



CLEANROOM
TECHNOLOGY



WHITEPAPER

Elevating Cleanroom Technology

The transition to Cleanroom-as-a-Service:
advantages of a new business model in
productized cleanroom solutions.

Introduction

In this article, we delve into the evolving landscape of the cleanroom industry, shedding light on the potential advantages of adopting a service-oriented business model, Cleanroom-as-a-Service (CaaS). While the software industry already made this shift in the late nineties (SaaS), the manufacturing industry is slowly making this shift through servitization (Neely, Benedettini, & Visnjic, 2011). This transition from a product-centric world to a solutions-focused approach has yet to fully unlock its potential in the cleanroom sector. ABN Cleanroom Technology has embarked on this journey to not only deliver cleanrooms but also offer a full turnkey service model.

Making the switch to a service model in the form of an Industrial Product Service System (IPSS) consists of different checkboxes that need to be ticked for success (Ayala, Paslauski, Ghezzi, & Frank, 2017). The following sections of this paper will delve into diverse topics, providing insights why ABN Cleanroom Technology initiated this change and why the transition to a CaaS model is essential for fostering innovation in our client's industry.

This necessary shift to Cleanroom-as-a-Service will be based on the three most important topics to ensure a successful transition:

1 Shifting our financial model from CAPEX to OPEX

2 From traditional cleanrooms to productized cleanroom solutions

3 Transition from Service to Cleanroom Lifecycle Management

1 Transforming our financial model

Before delving into details, let's first clarify some financial terms. Capital expenditures (CAPEX) generally involve investments in fixed assets such as property, plant and equipment (commonly referred to as PPE). Cleanroom facilities typically fall within this category. On the other hand, Operational Expenditures (OPEX) are the day-to-day operational expenses of an organization, which can be either one-time or recurring.

What if we embraced the idea that cleanroom facilities should be flexible, evolving alongside the dynamic needs of our clients? With this vision in mind, we've restructured our financial model to introduce the option of renting our cleanroom facility at the client's location with the opportunity to purchase after a specified period of time. While we recognize that the cleanroom industry traditionally leans towards Capital Expenditures (CAPEX), we believe in providing our customers with the additional flexibility of hybrid rental solutions.

Moreover, the availability of cleanroom rentals aims to democratize and therefore make cleanroom solutions more accessible for every company. By offering hybrid rental options, companies can invest in their facilities, reducing reliance on external third parties. It is a common perception within the industry that cleanroom facilities are currently too expensive and can only be realistically pursued in a later stage of a company's life cycle. Our objective, through the availability of rental alternatives, is to enhance accessibility to cleanroom solutions, empowering companies with greater autonomy and reducing obstacles in the establishment of their own cleanroom facilities.

2 CaaS made available by shifting from conventional to productized cleanroom solutions

After redefining the financial model, this section focuses on our evolving cleanroom projects. Over the years, ABN Cleanroom Technology has strategically shifted towards modular and pre-engineered cleanrooms. This results in being the leader of productized cleanroom solutions and concepts such as: VIX, ICONIC, INTEGRA and SteriCube. This productization was essential to transition from ownership to usership (Baines and Lightfoot, 2013).

