

DACUM Research Chart for High Performance Building Operations Professional

Produced for



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April 7-8, 2016

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April 7-8, 2016

DUTIES	TASKS								
A. Analyze Building Operations	A.1 Review building documentation (e.g., SOPs, BMS, MEP)	A.2 Perform Level I site assessment	A.3 Interview facility operators	A.4 Determine equipment performance (e.g., temperature, pressure, schedules)	A.5 Benchmark building performance	A.6 Develop building performance goals (e.g., energy, IEQ, water)	A.7 Identify environmental requirements (e.g., temperature, lighting, ventilation)	A.8 Trend service calls	A.9 Trend utility usage and cost
	A.10 Trend building occupancy/production	A.11 Review capital improvement plan							
B. Maintain Building Operating Efficiency	B.1 Identify BAS discrepancies	B.2 Check for equipment override conditions	B.3 Calibrate equipment controls	B.4 Coordinate repair of deficient equipment	B.5 Calibrate air distribution systems (e.g., economizers, VAV, air handlers)	B.6 Calibrate central cooling systems (e.g., temperature resets, flow, pressure)	B.7 Calibrate central heating systems (e.g., temperature resets, flow, pressure)	B.8 Calibrate evaporative cooling systems (e.g., cooling towers, filtration, free cooling)	B.9 Optimize pump performance
	B.10 Review VFD settings	B.11 Manage preventive maintenance plan	B.12 Manage predictive maintenance plan	B.13 Optimize equipment operating schedules	B.14 Optimize operating set points	B.15 Develop key performance indicators (e.g., reset schedule, KW/sq. ft., peak load)	B.16 Conduct regular building performance meetings		
C. Audit Building Operational Performance*	C.1 Review maintenance and repair log	C.2 Perform utility bill audit (e.g., electric, gas, water)	C.3 Perform disaggregation of utilities (e.g., electric, gas, water)	C.4 Perform facility condition assessment	C.5 Perform Energy Star® review	C.6 Perform green building certification review	C.7 Review building occupancy plan	C.8 Quantify greenhouse gas emissions	C.9 Perform waste audit (e.g., hazardous, landfill, recycling)
	C.10 Perform lighting audit	C.11 Perform indoor air quality audit	C.12 Audit equipment sequence of operations	C.13 Audit building/equipment operating procedures	C.14 Review building occupant survey results	C.15 Review system alarm history	C.16 Test combustion equipment efficiencies	C.17 Perform water treatment audit	C.18 Determine need for energy consultant
	C.19 Perform life cycle analysis								
D. Create High Performance Building Plans	D.1 Obtain payback analysis	D.2 Modify capital improvement plan	D.3 Prioritize audit recommendations	D.4 Develop formal energy policy	D.5 Develop energy plan	D.6 Determine load shedding opportunities	D.7 Develop zero waste plan	D.8 Optimize SOPs	D.9 Update maintenance & repair plan
	D.10 Optimize equipment sequence of operations	D.11 Develop operational & performance metrics	D.12 Identify utility rebates	D.13 Develop commissioning plan	D.14 Develop building occupancy policy	D.15 Identify alternative energy opportunities	D.16 Develop zero net energy plan	D.17 Develop control system plan (e.g., enhanced data points, trends, data analysis)	D.18 Develop system integration plan
	D.19 Develop tenant engagement programs	D.20 Develop water conservation plan	D.21 Review predictive maintenance plan	D.22 Develop measurement & verification policy	D.23 Develop proposals for management				

