

Title (en)
HEAT RECOVERY DURING ELECTROLYSIS PROCESSES

Title (de)
WÄRMERÜCKGEWINNUNG BEI ELEKTROLYSEPROZESSEN

Title (fr)
RÉCUPÉRATION DE CHALEUR LORS DE PROCÉDÉS D'ÉLECTROLYSE

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Application
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Abstract (en)
[origin: WO2022042876A1] The invention relates to a method for electrolytically producing at least one product stream containing hydrogen, wherein a feed stream (1, 2) containing at least water is subjected to electrolysis (E) so as to obtain two extraction streams (3, 4). Downstream of the electrolysis (E), the two extraction streams (3, 4) are subjected to separation (S1, S2) so as to obtain the at least one product stream (6, 7) and two liquid fractions (2, 5) containing water. At least one of the two liquid fractions (2, 5) is fed back at least in part to the electrolysis (E). Upstream of the electrolysis (E), the feed stream (1, 2) is heated by exchanging heat with at least one of the two extraction streams (3, 4). The at least one extraction stream (3) from which heat is removed by means of the heat exchange is subjected to additional cooling, the additional cooling taking place by using an organic Rankine cycle or a Rankine cycle that uses an organic-chemical heat transport medium (O). The electrolysis (E) is thus operated at a higher temperature level than is usually the case, because the cooling effect is lower as a result of the feed pre-heating. This brings about an increase in efficiency when the electrolysis (E) is in operation. The higher temperature level of the electrolysis (E) also produces the effect that waste heat is produced at a higher temperature than usual. An organic Rankine cycle can thus be used efficiently for waste heat recovery. The invention also relates to a corresponding system (300) for carrying out the method.

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