



GP 95

direct heating vt indirect heating



Advantages of indirect heating

- Energy saving from ca.25%
- Better performance of the animals
- Lower insurance costs
- Allows the farmer to have more birds in the barn – higher production capacity in the shed
- Less ill birds, less losings, less medication

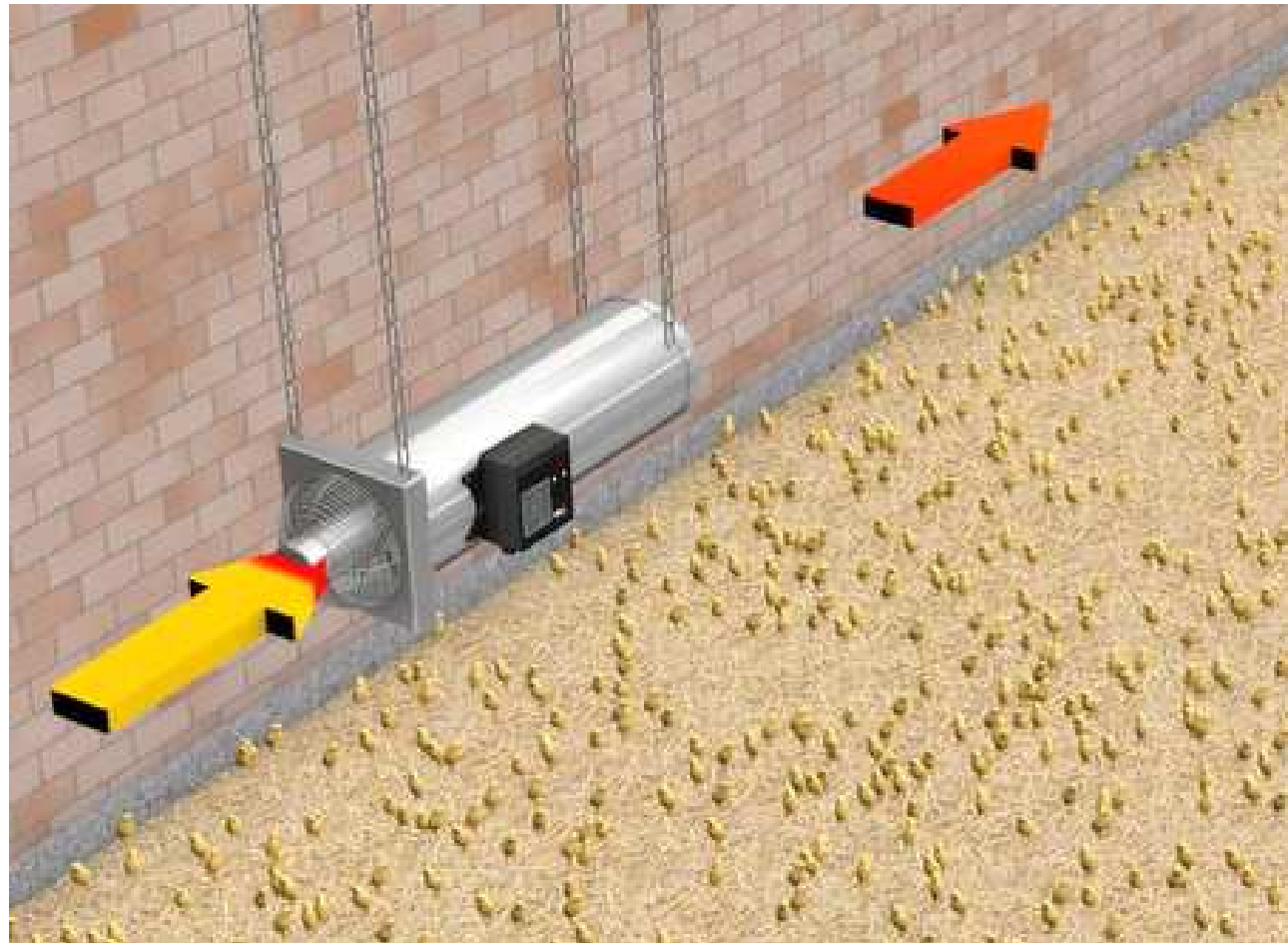
Comparison direct and indirect heating



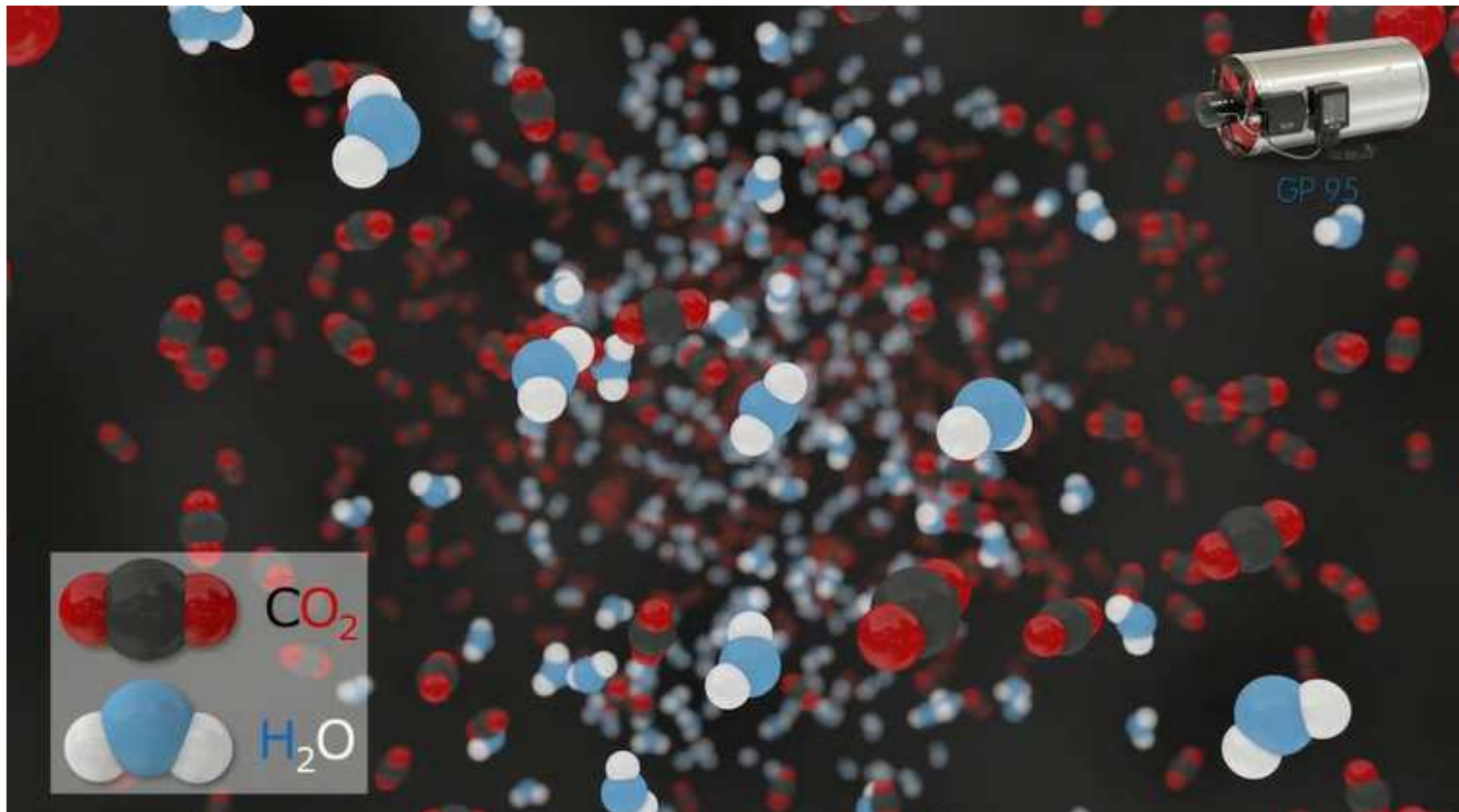
Direct heating:



