Biography

Dr. Sun obtained his bachelor and master degrees in thermal energy and power from Xi'an Jiaotong University (XJTU) and in refrigeration and cryogenics from Hua Zhong University of Science and Technology (HUST) in 2003 and 2006 respectively, and he received his PhD degree in building services engineering from the Hong Kong Polytechnic University in 2010. Before he joined in City University of Hong Kong in 2014, he was a postdoctoral research fellow at the Department of Building Services Engineering, the Hong Kong Polytechnic University.

Dr. Sun's current research focuses on HVAC, building energy efficiency, zero energy building and building integration with smart grid. One of his research aims is to improve building energy efficiency through system design and control optimizations.

Employment

Division of Building Science and Technology
City University of Hong Kong
17 Feb 2014 → present

Grants

Research output

A robust design of nearly zero energy building systems considering performance degradation and maintenance

Response-surface-model-based system sizing for Nearly/Net zero energy buildings under uncertainty
Scopus citations: 2

Self-assembly synthesis of silver nanowires/ graphene nanocomposite and its effects on the performance of electrically conductive adhesive

A top-down control method of nZEBs for performance optimization at nZEB-cluster-level

A collaborative control optimization of grid-connected net zero energy buildings for performance improvements at building group level
Fan, C., Huang, G. & Sun, Y., 8 Sep 2018, In : Energy. 164, p. 536-549

Discovering gradual patterns in building operations for improving building energy efficiency

Investigation of maximum cooling loss in a piping network using Bayesian Markov Chain Monte Carlo method

Uncertainty-based life-cycle analysis of near-zero energy buildings for performance improvements
Building-group-level performance evaluations of net zero energy buildings with non-collaborative controls

Event-driven optimal control of central air-conditioning systems: Event-space establishment

A new multiplexed optimization with enhanced performance for complex air conditioning systems

Standby energy use and saving potentials associated with occupant behavior of chinese rural homes

Development of a simplified resistance and capacitance (RC)-network model for pipe-embedded concrete radiant floors
Li, A., Sun, Y. & Xu, X., 1 Sep 2017, In : Energy and Buildings. 150, p. 353-375

Optimization design and experimental study of thermoelectric dehumidifier

Modeling energy consumption in residential buildings: A bottom-up analysis based on occupant behavior pattern clustering and stochastic simulation

確定零能耗建築中各設備系統大小的方法及裝置
SUN, Y. & CHAI, J., 4 Jul 2017, (Accepted/In press/Filed) Priority No. 201710537031.4

香港办公建築暖通空调系统的优化控制
DU, J., TSE, C. F. N., CHAN, Y. C. & SUN, Y., Jul 2017

Recent Developments in HVAC System Control and Building Demand Management

Event-driven optimization of complex HVAC systems

基于事件驱动的空调系统实时优化控制
WANG, J., HUANG, G. & SUN, Y., Nov 2016

A study on thermoelectric technology application in net zero energy buildings

A GA-based system sizing method for net-zero energy buildings considering multi-criteria performance requirements under parameter uncertainties

Performance evaluation of conventional demand response at building-group-level under different electricity pricings
Performance comparisons of two system sizing approaches for net zero energy building clusters under uncertainties

A study on pipe-embedded wall integrated with ground source-coupled heat exchanger for enhanced building energy efficiency in diverse climate regions
Li, A., XU, X. & Sun, Y., 1 Jun 2016, In : Energy and Buildings. 121, p. 139-151Scopus citations: 10

Optimal Control of Complex HVAC Systems: Event-driven or Time-driven Optimization?
WANG, J., HUANG, G. & SUN, Y., 22 May 2016

Initial ratio optimization for the ejector cooling system with thermal pumping effect (ECSTPE)

A GA-based coordinated demand response control for building group level peak demand limiting with benefits to grid power balance
Gao, D. & Sun, Y., 1 Jan 2016, In : Energy and Buildings. 110, p. 31-40Scopus citations: 8

A multi-criterion renewable energy system design optimization for net zero energy buildings under uncertainties

Development of a simplified heat transfer model of hollow blocks by using finite element method in frequency domain

A robust demand response control of commercial buildings for smart grid under load prediction uncertainty

Robustness analysis of chiller sequencing control

A multi-criteria system design optimization for net zero energy buildings under uncertainties
Sun, Y., Huang, P. & Huang, G., 15 Jun 2015, In : Energy and Buildings. 97, p. 196-204 5800Scopus citations: 30

Optimal scheduling of buildings with energy generation and thermal energy storage under dynamic electricity pricing using mixed-integer nonlinear programming

Sensitivity analysis of macro-parameters in the system design of net zero energy building

Stochastic chiller sequencing control

Uncertainty analysis for chiller sequencing control

Life-cycle cost benefit analysis and optimal design of small scale active storage system for building demand limiting

An interactive building power demand management strategy for facilitating smart grid optimization
Uncertainty impacts on reliability and energy-efficiency of chiller sequencing control

Multiplexed optimization for complex air conditioning systems

Sensitivity and uncertainty analysis of cooling water control strategies

Sensitivity and uncertainty analysis of measurements in outdoor airflow control strategies

Building instantaneous cooling load fused measurement: Multiple-sensor-based fusion versus chiller-model-based fusion
Huang, G., Sun, Y. & Wang, S., May 2013, In : Building Services Engineering Research and Technology. 34, 2, p. 177-194

An online adaptive optimal control strategy for complex building chilled water systems involving intermediate heat exchangers

An optimal control strategy with enhanced robustness for air-conditioning systems considering model and measurement uncertainties

Development and validation of a simplified online cooling load prediction strategy for a super high-rise building in Hong Kong

Energy performance enhancement of Hong Kong International Airport through chilled water system integration and control optimization

In situ performance comparison and evaluation of three chiller sequencing control strategies in a super high-rise building

Peak load shifting control using different cold thermal energy storage facilities in commercial buildings: A review

A study of pre-cooling impacts on peak demand limiting in commercial buildings
Sun, Y., Wang, S., Xiao, F. & Huang, G., 1 Dec 2012, In : HVAC and R Research. 18, 6, p. 1098-1111Scopus citations: 7

Development and In-situ validation of a multi-zone demand-controlled ventilation strategy using a limited number of sensors

Diagnosis of the low temperature difference syndrome in the chilled water system of a super high-rise building: A case study

A fault-tolerant and energy efficient control strategy for primary-secondary chilled water systems in buildings
Fusion of redundant measurements for enhancing the reliability of total cooling load based chiller sequencing control

Energy performance and optimal control of air-conditioned buildings with envelopes enhanced by phase change materials

Online optimal ventilation control of building air-conditioning systems

Online optimal control strategies for multiple-chiller systems

A demand limiting strategy for maximizing monthly cost savings of commercial buildings

Model-based optimal start control strategy for multi-chiller plants in commercial buildings

Online sensor fault diagnosis for robust chiller sequencing control

Chiller sequencing control with enhanced robustness for energy efficient operation

A data fusion scheme for building automation systems of building central chilling plants

Application of data fusion and FDD for improving the performance of chiller sequencing control

Robust chiller sequencing control for central chilling plant

Enhancing the reliability of chiller control using fused measurement of building cooling load