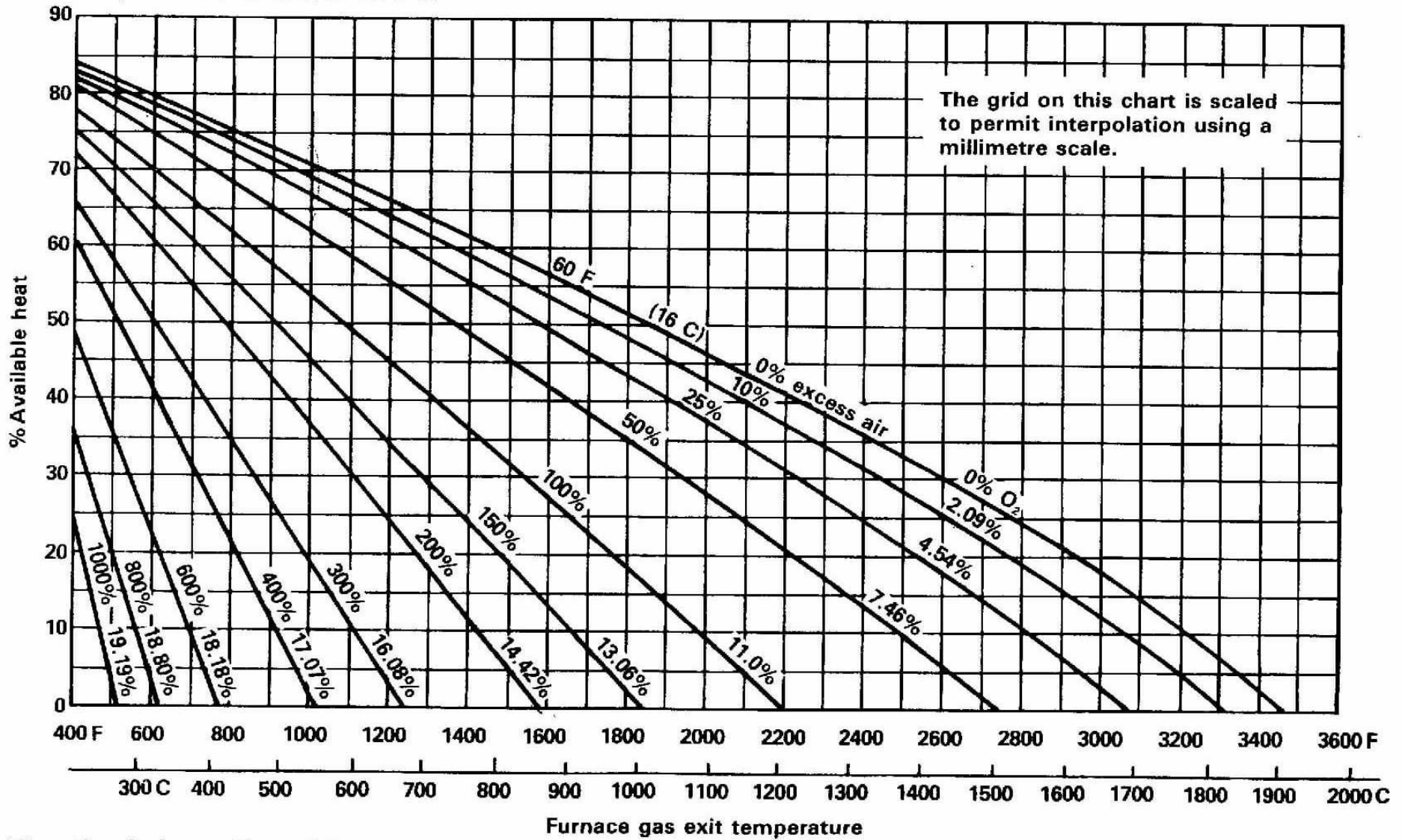


Payback Example



*Savings are based on performing
PM on only ONE burner**

Figure 3.10. Available heat chart for 1000 Btu/ft³ natural gas*, showing the effect of excess air upon available heat. Based on 60 F (16 C) air. Applicable only if there is no unburned fuel in the products of combustion. Corrected for dissociation of CO₂ and H₂O. See also Figures 3.11, 12, 15, 17. See Examples 3-6, 7, 8. See footnote (t) on page 71. The x-intercept is the adiabatic flame temperature (hot mix temperature) for that particular curve. Example: With 25% excess air with natural gas (4.54% O₂ in the furnace exit gas), the adiabatic flame temperature is 3070 F, or 1688 C.



* For other fuels, see Figure 3.9.

Payback Example

- A Customer is running 1 burner system at 1 mmBTU/ Hr and 1400°F with 50% excess air.
- From the heat chart on the previous page the customer is shown as getting 48% of available heat, thus they are dissipating 52% of the available heat.
- The customer is running on 10\$/mmBTU natural gas.
- $.52\% \text{ dissipated heat} * 1\text{mmBTU/Hr} * 10\$/\text{mmBTU} = 5.20 \text{ \$/Hr}$ in unused energy.
- S&B is hired for PM and Burner Tune-up costing the customer \$1000 and obtaining 10% excess air at 1400°F, which is as efficient as could be expected.
- From the heat chart customer is getting 58% of available heat thus they are dissipating 42% of the available heat.
- $.42\% \text{ dissipated heat} * 1\text{mmBTU/Hr} * 10\$/\text{mmBTU} = 4.20 \text{ \$/Hr}$ in unused energy.
- S&B is saving customer 1.00 \$/hr
- If customer runs burner 80 hours a week then we save them 80 \$/week.
- The original cost to customer is \$1000 thus the payback period is 12.5 weeks!
- This payback is based on gas savings for one burner only. Other benefits of PM are not included.