

### **CO<sub>2</sub> Capture summary 2003**

Date: 2004-04-14  
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ID: Vattenfall Utveckling AB, Serial No. U 04:20  
Distribution: Restricted distribution, internal Vattenfall Group  
Further: English language, 24 pages, 121 appending pages

#### **Abstract**

The purpose of the present report is to provide an overview of the work initiated during 2003 in the capture part of the "CO<sub>2</sub> free power plant" project.

Main focus during 2003 has been on oxyfuel combustion and the energy source considered has been raw lignite. The work has mainly been focused on cycle performance studies, non-cryogenic oxygen production and O<sub>2</sub>/CO<sub>2</sub> combustion. In addition, work has been initiated on CO<sub>2</sub> purity requirements. The report presents cycle performance studies on oxyfuel combustion with O<sub>2</sub> produced by a cryogenic ASU or by a high-temperature ceramic membrane. The membrane option was found not to be attractive for integration in boilers. Also, evaluations have been done of IGCC with CO<sub>2</sub> separation (pre-combustion capture) and of an air fired PF lignite plant with amine separation of the CO<sub>2</sub> in the exhaust (post combustion separation).

Many projects have been initiated during 2003, but results were not entirely finished before the writing of this report. Oxygen production with the CAR process and combustion related issues (modelling and experiments) are examples of this, where a descriptive presentation is made.