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(71) Applicant (for all designated States except US): **ACCENTUS PLC** [GB/GB]; 329 Harwell, Didcot, Oxfordshire OX11 0QJ (GB).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BOWE, Michael, Joseph** [GB/GB]; 17 Balmoral Road, New Longton, Preston, Lancashire PR4 4JJ (GB). **LEE-TUFFNELL, Clive, Derek** [GB/GB]; 50 Martin Close, Poole, Dorset BH17 7XS (GB). **MAUDE, Jason, Andrew** [GB/GB];

32 Calderbrook Court, Meadowbrook Way, Cheadle, Cheshire SK8 5NX (GB). **STAIRMAND, John, William** [GB/GB]; Firdale, 1 School Lane, Guildon Sutton, Chester, Cheshire CH3 7ET (GB). **ZIMMERMAN, Ian, Frederick** [GB/GB]; 106 Merley Lane, Wimborne, Dorset BH21 3AQ (GB).

(74) Agents: **MANSFIELD, Peter, Turquand** et al.; Accentus plc, Patents Dept., 329 Harwell, Didcot, Oxfordshire OX11 0QJ (GB).

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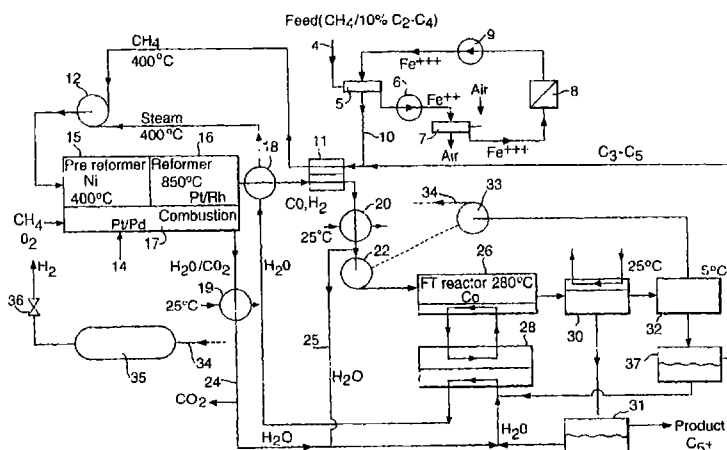
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(54) Title: PROCESS AND APPARATUS FOR STEAM-METHANE REFORMING



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(57) Abstract: Methane is reacted with steam, to generate carbon monoxide and hydrogen in a first catalytic reactor (14); the resulting gas mixture can then be used to perform Fisher-Tropsch synthesis in a second catalytic reactor (26). In performing the steam/methane reforming, the gas mixture is passed through a narrow channel in which the mean temperature and exit temperature are both in the range 750 °C to 900 °C, the residence time being less than 0.5 second, and the channel containing a catalyst, so that only those reactions that have comparatively rapid kinetics will occur. The heat is provided by combustion of methane in adjacent channels (17). The ratio of steam to methane should preferably be 1.4 to 1.6, for example about 1.5. Almost all the methane will undergo the reforming reaction, almost entirely forming carbon monoxide. After performing Fischer-Tropsch synthesis, the remaining hydrogen is preferably fed back (34) to the combustion channels (17). The steam for the reforming step is preferably generated from water generated by the chemical reactions, by condensing (30, 32) the products from the Fischer-Tropsch synthesis and by condensing (19) water vapour generated in the combustion.



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