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# Cooling-as-a-Service: Decarbonisation by Servitisation

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## **Cooling-as-a-Service: Decarbonisation by Servitisation**

Evolving business models align the interests of traditional asset owners with service providers and, where the cooling of buildings is concerned, can also help to decarbonise the industry.

Servitisation is a deliberate strategy of adding services to products – or even replacing a product with a service. That shift from a one-off sale means the interests of clients and providers can be much more closely aligned within a longer-term relationship. It also tends to generate smoother, recurring revenues for the service provider. This makes investment for further growth easier to plan and facilitates raising debt finance to optimise capital structures, as favoured by large multinational corporations and private equity investors alike.

Servitisation is not especially new. However, it is expanding into more and more arenas. Long established in areas such as transport and music (e.g. Spotify), it is now displacing previously transactional-focused approaches in airplane engines (thrust), lighting, energy provision – and cooling.



### Servitisation by selected sectors

It is a game changer for the cooling sector where the adoption of Cooling-as-a-Service ("CaaS") can transform it into a critical contributor to global decarbonisation by increasing efficiencies and reducing greenhouse gas ("GHG") emissions. With temperatures rising rapidly worldwide, reducing such emissions is critical; according to NASA, the summer of 2023 was Earth's hottest since records began in 1880. Meanwhile, the global air conditioner stock in use is expected to triple its 2020 level by 2050, by which time over half of the units will be in Asia-Pacific. The carbon footprint of "the built environment" – aka buildings – already represents ~26% of global  $CO_2$  emissions and, without fundamental change, will become yet more significant, primarily driven by emissions generated by cooling systems. Any way that cooling can be delivered more efficiently is thus very welcome.





### The CaaS model

The CaaS model is relatively straightforward. The service provider assumes full responsibility for the design and investment/ownership required for the cooling installations and related equipment (retrofit or take-over of existing units), associated energy and water consumption, and its operation, maintenance, and optimisation. It charges at a fixed price per Refrigeration Ton Hour (\$/RTH) rate on a pay-as-you-use basis. It is then accountable for ensuring specific metrics are achieved, e.g. ambient indoor temperature in a data centre, shopping mall or office building, and bears all related costs to deliver them. The client – typically the building owner – is only responsible for ensuring a consistent supply of electricity and water to the building. Contract agreements are multi-year, with inbuilt price adjustments for changes in tariffs for electricity and water.

The CaaS service provider is therefore directly incentivised to install and/or run the Heating, Ventilation, and Air Conditioning ("HVAC") equipment in the most efficient way possible. Using remote sensors, data pools from multiple installations, and in-house algorithms to constantly refine and define best practice, means units can constantly operate at optimal output. This can result in consistent energy savings well in excess of 30% – and a much-reduced carbon footprint. Moreover, the in-building approach eliminates the distance-related inefficiencies that are a core weakness of the centralised district cooling model.



## **Concluding remarks**

Unsurprisingly, Original Equipment Manafacturers ("OEM") are now pushing into this space. Carrier, a global HVAC OEM, aims to deliver CaaS to the state-of-the-art FNB Financial Center currently under construction in Pittsburg, USA. Johnson Controls recently announced it was launching CaaS in the Middle East, referencing it as "a pivotal moment– allowing businesses to quickly transform their buildings into more efficient and sustainable assets while spreading the cost of capital ... key to reducing carbon footprint and meeting sustainability targets." However, both have some catching up to do versus the longer-established pioneering specialists in the CaaS space, such as Taka Solutions in Dubai or Kaer in Singapore – who also benefit from the ability to commission and select the best-fit equipment from different manufacturers.

"Cooling-as-a-service is a business model that allows us to deliver what our customers have been asking for, which is a hassle-free, carbon-neutral cooling system for their space so that they can focus on running their business" – Kaer

Finally, servitisation in cooling is only possible if flexible. One leading further education institution in Singapore was an early adopter of the CaaS model for its campus, helping it secure the top award for "green" buildings. Now it is looking to go further by asking its CaaS service provider to design a contract that incentivises reducing GHG emissions in addition to delivering the desired temperatures to the campus. With more thinking like that, and with the adoption of the CaaS model across global real estate, keeping buildings cool may become a much smaller contributor to a warmer tomorrow.



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