



# IMMERSION COOLING FLUIDS IN DIGITAL INFRASTRUCTURE: FUNDAMENTALS OF THE GROWTH SEGMENT

*Emerging Opportunities Series*

# WHAT BURNING QUESTIONS SHOULD YOU BE ASKING TODAY TO SUCCEED IN THIS SPACE?

## IMMERSION COOLING FLUID VALUE CHAIN →

ARE YOU WORKING WITH THE RIGHT PARTNERS BASED ON THE INFLUENCE MAP OF TODAY AND TOMORROW?

- Do you understand the market map and key value participants for immersion cooling fluids in the fast-growing data center market?
- Are you making well informed decisions for your go-to-market strategy?
- Do you know who the essential influencers / decision makers in this market are and are you ready to work with them?

## GEOGRAPHIC DEMAND DRIVERS AND KEY TRENDS →

**STRONG BUT UNEVEN GROWTH GLOBALLY**

- Where will the market hit maturity state first?
- Are you placing bets in the highest growth regions with the longer view in mind?
- What are the regional consumer preferences for cooling technology and on-going trends in key data center growth markets?
- Do you understand the regional consumer preferences for cooling technology and on-going trends in key data center growth markets?

## ON FLUID CHEMISTRY →

WHAT IS YOUR UNDERSTANDING OF IMMERSION COOLING CHEMISTRY TYPES IN THE EMERGING FLUID SUPPLIERS MARKET

- What are the various immersion cooling fluids being offered?
- How do they vary in terms of chemistry; thermal, electrical properties; fluid life and maintenance practices; sustainability – carbon footprint and toxicity; and fluid cost?
- Who are the key suppliers of these fluids? What are the fluids that they offer?
- Are you up to speed with the changing market perception and preferences for immersion cooling fluid type?

## COMPARATIVE VIEW OF FLUID DEMAND BY CHEMISTRY →

**ARE YOU ABREAST WITH THE DEVELOPMENTS TAKING PLACE IN IMMERSION COOLING FLUIDS BY TYPE?**

- Would you like to make informed business decisions based on the type of fluid chemistries that are likely to become the fluid of choice for end-users in the data center industry?
- Would you like to appraise yourself with the latest developments in fluid offerings such as new product launches and evolving fluid requirements?



**BASE YEAR: 2023 | TO BE PUBLISHED: FEBRUARY 2024 | COVERAGE: GLOBAL OVERVIEW & REGIONAL TRENDS**



### **IMMERSION COOLING TECHNOLOGY OVERVIEW → TECHNOLOGY LANDSCAPE**

- What is the technology?
- What does it entail?
- What are its advantages and drawbacks compared with other routes of thermal management?



### **IMMERSION COOLING FLUID VALUE CHAIN → KEY INFLUENCERS IN THE VALUE CHAIN**

- What are the key components of immersion cooling value chain?
- Who are the key influencers or decision makers?
- Who are the key suppliers of these fluids? What are the fluids that they offer?
- What are the key data center customer segments?



### **IMMERSION COOLING FLUID MARKET LANDSCAPE → INTER-PRODUCT COMPETITION LENS**

- What are the various immersion cooling fluids being offered?
- How do they vary in terms of chemistry; thermal, electrical properties; fluid life and maintenance practices; sustainability – carbon footprint and toxicity; and fluid cost?
- Who are the key suppliers of these fluids? What are the fluids that they offer?



### **THERMAL MANAGEMENT IN DIGITAL INFRASTRUCTURE → CUSTOMER NEEDS LENS**

- What are the current thermal management practices in various digital infrastructure segments – high performance computing, enterprise/private cloud, hyperscalers, and other applications?
- What are the performance requirements from thermal management process – in terms of heat removal / reuse, thermal fluid life, recycling, sustainability, operating costs?
- What are the commercial considerations when choosing cooling fluids?

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### GEOGRAPHIC DEMAND DRIVERS AND KEY TRENDS → KEY TRENDS VIA REGIONAL LENS

- Geographic demand heatmap and customer footprint (key regions)
- Key developments/activity, regulatory updates in various regions impacting the demand for these fluids
- What regions/markets are seeing faster growth?
- What are the key factors driving the penetration of immersion cooling technology/fluids in key regions/markets?



### MARKET SIZE FOR IMMERSION COOLING FLUIDS → PARAMETERS OF THE OPPORTUNITY

- What is the overall thermal fluid demand in immersion cooling applications in volume and value terms?
- Comparative view of fluid demand by chemistry
- 5- and 10-year outlook for immersion coolants; Key drivers and restraints for growth in immersion cooling technology
- Kline view: Key take-aways on market assessment and opportunities

## HOW DOES THIS REPORT HELP ME SUCCEED IN THIS SPACE?

It's not often that traditional products face the prospect of a **new outlet well-aligned with a mega-trend like digitalization**, creating a promising new playing field.

Correctly estimating the opportunity based on **where-to-play and right-to-win** requires several steps, starting with a **pragmatic view of the fundamentals of the opportunity** to make 'Go/No-Go' decisions.

Kline's report on ***IMMERSION COOLING FLUIDS IN DIGITAL INFRASTRUCTURE*** will help you understand:

The key fundamentals and the size of opportunity in this market complimented with flavors of geographical trends and product characteristics.

Kline will leverage its **strong footprints** in the **energy and chemicals industries** and will draw **expertise** from its **existing fluids knowledge base** to **develop a comprehensive view** on emerging opportunities in this market.



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TO HEARING FROM  
YOU!**

Contact us at [energy@klinegroup.com](mailto:energy@klinegroup.com)



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