Direct heating:



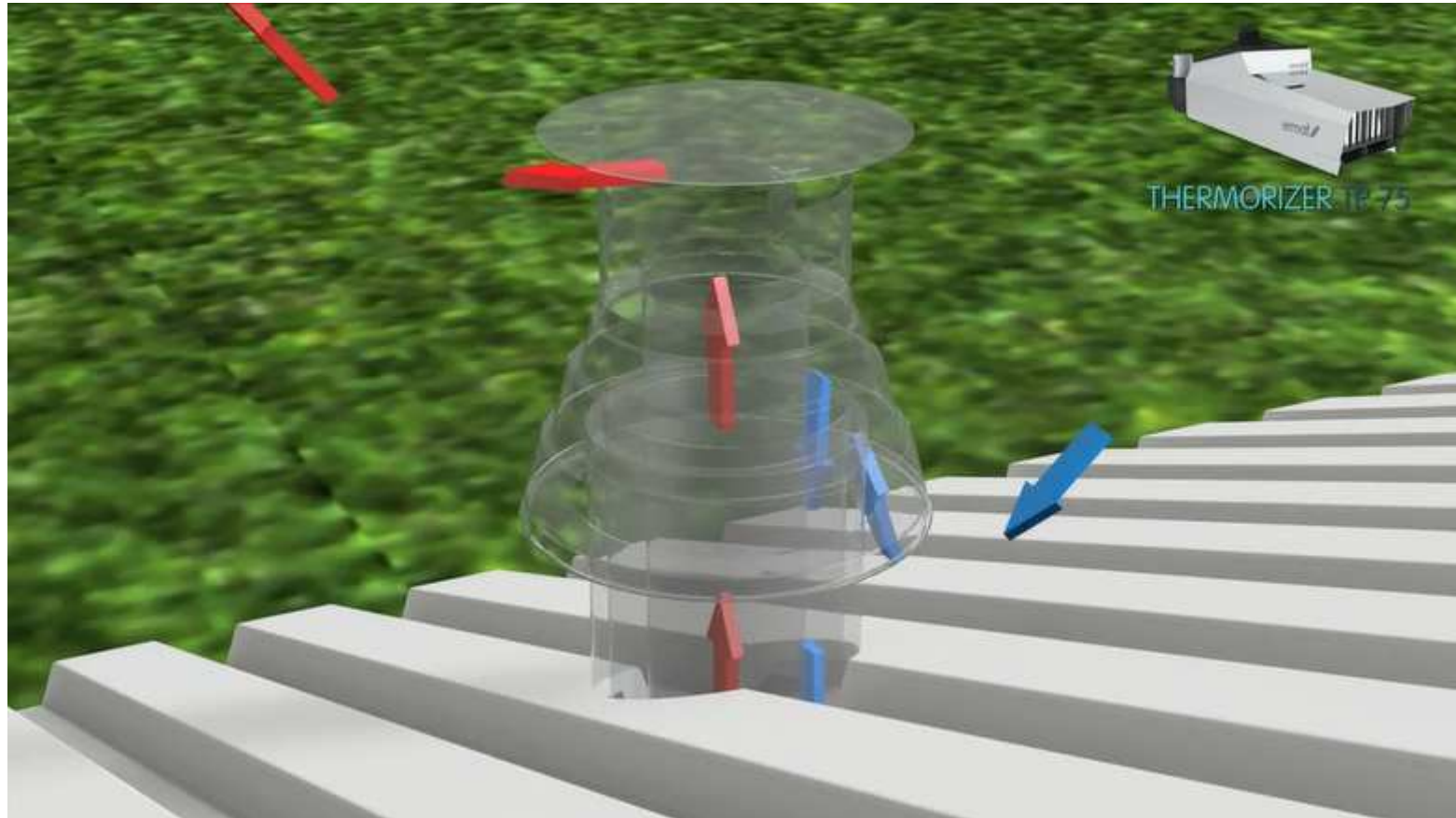
Direct heating:



