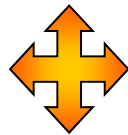


# IR vs. convection



## Heat transfer by...



Vibration



Induction



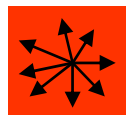
Convection



Conduction

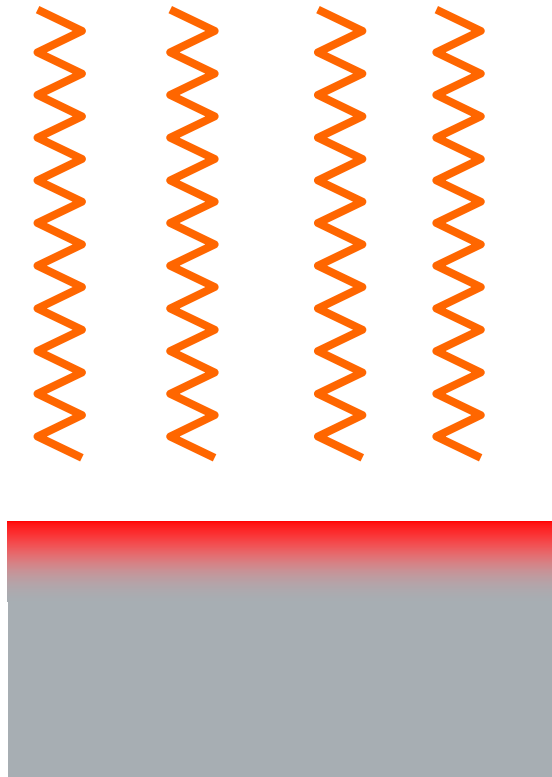


Electronic Beam

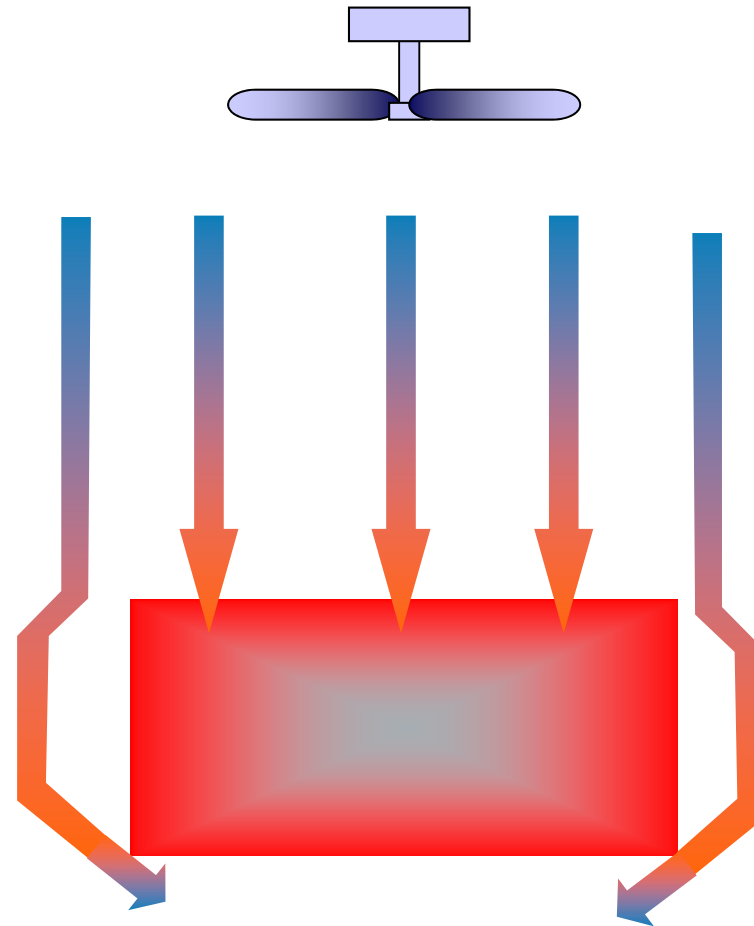


Infrared Radiation

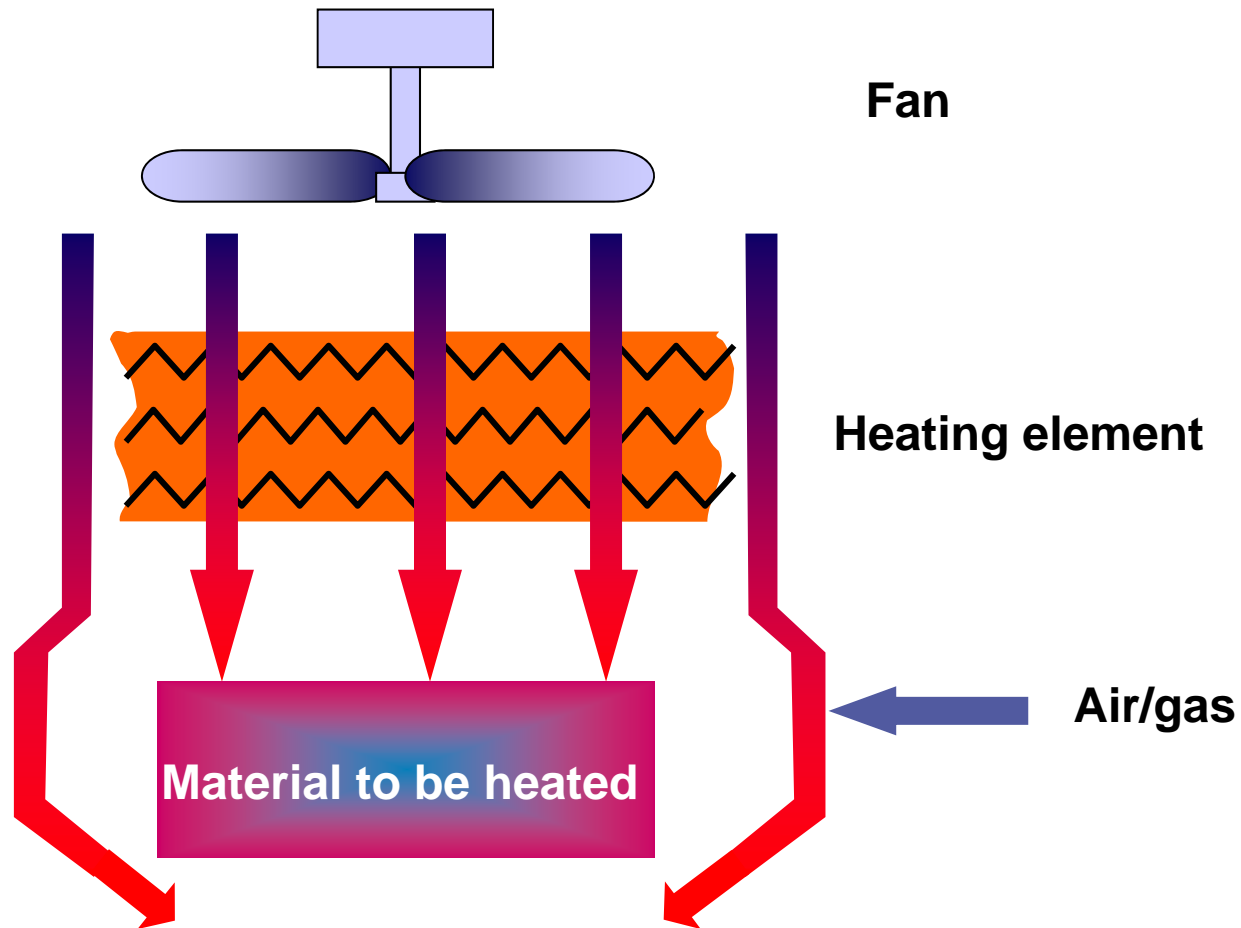
