Solid fuel furniture, open chimneys, cockle stove etc. against controlled flat ventilation (CFV)? – due to fireplaces - regulation

In effect the contra is needless if you have correctly understand the coherencies between heating and CFV and if you correctly interprete the concerning regulations. A modern house of the EnEV is well protected against heat loss and excessively heat input (summer) additionally the house is very leak in order to avoid energy loss through gaps and other leakiness of the shell of building, the doors and the windows. This tightness has the price that room air supported fireplaces are permitted. You ask why?
In order to burn 1 kg solid fuel (e. g. wood) needs between 12 – 18 kg air, justified by the chemic formulas $C + O_2 = CO_2$ $H_nC_m + O_2$ = ca. a $*H_2O + b* CO_2$ ((H_nC_m stands for the numerous types of carbon hydride, a and accordingly b are dependent of CH connections and their proportion into the solid fuel) in order to mention the most important parts. Naturally there are further products of combustion like nitric oxide, calcium oxide, magnesium oxide and others. A big part of them can be found in the ash and the gazes, with the water damp, vanish with the fine dust through the chimney. Oxigen can be only found for 1/5 in the air, for this reason the air demand is approx. 5 times of the volume of oxigen. Only calculated the first formula, 1 kg C burns to (12+32)/12 = 3,67 kg CO_2, you can say that 2,667 kg oxygen and 9,345 kg nitrogen (4* 2,667 *28/32) had been used, in which nitrogen behaves as inert gaz. (The number 12,32,28 corresponds the atomic mass/molecular mass of C, O_2 and N_2) Additionally to the demand for burning there is also a conventions effect due to the burning heat, which detaches further air flow through the chimney, so that the above mentioned quantity of 12 – 18 kg isn't unrealistic. The middle specific weight of air is 1, 2 kg/m³, for this the volume value of the used air is 10 – 15 m³ for each kg fuel. A middle room has 40 m³, a living room of 60 – 100 m³ and often more. Depending of the heat demand 1 kg wood burns up in 10 – 40 minutes. If the air demand should be covered by the room air, there will be coming some problems, because the remaining leakiness delivers not sufficient air. An underpressure arises; the burning is qualitatively bad; dangerous gases, which are flowing back into the room, are arising.

Additionally there is also the regulation for room air supported fireplaces, which says, that during the operation of such fireplaces, room air technical ventilation apparatus must be (automatically) switched off. The regulation is justified by the fear, that the incoming air ventilator could fail and that an underpressure will arise through the outgoing air ventilator, which could extract smoke into the room. It makes no sense to argue with the fathers of this regulations, concerning the plausibility of the expected breakdown, if they do not detect, that the inhabitants must be death, alone the demand of air of the room air supported fire place in an air tight room which corresponds the EnEV.

If you consider the regulations of the EnEV, the lawmaker and their civil servants do not notice, that in a built houses/renovated houses such fire places have no place!

Correctly there must be a pressure controller, which is combined with the fire place, which assures by an automatic equipment, that the fire place brings enough combustion air and if there would be only one window in the near which would be opened!

Since decades, demand and innovation assure that the above mentioned problems are appropriate solvable and namely that there is a non-switchable combustion air induction for the fire place. This can be an appropriate pipeline, which brings air from the outside to the fire place or a chimney which lead in fresh air in counter stream to the burnt gas.

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