

Yongjun SUN

Division of Building Science and Technology

Visiting address:

MMW-5424

Email: yongjsun@cityu.edu.hk

Phone: +852 34422672



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 control of nZEBs for performance optimization at cluster level under demand prediction uncertainty

Huang, P. & Sun, Y., Apr 2019, In : Renewable Energy. 134, p. 215-227

A collaborative control optimization of grid-connected net zero energy buildings for performance improvements at building group level

Fan, C., Huang, G. & Sun, Y., 1 Dec 2018, In : Energy. 164, p. 536-549

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

Huang, P., Huang, G. & Sun, Y., 15 Nov 2018, In : Energy. 163, p. 905-919

A clustering based grouping method of nearly zero energy buildings for performance improvements

Huang, P. & Sun, Y., 3 Nov 2018, In : Applied Energy. 235, p. 43-55

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

Zhang, S., Sun, Y., Cheng, Y., Huang, P., Oladokun, M. O. & Lin, Z., 15 Oct 2018, In : Applied Energy. 228, p. 1020-1031
Scopus citations: 8

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

Xu, T., Chen, J., Yuan, W., Liu, Y., Sun, Y., Wu, H. & Zhou, X., Oct 2018, In : Materials. 11, 10, 2028

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

Huang, P., Wu, H., Huang, G. & Sun, Y., 15 Sep 2018, In : Energy. 159, p. 891-904
159Scopus citations: 3

Discovering gradual patterns in building operations for improving building energy efficiency

Fan, C., Sun, Y., Shan, K., Xiao, F. & Wang, J., 15 Aug 2018, In : Applied Energy. 224, p. 116-123

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

Huang, P., Augenbroe, G., Huang, G. & Sun, Y., 25 Jun 2018, In : Journal of Building Performance Simulation. 12, 2, p. 117-132 16 p.

Uncertainty-based life-cycle analysis of near-zero energy buildings for performance improvements

Huang, P., Huang, G. & Sun, Y., 1 Mar 2018, In : Applied Energy. 213, p. 486-498 Scopus citations: 11

Building-group-level performance evaluations of net zero energy buildings with non-collaborative controls

Sun, Y., Huang, G., Xu, X. & Lai, A. C., 15 Feb 2018, In : Applied Energy. 212, p. 565-576 Scopus citations: 8

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

WANG, J., JIA, Q., HUANG, G. & SUN, Y., 2018, In : Science and Technology for the Built Environment. 24, 8, p. 839-849 Scopus citations: 4

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

Chen, J. & Sun, Y., 1 Dec 2017, In : Energy and Buildings. 156, p. 85-95 Scopus citations: 1

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

Yu, Z. (., Hu, B., Sun, Y., Li, A., Li, J. & Zhang, G., 1 Nov 2017, In : Energy and Buildings. 154, p. 295-304 Scopus citations : 1

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

Yao, Y., Sun, Y., Sun, D., Sang, C., Sun, M., Shen, L. & Chen, H., 1 Aug 2017, In : Applied Thermal Engineering. 123, p. 820-829 Scopus citations: 4

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

Diao, L., Sun, Y., Chen, Z. & Chen, J., 15 Jul 2017, In : Energy and Buildings. 147, p. 47-66 Scopus citations: 16

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

香港办公建筑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

SUN, Y. & HUANG, G., Mar 2017, Springer.

Event-driven optimization of complex HVAC systems

WANG, J., HUANG, G., SUN, Y. & Liu, X., 1 Dec 2016, In : Energy and Buildings. 133, p. 79-87 8 p. Scopus citations: 12

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

Shen, L., Pu, X., Sun, Y. & Chen, J., 15 Oct 2016, In : Energy. 113, p. 9-24 Scopus citations: 18

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

Yu, Z. (., Chen, J., Sun, Y. & Zhang, G., 1 Oct 2016, In : Energy and Buildings. 129, p. 524-534Scopus citations: 8

