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October 2019

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## Brunel develops Lego-style solar panels

**Photovoltaic cells combined with flat heat pipes to transfer unwanted heat away from surfaces and re-use it**

Solar panels that click together 'like Lego' are being developed at London's Brunel University as part of £10m sustainable energy scheme.

Funded by Horizon 2020, the project aims to perfect a flexible, solar-powered renewable energy system that generates heat from hot water and electricity.

The 'PVadapt' hybrid panels combine photovoltaic (PV) cells with flat heat pipes, which transfer unwanted heat away from surfaces. PVadapt aims to use the heat pipes to cool the PV cells to make them more efficient and longer lasting - with the removed heat being reused.

'There is no waste heat with our system,' said technical coordinator Professor Hussam Jouhara. 'The approach focuses on low-cost, high-efficiency and modular prefabricated, Lego-type construction elements for near-zero-energy buildings.'

PVadapt is a team effort involving 18 organisations from 11 countries. Click-in-place hybrid solar roof panels are to be installed into eight buildings - including homes, offices and shops - in Spain, Greece, Austria and Portugal.



## California passes law to be carbon free by 2045

US state California has defied President Donald Trump and passed a law committing it to carbon-free electricity by 2045.

It is the second state, after Hawaii, to commit to carbon-free energy, and Governor Jerry Brown said there was 'no understating the importance of this measure'. He added that California would honour the USA's commitment to the 2015 Paris climate accord, despite the President's determination to withdraw from it.

The new legislation requires utility companies to generate 60% of their energy from renewable sources by 2030. By 2045, all Californian electricity must come from carbon-free or renewable energy. Currently, around one-third of its retail electricity sales come from renewable sources

Some utility companies have condemned the new law as 'not affordable... not sustainable', despite widespread praise for Governor Brown from environmental groups.



## Schools face challenging air-quality upgrades

**Use of 'hybrid' or 'mixed mode' systems is addressed for first time**

Changes to government guidelines for school buildings published in the new Building Bulletin 101 (BB101) have set challenging targets for improving indoor air quality, thermal comfort and ventilation.

A new requirement for fresh air rates of five litres per second per person is a major change from the last version, published in 2006, with a 'purge' fresh air rate set at 8 litres per second per person for all new-build teaching spaces. As a result, many educational facilities are expected to review their air quality strategies and may be forced to carry out expensive upgrades, experts say.

Natural ventilation systems must be able to reduce carbon dioxide (CO<sub>2</sub>) levels to below 1,500 parts per million (ppm), with mechanical ventilation

achieving 1,000ppm. CO<sub>2</sub> levels cannot exceed 1,500ppm for more than 20 minutes in any new classroom. Refurbished teaching spaces must now achieve an average CO<sub>2</sub> level of below 1,750ppm.

Where mechanical ventilation is used, it should not be the sole means of summertime ventilation in occupied spaces, according to the new BB101. Windows or vents should be provided to ensure an 'effective opening area' equivalent to approximately 3-5% of the floor space. Natural ventilation should be the first option for designers where the school is in a rural location, it adds.

The use of 'hybrid' or 'mixed mode' systems is addressed fully in the guidance for the first time and eliminating cold draughts has been made a priority, to prevent teachers from closing windows and compromising the overall ventilation design.

## New trends reflected in revised energy management standard

The ISO 50001 energy management standard has been revised and updated for the first time since it was introduced seven years ago.

Developed by the International Organization for Standardization (ISO), and represented in the UK by the British Standards Institution (BSI), the revised version reflects new trends, such as rising energy costs and climate change. It offers step-by-step guidance on how businesses can reduce energy costs and grow more sustainably while complying with legislation.

The new standard, which is used by more than 20,000 businesses and organisations worldwide, places a stronger emphasis on the role of top management. It has also been brought in line with the revised versions of ISO 9001 and ISO 14001.

BSI's head of sustainability, David Fatscher, said the update tackled significant changes in technology, scientific knowledge and the regulatory environment.

### IN BRIEF

#### Ex-Skanska director to lead 'transforming construction' plan

Skanska's former innovation director Sam Stacey is to head up a £170m programme, run by UK Research and Innovation (UKRI), to 'transform the construction industry'.

The scheme is linked to the Construction Sector Deal and includes funding for research, a new construction network, and the creation of an active building centre and innovation hub. Its finance will be drawn from the main £1.7bn Challenge Fund aimed at stimulating the UK's research base.

UKRI was created in April 2018 and unites the seven existing research councils - as well as Innovate UK and the Research and Knowledge Exchange functions of the Higher Education Funding Council for England (HEFCE) - into a single organisation.

