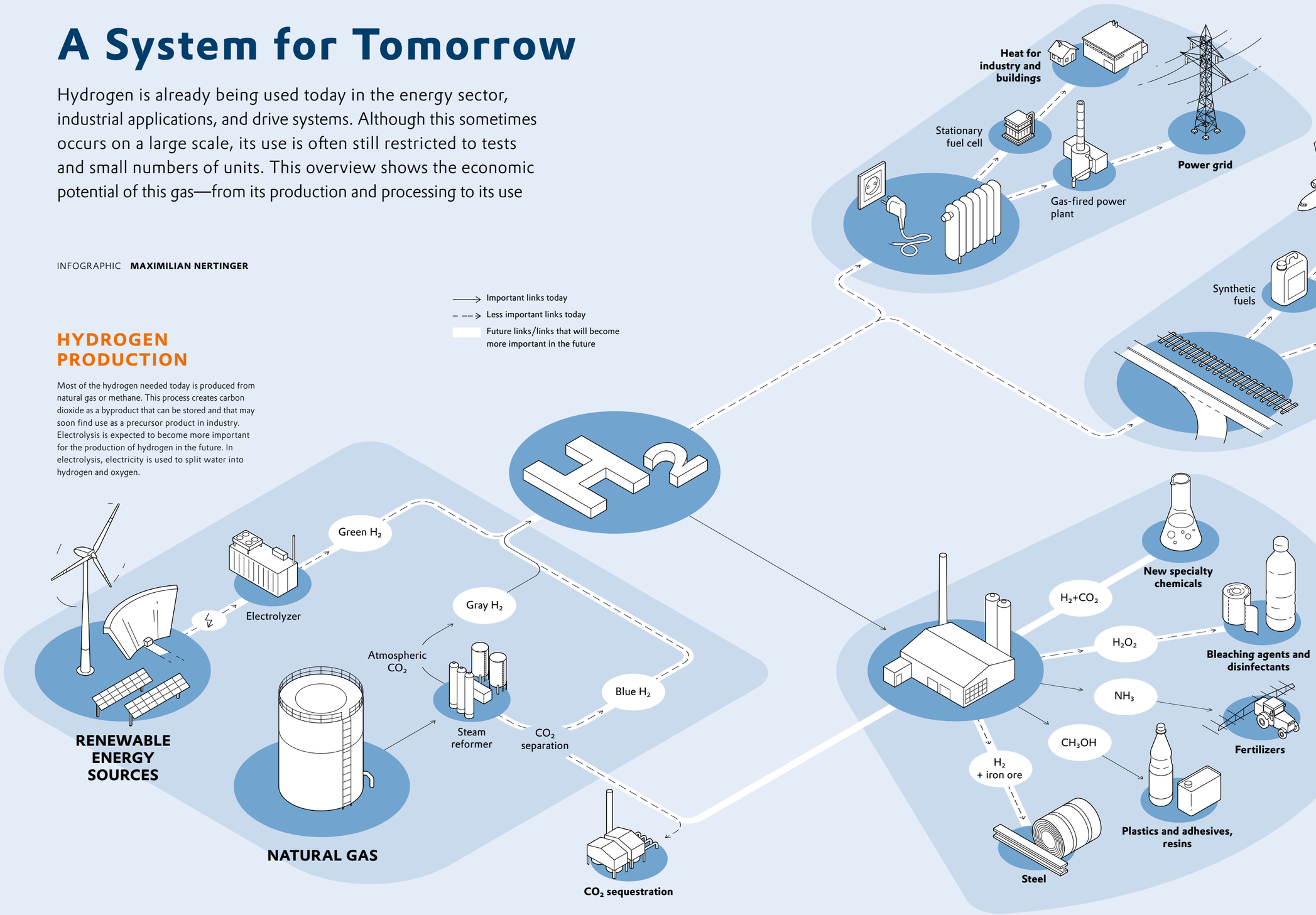
A System for Tomorrow

Hydrogen is already being used today in the energy sector, industrial applications, and drive systems. Although this sometimes occurs on a large scale, its use is often still restricted to tests and small numbers of units. This overview shows the economic potential of this gas—from its production and processing to its use

INFOGRAPHIC **MAXIMILIAN NERTINGER**

HYDROGEN PRODUCTION

Most of the hydrogen needed today is produced from natural gas or methane. This process creates carbon dioxide as a byproduct that can be stored and that may soon find use as a precursor product in industry. Electrolysis is expected to become more important for the production of hydrogen in the future. In electrolysis, electricity is used to split water into hydrogen and oxygen.



POWER AND HEAT

Fuel cells can supply buildings with energy. The reaction of oxygen and hydrogen produces heat and electricity. Some gas-fired power plants are already replacing natural gas with hydrogen fuel. In this way, hydrogen is indirectly serving as a power storage system.

MOBILITY

In vehicles, fuel cells generate power for electric drive systems. This works especially well in trains, trucks, and buses. Hydrogen-based fuels can be used wherever low weight is important, such as in aviation.

INDUSTRY

Hydrogen is already being used to produce ammonia (NH_3) and methanol (CH_3OH), which can be found in many products. Hydrogen peroxide (H_2O_2) is becoming increasingly important, as is the use of hydrogen for the reduction of iron ore in the steel industry and, in combination with carbon dioxide (CO_2), for specialty chemicals.