Technology in Recreation Centers

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Athletic Business Conference EXPO 2011
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ARCHITECTURE ▪ PLANNING ▪ ENGINEERING

Technology in Recreation Centers

Presented by

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2011
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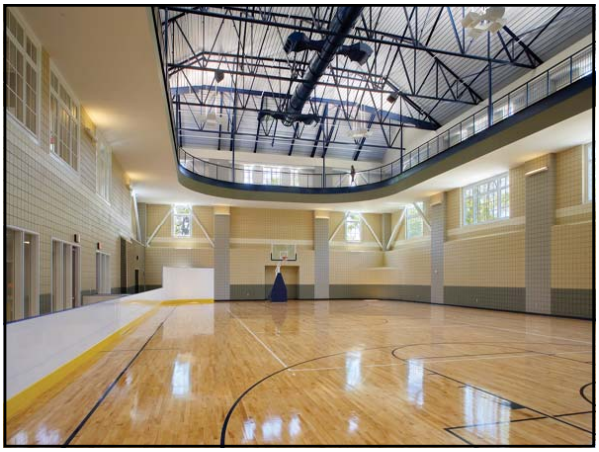
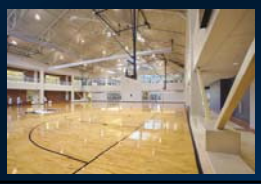


Agenda

- **Introduction / Overview**
- **Building Systems**
- **Operational Issues**
- **User Interface**
- **Questions & Comments**



What does technology mean?

Learning Objectives

- **Identify New Technologies For Your Project**
- **Allow Your Facility To Be More Environmentally Sensitive**
- **Cost Impacts Of Implementing Technology Into Your Facility**

Technology Overview

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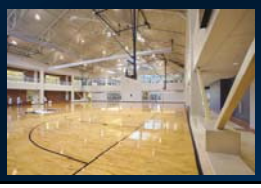


Technology Overview

Building Systems

Technologies

- Exterior Materials
- Natural Light
- Lighting Systems
- Electrical Systems
- Plumbing Systems
- Mechanical Systems
- Aquatic Centers
- Energy Recovery

Exterior Materials

- Walls & Exterior Skin
  - Climate Dependent
  - Insulation Value
  - Infiltration Factor
  - Thermal Mass

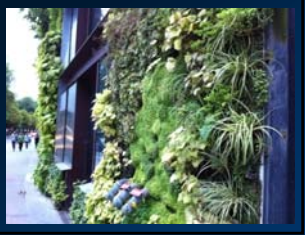
Exterior Materials

Cost of Wall System

Metal Panel ($7-10/SF)	Tilt Up Concrete	Built Up Wall	SIP – Structural Insulated Panel	ICF – Insulated Concrete Form ($20 –30/SF)

Insulation Value of Wall Systems

Exterior Materials

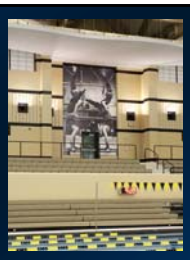


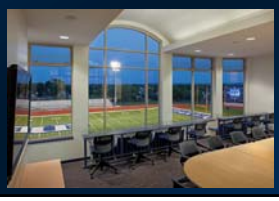
Exterior Materials

- Roofs
  - Roof Span May Determine System
  - Insulation Value
  - Largest HVAC Load
  - Reflective Roofs
  - Green Roofs

Natural Light

- **Windows**
  - **Double & Triple Pane**
  - **Exterior Sun Shades**
  - **Operable Windows**
  - **Interior Control Of Sun/Glare**
  - **Electronically Tinted Glass**



