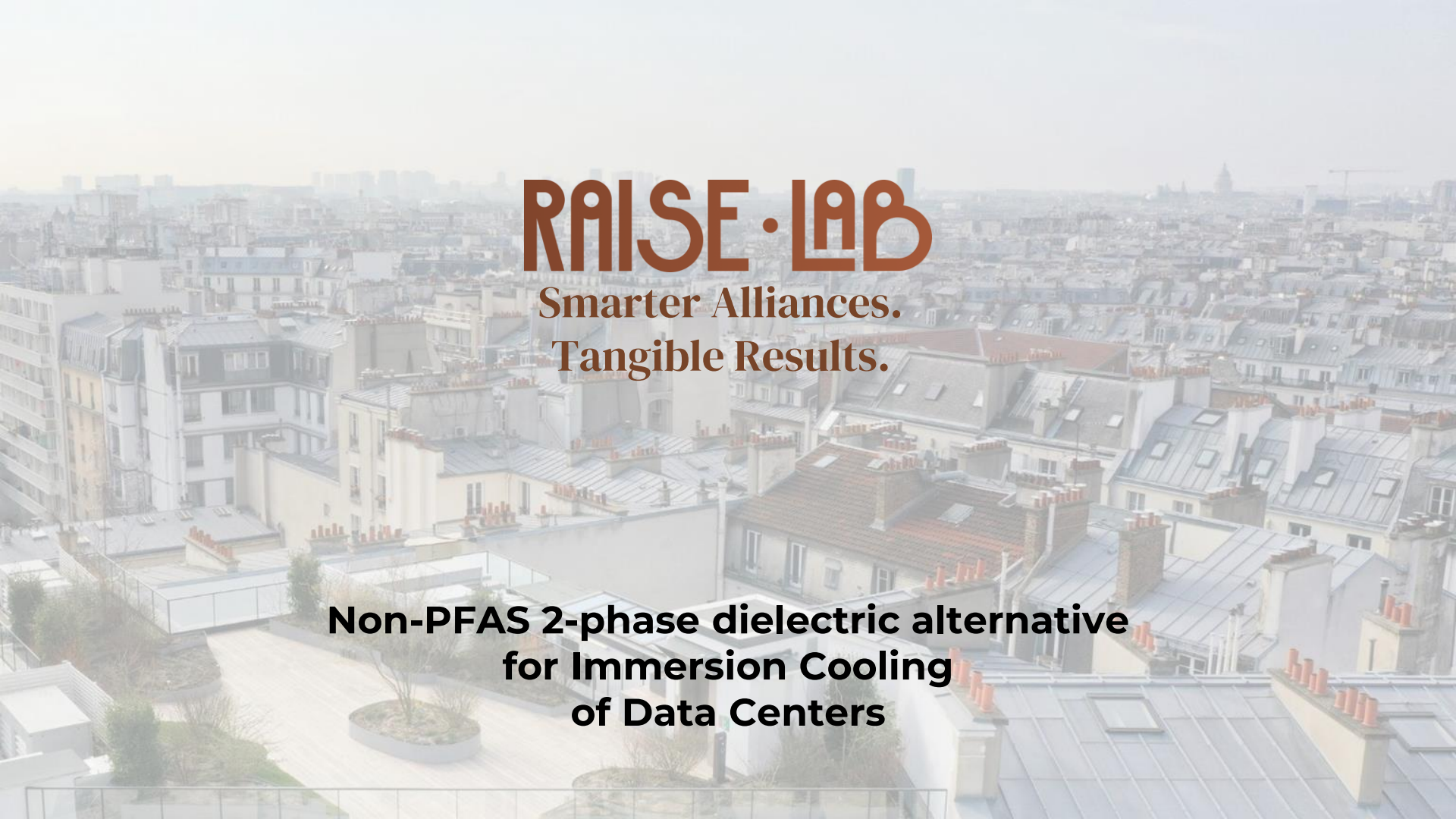

RAISE·LAB
Smarter Alliances.
Tangible Results.
Non-PFAS 2-phase dielectric alternative
for Immersion Cooling
of Data Centers

