air is used instead of oxygen the relation between S and the combustion speed λ is the same; only the value is 10 x lower as explained before. On the other hand if the mixture has a temperature of 400°C the combustion speed will be increased by a factor 5 as explained before.

Combining all the factors results in a complete nomogram per fuel gas. An example for natural gas / air / oxygen mixtures illustrates the above (fig. 3.):

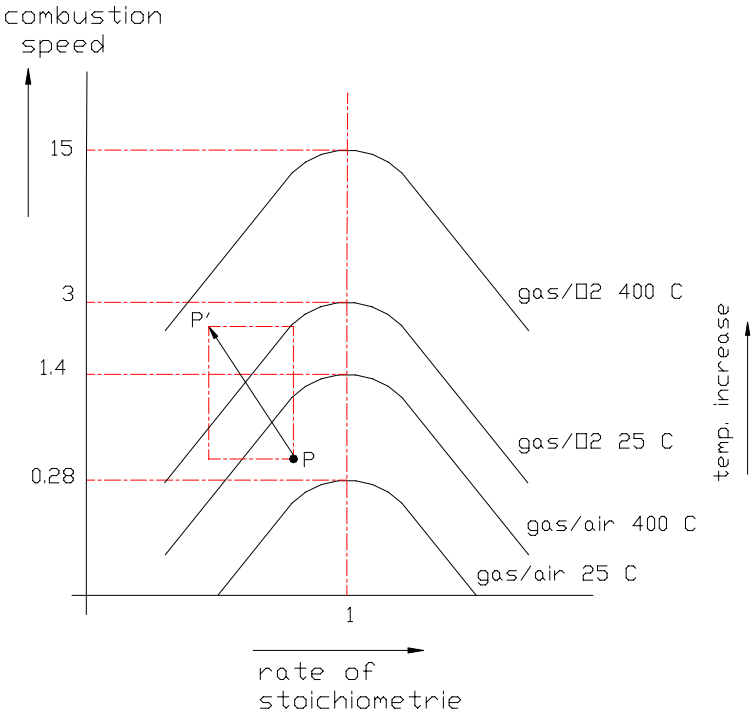

Figure 1

Imagine a gas/air/oxygen mixture characterised by point P.
When we add oxygen, the combustion speed increases because there is relatively more oxygen in the mixture and therefore the chance for a CH_4 molecule to find an O_2 molecule increases; on the other hand the degree of stoichiometry decreases as there is now more ballast in total (be it "better" ballast as it contains more oxygen !) The result is a shift to P'.

type of fuelgas	calorific value (* 10^3 Kj/m^3)	combustion speed (m/s)		stoichiometric mixing ratio	
		gas/ air	gas/ oxygen	Air	oxygen
Coal gas	14.0-17.6	0.7	7	1:5	1:1
Hydrogen	10.8	2.7	9	1:2.5	1:0.5
Natural gas 85% CH_4 15% N_2	31.8	0.28	3	1:8.5	1:1.7
Methane	35.9	0.45	4	1:10	1:2
Propane	94.0	0.40	4	1:25	1:5
Butane	123.9	0.40	4	1:32.5	1:6.5
LPG 40-60%	103.0-111.0	0.40	4	1:28	1:5.6