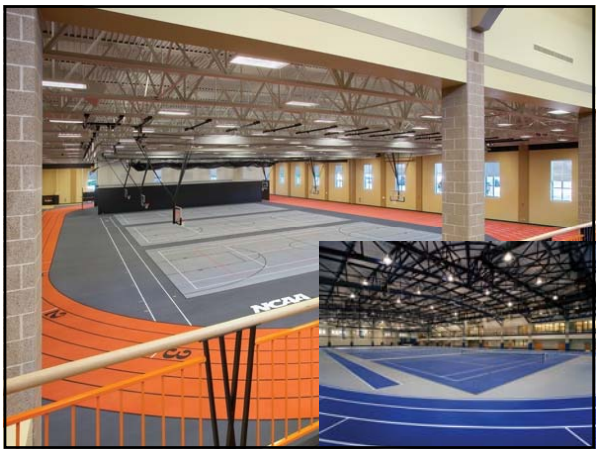


Natural Light

- **Skylights**
  - **Effective Daylight Strategy**
  - **Roof Area of 3 to 5%**
  - **Reduces Lighting Cost**
  - **Must Turn Off Lights**
    - **Photocells**
  - **Example**
    - **50,000 SF Field House**
    - **$120,000 Install Cost**
    - **$32,000 Annual Lighting Cost Savings**
  - **Look At Your Wal-Mart**

Lighting Systems

- **High Efficiency T-8 and T-5 Lamps with Electronic Ballasts**
  - **Reduce Lighting Energy by 15 to 30%**
- **Exit Signs with LED Type Lamps**
- **Lighting Controls Tied Into Building Systems**



Lighting Systems

- **Install Daylight Sensing Controls to Dim Lights During Sunny Days**
- **Install Occupancy Sensors to Automatically Turn Off Lights In Unoccupied Spaces**

Lighting Systems

- **Benefits**
  - **LEED Point**
  - **Lower Energy Cost**
  - **Longer Lamp Life**
- **Simple Operation Is Key**
  - **Significant Lamps Per Sensor (Larger Spaces)**
  - **MP Space (2,000 SF)**
  - **$175/Sensor**
  - **2 Year Payback**

Lighting Systems

- LED Lighting Systems
- Benefits
  - LEED Point
  - Lower Energy Cost
  - Less Fixture Replacement
  - Dimmable
- Large Scale Space
- Evolving Technology
- Color Spectrum Must Be Addressed

Electrical Systems

- Co-Generation Systems
- Solar Array
  - PV Array
  - East/West Orientation Preferred
  - Payback Analysis
- Wind Energy
  - Location Dependent
- Renewable Energy Credits

Plumbing Systems

- Proximity Sensor Activated
- Low/Dual Flow Fixtures
- No Flow Fixtures
  - Waterless Urinals
  - Composting Toilets
- Graywater Flushing Systems
- Rainwater Capture
- Water Bottle Fill Station
- Solar Tubes

Mechanical Systems

- Geothermal Systems
  - Central Plant
  - At Each Piece of Equipment
- Temperature Control & Monitoring Systems
  - BAC Net Capability
  - Remote Monitoring
- Demand Ventilation Systems
  - CO2 Sensors
  - High Occupancy Areas

Aquatic Centers

- UV Water Treatment (Less Chemicals)
- Regenerative Filtration Systems (Less Water)
- Variable Pumping Systems – VFD's
- Air Supply & Exhaust At Pool Level
- Chemical System, Monitoring Air Quality

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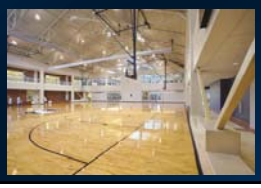


Technology Overview

- Access & Security Control
- Passive Recreation
- Audio/Visual Systems

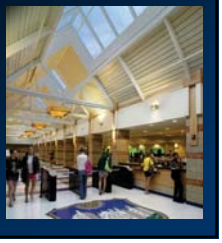
Operational Issues

Technologies

- Energy Recovery / Savings
- User Expectations

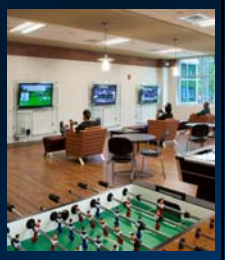
Access & Security Control

- All In One Campus ID
- Access Control
  - Card Swipe
  - Thumb Scanner
  - Reduced Staffing Levels
- Electronic Door Hardware
  - Digital Systems, Less Costly
- Video Surveillance Systems
- Remote Monitoring



Passive Recreation

- Support Video Gaming
  - Designated Area
  - Infrastructure/Equipment
  - Built In or Check Out
- On Line Gaming for Large Groups
  - Power & Data
- Electronic Resources
  - Reference for Health, Fitness & Nutrition

