



ACREX India 2016: a Ringside View

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Technical Editor, *ISHRAE Journal*

ACREX
India 2016

ACREX India celebrates the spirit of the Indian HVAC&R industry. It brings together, for three long days every year, the who's who of the industry from India and abroad. It showcases the innovations, technical expertise and manufacturing prowess of the industry, and provides a networking platform for professionals. Recognized as the largest exhibition of air conditioning, ventilation, refrigeration and building services in South Asia and the sixth largest in the world, it is more than an exhibition. It is a continuum of events that overwhelm the senses and widen the mental horizon of the participant. And it is a valuable brand.

From its humble but ambitious beginning at Bengaluru in 1990, ACREX has become the flagship event of ISHRAE that rotates annually between Mumbai, Delhi and Bengaluru. The 17th edition of ACREX India was held

from February 25 to 27 at Bombay Convention and Exhibition Centre, Mumbai. The theme, quite appropriately, was *Make in India - Infinite Opportunities for HVAC&R Industry*.



David Underwood, ASHRAE President, lighting the lamp of knowledge at the inauguration as (L to R): K. Ramachandran (ISHRAE National President), Pankaj Dharkar (National Chair, ACREX India 2016) and other dignitaries look on

The event saw all the major companies in the industry participate, reflecting their optimism in its future. Overseas companies also participated in large numbers, in recognition of India as the fastest growing major economy in the world.

There were several concurrent events like workshops and interactive panel discussions. The evenings saw glittering events: the Curtain Raiser, ACREX Awards Night and Danfoss Hall of Fame Night. And there were student events like aQuest (covered in *Student Corner* in the current issue) and National Student Design Competition. ISHRAE presented its position paper on Indoor Environment Quality to the government of India.

continued on page 22

continued from page 20

The Exhibition



A. C. Humidin exhibited its dehumidifiers, energy recovery wheels, TFA units and the newly launched centrifugal fan with aerofoil design.



Advance Valves displayed its range of specialised valves for air conditioning and other applications including balancing valves, which it pioneered in India.



ALP Aeroflex exhibited its EPDM and nitrile insulation products, including sheets, tubes and accessories for HVAC&R applications.

The Curtain Raiser

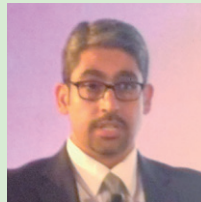
On the eve of inauguration of ACREX India 2016, a Curtain Raiser was held at ITC Maratha on February 24 in the presence of a large number of distinguished professionals from the industry. The theme was 'Sustainabiz: Sustainability Makes Business Sense'. Carrier Toshiba was the event partner. ACREX 2016 Chair Pankaj Dharkar welcomed the delegates and thanked the partners for their support. He acknowledged the international guests present. ISHRAE President K. Ramachandran welcomed the participants. Chirag Bajjal, Director, Commercial Sales, Climate Controls & Security, India, UTC made a presentation on the green building scenario.



Pankaj Dharkar



K. Ramachandran



Chirag Bajjal

Awards were presented for contributions to ISHRAE activities. Sudhir Sinha, Chair, Honours & Awards Committee of ISHRAE, along with K. Ramachandran and Sachin Maheshwari, President-Elect, ISHRAE presented the awards.

H. M. Jhangiani Journal Paper Awards were presented



Ketan Soni



Melissa Smith



Panel discussion in progress

for the two best articles that appeared in the *Journal* during 2014. Ketan Soni of Blue Star and Melissa Smith of Banduksmith Studio were the recipients.

Puneet Desai, Regional Manager, Infrastructure and Green Initiatives, Infosys presented a case study titled 'That's Environmental Sustainability Making Business Sense @Infosys'. He expressed the resolve of Infosys to become carbon neutral by 2018. Rahul Garg of United Technologies spoke on 'Sustainability & Business Impact', with a case study on plant room retrofit at Taj Palace, Delhi.