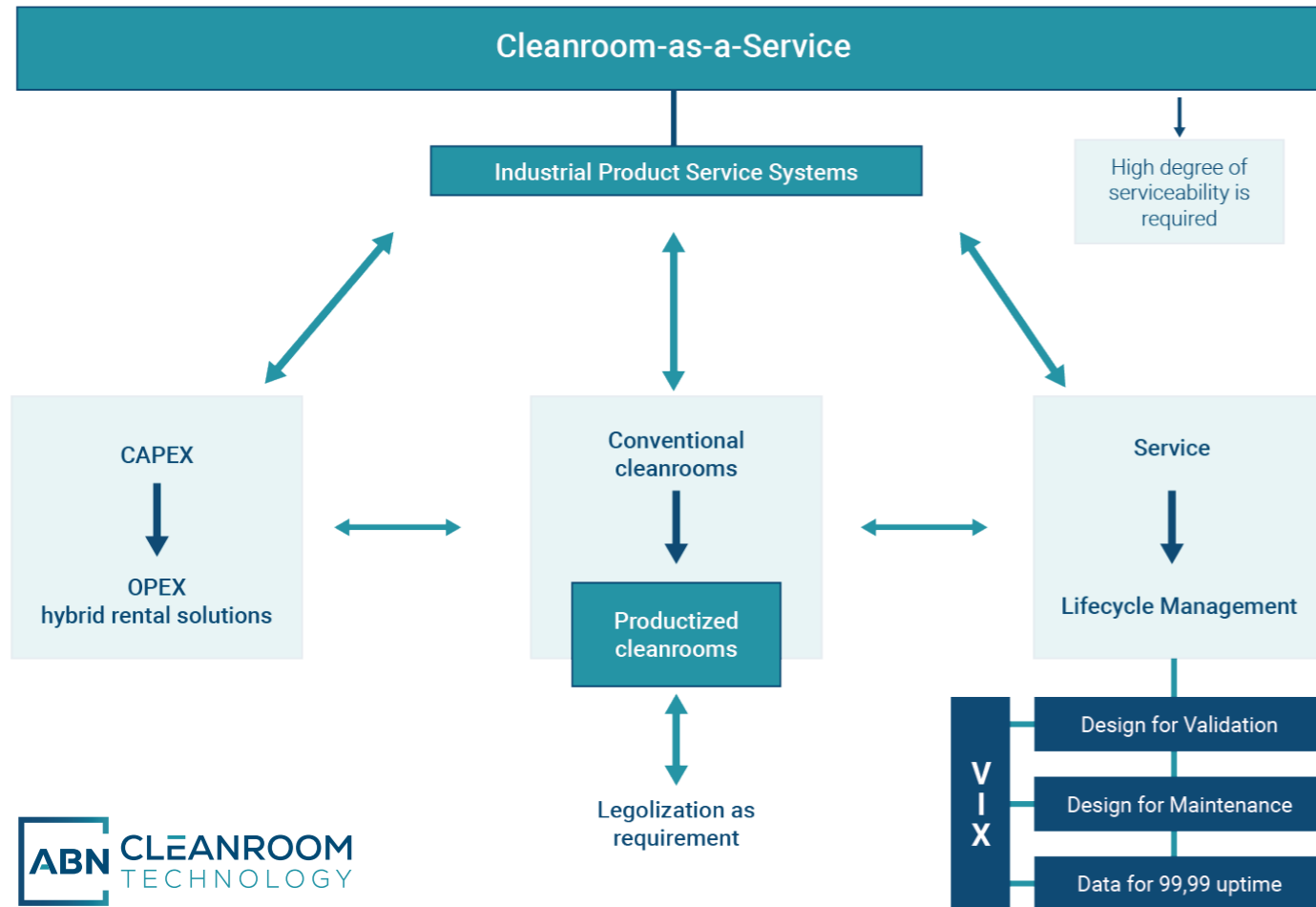


Productization of cleanroom solutions

Offering ready-to-ship cleanrooms alongside our traditional cleanroom projects allows our customers to choose a streamlined, quickly delivered cleanroom configured to their needs. This strategic move is necessary for the initiation of ABN's journey into an as-a-service approach.

The modular concept allows our clients to adapt their cleanroom facilities based on fluctuating requirements and customer demands. This service approach is not just relied to the possibility of renting a cleanroom during peak production times, but can also be relied on our service to remodel current cleanrooms. Our pre-engineered cleanrooms are based on what we call 'legolization' and is the core of our approach of productizing cleanroom solutions. Like already discussed in a previous paper, we believe that cleanrooms should be designed based on pre-engineered building blocks, instead of just engineering a cleanroom from scratch every time. Each building block has its own functionality and allows us to upgrade the cleanroom easily and fast to the needs of our customers.

