



MONDAY
Politics

TUESDAY
Build the Change

WEDNESDAY
Sport

THURSDAY
Science

FRIDAY
Culture

THE DAY
Build a better world



NEWS DETECTIVES

TODAY'S BIG STORY

The swimming pool heated by tiny computers

Are good ideas always surprising? A swimming pool has found a surprising way to keep its costs down using a “digital boiler” provided by a tech company.

Heating bills are going up everywhere. But one **leisure** centre in Devon has found a way to keep their bills down thanks to the power of data.

Exmouth Leisure Centre has teamed up with the technology company Deep Green to keep their swimmers warm for less.

Deep Green **provides** the pool with a “digital boiler”. This is actually a data centre, a box the size of a washing machine filled with tiny computers.

While the computers inside the box **whirl** away crunching numbers they generate a lot of heat.



Processing power: A digital boiler can heat the pool to 30 degrees.

THE STORY SO FAR

Data centres house computers that store data or process it. What to do about the heat they produce is a big question. Cooling them accounts for about 30% of their running costs.

The tiny computers in the data centre are surrounded by **mineral oil** which is heated by the computers. This is then pumped into a **heat exchanger** which warms the water that goes into the pool.

The data centre creates enough heat for 60% of the pool's needs.

Sean Day, who runs the Exmouth

Leisure Centre, had been expecting its energy bills to rise by £100,000.

“The partnership has really helped us **reduce** the costs”

Not only does it save the leisure centre money, but it **prevents** the energy from the data centre going to waste.

“Data centres have got a huge problem with heat,” Mark Bjornsgaard, the **founder** of Deep Green said.

“A lot of the money that it costs to run a data centre is taken up in getting rid of the heat.

“And so what we’ve done is taken a very small bit of a data centre to where the heat is useful.”

KEY WORDS

Leisure: Relaxation

Provides: Gives

Whirl: The sound of turning fans

Mineral Oil: A kind of petrol waste

Heat exchanger: A device

for transferring heat

Reduce: Lower

Prevents: Stops

Founder: The person who started a company



YOU DECIDE

Are good ideas always surprising?

YES. If the idea was obvious someone else would already have had it. The best new ideas come from thinking outside the box.

NO. Lots of good ideas are a matter of common sense. The least surprising solution can be the best.



THE DETECTIVE ZONE

SPOT THE FAKE

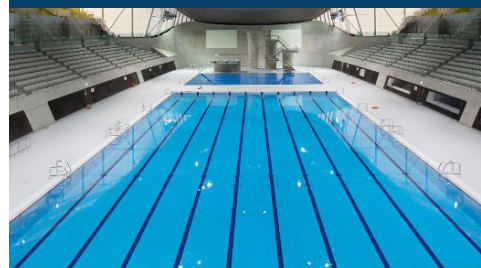
One of these three news stories is fake.
Which one?

Architects propose pool on roof of Notre Dame cathedral ☐

French taxman uses AI to find secret pools ☐

Man digs secret pool in neighbour's basement ☐

How long is an Olympic sized swimming pool?



- A) 25m
- B) 50m
- C) 75m
- D) 100m

Build THE Change



What else do you think you could heat up or power with a data centre? In this challenge, you will design a new system to use the energy from a data centre to power a new machine!

Step 1: Think about your design! Could you power a rollercoaster, or a device for making your breakfast? Could you design something that will help the planet?

Step 2: Create your design! You could draw a picture of your machine, or if you have time, you could make a real life version using LEGO® bricks or bits of recycling.

Share your genius
Show your work to your class!



Upload a photo of your work to the Build the Change gallery by scanning the QR code and have your work displayed to inspire real-world change.



Talking point

Will clever uses of waste be enough to save the environment, or will we have to consume less energy?

Amaze someone

Lots of things we call by other names are actually computers, such as smartphones, tablets, games consoles and smart speakers.

In Japan, Macaques, a kind of monkey, bathe in hot springs. Zoologists think they do this to de-stress, like humans.

THE EXTRA PAGE

Heating the pool with data

A The heat generated by a washing-machine-sized data centre is being used to heat a Devon public swimming pool.

The computers inside the white box are surrounded by oil to capture the heat — enough to heat the pool to about 30C 60% of the time, saving Exmouth Leisure Centre thousands of pounds.

The data centre is provided to the council-run centre free of charge.

Start-up Deep Green charges clients to use its computing power for artificial intelligence and machine learning.

Founder Mark Bjornsgaard said the company would also refund the leisure centre's electricity costs for running the "digital boiler" — and seven other England pools had signed up to the scheme.

The concept, developed over five years, is relatively straightforward — the hot oil is pumped into a heat exchanger to warm the water in the pool.

Sean Day, who runs the leisure centre, said he had been expecting its energy bills to rise by £100,000 this year.

"The partnership has really helped us reduce the costs of what has been astronomical over the last 12 months — our energy prices and gas prices have gone through the roof," he said.



Diving in: Deep Green founder Mark Bjornsgaard wants to solve computing's heat waste problem.

"Looking at different ways of how we can save money as an organisation has been awesome."

Swim England chief executive Jane Nickerson said it was good to see pools "embracing innovative solutions".

Last summer, BBC News revealed 65 swimming pools had closed since 2019, with rising energy costs cited as a significant reason.

Cambridge University professor of engineering and the environment Dr Julian Allwood said: "If it's a sensible idea and it saves the leisure centre some money, then why not?" adding data centres on the whole used less energy than previously reported.

But large ones can require billions of gallons of water and millions of pounds

to keep cool.

Some are even built under water — or in caves or very cold parts of the world.

And in Danish and Swedish cities, huge data centres power thousands of homes.

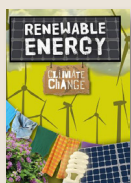
"Data centres have got a huge problem with heat," Mr Bjornsgaard said.

"A lot of the money that it costs to run a data centre is taken up in getting rid of the heat.

"And so what we've done is taken a very small bit of a data centre to where the heat is useful and required." ■

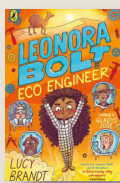
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Answers to the puzzles

Swimming pool question
50m

Spot the fake
Man digs secret swimming pool in
neighbour's basement



This week's challenge is part of the LEGO® Build the Change programme. It can be done at school or as homework, and parents can help upload photos of pupils' work to the online gallery.



Visit the gallery at
<https://bit.ly/btcgallery> and feel free
to use it as discussion point in class.