The high point of the evening was a panel discussion on 'Green and Sustainable Buildings'. Rahul Kadri, Principal Architect and Partner, I. M. Kadri Architects was the moderator. The panelists were Pankaj Dharkar, MD, Pankaj Dharkar Associates; Rajan Rawal, Executive Director, Centre for Advanced Research in Building Science & Energy (CARBSE); P. R. P. Ramakrishnan, Area Director of Engineering – South Asia, Marriott International; Arun Bhatia, MD, Climate Controls & Security, India, UTC; David Underwood, President, ASHRAE; and Anuj Agarwal, Head, Infrastructure Management Services Group, ICICI Bank.

continued from page 22

Workshops and Interactive Panel Discussions

Workshops conducted by ASHRAE Distinguished Lecturers are a regular feature of the ACREX program schedule. This year they were spread over 3 days, beginning February 25. The diverse topics ranged from 'Air Distribution and Heat Load Calculations for Displacement Ventilation Systems' and 'Tall, Supertall and Megatall Building Design' to 'Design of Cold Storage as a Part of Cold Chain' and 'Safe & Save Ammonia Refrigeration Systems'.



Ramesh Paranjpey conducts a workshop on Design of Cold Storage



At the panel discussion on refrigerants (L to R): Dr. S. P. Chidambaram (Senior Manager – Material Applications, Honeywell), Kapil Singhal (Founder, BP Refcon), Ajit Panicker (CEO, Nova Group), Gaurav Mehtani (Divisional Manager – Product Management & Technical Support, Daikin), Nanda Lakkaraju (Director Engineering – HVAC, South Asia, Carrier), Anil Gulanikar (Director, Dag-Tech Services), Torben Funder-Kristensen (Head, Public Industry Affairs, Danfoss Cooling Segment, Denmark) and Jitendra Bhambure (EVP - R&D and Technology, Blue Star)

Concurrently, there were interactive panel discussions on 'Safety at HVAC Workplace', 'Reducing Building Energy', 'All About Refrigerants', 'Fire and Safety Inside Glass Facades', 'Building Performance Score' and 'An Architect-Developer Interaction'.



Armacell India showcased its range of thermal and acoustic insulation products.



Armstrong showcased its new chiller plant controller, along with its fluid flow and control equipment including pumps, advanced controls, fire pump packages and pressure boosting systems.

Auro Engineering displayed its wide range of products including air handling units with EC fans, condensing units, refrigeration units, heating and cooling

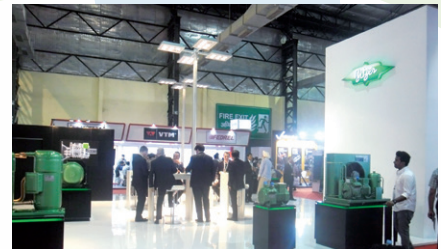


coils, compressor parts, Xylem pumps and EC fans.



Bhutoria Refrigeration showcased the line up of Midea chilled water FCUs and split units for which it is the all India distributor.

Bitzer displayed its Ecoline 4 cylinder semi-hermetic compressor, CSH semi-hermetic screw compressor, OS.A95 open screw compressor, Orbit 6 and 8 scroll compressors and Ecostar condensing unit. It also exhibited the GSD8 trio, Orbit 6+8



Tandem and K813H water cooled shell-and-tube condenser.



Blue Star exhibited its new mini-VRF (6 and 8 HP) and AHRI certified water cooled screw chiller with VFD, along with its 22 HP VRF, R410 fixed speed ductable AC, water cooled ductable, floor mounted PU, heat recovery wheel, treated fresh air unit and R410 multi inverter split.

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Launch-pad for New Products

Quite a few new products were on view during ACREX India 2016. Some of these are described here.