An illustrative example highlighting the practical application of our service model involves a Biotech company initially requiring a GMP Grade C cleanroom for Phase 2 testing. As they advanced to Phase 3, the need for a grade B cleanroom emerged. Through our hybrid rental solutions, we empower Biotech firms to align their cleanroom facilities with their evolving requirements, offering flexibility and scalability. Alternatively, if they opt to purchase a cleanroom, ABN can efficiently remodel their existing facility to meet grade B standards. As a CaaS provider, this business model not only positions us to be intimately involved with our clients but also allows us to grow in tandem with their evolving needs.



3 Transition from Service to Cleanroom Lifecycle Management

The ultimate and critical objective for cleanroom suppliers to position as service provider, requires the transition from offering a service to proactively addressing and resolving all challenges related to mission-critical assets -in this instance, their cleanrooms. Mission critical assets are all activities, which are essential to the business operation.

These additional services increase the perceived customer value compared to sole physical products, which is well described in the Service-Dominant Logic (SDL) theory. This theory states that all companies are service based (Lush, & Vargo, 2004). At the core of this commitment is ABN's dedication to managing our clients' ISO and GMP cleanrooms throughout their entire life cycle.

- 1 Efficient Cleanroom Maintenance
- 2 Validation Excellence
- 3 The role of data in a CaaS model

Efficient Cleanroom Maintenance

As managers of the entire after-sales-service, we design our cleanrooms for simplicity to enhance the efficiency of our maintenance services. Our patented VIX concept is characterized by its decentralized air systems. These air units are strategically placed in the plenum above the cleanroom, eliminating the need to enter the cleanroom during maintenance.

Our VIX-concept allows us to guarantee uninterrupted operations for our clients during maintenance activities. Recognizing that the most substantial cost for our clients involves temporarily stopping their cleanroom activities, we strive to erase these interruptions and ensure continuous operational efficiency.

This unwavering need to continuous operations leads us to the core of transitioning to a service model.

The success or failure of a service model rests on the essential nature of the product it offers (Grönroos, 1990). ABN believes in the transition to a Cleanroom-as-a-Service model due to the critical role cleanroom facilities play as mission-critical assets. Cleanroom facilities are so vital to the operational process of our customers that we consider it our duty as a cleanroom company to ensure 99.99% uptime of our cleanrooms. This strong commitment brings us to the next paragraph.

Validation Excellence

The crucial aspect of our support lies within our Validation team. Our Validation process involves writing a detailed report, showcasing the optimal functionality of every aspect. This additional service not only streamlines the process but also spares our clients the need for an external consulting team during the validation.

Following the Validation process, a final report is presented, providing valuable recommendations for effectively addressing any comments during external audits.

