

# ASTUDIAETH ACHOS

## CYNLLUN RHEOLI CARBON

### YSGOL EDERN, PWLLHELI

#### Cefndir

Mae Ysgol Edern wedi llwyddo i leihau ei hól-troed carbon o 36% o fewn blwyddyn, diolch i waith i uwchraddio'r ysgol ac ymdrechion disgyblion a staff brwdfrydig. Dros y 10 mlynedd diwethaf, mae defnydd propan yr ysgol, sy'n cael ei ddefnyddio i wresogi'r adeilad, wedi disgyn 38%, tra bod eu hallyriadau carbon ar y cyfan wedi gostwng o chwarter.

Mae defnydd trydan yr ysgol yn fwy na 10% yn is na'r meincnod nodweddiadol cenedlaethol, sef faint y byddai disgwyl i ysgol o'r un maint ei ddefnyddio.

Daw'r arbedion o ganlyniad i gyfres o welliannau i'r adeilad i'w wneud yn fwy ynni-ffeithlon ac, ar yr un pryd, mae disgyblion wedi bod yn awyddus i fonitro defnydd ynni'r ysgol yn ogystal â faint o drydan y maent yn ei gynhyrchu gyda'u paneli solar newydd.

#### Gweithredu



Ers 2012, mae gwaith wedi ei gynnal ar Ysgol Edern i'w thrawsnewid i mewn i adeilad effeithlon, gan gynnwys boeleri newydd, gosod paneli solar ffotofoltaidd (PV), gwelliannau i'r goleuadau, gosod drysau newydd ac ynysu'r to.

Dywedd Geraint Evans, pennaeth yr ysgol: "Mae'r gwelliannau sydd wedi cael eu cyflawni dros y blynyddoedd diwethaf

wedi ein galluogi ni fel ysgol i ostwng ein defnydd ynni'n sylweddol ac, o ganlyniad, ein costau a'n hól-troed carbon."

Fel rhan o'r prosiect, gosodwyd drws newydd yn y fynedfa i gymryd lle'r hen ddrws drafftlyd. Ond penderfynodd yr ysgol i fynd gam ymhellach a chreu cyntedd mewnol drwy roi drws ychwanegol yn y coridor er mwyn atal gwynt oer rhag dod mewn i'r adeilad.

"Rydw i'n amau ei bod hi wedi bod yn adeilad aneffeithlon dros ben yn y gorffennol," dywedodd Geraint. "Ond o ganlyniad i'r gwaith sydd wedi cael ei gynnal, rydym wedi gweld gwahaniaeth mawr i'n defnydd ynni o fewn cyfnod cymharol fyr."

Mae gosod system wresogi newydd, ynghyd ag ynysu'r adeilad a chreu mynediad newydd i'r adeilad yn golygu bod llai o wres yn dianc a bod angen llai o ynni i wresogi'r ysgol.

Yn ogystal, ar ôl ail-wifro'r adeilad a gosod goleuadau newydd effeithlon sy'n rhedeg ar synwryddion, mae goleuadau'r ysgol bellach yn diffodd yn uniongyrchol.

#### PROSIECT

Uwchraddio boeleri;

Paneli solar PV;

Ail-wifro'r adeilad a gosod goleuadau mwy effeithlon;

Ynysu'r to;

Gosod drws newydd yn y fynedfa

#### COSTAU CYFALAF

£89,733 (cyfanswm yr holl brosiectau)

#### ARBEDION

#### ARIANNOL

£76,640 dros oes y prosiect

#### ARBEDION CARBON

154 tonnell o CO2 dros oes y prosiect

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Ond er nad oes angen i'r plant gofio diffodd y goleuadau bellach, eglurodd Geraint bod dysgu pwysigrwydd arbed ynni yn parhau i fod yn flaenoriaeth yn yr ysgol.

"Mae gennym ddau ddisgybl sy'n cadw cofnod o'n defnydd ynni yn fisol, yn ogystal â chofnodi faint o drydan sy'n cael ei gynhyrchu gan ein paneli solar," dywedodd.