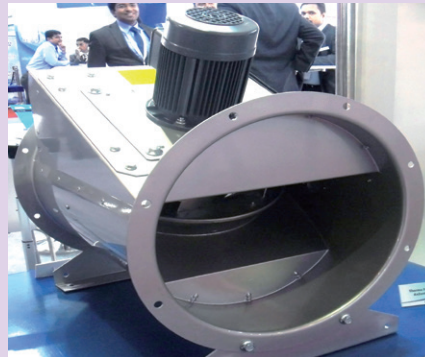
Mitsubishi Heavy Industries displayed a 5 Star hybrid split AC in 1.5 TR with EER of 3.93, with an air throw of 47" using jet air technology.



Blue Star exhibited its mini-VRF IV P in 6 and 8 HP for residential and small commercial applications, which can be used with a maximum of 5 indoor units of 4 TR each. It also displayed a water cooled screw chiller with VFD.



Dorin displayed its CDB series of compressors for subcritical CO₂ applications that require a high standstill pressure and condensing temperature, with a pressure strength of up to 150 bar at high pressure side and 100 bar at low pressure side in standstill mode.



Systemair had its Thermo Fan AxZent with the motor outside the air stream, mainly for kitchens. The fan has a SISW centrifugal impeller that can deliver up to 10,000 cfm at up to 100 mm wg static pressure. It also displayed its SDD displacement diffuser.



Voltas displayed its ammonia screw chiller with J&E Hall compressor for -5°C.



Frick India had its new screw chiller package with vertical oil separator, R404 condensing unit with Dorin compressor, and AHU with aluminium coil.



Mitsubishi Electric exhibited its new range of axial, centrifugal and propeller fans with robust construction, compact design and low noise level (40-45 dB).



Dwyer introduced its Smart Air Hood™, an ergonomically designed lightweight air capture hood with patented technologies with improved accuracy.



Armstrong had its new IPC 9521 chiller plant controller on display.



Victaulic exhibited its new QuickVic Style 107N line of installation-ready rigid couplings.



Cruise displayed its condensate drain pump that can be mounted in four positions.



A. C. Humidin displayed its centrifugal aerofoil fans in the 200-1120 mm diameter range.

continued from page 26

ACREX Awards Night

The air in the lawns of JW Marriott, Sahar was thick with excitement on the evening of February 25, when all those who had worked tirelessly to make ACREX India 2016 a roaring success were recognized for their efforts. Daikin was the Partner in Excellence, and Kanwal Jeet Jawa, MD and CEO, Daikin Air-conditioning India was the host of the evening.

ACREX 2016 Chair Pankaj Dharkar began by tracing the journey of ACREX since its first edition at Bengaluru in 1990, and spoke about the roadshows, Facebook page, LinkedIn, Google connect, online promotions, overseas promotions, MoUs, press conference and other efforts to promote the expo.

ISHRAE National President K. Ramachandran thanked the partners and stall holders, and mentioned that the main objective of the evening was to celebrate ACREX.

Ashish Rakheja, ACREX 2017 Chair, disclosed that the next year's expo will be held at India Exposition Mart, Greater Noida from February 23 to 25, and there would be five simultaneous exhibitions under one roof.

ACREX partners to be felicitated during the event were Daikin, Danfoss, Hitachi, Zamil, Bry-Air/DRI, Advanced Valves, Blue Star and UTC Carrier.

Kanwal Jeet Jawa presented the highlights of Daikin operations: No. 1 rank in the world in HVAC, fastest growing HVAC company in India, pioneer of R32, inventor of VRV, new air purifiers and a new R&D Centre at Neemrana to develop Bharat ka AC. He wished success to ACREX.

N. C. Gupta, a veteran member of ISHRAE, was felicitated by ASHRAE President David Underwood for his book *Comprehensive AC System Design*.

'Search-O', an initiative by ISHRAE to make available a comprehensive database of HVAC&R businesses to its members, was launched during the evening.

ACREX Awards of Excellence

Awards were presented for the best exhibits in the expo. The Jury for the awards comprised Ravindra S. Kulkarni (Consultant), Rakesh Kumar (Technical Editor, *Air Conditioning and Refrigeration*

Journal), Jayesh Deshpande (Daikin) and Sanjay Goel (Daikin). The awards were presented in four categories:

Energy Saving



Thermax received the first prize for its High Efficiency Absorption Chiller-Heater.