## Infrared Heat



## Hot Air / Convection



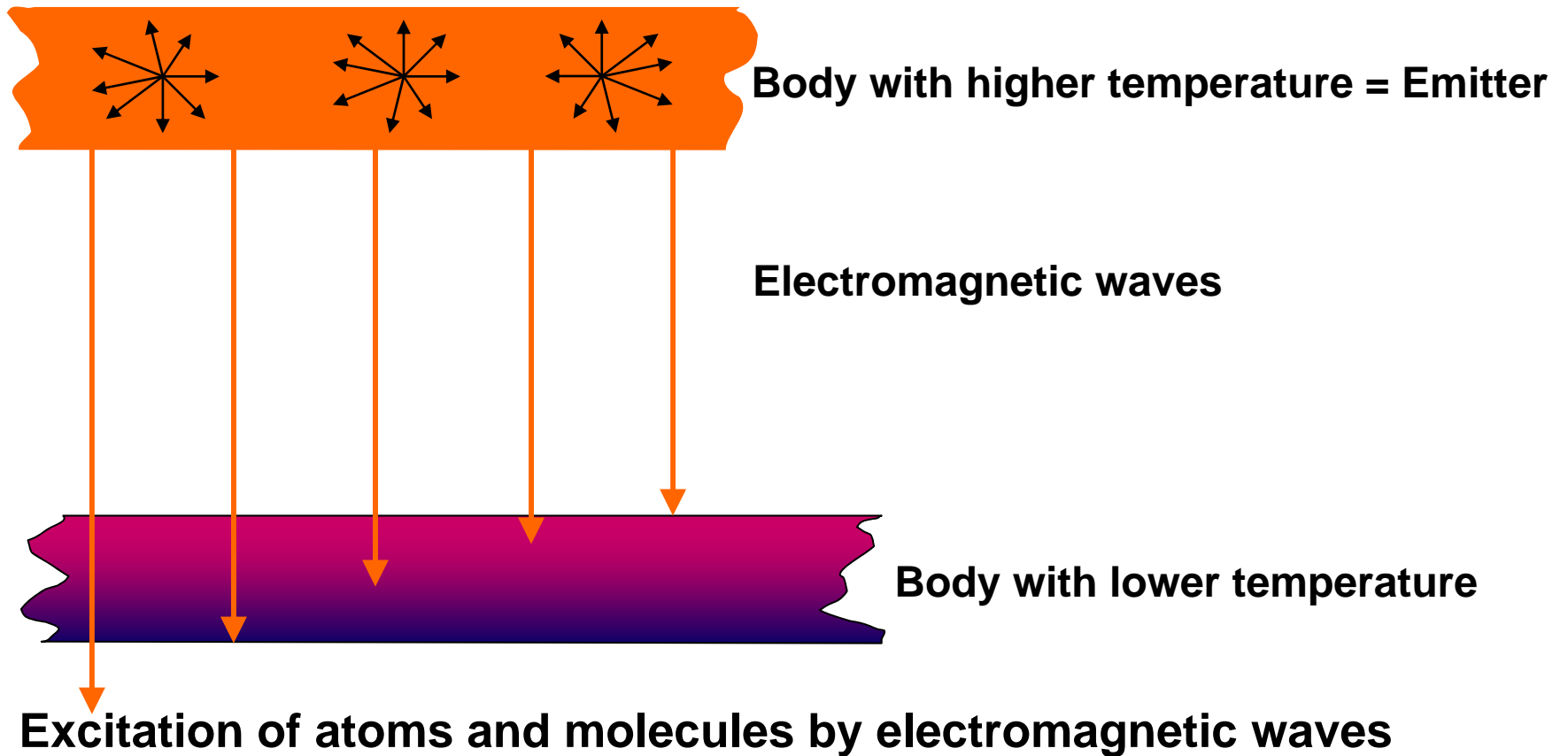
## Heat Transfer by Convection



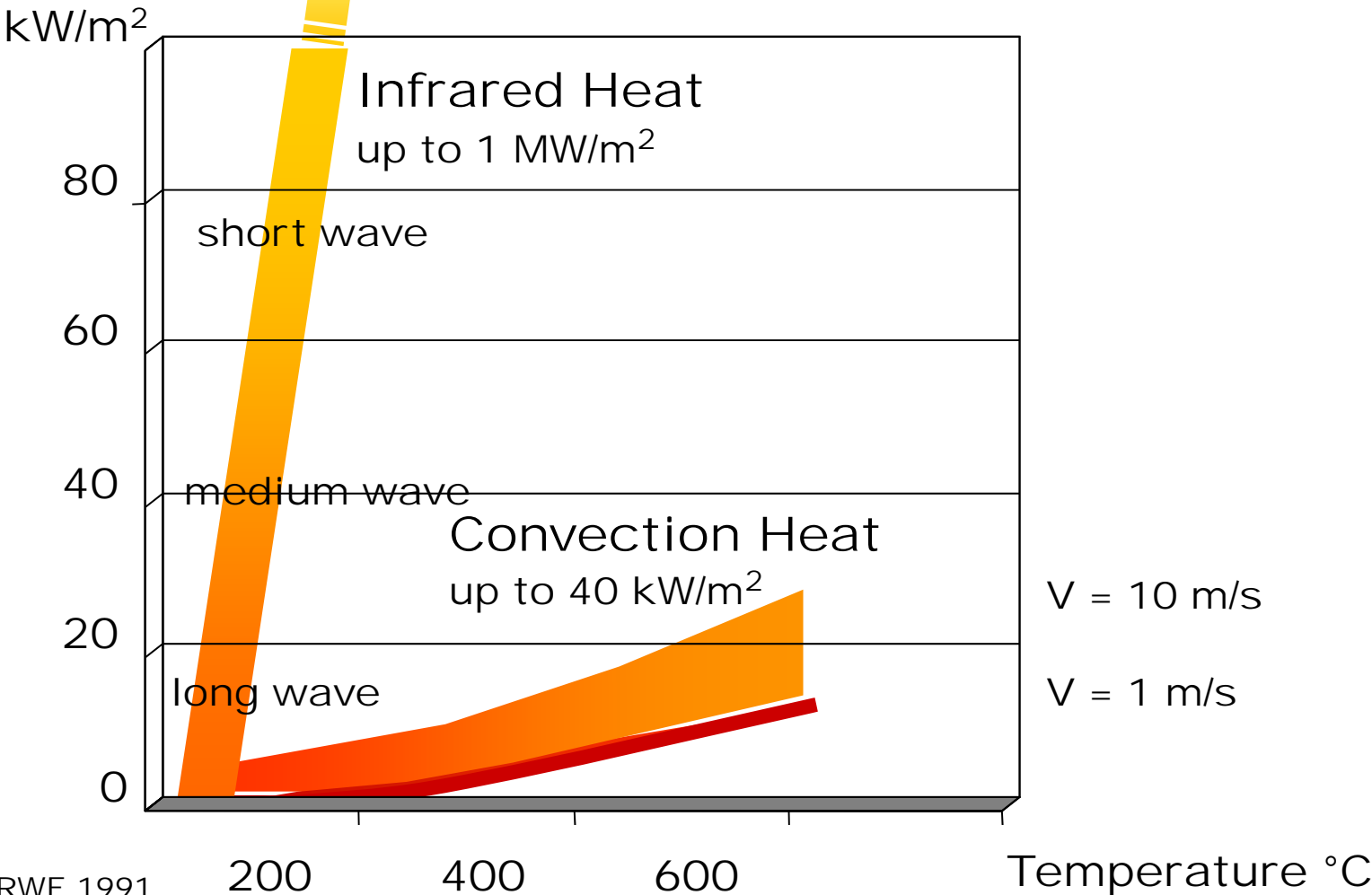
**Heat will be transferred by gas/air to warm up the material**

## Heat Transfer by IR Radiation

**Oscillation energy = function of temperature**



# Heat Transfer Capacity



Source: RWE 1991

## Advantages of Infrared-Heating compared to convection

- **Approx. 50% energy saving  
by direct heat transfer**
- **Approx. 80 % space saving by  
high heating power and fast heating**
- **Heating process fits in easily with the manufacturing  
process  
by appropriate choice of emitter / emitter cassette,  
the heating can be matched to the speed of the  
process**
- **Simple dust-free working and heat transfer  
without intermediate medium.**



## Powder Coating of steel cylinders



## Powder Coating of steel cylinders

	Convection	Infrared	Saving
Length	Ca. 30m	Ca. 6m	80%
Gelling and Curing	30-60 min	5-15 min	80%

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