

Whitepaper

Market Conditions are Driving the Need to Re-engineer AHU Selection, Sales & Manufacturing

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How Market Conditions are Driving the Need to Re-engineer Air Handling Unit Selection, Sales & Manufacturing

Abstract:The demand for Air Handling units for new build and retrofits is set to expand dramatically over the next decade, given climate change and the need to upgrade HVAC systems in existing buildings to cope with post-pandemic air quality standards. While these two factors will drive increased demand, they will also strain the ability of AHU manufacturers to respond, given currently fragmented and siloed processes to divide sales, design, and manufacturing processes. The solution is to adopt unified, collaborative platforms (like Kinetix Air) that eliminate barriers and repetitive re-work and allow your internal teams, external partners, and even clients to work together to streamline and accelerate the end-to-end process.

The Problem: An Explosion in AHU Demand will Strain Manufacturer's Current Capabilities

Two of today's most pressing realities are converging to create a perfect storm of new requirements and increased demand that will drive increased AHU demand for the next decade. No matter which side of the climate change debate you stand on, it's inevitable that consumer demand and new legislation will drive the need for new or upgraded AHUs across new builds, retrofits, and rehabilitation. Add to that the fact that many jurisdictions are already rewriting their codes to include upgraded filtration, volume control, and monitoring for public buildings, and you have two critical vectors pushing demand for new and improved Air Handling Units.

In terms of climate change, the role played by cooling technologies is significant. According to a recent report by the UN's IEA – Environmental Programme: "The growing demand for cooling will increase global warming – from emissions of hydrofluorocarbons (HFCs) used in cooling equipment, and from CO2 and black carbon emissions from the mostly fossil fuel-based energy currently powering cooling. A transition to climate-friendly and energy-efficient cooling, however, would avoid these emissions and allow an increase in cooling access that would contribute substantially to the Sustainable Development Goals (SDGs)."¹

In an article on Sustainable Cooling, published on the World Bank website, the message on the rapidly increasing need for energy-efficient cooling is similar. "Cooling contributes to climate change by increasing demand for electricity, much of which is still generated from fossil fuels, and through leakage of refrigerants, which have a much higher global warming potential than CO2 emission. Conventional cooling devices – such as refrigerators, room air conditioners, industrial-scale chillers, and other devices – account for as much as 10% of all global greenhouse gas emissions, which is more than twice the emissions generated from aviation and maritime combined. Furthermore, if left unchecked, emissions from cooling are expected to double by 2030 and triple by 2100, driven by heatwaves, population growth, urbanization, and a growing middle class. Business-as-usual cooling generates a vicious cycle: as the world gets hotter, increased demand for cooling drives up levels of greenhouse gas emissions that, in turn, drive up temperatures and make access to cooling even more critical, all while endangering human safety and livelihoods."²

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The pandemic has also revealed another important variable driving demand for new and upgraded AHUs: harmful pathogens.

In a recent article in The Economist magazine, the explored link between AHUs and risk abatement, and the conclusion was clear. "Applied to a typical American school class of 19 pupils and a teacher, the safe time after an infected individual enters a classroom that is naturally ventilated (that is, how long before the risk of infection is unacceptably high) is 72 minutes. This period can, though, be extended in two ways. One is by mechanical ventilation of the room, which increases the safe time to 7.2 hours. The other is by everyone wearing masks. In the absence of mechanical ventilation, mask-wearing increases the safe time to eight hours. But the real benefit comes from combining these approaches. That pushes the safe time up to 80 hours—almost 14 days if a school day is six hours long. Add in intervening weekends and a class wearing masks in a schoolroom with adequate ventilation would thereby be safe for longer than the time it takes to recover from Covid-19, which is typically between one and two weeks. School transmissions would thus be rare."³

Yet another Economist article explored the cost implications of improved ventilation in schools and public buildings. "The bill for all this need not be huge. A recent study found that raising the standard of ventilation in all American elementary and secondary schools to the minimum level would cost less than 0.1% of the country's typical public spending on education. President Joe Biden's American Rescue Plan assigns \$123bn to improving school infrastructure and mentions ventilation as a priority. Other countries should follow suit."⁴

Background: The Current AHU Design Process is Siloed, Slow and Inefficient

If you currently work in the AHU industry, you probably already feel that there is something broken. With siloed processes, duplication of effort, and lack of clear lines of communication between sales, design, purchasing, cost accounting, and manufacturing, the SOP for AHU manufacturers drives inefficiencies, cost, and delays.

Manufacturers

In today's custom AHU world, designing, selling, and manufacturing an air handling unit involves numerous interrelated tasks woven together in a complex web of activities. The typical manufacturer utilizes multiple software tools to complete all tasks, whether intended for internal (various in-house departments) or external (sales representative, consulting engineer, contractor, owner) consumption.

From re-entering data to waiting for someone to email you a file or double- and triple-check design/selection/submittal documents to make sure no errors have crept in, the process is repetitive, lacks coordination, and drives time usage – thereby increasing cost. Communication between internal management, sales, engineering, purchasing, manufacturing, shipping, and service team members is ponderous, the lack of a single-source-of-truth introduces unnecessary risk, and sharing of AHU selection, designs, and drawings with the outside partners, including specifying consulting engineers, contractors, and the owners' design/project management team, can be time-consuming and challenging.