Ziehl-Abegg was the runner-up for its ZavBlue Bionic Centrifugal Impeller.

Green and Sustainable

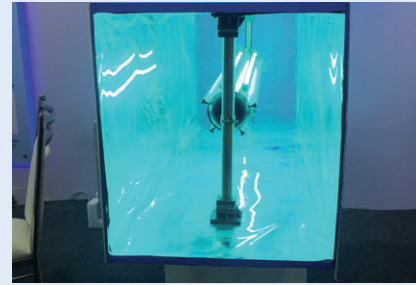


The first prize went to Bitzer for its CSVH Compact Screw Compressor.



The runner-up was Emerson for its Copeland Scroll R32 vapour injection compressor.

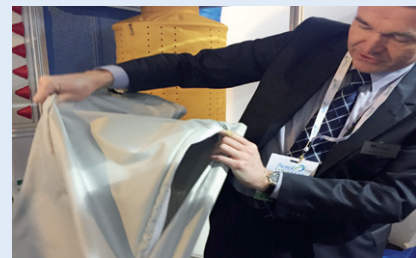
Indoor Air Quality



Ace Hygiene Products (Alfa UV) bagged the first prize for its Ultraduct.

Aeropure was the runner-up for its Watmiser UV Germicidal Irradiation.

Innovation



Parihoda won the first prize for its SquAire TexFabric Diffuser Tiles.



The runner-up was Danfoss for its Turbocor VTT Centrifugal Compressor.

Special Jury Award

azbil

New VAV BOX

Product Features

1. No reduce, and less pressure loss
Total pressure loss 1.2Pa
2. Accurate airflow sensor
Range ability 10:1

Conventional VAV box	Azbil New VAV box
Total pressure loss: 90.6Pa	Total pressure loss: 1.2Pa
Range ability: 3:1	Range ability: 10:1
Airflow sensor: Differential pressure type	Airflow sensor: Propeller-shaped type

Benefits for customer

1. Downsize the motor that drives fan
2. Reduce 15% power consumption
3. Reduce additional 15% power consumption by fan VSD optimization according to VAV opening.

Azbil won the Special Jury Award for its New VAV Box.

continued from page 28

Fact File

Organiser : ISHRAE
 Event Producer : NürnbergMesse
 Endorsed by : ASHRAE
 Approved by : India Trade Promotion Organisation
 Covered area : 35,000 sq m
 Number of exhibitors : 450+
 Foreign participation : 116 exhibitors from 18 countries
 Number of visitors : 34,957
 Special pavilions : Cold Chain, Smart Homes, FSAI, AAR
 Country pavilions : Germany, USA, S. Korea, China, Turkey, Japan, UK, France, Canada, Taiwan, Singapore, New Zealand, Thailand, Czech Republic, Switzerland, Sweden, Malaysia, Vietnam

Partners

Curtain Raiser : Carrier, Toshiba
 Platinum & aQuest : Johnson Controls-Hitachi
 Titanium : Blue Star
 Partner in Excellence : Daikin
 ACREX Hall of Fame : Danfoss
 Knowledge Partner : Samsung
 Green & Sustainability Partner : Superlon
 VIP Hospitality Partner : Edgetech
 Gold : Bhutoria, Cosmos
 Silver : Desiccant Rotors International, Fuji Electric, AHRI, Paharpur
 Bronze : LG, Intertek, Zamil

Supporting Associations

NCCD, IPA, IGCC, CAR, FSAI, AAR, BEE, Climate Control, IAPMO, RATA, REHVA, IGBC, CCSI, AIACRA, JARN, IGSHPA, RAMA, USGBC



Carel ACR Systems had a large line up of controls for air conditioning, refrigeration and retail equipment, and humidification systems.



and ductable units designed for the pharma industry in mind.



