Next Generation Teaching Tools

Classrooms from IMS

IMS Modular Classrooms provide an extensive suite of technology features to benefit the teacher, student, and district. We looked at the available automation systems and determined that we wanted to offer something better; something made specifically to benefit the classroom of tomorrow with a future-proof architecture and something extremely simple to use, yet powerful and energy efficient. This is an introduction to that system.

We started with **Ultra Quiet High Efficiency HVAC** because it's hard to be efficient if you're not comfortable. We diffuse the air supply into the classroom over its full width, creating the effect of a "radiant" heating and cooling system with almost no noise and with extremely high efficiency. Eliminating this noise source makes life easier on the teacher as well as the students. Everything has to start with being comfortable.

To this we added **High Efficiency LED Lighting** to ensure that everyone in the room has the benefit of high quality illumination. In the near future, we'll also be offering tunable white LEDs which follow the spectral content of natural sunlight throughout the day to keep Circadian Rhythms in sync with the natural world.

Dynamic Security Glass allows light to enter when needed but it also blocks unnecessary excess light in order to make monitor viewing easier and to control thermal gain, lowering air conditioning requirements. We offer both passive thermochromic, and active electrochromic glass systems depending on the needs of the customer. Electrochromic glass can reduce light transmission to 1% when switched on, eliminating the need for blinds or drapes and eliminating moving parts as well as additional surfaces to clean or dust.

A cutting edge **Unisound Presentation Audio System** allows the teacher to speak using a conversational voice while being heard much more evenly and effectively by the entire class. Without such a system, a teachers' vocal chords can get quite a workout and not all students have perfect hearing. The Unisound system projects an even field of audio to everyone, making speech far more intelligible for the entire class.

Our classrooms are designed from the ground up to be **High Speed Internet enabled**. Gigabit Ethernet and high speed wireless infrastructure provide the performance needed to deliver high definition video and audio presentations, to enable worldwide teleconferencing, to share S.T.E.M. work data, and to quickly get ahold of any information available on the Internet.

A **4K HDR High Definition Media Wall** featuring dual 75" monitors makes up the centerpiece of our classroom of tomorrow. The dual, large monitors allow for easy view-ability anywhere in the room and if a picture is worth 1000 words, an HD Video presentation is worth

considerably more. Each room is also equipped with high quality 5.1 or 7.1 channel audio to provide the best possible platform for presentation of educational videos. Apple, Android, and Unix media servers provide 4K video, screen sharing for devices such as tablets, and support for additional or custom applications or Apps, much like a smart phone. There's so much potential in this system that one paragraph only scratches the surface. Best of all this system is open to evolution as the rest of technology advances.

One of our primary goals was to make these powerful features **easy to operate** without any training. Most system functionality is one button press away and we've made good use of touch controls to present the most intuitive, most natural interface possible. A touchscreen control panel on the teacher's desk and a handheld infrared remote give the teacher control over all presentation, media, and building automation functions.

With S.T.E.M. gaining so much momentum, we decided that a **S.T.E.M. Enhanced** design was our only option and our media wall contains some considerable computing resources to aid in this goal. High definition video microscopes allow the entire class to watch the same microscope slide. Visualization software can turn math into three dimensional graphical projections. Database tools collect, record, and display students' experimental data. Any table or reference data is available at the touch of a button and visible to the whole class. The system even functions as a complex music synthesizer for teaching about sound. We make extensive use of Open Source software, adding our own extensions to integrate the functionality of the entire room. This allows for complete openness and an adaptable, future proof design with the ability to grow and evolve.

Our **efficiency optimized** design with its integrated **environmental monitoring** is something School Districts will greatly appreciate. One of the big advantages we bring is being data rich. Our system constantly monitors and records environmental conditions including temperature, humidity, solar, and CO_2 level. This real world data is vital to being able to assess that students and teachers are getting the best possible environment as well as to forecast energy consumption, and to establish consumption neutrality when paired with photovoltaic installations.

Central Energy Monitoring and Accounting of any number of rooms on any number of campuses is inherently simple thanks to open source software from IBM. Power consumption overall and for subsystems such as HVAC and lighting are monitored and recorded. This facility provides for district wide energy consumption monitoring as well as performing remote proactive diagnostics which minimize interruptions and minimize service costs.

We want your input! This short description only hits some of the high points and we're quite proud of what we have to offer but if there's any way to make our system even better for you, we would love to hear from you! We know what features we need today but tomorrow brings new innovations and needs so our modular system design is completely future proof and adaptable to accommodate whatever growth is required. **IMS** would like to invite all customers and prospective customers to tell us what it is exactly that you want in a next generation classroom presentation and automation system.