A key aspect of Stacey's role will be to bring together researchers and businesses to identify construction innovations.

#### Teasdale wins ECA Edmundson Award

Jack Teasdale, of Tyne and Wear's Opus Building Services, has been crowned 2018 ECA Edmundson Apprentice of the Year.

The 21-year-old, who was trained by provider JTL, won £1,500 and a study tour to France. He will also go on to be an ambassador for the electrotechnical industry over the next 12 months.

Teasdale said: 'One of my mentors was himself the winner of this award in 1997, so it's an honour to follow in his footsteps.'

The two runners-up, who each won £750 and a toolkit, were Niall Watson, of Derry Building Services, and Conor McCarthy, of Darke and Taylor.

#### Pepper steps down as Lochinvar MD

Former CIBSE board member David Pepper has moved from managing director to business development manager at boiler, water heater and heat pump company Lochinvar. Eelco van Driel has taken up the role of general manager and Liam Elmore has been promoted to sales director.

Pepper, who was Lochinvar MD for 20 years, will focus on sales and marketing in his new part-time role, while continuing to give support to the management team.

Van Driel was general sales manager of a European water heater company for 20 years - including 10 years' experience in the UK - and Elmore joined Lochinvar in April 2014 as UK sales manager.



RAMBOLL WINS AT WEMBLEY



Ramboll is to design and deliver a heat network for 20 newly constructed buildings on the £3bn Wembley Park regeneration project, developed by Quintain. A single energy centre will distribute low temperature hot water 3.5km across the site. Ramboll is working with manufacturer SWEP to install a system that uses returned water from the radiator circuit heat exchanger to pre-heat domestic hot water. Ramboll is also providing engineering design services on the site, including structural, energy and civil engineering services.

Two peers call for payment reform

Former cabinet minister Lord Adonis has called for reform of the construction industry's payment practices. He said the construction industry must drive out wasteful processes and bad practice. 'This includes eradicating payment abuse and manipulation of the cash-flow process, which impacts upon quality and delivery within time and cost,' added the former chairman of the UK Infrastructure Commission. 'I see no reason why we can't insist that projects use project bank accounts. Furthermore, the government should support the Construction (Retention Deposit Schemes) Bill, submitted by Peter Aldous MP, which protects cash retentions.' This intervention in the supply chain payment row was welcomed by the Specialist Engineering Contractors' Group. Its president, Lord O'Neill, said: 'The solutions referred to by Andrew Adonis will help to curb payment malpractice.'

Ministers and union demand more action over Carillion

No senior official oversaw company in period leading up to its liquidation

The government has been criticised in the wake of Carillion's collapse for failing to review the role of officials and the monitoring system tasked with overseeing major public sector contracts. The committee leading the parliamentary inquiry into Carillion said the Crown Representative system should be overhauled because it had failed to give early warning of the impending implosion of such a key public sector supplier. The current system was dismissed as 'semi-professional and part-time' by the inquiry chairs, after it was revealed that no senior official oversaw Carillion during a critical period leading up to its liquidation in January. In a letter to the Cabinet Office, they said it was 'astonishing that there has been no

indication of any government action to resolve this'. Committee chair Frank Field MP said: 'This [lack of] response illustrates the complacency that got us, the public purse and some key public contracts into this mess. The picture the Cabinet Secretary paints of our Crown Representatives is more Johnny English than James Bond.' Meanwhile, trade union Unite has called for an urgent criminal investigation into the Carillion episode. At the TUC Congress in Manchester, assistant general secretary Gail Cartmail said there was 'nothing normal about the biggest corporate collapse in the UK's history', and - if no laws were broken - 'then we need, better, stronger laws'. 'While thousands of workers have been thrown on the scrapheap, those responsible for driving the company into the ditch have dusted themselves off and started again, as if nothing had happened,' she added.

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### IN BRIEF

#### How your expertise can help children

In the latest CIBSE blog, James Collins, operations manager for an M&E contractor, talks about being a school governor and how his experience as a building services engineer is making a difference to children in his community.

'Running a school is so much more than teaching children in a classroom – which is why schools need support from people in a variety of fields,' says Collins, who acknowledges that being a school governor also has benefits for his working life. 'Using softer skills like negotiating, being open to other viewpoints, and managing general discussions are helpful to take back to work.'

Go to [www.cibseblog.co.uk](http://www.cibseblog.co.uk) to read Collins' blog.

#### Society launches digital awards

The Society of Digital Engineering (SDE) has launched its digital awards to showcase excellence and best practice for clients and engineers, contractors and manufacturers who use digital engineering to deliver better outcomes.