Cosmos Group (Spectrum Industries) had on display its wide range of air distribution products.



controls for refrigeration, air conditioning, HVAC, district cooling and under-floor heating applications.



Carrier had a cluster of stalls for its Carrier, Toshiba and Midea brands of HVAC equipment.

Citizen Industries showcased its energy efficient range of AHUs, ventilation and exhaust units, cooling and heating coils, duct dampers, metallic doors, FCUs



Cruise displayed its range of air conditioners, and a condensate drain pump that can be mounted in 4 positions.

Danfoss showcased its range of VLT and VACON drives, heating valves, and



Desiccant Rotors International exhibited its energy recovery ventilator, treated fresh air unit, Ecobeam chilled beam, evaporative cooling pads and Arctic cooler.

continued from page 30

Hall of Fame Night

ACREX Hall of Fame is a new industry benchmark instituted by Danfoss India and ISHRAE to recognize the excellence achieved in conserving energy by commercial buildings in the Indian subcontinent. The coveted recognition aims to encourage energy efficiency among industry stakeholders and to showcase success stories in the HVAC space in India.

The Hall of Fame was introduced at ACREX INDIA 2016 for the first time. Among about 100 nominations, 10 projects were nominated. The parameters included energy efficiency, healthy environment, architecture and art, and conducive environment for employees and visitors. One-year operational data was scrutinized.

A sub-committee of ISHRAE headed by Sushil Choudhury (Chair, ISHRAE Technical Committee) shortlisted 5 entries, which were then evaluated by the Jury. The eminent Jury comprised Dr. Ajay Mathur (Director General, The Energy Research Institute), Dr. Prem C. Jain (Chairman, Indian Green Building Council) and Padmashree C. N. Raghavendra (MD, C. Narayana Rao Consultants).



Dr. Ajay Mathur announces the first Hall of Fame inductee

Dr. Ajay Mathur explained the Jury process and announced the nominees: Mandi House Metro Station (New Delhi), Indian School of Business (Hyderabad Campus), Chhatrapati Shivaji International Airport (CSIA) Terminal II (Mumbai), Avani Riverside Mall (Howrah) and Advant Navis IT Park (Noida).

Excitement built up as he revealed the name of the first ever inductee to the Hall of Fame. CSIA Terminal II had the honour of being the first project to be inducted into the Hall of Fame. The teams behind the project include GVK Group, L&T, Blue Star and Skidmore Owings & Merrill (SOM). They received the honour on behalf of the stakeholders involved in the making of CSIA.

The award underlines CSIA as an energy efficient and sustainable HVAC venture. What sets CSIA apart is that it imbibes features like improved indoor air quality, an air



conditioning system that is integrated with the rest of the BMS, and the use of technology to achieve a high energy productivity index, resulting in reduced energy usage, better air quality and large cost savings.

Ravichandran Purushothaman, President, Danfoss India said on the occasion that ACREX Hall of Fame recognizes the cutting edge work that organizations are doing to become benchmarks for sustainable solutions. ACREX 2016 Chair Pankaj Dharkar and ISHRAE President K. Ramachandran also spoke on the occasion.

While acknowledging the award, G. V. Sanjay Reddy, Managing Director, Mumbai International Airport Ltd. (MIAL) said that sustainable infrastructure development is pivotal to our country's journey towards becoming an industrial nation by 2020.

ASHRAE President also spoke on the occasion, congratulating ISHRAE on its new initiatives.

During the evening, Rajesh Premchandran (Danfoss) made a presentation on Energy Efficiency, highlighting the LEED Platinum rated campus of Danfoss at Oragadam (Tamil Nadu) that has a 2 mW solar park.

Dr. P. Shakil Ahammed spoke on the cold chain in India. He mentioned that the average price realisation of apples for a farmer has gone up from Rs. 35 to Rs. 80 per kg over the last few years due to industry intervention in the cold chain infrastructure.

D. Nirmal Ram spoke about the Integrated Approach to Project Delivery (IAPD), which he has been driving through the ISHRAE platform for the last couple of years.

