"Flames are speaking a clear language":
The translation is the key into a new process analysis

heat energy input of the burner:

$$\dot{m}_{fuel} \times h\dot{u}_{fuel} = \dot{Q}_{flame}$$

fuel & primary air →

$T_{1\ flame}$

$T_{2\ flame}$

V_{flame1} V_{flame2}

$Q_{flame \rightarrow clinker}$

$\dot{Q}_1$ $\dot{Q}_2$

$\dot{T}_{clinker} \sim \dot{m}_{clinker} \times \dot{q}_{preheating}$

$T_{clinker}$

Δt

secondary air

Belite

Short Flame

Long flame

Alite

Two different flame temperature profiles and their effect on clinker materials

Distance from firing end, (m)
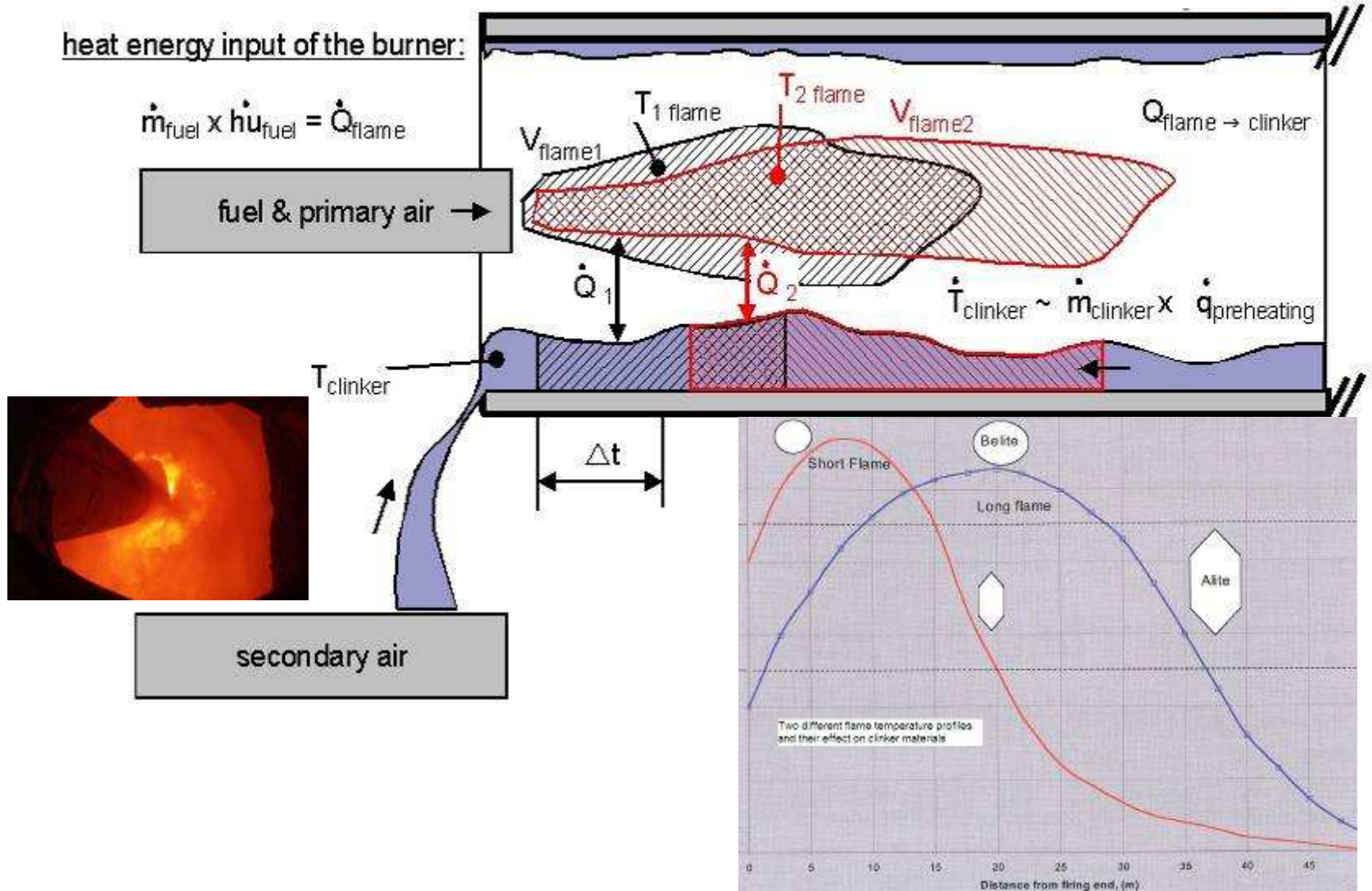
Flame geometry, the basis for enhanced process transparency