

SUBSTITUTION OF CARBON IN CHEMICAL AND PROCESS INDUSTRIES

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The process industries, particularly the chemical technologies had been well optimized under the assumption, that cheap fossil fuels are available. There is hardly any space for saving. Principal energy consumption is here for high temperature processes of high tonnage manufacture, as metallurgy, cement and lime manufacture, bricks and ceramics, in the classical chemistry e.g. the olefine pyrolysis or ammonia synthesis. Therefore, the only option, how to save carbon is a substantial revolution under the assumption that other source of heat, renewable energy, and reducing agents would be at hand. Nevertheless, carbon as a component of polymers and other manufactured compounds is mostly irreplaceable; only small fraction could be covered by biomaterials or by a captured waste carbon dioxide. However here, any replacement should mean a complete development of essentially new technologies, which means also enormous investments. It is questionable whether this is just the place where to do it. In EU27, the classical chemistry consumes about 5 % of fossil carbon only, in the other large-scale process technologies (iron and steel, cement bricks, lime, ceramics, glass, etc.) it makes 13 %. We can compare it with the energetics (42 %), transport (23 %), or household and services (26 %), where the saving may be simpler and more efficient.