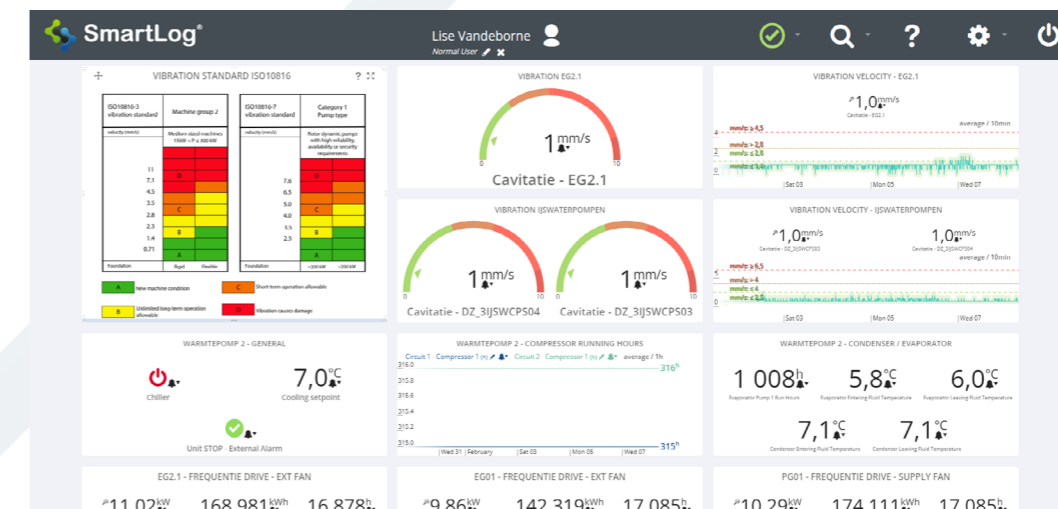
The role of data in a CaaS model

This paper left an essential aspect unexplored, the role of data in providing a CaaS model. In the age of digitalization in industrial sectors, known as Industry 4.0., is increasingly gaining importance by enabling new life-cycle and customer-oriented solutions, which are more sustainable, resource-efficient and also strengthen long-term customer relationships (Michalik, Besenfelder, & Henke, 2019).

The integration of industry 4.0 technologies enhances the customer experience, resulting in a more specialized service. Our commitment to data-driven excellence is exemplified by the incorporation of CleanConnect and GMPConnect into our cleanrooms.

This cloud platform serves as the backbone for collecting and processing diverse data and insights related to our installed cleanrooms. This information empowers us to maintain our risk-based management vision. Through collection and comparing this data, we gain profound insights into the cleanroom environment with which we define our maintenance strategy.

Our separate maintenance business unit ensures a guaranteed 99.99% uptime of our cleanrooms and lays the foundation for continuous improvements in the future. This separate entity fully unburdens the clients on their mission-critical assets.



4 What's in it for the financial department?



Capital Conservation

Renting allows you to preserve precious capital resources. By avoiding large upfront payments linked to asset purchases, you can retain liquidity and allocate capital more effectively across other critical areas of the business such as innovation, research and development.



Operational Flexibility

In a rapidly evolving market, flexibility is paramount. Renting provides the agility to upgrade or change equipment without the burdensome process of selling existing assets. This ensures that your production capabilities remain cutting-edge and adaptable to market demands.



Maintenance and Repairs

OPEX business models include maintenance and repair services as part of the agreement. This not only reduces the burden on your operational teams but also fixes costs, providing greater predictability and stability in your financial planning.



Tax Advantages

Renting payments are generally considered operational expenses, potentially offering tax advantages over the depreciation of purchased assets. This can result in lower tax liabilities and improved overall tax efficiency.



Risk Mitigation

The volatility of technology and market dynamics poses inherent risks to asset values. Opting for an OPEX model transfers the burden of obsolescence risk to the lessor, shielding you from potential losses associated with depreciating assets.



Enhanced Financial Ratios

Renting can improve financial ratios by presenting a more favorable debt-to-equity ratio. This, in turn, can positively impact your creditworthiness and make you more attractive to investors and lenders.



Improved Return on Assets (ROA)

Renting allows you to utilize assets without the long-term commitment and financial burden associated with ownership. This can enhance your Return on Assets as you deploy capital more efficiently to generate revenue.

Final thoughts

In conclusion, ABN Cleanroom Technology stands at the forefront of the Cleanroom-as-a-Service revolution. This commitment involves a strategic financial shift from CAPEX to OPEX, a productized cleanroom solution approach and a transition from service to cleanroom lifecycle management.

By redefining our financial model and introducing hybrid rental solutions, we are actively fostering autonomy and breaking down entry barriers for our clients. Our productized cleanroom approach, based on 'legalization', enables swift adaptations, scalability and tailored made upgrades.

Above all, the transition to cleanroom lifecycle management goes beyond service provision. It streamlines processes, guarantees uninterrupted operations and embraces the power of data for continuous improvement.

Sources

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Want to know more?



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