Performance evaluation of conventional demand response at building-group-level under different electricity pricings

Shen, L., Li, Z. & Sun, Y., 15 Sep 2016, In : Energy and Buildings. 128, p. 143-154Scopus citations: 9

Performance comparisons of two system sizing approaches for net zero energy building clusters under uncertainties

Shen, L. & Sun, Y., 1 Sep 2016, In : Energy and Buildings. 127, p. 10-21Scopus citations: 6

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)

He, Y., Sun, Y., Zhang, S., Lyu, Y. & Chen, G., 1 Apr 2016, In : Energy Conversion and Management. 113, p. 281-289Scopus citations: 5

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: 10

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

Zhang, S., Huang, P. & Sun, Y., 1 Jan 2016, In : Energy. 94, p. 654-665Scopus citations: 35

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

Li, A., Xu, X., Xie, J. & Sun, Y., 1 Jan 2016, In : Energy and Buildings. 111, p. 76-86Scopus citations: 3

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

Gao, D., Sun, Y. & Lu, Y., 15 Dec 2015, In : Energy. 93, p. 275-283Scopus citations: 27

Robustness analysis of chiller sequencing control

Liao, Y., Sun, Y. & Huang, G., Oct 2015, In : Energy Conversion and Management. 103, p. 180-190Scopus citations: 10

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. 196-204Scopus citations: 34

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

Lu, Y., Wang, S., Sun, Y. & Yan, C., 1 Jun 2015, In : Applied Energy. 147, p. 49-58Scopus citations: 54

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

Sun, Y., Jan 2015, In : Energy and Buildings. 86, p. 464-477Scopus citations: 25

Stochastic chiller sequencing control

Li, Z., Huang, G. & Sun, Y., Dec 2014, In : Energy and Buildings. 84, p. 203-213Scopus citations: 10

Uncertainty analysis for chiller sequencing control

Liao, Y., Huang, G., Sun, Y. & Zhang, L., Dec 2014, In : Energy and Buildings. 85, p. 187-198Scopus citations: 12

Life-cycle cost benefit analysis and optimal design of small scale active storage system for building demand limiting
Cui, B., Wang, S. & Sun, Y., 14 Aug 2014, In : *Energy*. 73, p. 787-800Scopus citations: 10

An interactive building power demand management strategy for facilitating smart grid optimization
Xue, X., Wang, S., Sun, Y. & Xiao, F., 1 Mar 2014, In : *Applied Energy*. 116, p. 297-310Scopus citations: 70

Uncertainty impacts on reliability and energy-efficiency of chiller sequencing control
Liao, Y., Huang, G. & Sun, Y., 2014, *Indoor Air 2014 - 13th International Conference on Indoor Air Quality and Climate*. International Society of Indoor Air Quality and Climate, p. 599-606

Multiplexed optimization for complex air conditioning systems
Sun, Y., Huang, G., Li, Z. & Wang, S., Jul 2013, In : *Building and Environment*. 65, p. 99-108Scopus citations: 18

Sensitivity and uncertainty analysis of cooling water control strategies
Shan, K., Wang, S., Xiao, F. & Sun, Y., 19 May 2013, In : *HVAC and R Research*. 19, 4, p. 435-443Scopus citations: 4

Sensitivity and uncertainty analysis of measurements in outdoor airflow control strategies
Shan, K., Wang, S., Xiao, F. & Sun, Y., 19 May 2013, In : *HVAC and R Research*. 19, 4, p. 423-434Scopus citations: 2

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
Wang, S., Gao, D., Sun, Y. & Xiao, F., 2013, In : *Applied Thermal Engineering*. 50, 1, p. 614-628Scopus citations: 23

An optimal control strategy with enhanced robustness for air-conditioning systems considering model and measurement uncertainties
Zhu, N., Shan, K., Wang, S. & Sun, Y., 2013, In : *Energy and Buildings*. 67, p. 540-550Scopus citations: 2