About RaiseLab

Our vision

« Leverage **innovation** to build a sustainable, resilient and inclusive economy, by the partnership of **large corporations and startups**. »

RaiseLab JV is the first French structure solely dedicated to Open Innovation, born from Schoolab & RAISE

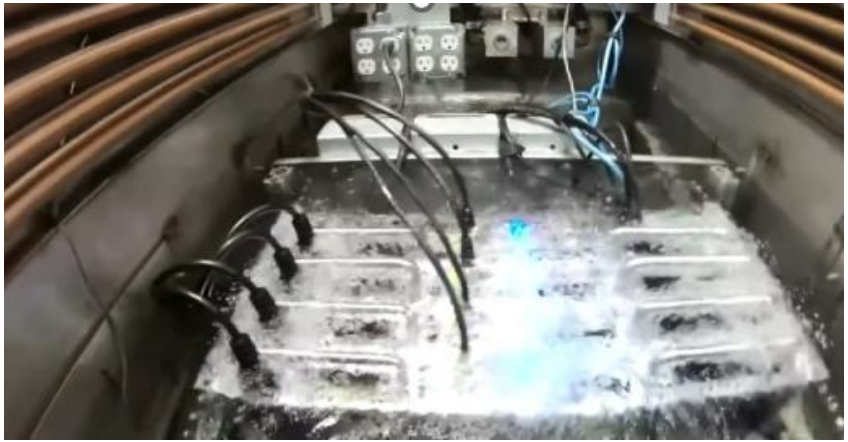
Schoolab startups incubator supports the transformation of companies to accelerate their innovation projects as well as help them transition to more agile organizations.

Investment fund founded in 2013, RAISE is the first efficient, benevolent, civic ecosystem that helps France via entrepreneurs who innovate, create jobs and nourish growth.

2-phase Immersion Cooling for Data Centers

The number and power of data centres are rocketing, such as their electricity consumption.

Cooling of these IT servers represents a third of the electricity bill.
Two-phase immersion cooling reduces this cooling cost to just 5%, by taking advantage of the latent heat of vaporization of fluids.
Thus the servers are immersed in the fluid, which performs a vaporization/condensation cycle
More information can be found at liquidstack°



Fluorocarbon-based Fluids are the sole current solutions

Current 2-phase fluids used for Data Centers immersion cooling are PFAS fluids, like 3M's novec or fluorinert

But an alternative has to be found, To avoir pollution

The ECHA European Agency drives the interdiction of PFAS for fire extinguishers

2019-22 2023 2025

PFAS impacts turn mainstream

Potential total interdiction of PFAS In UE by 2025. "for immersion cooling a derogation is not justified". 3M has already stop its production of PFAS in Belgium

Specifications

Criteria	Specification	Nice to have
Pollution	**Not a PFAS**	Biodegradable
Dielectric resistance	**>6 kV**	20 kV
Boiling temperature	**45-70°C**	60°C; Few density variations from 15 to 60°C
Pour point	**<5°**	<0°
Stability	**>12 months**	>5 years
Flashpoint & auto-inflammation	**>150°C**	>200°C
ODP Ozone Depletion	**0**	0
GWP Global Warming Potential	**<10**	<1
Sulfurs	**<10 ppm**	
Acidity	**FC <0,001 mg KOH/g. Esters synthetic esters <0,03, natural esters <0,06 mg KOH/g**	
Material compatibility	**Servers, optic fiber, classical plastics**	
Volatility	**-**	No volatility
Allergens	**Nonallergenic at effective volatility**	Nonallergenic
Viscosity	**Small around 20-60°C ≈10 mm^2/s**	Small ≈10 mm^2/s
Smell		Low at defined volatility
Sourcing		Bio-sourced & CO_2 negative

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Thanks

Mai 2023