The awards aim to recognise and reward excellence and achievement in digital engineering in building services, and celebrate digital innovation in all its forms.

Entries are being sought for categories including: best innovation; best process and application; best digital engineer; best contractor; best manufacturer; best consultancy; best project/collaboration small; best project/collaboration large; and digital champion.

Entries need to be received by 22 October, with judging taking place in early November. Winners will be announced at Build2Perform Live on 27 November. For more information and to enter, visit [www.cibse.org/sdea](http://www.cibse.org/sdea)

#### Sponsors sought for annual dinner

The CIBSE North West Annual Dinner takes place on 25 January 2019 at the Midlands Hotel, Manchester. Early booking is recommended as places sold out fast last year. For details, or to sponsor the event, contact Colin Lehane at [clehane@idom.com](mailto:clehane@idom.com)

## New Digital Engineering guide on soft landings

### Improvement to final constructed asset should outweigh soft landings cost

The latest publication in the Digital Engineering series has been released. DE9: *Application of Soft Landings & Government Soft Landings in Building Services Engineering* is intended for those who specify, commission and deliver soft landings or government Soft Landings on construction projects.

It is not meant to be an exhaustive or definitive document, however, and users will need to exercise their own professional judgement.

Soft landings – whether for governmental use or not – are intended to ensure the constructed asset runs as designed, and that it has been designed to run effectively. The

financial logic behind this approach is that a constructed asset will cost far more to run than it will to design and construct, so – for a small addition of capital expenditure – it should be possible to create a far greater saving in operational expenditure.

Other benefits include a reduction in the costs of defect rectification and improvements in the functionality of the constructed asset.

Soft landings involves the inclusion of facility management requirements from the earliest design stages, and the input of the design and construction teams once the facility is occupied, post-completion.

The essence of the process is to improve performance outcomes of a construction project in terms of energy efficiency, user comfort and general operation. It involves better consultation with facility managers and other key stakeholders during briefing and early design stages, to ensure lessons learned from other projects inform design decisions at the beginning.

Soft landings also requires more focus on managing operational and defect risks during the construction phase, and better input from design and construction teams after handover.

While this process implies associated cost, the savings generated by soft landings – and the improvement to the final constructed asset – should far outweigh this.

DE9 and the rest of the series is available at [www.cibse.org/des](http://www.cibse.org/des)



## Piner is the pick of the undergraduates



Portsmouth University student Jake Piner has won the CIBSE Undergraduate Award 2018.

Piner studied for a BEng in mechanical engineering and took the prize with his final-year project, 'Analysing the benefits of a well-engineered building control system'. He will be presented with £500 and a certificate at the President's Awards Dinner on 12 October.

A trophy will also be awarded to Piner's course tutor, Dr David Sanders, in acknowledgement of Portsmouth University's achievement.

Robert Ralph, from Dublin Institute of Technology, and Thomas Lusty, from Coventry University, were runners-up, and will each receive a prize of £100.

The award, sponsored by Hays Building Services, is designed to encourage students to develop their potential and aim for excellence.

It is awarded to those in their final year of a building services course accredited by CIBSE, and recognises their academic achievements.



## Six on the shortlist for employers' award

### Small, medium and large companies will compete for overall winner status

Six businesses have made the shortlist for this year's Employer of the Year Awards.

The accolades celebrate organisations with progressive strategies for recruiting, nurturing and empowering young people. There are three award categories, for small, medium and large companies, with one overall winner. The shortlisted companies are:

- **Small:** S I Sealy & Associates and Services Design Solution (SDS)
- **Medium:** Elementa and Black & White Engineering
- **Large:** Aecom and Hoare Lea.

Together with the Graduate of the Year competition, the awards form part of the CIBSE Young Engineers' Awards, sponsored by

Andrews Water Heaters, Kingspan Industrial Insulation, Swegon Air Management and the CIBSE Patrons.

Kevin Mitchell, chair of the CIBSE Employer of the Year judging panel – and the first winner of the graduate award – said entries had been particularly difficult to separate.

'The standard was very high, which is extremely heartening in light of the sector's ongoing battle with skills shortages,' he said.

Winners will be announced at the awards night on 11 October, at the Institution of Mechanical Engineers, in London, where the Graduate of the Year finalists will also give their presentations. You can find out more about the student finalists on page 22.