ISHRAE and Danfoss India launched a guide book towards efficient project management and delivery for stakeholders in the HVAC industry. Through IAPD with Focus on HVAC&R, the right framework for stakeholders can be developed in the industry.

The evening will be remembered for long as a milestone in the history of ISHRAE, Danfoss and the HVAC&R industry.



ASHRAE President David Underwood addresses the audience



Rajesh Premchandran



Dr. P. Shakil Ahammed



D. Nirmal Ram speaks about IAPD

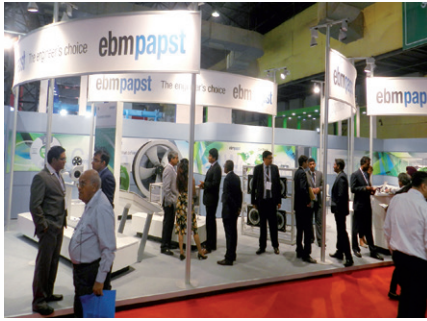


All smiles at the Hall of fame induction ceremony; (L to R) K. Ramachandran, Dr. Prem C. Jain, Lt. Cdr. Nagahari Krishna L. (Director, Strategic Initiatives, Danfoss), Vir Advani (Executive Director & President, Blue Star), R. Purushothaman, Dr. Ajay Mathur, Padmashree C. N. Raghavendra, Pankaj Dharkar, Rajagopal Raviraj (VP, GVK), K. P. Cion (Head MEP, L&T) and Dr. P. Shakil Ahammed (Joint Secretary, Mission for Integrated Development of Horticulture)



Release of ISHRAE guide book on 'IAPD with Focus on HVAC&R'; (L to R) Vir Advani, K. Ramachandran and Ravichandran Purushothaman

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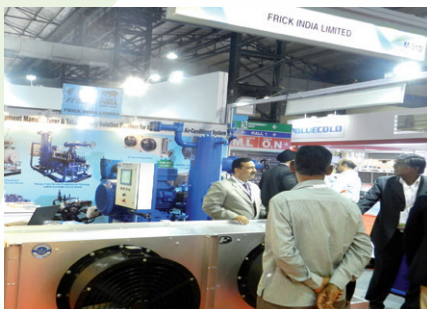
ebmpapst had a large stall to display its wide range of various types of fans.



Emerson Climate Technologies had on display its water cooled semi-hermetic condensing unit, KHZ scroll condensing unit, next generation ZX scroll condensing unit and several other exhibits.



ETA General had its wide range of air conditioners on display.



Frick India showcased its rotary twin screw compressor package with vertical oil separator, R404 condensing unit with Dorin compressor and AHU with aluminium coil.



Fire and Security Association of India (FSAI) had a stall to showcase its activities and to promote the first Fire and Security India Expo 2017.



Fuji Electric had on display its dedicated HVAC variable frequency drives, flow and BTU meters, human machine interface system and digital controllers.



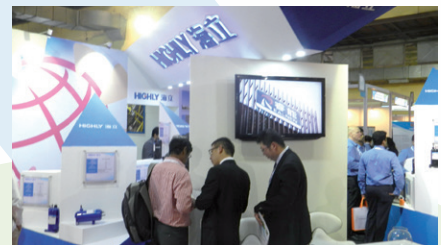
FxMultitech exhibited the range of products for which it has exclusive Indian distributorship, including Danfoss, Roller, Thermofin, Refco, Gumax, ESK and DSI.



Guangdong Meizhi Compressor Company (GMCC) showcased its wide range of compressors for diverse applications.



Greenheck's main attractions were its RA series axial fan, jet fan, BSQ series inline fan and configurable ventilation solution.



Shanghai Hitachi had on display its wide range of ACs for diverse use.



Honeywell Automation exhibited its HVAC controls including thermostats, temperature controllers, valves and valve actuators, BMS controls, combustion controls, pressure reducing valves, butterfly valves and balancing valves.