* Audit reports include recommendations for improvement

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DUTIES	TASKS								
E. Implement Continuous Improvement	E.1 Present facility improvement plan to management	E.2 Manage vendor contracts (e.g., RFP, proposals, awards)	E.3 Review engineering budget (e.g., operating, capital)	E.4 Perform routine inspections (e.g., equipment, systems, controls)	E.5 Implement high performance energy plan	E.6 Implement load shedding measures	E.7 Implement zero waste plan	E.8 Implement commissioning plan	E.9 Adjust equipment settings per occupancy plan
	E.10 Implement zero net energy plan	E.11 Implement system integration plan	E.12 Optimize control system (e.g., enhance data points, trends, data analysis)	E.13 Implement predictive maintenance plan	E.14 Review measurement & verification plan				
F. Manage Building Systems	F.1 Track utility costs & consumption	F.2 Evaluate energy savings	F.3 Track equipment performance	F.4 Track service calls	F.5 Determine need for systems balance	F.6 Track maintenance and repairs	F.7 Track predictive maintenance	F.8 Review measurement & verification reports	F.9 Monitor staff performance (e.g., service calls, preventive maintenance, rounds)
G. Perform Administrative Tasks	G.1 Review test equipment and tools	G.2 Manage operating budget	G.3 Prepare monthly reports for management (e.g., energy, labor, activity)	G.4 Manage building energy efficiency standards	G.5 Research new technology	G.6 Establish staff performance goals	G.7 Develop green procurement policy	G.8 Facilitate energy efficiency meetings (e.g., staff, management, vendors)	G.9 Develop staff training program
	G.10 Assess vendor's high performance qualifications								
H. Participate in Professional Development Activities	H.1 Develop staff succession plan	H.2 Conduct staff evaluations	H.3 Conduct high performance job training	H.4 Facilitate problem solving meetings	H.5 Identify staff professional development activities	H.6 Develop vendor shadowing program	H.7 Develop staff training on new equipment technologies	H.8 Create employee engagement programs	H.9 Participate in professional organizations
	H.10 Participate in conferences and trade shows	H.11 Participate in code update training (e.g., energy efficiency, building codes, local ordinances)	H.12 Share best practices (e.g., peer-to-peer, online, conferences)	H.13 Obtain professional certifications (e.g., CXA, LEED, BOC)	H.14 Participate in continuing education classes				

General Knowledge and Skills

Knowledge:

Root cause analysis
Basic algebra
Basic geometry
Fluid dynamics
Thermodynamics
Mechanical systems
Lighting systems
Building construction
Systems thinking
HVAC cycle
DDC controls
Basic finance
Real estate finance
Insurance & liability
Codes and standards
Air & water balance
Psychrometrics
Plumbing systems
Electrical systems
Design intent
Building loads
Building science
Engineering ethics
Sustainability principles
Environmental impact
Available certifications

Skills:

Communication
Tool operation
Report writing
Blueprint reading
System diagrams
Single line diagrams
Flow charting
Troubleshooting
Analytical
Leadership
Negotiation
Prioritizing
Selling
Presentation
Conflict resolution
Mentoring
Managerial
Problem solving

Behaviors

Team player
Accountable
Confident
Multitasker
Analytical
Persistent
Punctual
Trainable
Passionate
Open minded
Physically fit
Innovative
Knowledgeable
Able to follow directions
Inquisitive
Precise
Safety oriented
Mechanically inclined
Self starter
Forward thinking
Solution driven

Acronyms

VFD Variable Frequency Drive
PPE Personal Protective Equipment
LED Light Emitting Diode
RFP Request for Proposal
SOP Standard Operating Procedure
BMS Building Management System
PM Preventive Maintenance
MEP Mechanical Electrical Plumbing
IEQ Indoor Environmental Quality
BAS Building Automation System
DDC Direct Digital Controls
CXA Certified Commissioning Authority
LEED Leadership in Energy & Environmental Design
BOC Building Operator Certification

Tools, Equipment, Supplies and Materials

Light meter
pH meter
Tachometer
Computer
Calculator
Basic hand tools
Digital camera
Infrared camera
PPE
Ladders
Basic office supplies
Megger
Multimeter
Cell phone
Internet/Intranet
Flash drives
Flashlights
Carbon dioxide meter
Anemometer
Manometer
Power meter
Temperature meter
Flow hood
Oxygen sensor
Data logger
Combustion analyzer
Building automation system
Lockout/tagout tags
Man lifts
Particulate counter
Water quality testing equipment
Software:
* HOBO
* Universal Translator
* Microsoft Office
* Microsoft Project
* DOE programs
* Visio
* Energy Plus
Network access to:
* BAS
* Tenant interface
* PM program
* Work order program
* Energy dashboard
* Google Docs
* File sharing
Vibration analysis
Ultrasonic microphone
Ultrasonic meter

Future Trends and Concerns

Trend toward:
* zero net energy
* zero waste
* on site energy generation
* use of direct digital controls
* carbon footprint reduction
* lighting controls
* big data/Internet of things
* building certifications
* variable refrigerant flow
* water conservation
* increased occupancy density
* consolidating data centers
* sub metering
* electric vehicle charging stations
* onsite energy shortage
* micro grids
* utility demand response
* smart meters
* wireless systems
* carbon dioxide monitoring
* electronic data gathering
* integration of systems
Proliferation of data centers
Cloud data storage
Workforce shortages
LED lighting