The event is free to attend, but pre-registration is required. For more details, visit [www.cibse.org/yea](http://www.cibse.org/yea)

Last year's winners in Tandem Systems

### Young Lighter of the Year longlist revealed

To preview the potential winner of the 2018 SLL Young Lighter of the Year competition, visit [www.cibse.org/sll](http://www.cibse.org/sll), where you can view the longlist of video submissions. This includes:

- Emma Beadle – 'Children's utopian visions of the city: co-designing lighting masterplans through play and exploration'
- Katia Kolovea – 'Light as a medium to enhance communication in urban spaces'
- Carla Piatti – 'Interactive lighting in public spaces'
- Sunny Sribanditmongkol – 'Design strategies for daylighting in a Thai rowhouse'
- Sanny Yuwono – 'Is there a threshold for the degree of chroma used to allow colour in exterior lighting without making the building incongruous to its surroundings?'

At the time of going to print, the judges were still deciding on the shortlist of finalists, who will present their papers at the LuxLive exhibition, at London's Excel, on 15 November. The winner will be announced at the Lux Awards that evening.

The competition helps young lighters show their research and hone their presentation skills.

## New members, fellows and associates

### FELLOWS

<b>Ng, Hon Lam Albert</b> Hong Kong, Hong Kong
<b>Coker, Isaac Kweku</b> Dubai, United Arab Emirates
<b>Perry, Keith Murray John</b> Dubai, United Arab Emirates
<b>Dunne, Mark Eric</b> Huntingdon, United Kingdom
<b>Raghobur, Komal</b> Caterham, United Kingdom
<b>Luk, Wang Tin Martin</b> Kowloon, Hong Kong
<b>Wan, Kwok Wah, Vincent</b> Tin Shui Wai New Territories, Hong Kong
<b>Wu, Wing Kin Dennis</b> Taikoo Shing, Hong Kong
<b>Shea, Tat Chi</b> Kowloon, Hong Kong

### MEMBER

<b>Hendrix, Garry</b> Melbourne, Australia
<b>Torre, Roseller Jr</b> Singapore, Republic of Singapore
<b>Spinozzi, Elisabetta</b> London, United Kingdom
<b>Bednarski, Maciej</b> London, United Kingdom
<b>Masourekos, Giorgos</b> Nicosia, Cyprus
<b>Gibbs, Andrew</b> Devon, United Kingdom
<b>Cichon, Maciej Michal</b> Hong Kong, Hong Kong
<b>Lum, Kam Cheung</b> Wong Tai Sin, Hong Kong
<b>Wang, Aaron Juan</b> Pu Dong, China
<b>Ho, Ka Lam</b> Shatin, Hong Kong
<b>Liu, Wai Yeung</b> Ap Lei Chau, Hong Kong
<b>Wong, Chi Ming</b> Cheung Sha Wan, Hong Kong
<b>Casuso, Pablo Valcarce</b> Billericay, United Kingdom
<b>McEvoy, James Michael</b> County Down, United Kingdom
<b>Barker, David Ian</b> Slough, United Kingdom
<b>Wong, Hong Chye</b> Auckland, New Zealand
<b>Lam, Tak Yeung</b> Yuen Long, Hong Kong
<b>Vig, Zsolt</b> Dubai, United Arab Emirates
<b>Cheung, Kin Ho Eric</b> Yuen Long, Hong Kong
<b>Cheung, Lap Fai</b> Tseung Kwan O, Hong Kong
<b>Lee, Ka Fai</b> Choi Hung, Hong Kong

<b>Ho, Kwok Wai</b> Tseung Kwan O, Hong Kong
<b>Chou, Ho Kit</b> Wanchai, Hong Kong
<b>Wong, King Fai</b> NT, Hong Kong
<b>Ward, Garreth</b> Dundalk, Ireland
<b>Shan, Kui</b> Hung Hom, Hong Kong
<b>LICENTIATE</b>
<b>Shepherd, Hannah Jane</b> Bath, United Kingdom
<b>Rust, Thomas B</b> Brandon, United Kingdom
<b>Kazane, Anna</b> Sharjah, United Arab Emirates
<b>Collins, Jacob</b> Leamington Spa, United Kingdom
<b>Alshibli, Mohammad</b> Amman, Jordan



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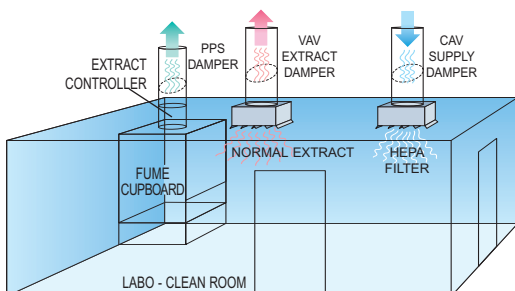


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