"Fel rhan o'r cynllun Ysgolion Gwyrdd Gwynedd a Môn, mae'r plant wedi bod yn astudio themâu megis paneli solar ac ynni, felly mae meithrin dealltwriaeth am bwysigrwydd arbed ynni yn rhywbeth yr ydym yn teimlo'n gryf amdano."

Dyweddodd Dyfan, disgybl Blwyddyn 6 sy'n gyfrifol am gofnodi defnydd ynni'r

ysgol: "Rydym ni yn cofnodi'r defnydd o drydan bob mis ac yn bwydo'r wybodaeth i daenlen. Mae'r daenlen yn gadael i ni wybod yn syth os oes mwy o drydan wedi ei ddefnyddio na'r mis cynt ac yn cymharu gyda'r un mis llynedd. Er mwyn lleihau'r defnydd o ynni rydym ni hefyd yn atgoffa pawb i gau drysau a ffenestri ac wedi rhoi sticeri o gwmpas yr ysgol i atgoffa bod angen diffodd goleuadau ac offer fel cyfrifiaduron diangen."



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# CASE STUDY

## CARBON MANAGEMENT PLAN

### YSGOL EDERN, PWLLHELI

#### Background

Ysgol Edern has succeeded in lowering its carbon footprint by 36% within a year, thanks to work to upgrade the school and the efforts of enthusiastic staff and pupils. Over the past 10 years, the school's use of propane, which is used to heat the school, has fallen by 38%, while its overall CO2 emissions has lowered by a quarter.



The school's electricity consumption is 10% below the typical national benchmark, which is the amount a school of its size would be expected to consume.

The savings are the result of a series of improvements carried out on the building to make it more energy efficient and, at the same time, pupils have been keen to monitor the school's energy consumption as well as the amount of electricity it generates with its new solar panels.

#### Implementation



Since 2012, work has been conducted to transform Ysgol Edern into an efficient building, including installing new boilers, PV solar panels, improvements to the lighting systems, installing new doors and insulating the roof.

Geraint Evans, the school's head teacher, said: "The improvements over the last few

years have enabled us as a school to reduce our energy consumption significantly and, as a result, our costs and carbon footprint."

As part of the project, a new door was installed in the entrance area to replace the old drafty door. However, the school decided to go one step further and create a new internal hallway by placing an additional door in the corridor to prevent cold drafts from coming into the building.

"I suspect it was an extremely inefficient building in the past," said Geraint. "But as a result of the work carried out, we've been able to see a substantial difference in our energy consumption within a relatively short period of time."

Installing a new heating system, along with insulating the roof and creating a new entrance to the building means less heat is able to escape from the school and that less energy is needed to heat the school.

#### PROJECT

**Upgrading boilers;  
PV Solar Panels;  
Re-wiring the building  
with the installation  
more efficient lighting**

#### CAPITAL COSTS

**£89,733 (total of all  
projects)**

#### FINANCIAL SAVINGS

**£76,640 over the life of  
the project**

#### CARBON SAVINGS

**154 tonnes of CO2 over  
the life of the project**

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Additionally, after re-wiring the building and introducing new efficient lights which run on sensors, the school's lights now switch off automatically.

But although the children no longer have to remember to switch the lights off, Geraint explained that learning the importance of saving energy is still a priority at the school.

"We have two pupils who keep a record of our energy consumption on a monthly basis, as well as how much electricity is generated by our solar panels," he said.

"Under the Gwynedd and Anglesey Green Schools scheme, the children have been studying themes such as solar panels and energy, so establishing an understanding of the importance of saving energy is something we feel strongly about."

Dyfan, a Year 6 pupil responsible for recording the school's energy consumption said: "We record our electricity consumption each month and feed the information into a spreadsheet. The spreadsheet informs us instantly if more electricity has been consumed in comparison to the previous month and compared to the same month last year. In order to reduce energy consumption we also remind everyone to close windows and doors and have placed stickers around the school to remind people that equipment such as computers need to be switched off when they're not in use."



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