Indirect heating



Indirect heating



Indirect heating



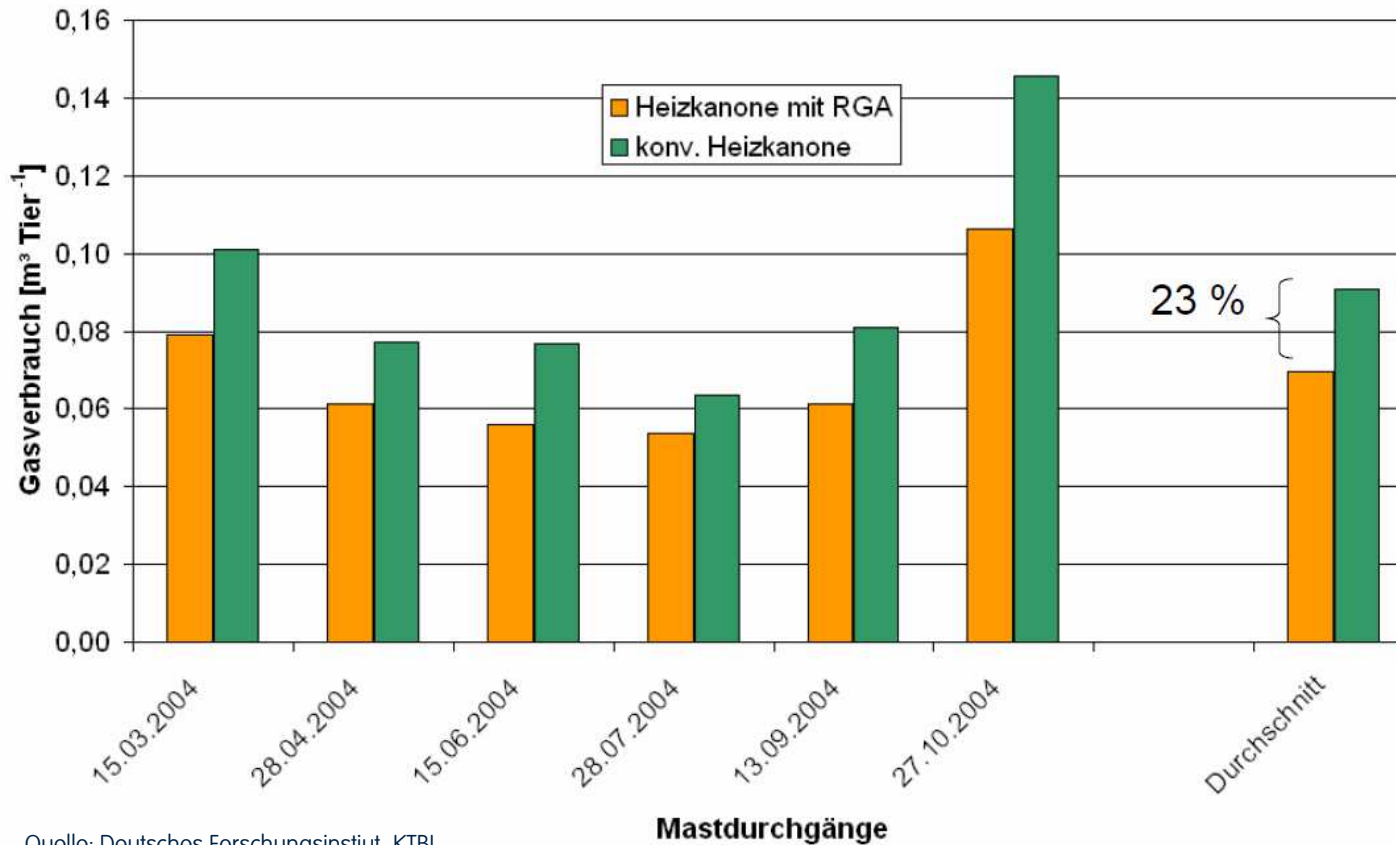
Indirect heating



Comparison indirect and direct heating



Energy savings over 25 %



Quelle: Deutsches Forschungsinstitut, KTBL

Energy savings because lower ventilation rate

What happens over 2500ppm carbon dioxide?

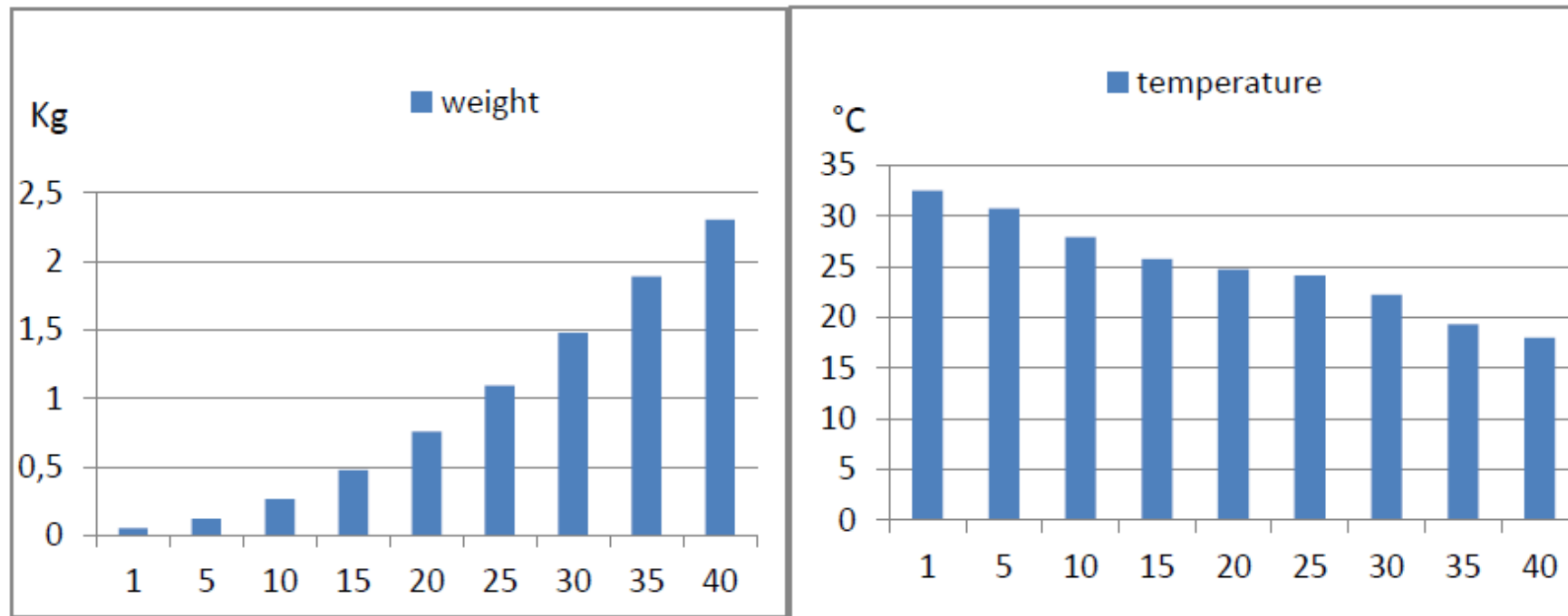


- Increase of the chance for "round heart disease"
- Inactivity of the birds
- They drink and eat less
- Metabolism decreases
- Birds gain less weight