Ice Make Refrigeration displayed its commercial and industrial refrigeration equipment for dairy, ice cream, food processing, fruit ripening, horticulture, hotel, pharma, logistics, plastic and chemical industries.



Infinity HVAC Spares & Tools displayed its wide range of spare parts, tools and equipment for HVAC&R industry like refrigerant recovery units, condensate drain pumps and precision measuring instruments.



Intertek India showcased its auditing, testing, inspection and certification services.



Johnson Controls-Hitachi displayed its centrifugal chiller with 6.5 COP, line up of split ACs, packaged units and other products.



Kahan Controls exhibited its HVAC controls and automation solutions, PLCs,

touchscreen, BMS, thermostats, control valves, data loggers, VFDs, refrigeration control and monitoring systems and electronic expansion valves.



Kirloskar Brothers' main draw was its hydro-pneumatic system. It also displayed its pumps and fluid management systems.



Kirloskar Chillers showcased their Turbotek chiller and vapour absorption machine, and displayed several other products like heat recovery equipment and AHRI certified chillers.



LG Electronics displayed its Multi V inverter with capacity of up to 14 HP and COP of 4.25 that can be connected to 23 indoor units, Multi V Water IV, ceiling concealed split and other products.



Lloyd Electric and Engineering showcased its range of split ACs, chest

coolers, water dispensers and heat exchangers.



LU-VE showcased its range of Value Defender unit coolers, the new plug-and save and other products.



Metalex Cryogenics displayed its refrigeration compressors, tube ice machine, LP and HP receivers and refrigerant controls.



Mitsubishi Electric displayed its newly launched ventilation fans, air conducting fan, twin nozzle air curtain, motor controllers, switchgear, control box with flare connections and MSZ FH series split ACs with R410A.



Mitsubishi Heavy Industries had a formidable presence in the stall of its

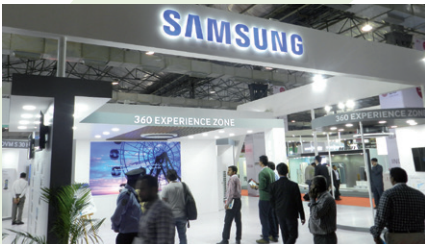
Indian distributor International Aircon. It displayed its expanded range of RACs (including inverter type), Eco Smart hybrid ACs and packaged ACs with R410, FDT125CR-S cassette (4 TR) and 5th generation hybrid VRF.



Paharpur Cooling Towers displayed a sample of its wide range of cooling towers, air cooled heat exchangers and air cooled condensers.



Safe Refrigerations exhibited its range of HVAC&R parts imported from leading brands, Harris brazing products and consumables and its own manufactured Dry All brand parts.



Samsung India showcased its new 360 cassette, DVM S 30 HP VRF, DVM chiller and its wide range of existing products.



Schneider Electric exhibited its IT business solutions, access control, power management, video security management and under-floor ducting systems.



Sevcon India showcased its expertise in system engineering, marketing, installation, service and execution of turnkey HVAC projects.



Superlon displayed its range of nitrile rubber insulation products for HVAC&R with low conductivity and high vapour resistance, meeting fire regulation codes.



Supreme Industries had on display its range of plastic products and components manufactured at its 23 manufacturing units in India.



Systemair displayed its thermo fan AxZent for kitchen exhaust and SDD displacement diffuser. Its Greater Noida factory has recently been conferred LEED Platinum rating.



Tecumseh Products exhibited its range of HVAC compressors and condensing units.



Thermax showcased its energy efficient products like absorption chiller-heater.



Voltas showcased its new ammonia chiller, R410A ductable and packaged unit, tri-generation VAM, air cooler and coin operated water dispenser.



Zamil Air Conditioners had on display its range of air conditioners for commercial and residential air conditioning.



Ziehl-Abegg exhibited its wide range of fans for air conditioning, refrigeration, cleanrooms, transformer cooling and other applications.