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It's clear that fragmented, inefficient workflows slow response times and increase costs. Current practices limit the volume of business each AHU manufacturer can handle, restricting their ability to take advantage of the new technological opportunities discussed earlier. Custom AHU manufacturers need a new playbook to tackle these challenges. The industry needs to adopt more streamlined business processes to allow for the option to scale up efficiently and tackle many times the volume of AHU production they could handle otherwise.

Outside Sales

Unlike the old days, outside sales reps are now busier than ever. They are forced to multitask and service multiple customers and accessories filling their multi-page line cards, meaning they can no longer spend long hours on the manufacturer's air handling units' selection, sale, and service. This leaves even less time for long emails and phone calls to resolve trivial but important and high-risk details. This new reality makes the validity and manufacturability of the representative's AHU selection and the usage of a unified, integrated cloud-based software platform ever more critical.

Solution: Unified, Collaborative AHU Manufacturing Platform

For a custom air handling unit manufacturer, unifying the various processes of selection, pricing, proposing, selling, engineering/submitting, parts purchasing, cost accounting, and servicing has long been a seemingly unattainable objective. The solution was seen as too technically complex, too computing-intensive, with too many stakeholders to bring together. In other words, out of reach.

But the evolution of cloud-based SaaS platform technology has allowed the development of such an ambitious platform for the industry. Kinetix Air allows manufacturers to unite all participants in the custom AHU manufacturing process to work collaboratively from a single-pane-of-glass.

The platform does what traditional selection software does but better, by automating performance and dimensional validations and pricing. Kinetix Content Management System simplifies the onboarding of new materials, components and accessories and allows the manufacturer's administrator to set and continuously update the rules and standards specific to the company's AHU product line – but it's what it does after the design phase that is truly revolutionary for the AHU industry.

Kinetix Air creates a virtual workshop that unifies all the once-siloed processes and replaced manual interventions and re-work from teams that could not share a common workflow in the past. Kinetix automates order entry, accelerates the creation of the submittal package, automates order release and the creation of the bill of materials, streamlines scheduling, gives production access to all the pre-production data and drawings; it can even automate the production of shipping documents and the scheduling of service orders. And at every step, Kinetix allows you to create your own reusable templates, set your own product- and business-specific rules, and give external partners and clients customized, "role-based permission" access (as required).

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With Kinetix SaaS-based architecture, it's easy to provision the help of more sales reps, more consulting engineers, etc., without investments in additional hardware or services to set up and maintain the hardware. The SaaS platform offers the ability to expand the business well beyond what the current business models allow for by taking full advantage of work-from-home models that the Covid pandemic proved to be highly efficient and desirable for all those who don't have to be on the manufacturing floor.

Return on Investment

Without considering the benefits of streamlined communications with all stakeholders, risk reduction in terms of eliminating opportunities for human error, and the capacity to take on more projects more quickly – which are substantial advantages of the platform – Kinetix Air provides strong, measurable ROI, simply in terms of the reduction of person-hours required to complete a typical single AHU project.

Time Spent Comparison Traditional vs. Kinetix

Task	AHU Selection Software	Kinetix
Selection: Component ratings, CAD drawings, datasheet, pressure drop calcs, weight calc, etc.	6hrs	1hr
Validation	2hrs	Automated
Communication	2hrs	0
Pricing	1hr	Automated
Proposal	2hrs	Automated
Order Entry	2hrs	Automated
Submittal	6hr	Automated
Order Release	2hr	Automated
Bill of Materials (BOM)	3hrs	Automated
Scheduling	1hr	1hr
Production	8 weeks	8 weeks
Shipping Order	1hr	.5 hr
Service Order	1hr	.5 hr

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By reducing the number of person-hours required to complete a typical single AHU project, Kinetix cuts design time by 50% and automates validation and pricing. It also dramatically reduces the time required through the rest of the process (order entry, submittal, BOM package, etc.), saving you more than 26 hours per AHU for an average savings of \$208K per year for a company producing 100 typical units per year.⁵

The break-even point on your investment, given the same assumptions, is only 14 units per year.

Conclusion

New business opportunities are on the horizon for AHU manufacturers. Demand for more and more efficient cooling, heating, and humidity control, as well as better ventilation, is set to expand rapidly. Today's manufacturing practices are fragmented and inefficient, and companies that address these structural inadequacies in their manufacturing process will be better positioned to take advantage of these opportunities. By unifying all phases of the sales, design, and manufacturing process in a single collaborative workflow, SaaS-based platforms like Kinetix Air can provide a significant lift in productivity, efficiency, and overall capacity, giving early adopters a massive competitive advantage.

Sources:

- 1 IEA - UN Environmental Programme, Cooling Emissions and Policy Report: Benefits of cooling efficiency and the Kigali Amendment
- 2 Worldbank.org, Four Things You Should Know About Sustainable Cooling, May 23, 2019
- 3 The Economist, Improving ventilation will help curb SARS-CoV-2, May 29, 2021
- 4 The Economist, It is time to clean up the air in Buildings, May 29, 2021
- 5 Based on a total manpower cost of \$80 per hour

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