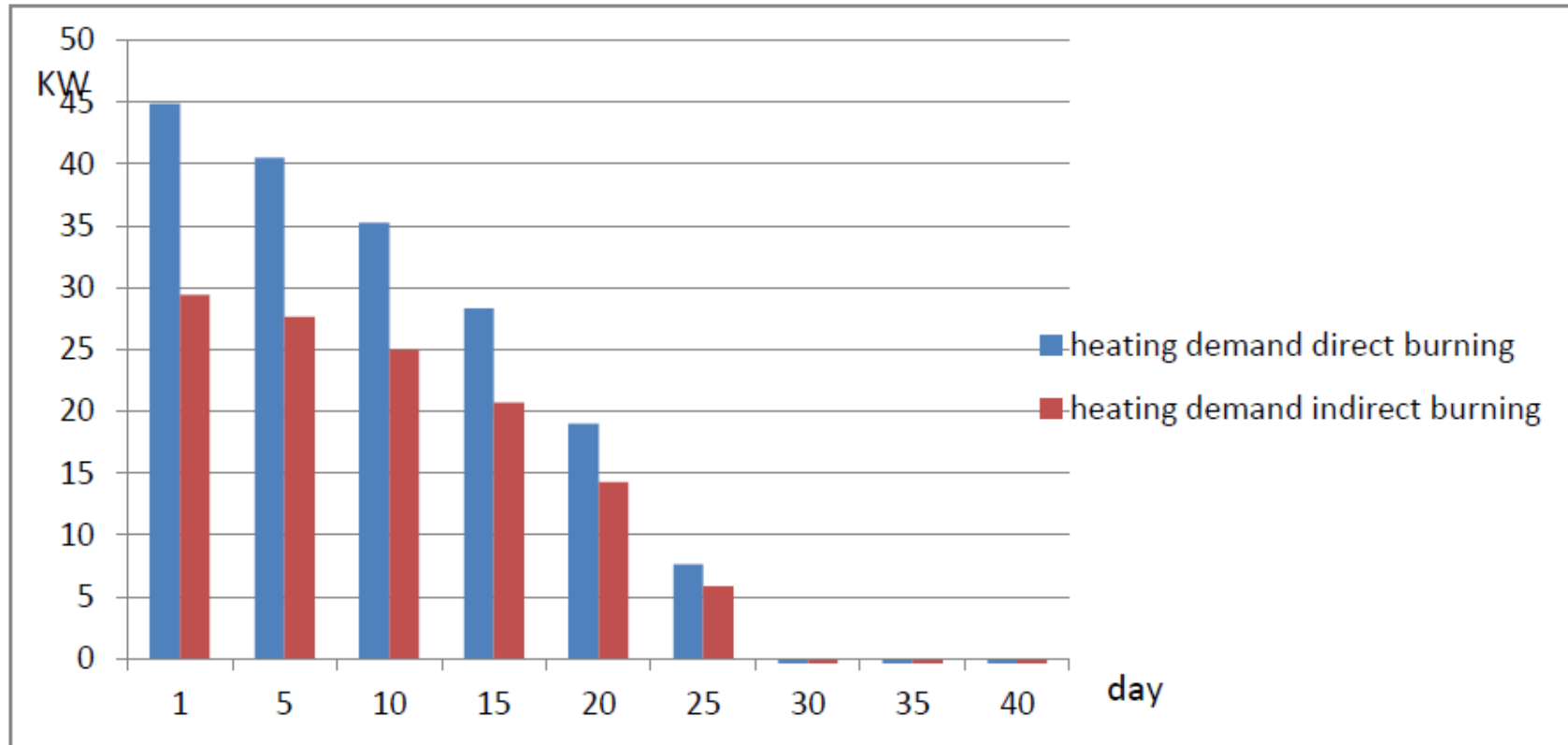
Example calculation for needed heat demand

length		94 m
width		19 m
height ceiling		5,5 m
height overall		7 m
	Einstreu	NO
k-value of floor		0,5 W/(m ² *K)
k-value of roof		0,4 W/(m ² *K)
k-value of wall		0,4 W/(m ² *K)
lowest temperature		-30 °C
CO2 - Concentration maximum		4000 ppm
Animals	Masttiere	84000 animals

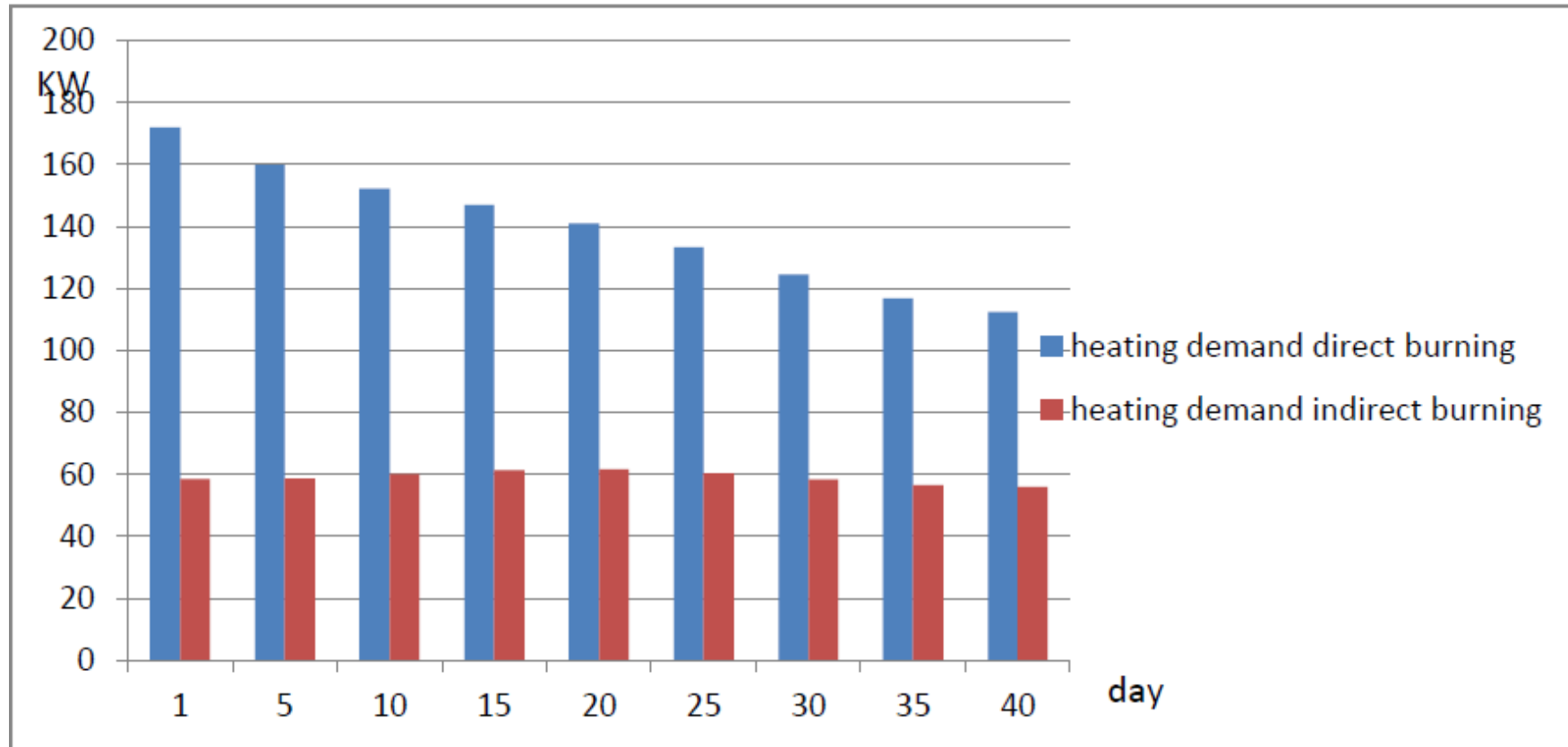
Example calculation for needed heat demand



