

REFINERY AND NATURAL GAS APPLICATIONS OF CANSOLV[®] SYSTEM TECHNOLOGY

Paul J. Parisi
Cansolv Technologies Inc.
8475 ave. Christophe-Colomb, Suite 2000,
Montreal, Quebec H2M 2N9 Canada
+1-514-382-4411
www.cansolv.com

John C. Bourdon
Black & Veatch Pritchard Inc.
10950 Grandview Drive
Overland Park, Kansas 66210 USA
+1-913-458-6425
www.bv.com

Presented at "Sulphur 97", November 18, 1997, Vienna

ABSTRACT

The CANSOLV[®] System SO₂ scrubbing technology is an emerging regenerable process for economical, highly selective capture of SO₂ from gas streams, down to a few ppm if desired. In oil refineries, the technology can be used to control sulfur emissions from sulfur recovery units (SRU's), cogeneration units, power boilers and FCCU catalyst regeneration. The pure, water saturated SO₂ byproduct from all these sources can be fed into the SRU for conversion to sulfur. Since process costs with the CANSOLV[®] System technology are only weakly sensitive to the concentration of SO₂ in the feed gas, high sulfur low value fuels, such as petroleum coke and visbreaker vacuum residue can be burned economically.

SRU tail gas cleanup with CANSOLV[®] System technology is competitive with other technologies, particularly if the acid gas has a low H₂S/CO₂ ratio. Since the tail gas is incinerated in excess air prior to scrubbing, all sulfur species are captured to minimize total sulfur emissions. The SO₂ is recycled to the SRU front end. Furthermore, the SRU capacity can be expanded at low capital and operating cost by feeding part of the acid gas, preferably the troublesome streams such as sour water stripper gas and hydrocarbon rich streams, to the tail gas incinerator, where the excess air destroys species like ammonia and hydrocarbons. The SO₂ only is recycled to the SRU front end, eliminating the flow of inerts that would be otherwise contributed by air and the bypassed acid gas. This process configuration will also allow pushing the envelope to lower H₂S concentration in the acid gas. When acid gas bypass is maximized, a new process paradigm, the "CANSOLV[®] System SRU", is created.