IRON OXIDE SCRUBBER

CRA
Engineering a Safer World

DRY POLISHING TO BELOW 5 PPM, WITHOUT POWER OR DOSING

The Iron Oxide Scrubber is CRA's dry polishing stage for H$_2$S. Gas passes down through a fixed bed of impregnated iron oxide media, where the H$_2$S reacts to form iron sulphide that stays in the bed.

A moisture conditioning point ahead of the media keeps the reaction active as the inlet load changes. The vessel runs without power or chemical dosing, and the spent media leaves dry.

CRA pairs it with the Regenerative Scrubber on CBG trains and offers it on its own at small sulphur loads. The vessels are fabricated in CRA's own works to ASME Section VIII Division 1.



Below 5 ppm
Outlet H$_2$S after polishing

Zero
Power and chemical dosing

3.4 kg
Sulphur left each day in 1,000 Nm^3/h of gas at 100 ppm

ASME VIII
Vessel code, Division 1, built in CRA's works

THE SULPHUR LOAD ON THE BED

The media is used up in proportion to the sulphur it takes up, so CRA sizes the bed from the sulphur load, which is gas flow (Nm^3/h) × H$_2$S into the bed (ppm) × 0.0000343 kg a day.

Gas flow, Nm^3/h	H$_2$S into the bed, ppm	Sulphur load, kg a day	Duty
500	100	1.7	After bulk removal
1,000	100	3.4	After bulk removal
2,000	100	6.9	After bulk removal
100	1,000	3.4	On its own

CRA sizes the bed volume and the change-out interval for each project against the gas analysis.

TWO DUTIES

After bulk removal

On a CBG train the Regenerative Scrubber takes the H$_2$S below 100 ppm, and the Iron Oxide Scrubber takes it from there to below 5 ppm.

On its own

At sulphur loads below about 5 kg a day, a dry bed on its own is the economical choice.

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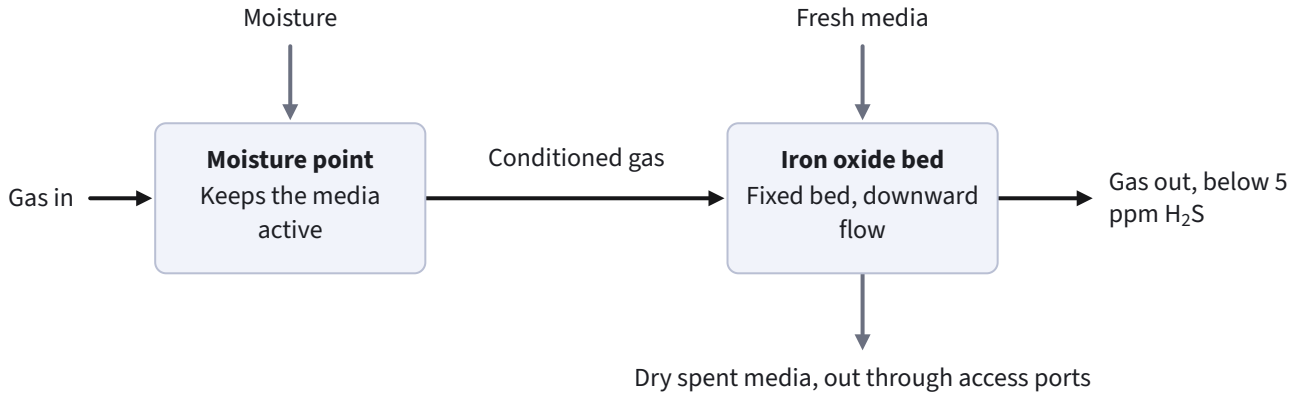
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WORKING AND CONFIGURATION

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A FIXED BED OF IRON OXIDE MEDIA, CHANGED OUT DRY

HOW IT WORKS



1. Inlet distribution

Gas enters through a distributor plate that spreads the flow evenly across the bed and prevents channelling.

2. Bed contact

The gas passes down through the media, where the H_2S reacts with the iron oxide to form iron sulphide.

3. Change-out

When the bed is exhausted, the spent media comes out through top or side access ports and a fresh charge goes in.

TYPICAL CONFIGURATION

Duty	Polishing after bulk removal, or on its own at small sulphur loads
Outlet H_2S	Below 5 ppm
Media	Impregnated iron oxide
Removes	H_2S. For siloxanes and VOCs, CRA uses the Carbon Scrubber.
Moisture	A conditioning point ahead of the bed keeps the media active
Gas flow	Down through the bed from a distributor plate
Vessels	Fabricated in CRA's works to ASME Section VIII Division 1
Arrangement	One vessel or several, sized to the sulphur load
Change-out	Through top or side access ports
Power and dosing	None
Waste	Dry spent media

Materials, instruments and scope are confirmed for each project against the gas analysis and the site standards.

To size a unit, send CRA the gas flow, the inlet H_2S, the gas composition, the gas use and the utilities at site, or book a call with a process engineer at www.cra.energy.

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