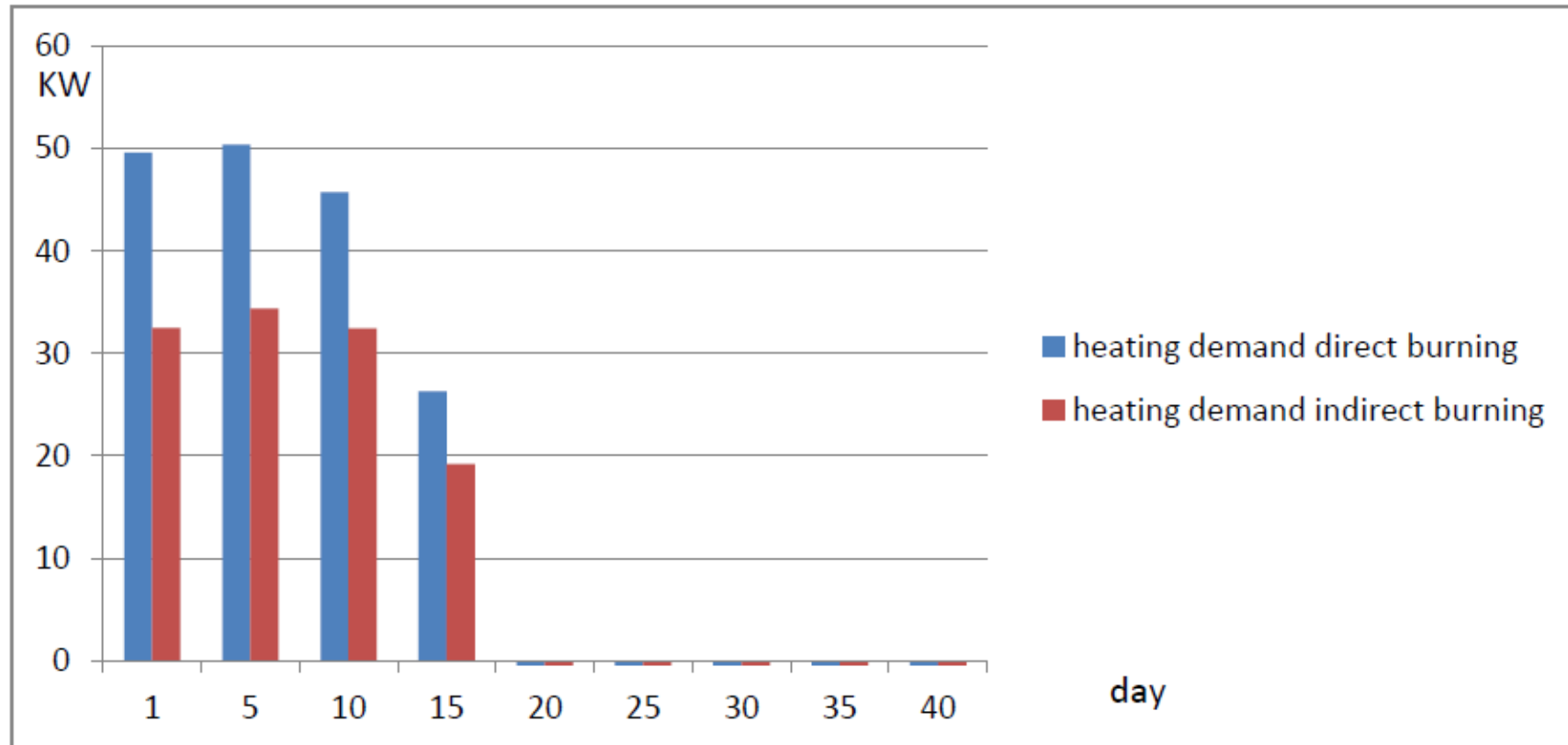
Example 8250 birds 5°C



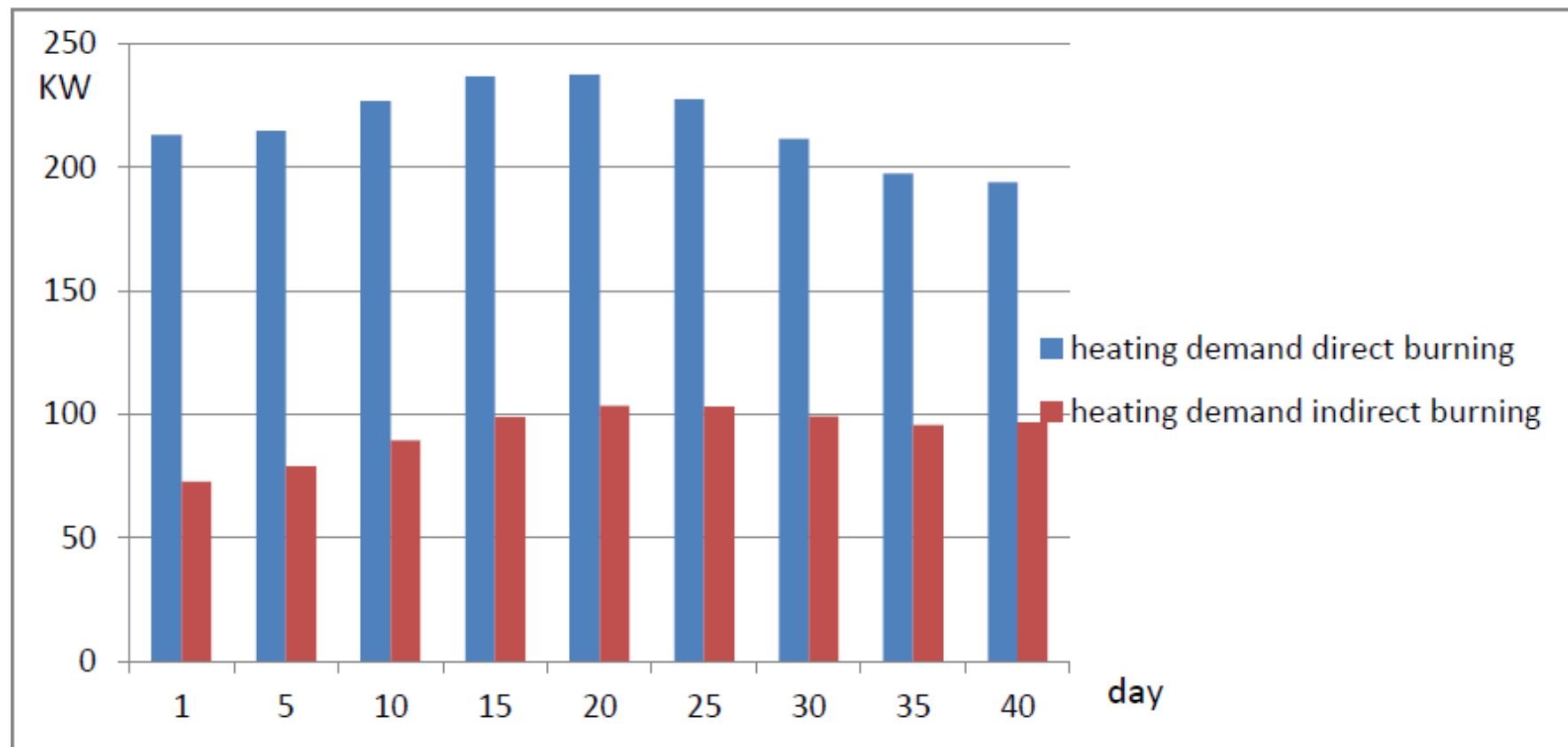
Example 8250 birds -20°C



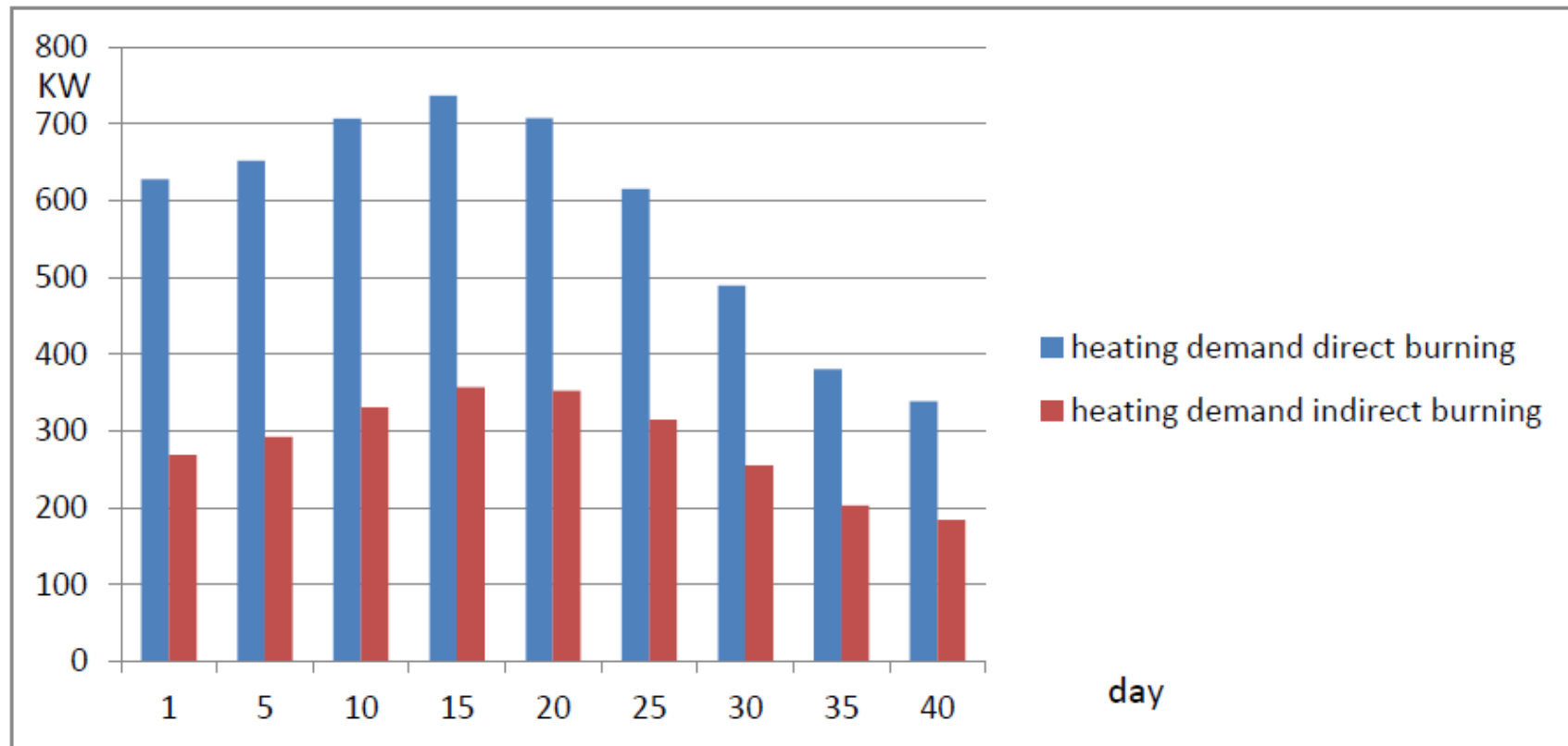
Example 30000 birds 5°C at 3000ppm



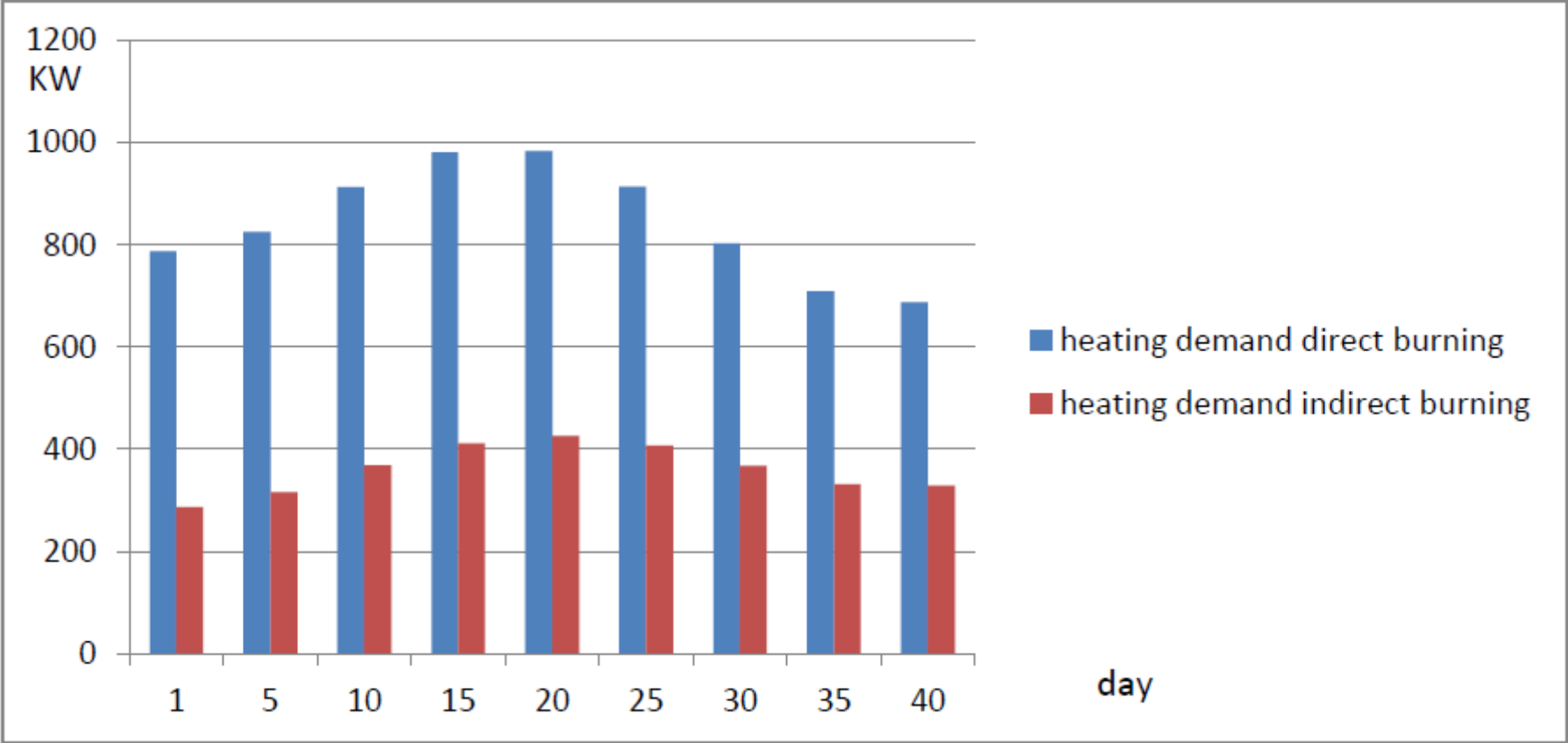
Example 30000 birds -20°C at 3000ppm



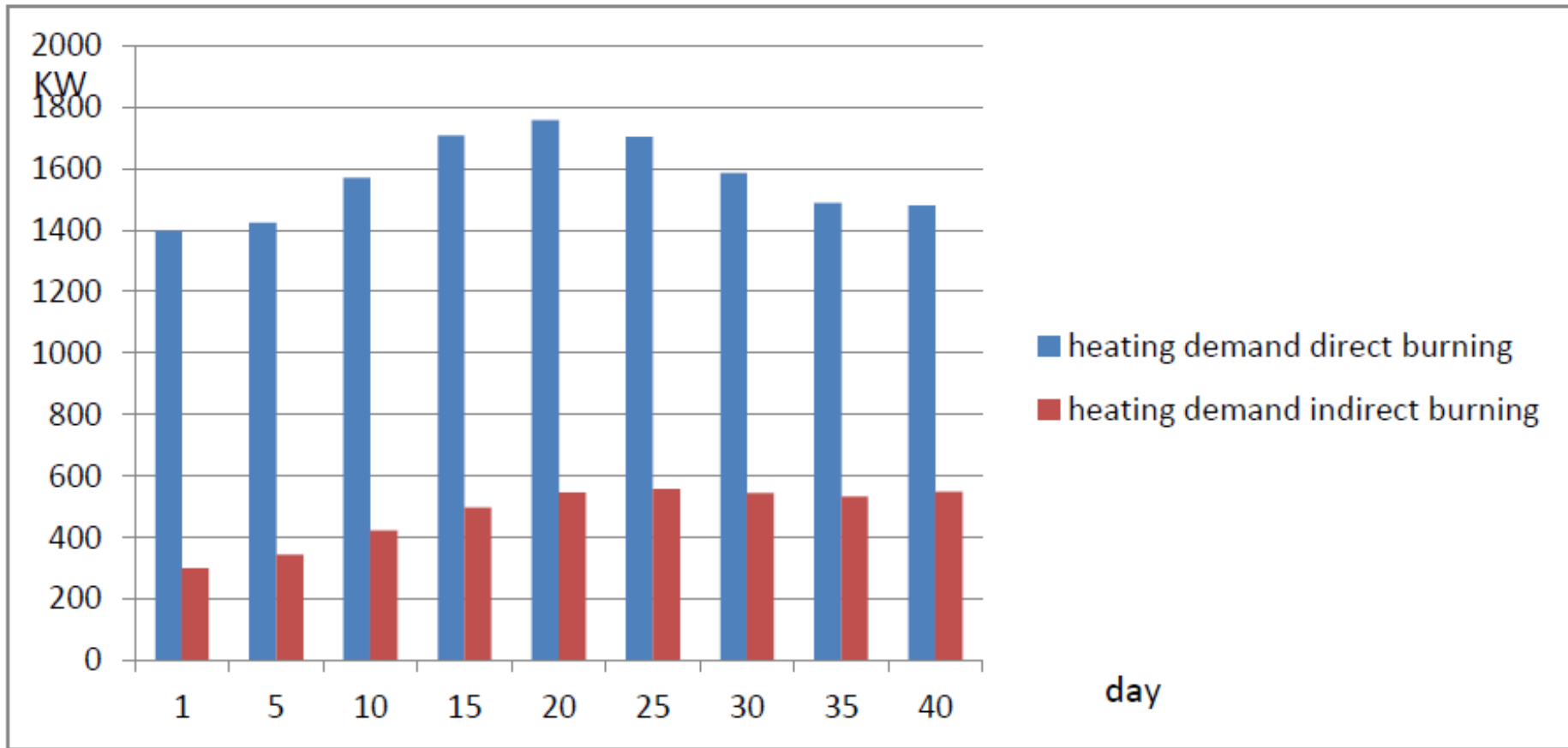
84000 broilers at -30°C und 4000ppm



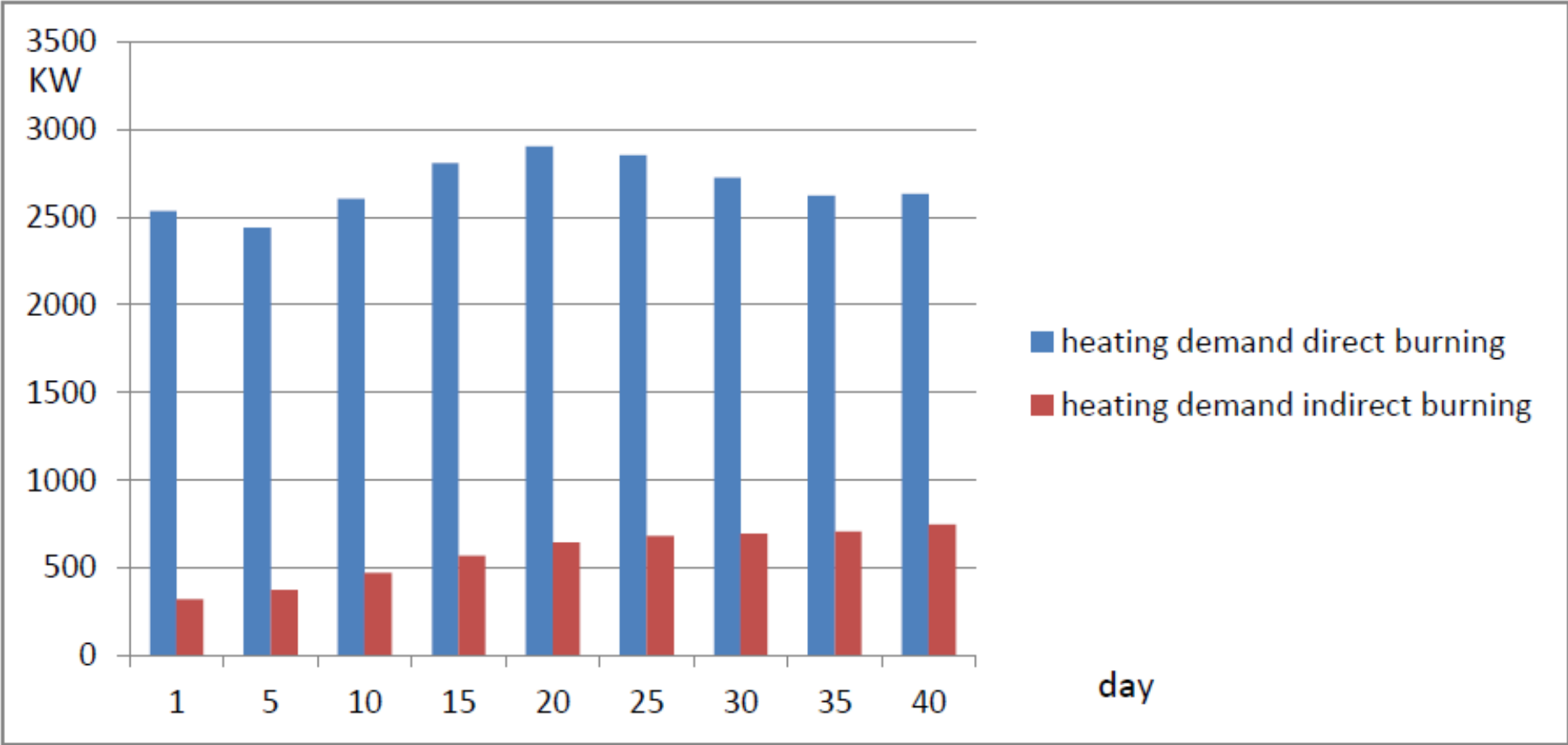
84000 broilers at -37°C und 4000ppm



84000 broilers at -30°C und 3000ppm



84000 broilers at -37°C und 3000ppm



