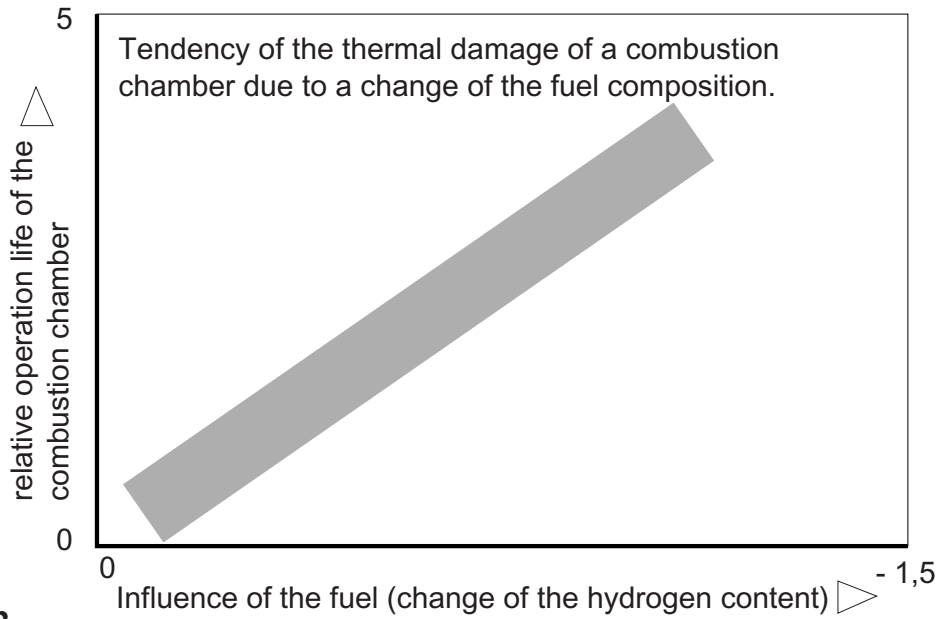
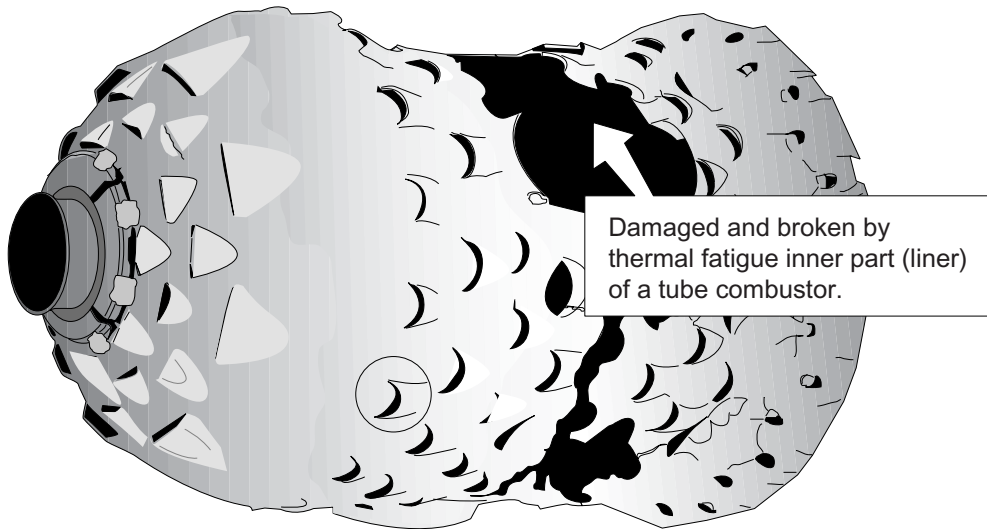
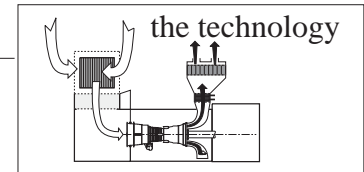


Seemingly small changes of the fuel can affect considerably the operation life of the combustion chamber.



III. 2.6-2



Ill. 2.6-2 (Lit 2-9): Soot of the combustion process is crucial for the **thermal load of the combustion chamber by heat radiation**. The glowing soot particles are the main radiation source. It is responsible for the temperature of the combustion chamber walls because the radiation penetrates the protective veil of cooling air. So the repair costs of the combustion chamber rise due to exceeding damage (e.g. crack formation, deformations; upper sketch, Ill. 3.2.3-1).

The **soot forming carbon** respectively the hydrogen content is destined by the ratio of the chain and ring hydrocarbons. Of course combustion conditions play an important role for the soot generation (Lit. 2-12).

The diagram shows the **tendency of the dependence from operation life time** of the combustion chamber from the composition of a (liquid) fuel.

About 100°K lead to thermal stresses which cause disproportionately changes of about a order of magnitude in the operating life (load cycles to crack formation).

Notice: Also a seemingly small change of the **fuel specification** and/or the use of different fuels can **shorten the time to overhaul** markedly and boost the repair costs. Therefore a most critical check with **suitable operation conform test runs** is strongly suggested.