Development and validation of a simplified online cooling load prediction strategy for a super high-rise building in Hong Kong
Sun, Y., Wang, S. & Xiao, F., 2013, In : *Energy Conversion and Management*. 68, p. 20-27Scopus citations: 24

Energy performance enhancement of Hong Kong International Airport through chilled water system integration and control optimization
Sun, Y., Wang, S., Cui, B. & Yim, M. S., 2013, In : *Applied Thermal Engineering*. 60, 1-2, p. 303-315Scopus citations: 6

In situ performance comparison and evaluation of three chiller sequencing control strategies in a super high-rise building
Sun, Y., Wang, S. & Xiao, F., 2013, In : *Energy and Buildings*. 61, p. 333-343Scopus citations: 18

Peak load shifting control using different cold thermal energy storage facilities in commercial buildings: A review
Sun, Y., Wang, S., Xiao, F. & Gao, D., 2013, In : *Energy Conversion and Management*. 71, p. 101-114Scopus citations: 95

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
Shan, K., Sun, Y., Wang, S. & Yan, C., Nov 2012, In : *Building and Environment*. 57, p. 28-37Scopus citations: 21

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

Gao, D., Wang, S., Sun, Y. & Xiao, F., Oct 2012, In : Applied Energy. 98, p. 597-606Scopus citations: 10

A fault-tolerant and energy efficient control strategy for primary-secondary chilled water systems in buildings

Gao, D., Wang, S. & Sun, Y., Dec 2011, In : Energy and Buildings. 43, 12, p. 3646-3656Scopus citations: 17

Fusion of redundant measurements for enhancing the reliability of total cooling load based chiller sequencing control

Huang, G., Sun, Y. & Li, P., Nov 2011, In : Automation in Construction. 20, 7, p. 789-798Scopus citations: 11

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

Zhu, N., Wang, S., Ma, Z. & Sun, Y., Sep 2011, In : Energy Conversion and Management. 52, 10, p. 3197-3205Scopus citations: 57

Online optimal ventilation control of building air-conditioning systems

Wang, S., Zhongwei, S., Yongjun, S. & Na, Z., Feb 2011, In : Indoor and Built Environment. 20, 1, p. 129-136Scopus citations: 13

Online optimal control strategies for multiple-chiller systems

Wang, S., Sun, Y. & Ma, Z., Dec 2010, In : Huagong Xuebao/CIESC Journal. 61, SUPPL. 2, p. 86-92

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

Sun, Y., Wang, S. & Huang, G., Nov 2010, In : Energy and Buildings. 42, 11, p. 2219-2230Scopus citations: 29

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

Sun, Y., Wang, S. & Huang, G., May 2010, In : Building Services Engineering Research and Technology. 31, 2, p. 113-129Scopus citations: 7

Online sensor fault diagnosis for robust chiller sequencing control

Sun, Y., Wang, S. & Huang, G., Mar 2010, In : International Journal of Thermal Sciences. 49, 3, p. 589-602Scopus citations: 17

Chiller sequencing control with enhanced robustness for energy efficient operation

Sun, Y., Wang, S. & Huang, G., Nov 2009, In : Energy and Buildings. 41, 11, p. 1246-1255Scopus citations: 28

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

Huang, G., Wang, S., Xiao, F. & Sun, Y., May 2009, In : Automation in Construction. 18, 3, p. 302-309Scopus citations: 22

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

Wang, S., Sun, Y., Huang, G. & Xiao, F., 2009, *Proceedings - 6th International Symposium on Heating, Ventilating and Air Conditioning, ISHVAC 2009*. Vol. 3, p. 2000-2007

Robust chiller sequencing control for central chilling plant

Huang, G., Sun, Y. & Wang, S., 2009, *Proceedings of 2009 7th Asian Control Conference, ASCC 2009*. p. 660-665 5276392Scopus citations: 1

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

Huang, G., Wang, S. & Sun, Y., Nov 2008, In : HVAC and R Research. 14, 6, p. 941-958Scopus citations: 18