

energy measures

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ADDITIONAL INFORMATION: Sports & Leisure

Suggested Temperatures for different parts of the Leisure Facility

Building/room type	Winter dry resultant temperature for stated activity and clothing levels			Summer dry resultant temperature range for stated activity and clothing levels			Suggested air supply rate (litres per person – except where otherwise stated)
	Temp (C)	Activity	Clothing	Temp (C)	Activity	Clothing	
Sports halls							
▪ Changing rooms	22-24	1.4	0.55	24-25	1.4	0.35	6-10 ACH
▪ Hall	13-16	3.0	0.4	14-16	3.0	0.35	8 ¹
Squash courts	10-12	4.0	0.25	-	-	-	4 ACH
Swimming pools							
▪ Changing rooms	23-24	1.4	0.5	24-25	1.4	0.35	10 ACH
▪ Pool halls	23-26	1.6	<0.1	23-26	1.6	<0.1	0-15 L s ⁻¹ m ⁻²

Recommended Pool Temperatures (°C)

Fitness	27
Recreational	28
Leisure	29
Children	30

¹ As above

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Indicative benchmarks for annual energy use, cost and CO₂ emissions

Indicative benchmarks for annual energy use, cost and CO₂ emissions per M² of entire building indoor facilities (UK)²

Centre type	Energy source	Energy (kWh/m ²)			Cost (£/m ²)			CO ₂ emissions (kg of CO ₂ /m ²)		
		Good	Fair	Poor	Good	Fair	Poor	Good	Fair	Poor
Without a pool	Fossil fuels	<215	215-325	>325	<2.6	2.6-4.0	>4.0	<41	41-62	>62
	Electricity	<75	75-85	>85	<4.7	4.7-5.3	>5.3	<47	47-54	>54
With a pool	Fossil fuels	<360	360-540	>540	<4.4	4.4-6.6	>6.6	<68	68-100	>100
	Electricity	<150	150-205	>205	<9.4	9.4-12.8	>12.8	<95	95-130	>130
Pool only	Fossil fuels	<775	775-1120	>1120	<9.5	9.5-13.8	>13.8	<150	150-210	>210
	Electricity	<165	165-235	>235	<10.3	10.3-14.7	>14.7	<100	100-150	>150

To compare the performance in your establishment to these benchmarks, you will need to:

To compare to the energy benchmark:

- i. Install sub-meters for the health suite and pool area (ensuring that your sub meters record only consumption from this area and not – for example – for the main hot water generation for the whole hotel)
- ii. Measure the area of your health suite in square metres. You should be able to do this from the plans or as a rule of thumb measure the external wall area and reduce by 15% to allow for unserviced space (for example shafts).
- iii. Take readings from your sub-meters and convert them all into kWh³
- iv. If you use more than one source of fossil fuels (for example fuel oil and natural gas), add both these figures together

² UK DoE guide 51 – *Energy efficiency in Sports and Recreation Buildings – a guide for owners and managers*

³ To convert energy consumption from other units into kWh, use the following factors:

- Multiply therms or BTU by 29.28
- Multiply cubic meters of gas by 10.5
- Multiply cubic feet of gas by 0.97
- Multiply tone of steam by 698

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- v. For electricity and fossil fuels, divide the total serviced area (m²) by the total amount of energy consumed kWh for both electricity and fossil fuels.
- vi. Compare your performance to the benchmarks above.

To compare to the cost benchmark:

- i. Ask your energy provider to assess the costs of your health suite and pool operation based on sub-meter readings
- ii. Measure the area of your health suite in square metres. You should be able to do this from the plans or as a rule of thumb measure the external wall area and reduce by 15% to allow for unserviced space (for example shafts).
- iii. If you use more than one source of fossil fuels (for example fuel oil and natural gas), add both these cost figures together
- iv. For electricity and fossil fuels, divide the total serviced area (m²) by the total cost of energy consumed kWh
- v. Compare your performance to the benchmarks above.

To compare to the carbon dioxide benchmark

- i. Install sub-meters for the health suite and pool area (ensuring that your sub meters record only consumption from this area and not – for example – for the main hot water generation for the whole hotel)
- ii. Measure the area of your health suite in square metres. You should be able to do this from the plans or as a rule of thumb measure the external wall area and reduce by 15% to allow for unserviced space (for example shafts).
- iii. Take readings from your sub-meters and convert them all into kWh⁴
- iv. Divide the total serviced area (m²) by the total amount of energy consumed kWh for electricity and each type of fossil fuel (keeping each separate).
 - v. Multiply the total electricity consumed by 0.11 to derive the CO₂ calculation
 - vi. Multiply the natural gas consumed by 0.05 to derive the CO₂ calculation
 - vii. Multiply the total diesel oil consumed by 0.07 to derive the CO₂ calculation
 - viii. Multiply the total LPG consumed by 0.06 to derive the CO₂ calculation
 - ix. Add the calculations for natural gas, fuel oil and LPG together.
 - x. Compare your performance to the benchmarks above.

⁴ To convert energy consumption from other units into kWh, use the following factors:

- Multiply therms or BTU by 29.28
- Multiply cubic meters of gas by 10.5
- Multiply cubic feet of gas by 0.97
- Multiply tone of steam by 698

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