EU – Guideline 2007/43/EG

- **It is allowed to hold 33 kg/m²**
- **If the CO₂ level is below 3000 ppm – 39 kg/m²**

almost 20% more chicken in a barn

Indirect Heating Effectuate

1qm gas produces 1 liter water

1. reduction of humidity with ca. 15 %
2. less ammoniac
3. less manure

Higher Fire Safety

- open flame - 1600 °C
- Temperature on heat exchanger max 400°C

What means that for the wallet of the farmer at the example in Russia?

- 95000m³ gas consumption for 30000 broiler
- 45 cent gas cost
- 42750 EUR gas cost
- Heating cost savings more than 25%
- **min. 10500,-- EUR savings in a year**

What means that for the wallet of the farmer at the example in Russia?

- 50 grams more weight gain (30.000 broiler)
- 1,5 tons additional produced meat
- at 7,5 batches
- 11,25 tons
- **11250,- more returns a year**

What means that for the wallet of the farmer at the example in Russia?

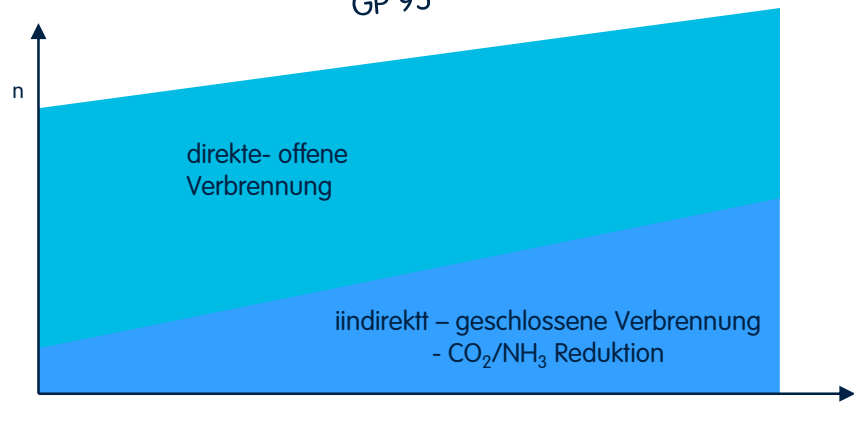
- Heating cost savings 10687,-- EUR
- Additional returns 11250,-- EUR
- Cost advantages 21937,-- EUR
- Additional cost TR75 at 6 pieces ca. 16000,-- EUR
- **ROI less than one year**
- we did not even count the lower insurance cost and the additional production capacity in the EU

Advantage of indirect heating

- Savings on heating and insurance
- better results of the birds, higher returns
- allows to have more birds in the barn – higher productivity
- less ill bird, less medication costs

- no harmful gases in the shed
- better climate in the shed
- more dry and less manure

Market development



Principle and Composition of the Thermorizer



