

# Round house revolution?

Circular design offers cow housing and economic benefits

An innovative cattle house design is turning heads at one Kent-based beef unit. But does it really have a place on UK dairy units? And if so, what are the benefits? We spoke to, among others, one of its designers and a house owner to find out more.

Good for cow health and welfare and easy on the eye – as well as the pocket. What more could dairy producers looking to invest in new housing ask for? “How about efficiency for starters,” says Geoff Simpson, whose innovatively designed building – Roundhouse – is generating a lot of interest in the UK and across Europe. “The initial investment required to erect a roundhouse is on a par with a conventional cow house, but where it really gains is on annual running costs,” he explains. “Those housing beef cattle report that straw use is down 15% and labour use down by 50%. Even if these are reduced by just 10%, and the cost of running fans is cut out – due to the good ventilation characteristics of the building – the annual cost of running the building is nearly £1,000 lower than for a typical cubicle building, and £7,000 less than a conventional straw yard building. That’s largely because the capital cost of the fans is the best part of £17,000, with the annual running cost being £3,000.” So far 11 beef producers have put up roundhouses, but the company is

currently taking several enquiries each day from dairy producers about the suitability of the design for dairy cows, dry cows and calves. At the moment buildings are in planning for dry cows and others in negotiation for milking herds. “We’re also looking at erecting one with a robotic milker and the building would also lend itself to a rotary parlour,” adds Mr Simpson.

## No walls

He says that the house is suitable for every dairy system – be it for a loose housed or cubicle system on slats. Its main design features are the central vent hole that works like a large chimney and an integral handling system. There are no walls to the open-sided 30.25m diameter, 95m circumference building. Its infrastructure consists of a central steel kingpin, eight roof trusses and 16 perimeter supports. The recommendation for a dairy loose housed system is that each cow has around 6m of space for lying down, plus a 2.7m loafing and feeding area. Given the building has a total area of 720m

*The aesthetics and ingenuity of the roundhouse design can be appreciated from above – and at ground level*

that would mean it could technically hold around between 80 and 100 cows, depending on whether the loafing area could be outside, with the house having part of its sides fully open. The cubicle-based system holds around 75 cows.

## High strength

And the roof is manufactured from a single piece of tensile PVC-coated polyester fabric of incredibly high strength and durability. It’s tensioned over the framework by steel cable ties. The basic cost of a house, including groundwork and concrete, is around £95,000, with the building cost alone being around £55,000. “So that’s about £132/m,” says Mr Simpson. “This compares favourably with other forms of dairy buildings.” He refers to Dairy Co’s ‘Housing the 21st Century Cow’ CD ROM that puts the cost of a general purpose building at £145/m; a straw bedded yard building at £143/m and a cubicle building at £204/m (see Table 1).

Table 1: Capital and running cost of new dairy buildings (based on 90 cows and an 8,000-litre average yield)

	capital cost (£/cow)	total cost (£)	running costs (£/year)	running cost (ppl)
straw yard	1,183	106,506	26,599	3.7
two row kennels, mats	1,052	9,7180	20,419	2.8
two row cubicles	1,317	12,1057	24,545	3.4
the roundhouse* (straw yard system)	1,055	95,000	19,542	2.7

\* RBSL figures, as the Dairy Co program does not include roundhouse costings.



*Without walls: improved cow flow, more light and better ventilation are just some of the benefits of an ‘open’ house*

Ventilation, however, is better than most, if not all, other dairy buildings. Independent building consultant Mike Kelly, who is familiar with the building, is impressed with air flow through the building. There’s a 1.5m wide ventilation hole in the centre of the roof, which creates a ‘stack’ effect, and all the stale air is sucked up the middle of the house and out. “This creates ideal draft-free conditions for the stock,” says Lackham College’s farm manager Philip Steans. He has one on his wish list – the college is looking at putting up a new dairy building for its 170-cow herd – and good air flow is a big selling point for him.

## Cost effective

“I also think it will offer greater cow comfort and that the herd would also be easy to manage in such a building. And I think it would be the best way to utilise the space that’s available.” He says that the figures stack up. “In fact the cost is very similar to a conventional building on first glance. And the good

news is that on closer inspection, and when you factor in the lower running costs and the possible labour savings, it does work out to be more cost effective in the long run. I’m just hoping that the final decision makers agree!” Kent-based beef producer William Alexander is certainly pleased with his roundhouse – home to 120 finishing cattle – which was built in summer 2008 and has just seen its first winter. “Ventilation was excellent in all weather conditions – I couldn’t fault it. We had no health issues and dry matter intakes rose because it’s such a stress-free environment for any cattle. They can easily see each other, as well as the people that come and go, and it’s light and airy inside too.” He did consider an open stock yard with no roof for housing finishers, but plumped for the roundhouse after seeing one on a beef unit in Northumberland. “The integral handling facilities within it are another plus point,” he says. And the cost was comparable with a

conventional rectangular building. “Only I think that this is better value for money because this building is purpose designed for the cattle and we don’t incur costs due to disease and poor animal performance.”

The house has striking good looks too and has caused quite a stir locally. Mr Alexander has put up an information board along the footpath that runs through his farm and past the house to satisfy passing ramblers’ curiosity. “People were stopping and pointing and asking what it was,” he explains. And their comments are always complimentary. Because the building has a curved and low profile roof, the building’s visual impact is dramatically reduced compared to a more traditional building. The green, matt-finished roof also means that the building blends extremely well into the countryside. “I’m very proud of the building. It looks good but, more importantly, the stock do well in there,” says Mr Alexander. “And I’d certainly put up another one if I needed more cattle accommodation in the future.”

Rachael Porter