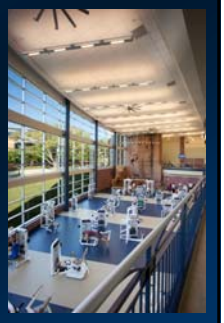


Audio / Visual Systems

- Individual Preferences of Users
- Flat Screens Comparable to Video Projectors
- Audio Systems Tailored to Use:
  - Multipurpose Room
  - Aquatics
- Staff Communication System
- Prepare for Change Now

Energy Recovery / Savings

- Heat Recovery on Exhaust Air Streams
  - Locker Rooms
  - Aquatic Centers
  - Large Gymnasiums
- Large Ceiling Fans to Move Air
- High Efficiency Heating Water Boilers (98%)



Energy Recovery / Savings

- **Vending Machines Operated to Maintain Product At Correct Temperature**
- **Refrigerated Water Fountains on Time Clocks to Match Occupancy Schedule**
- **Install NEMA Premium Efficiency Motors**

User Expectations

- **Recycling Program**
- **Electric Vehicle Recharge Station**
- **Wireless Access Points**
  - **High Speed Connections**
- **Cell Phone Reception**
- **Recharging Stations**

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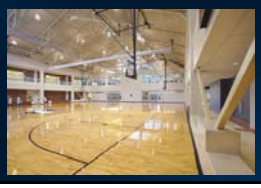
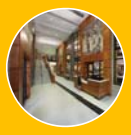


Technology Overview

- Equipment Requirements
- Web Based Programs
- Accommodate Variety of Devices
- Social Network/Areas



User Interface

Technologies

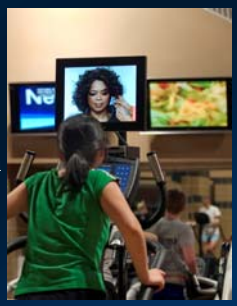
AB Trade Show Equipment

AB Trade Show Equipment

New Technology

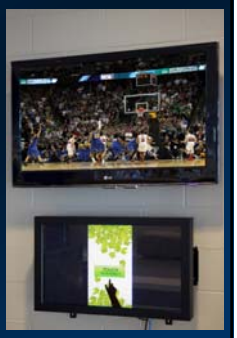
Equipment Requirements

- **Self Powered Cardio Equipment**
- **Data & Network Connections**
- **Wireless Communication to Surrounding Devices**
- **Equipment Size Is Increasing**



Web Based Programs - Scheduling

- **Communication Platform to Your Clients**
- **Person/Space Dedicated to Updating Information**
  - **Server Location or Cloud**
- **Remote Access, Preferred**
- **On-Site Access, Convenience**



Personalized Fitness Programs

Web Based Programs – Personal Fitness

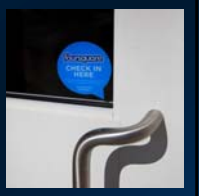
- **Fastest Growing Segments of Use**
- **Track Each Client**
  - **Wireless**
  - **Key Card**
  - **Personal Updates**
- **Equipment Has Technology Imbedded**
- **Personalized Workouts & Assessments**

Accommodate Variety of Devices

- Technology Keeps Evolving
- Flexibility In Cabling Systems
- Adaptability Of Future Systems
  - Data Closets & Server Rooms
- Number of Devices Per User
  - Connectivity to Equipment
  - Personal Choice In Entertainment

Social Network / Areas

- Collaborative Society
  - Social Aspects
- Group Interaction Space
  - Accommodate Multiple Users
  - Plug & Play Their Devices
- Power to Serve Devices
- Network/Web Connectivity
  - Wired and Wireless
- Beverage/Food Service



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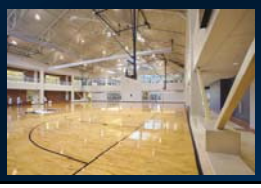

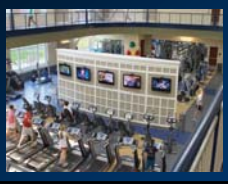

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