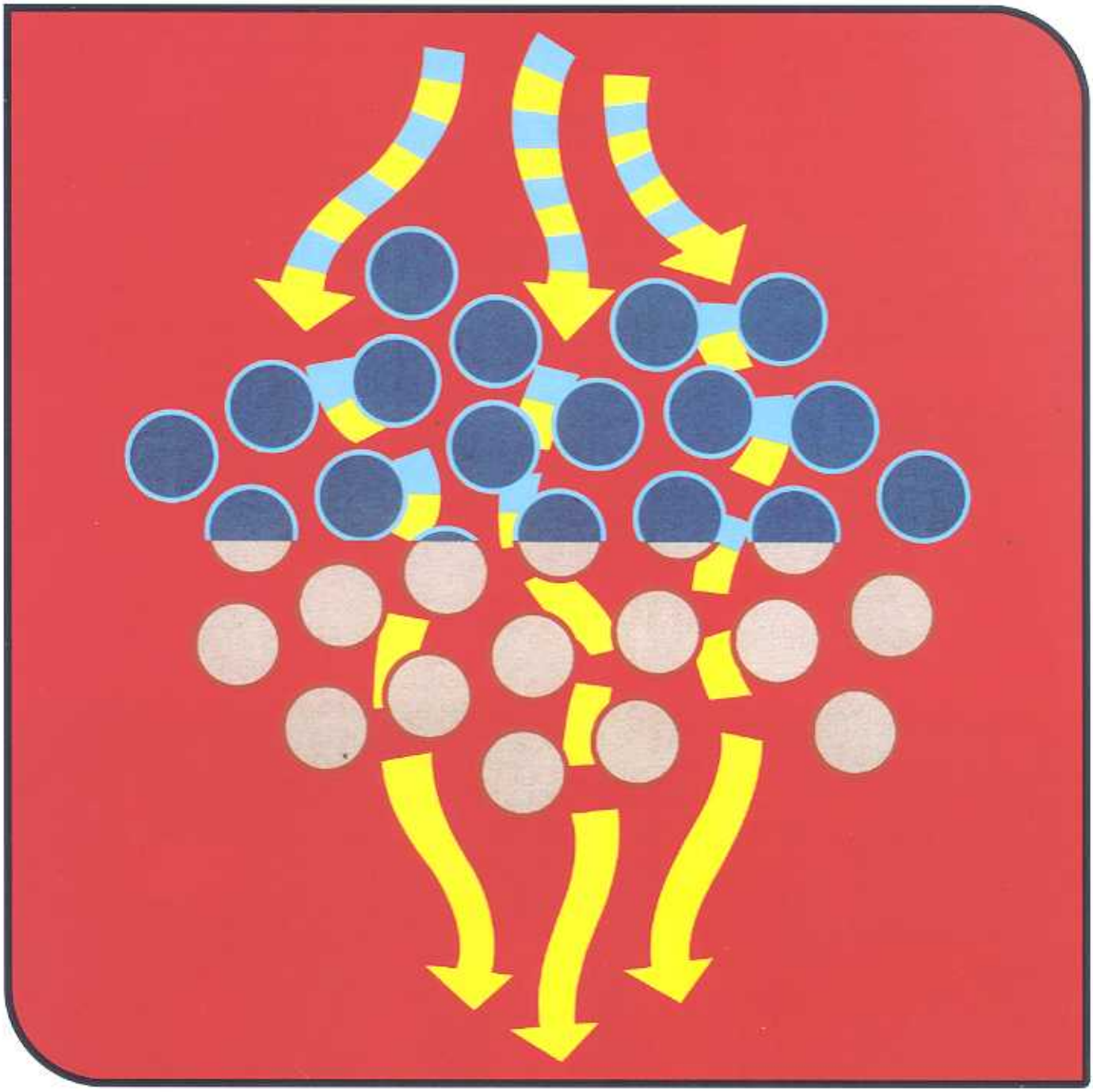
Dry Desiccant Adsorption



for economical removal of fluids

from natural gas streams

BS&B®

PROCESS SYSTEMS

Dry Desiccant Adsorption

DEFINITION

Dry Desiccant Adsorption is a process for adsorbing liquefiable water and hydrocarbon vapors from a natural gas stream by the use of solid desiccant material. A desiccant is a granular, surface active substance ranging in diameter from 1/8" to 1/4".

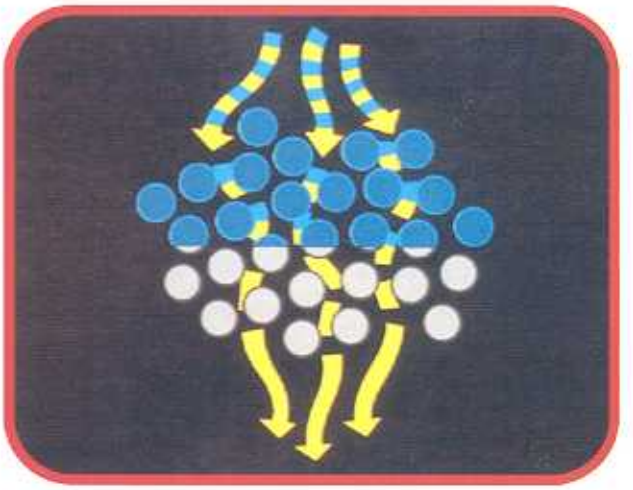
Adsorption is basically a form of adhesion between a solid desiccant and a liquefiable vapor. More simply, as a gas stream containing liquefiable vapors passes through a bed of desiccant granules, the attraction between the two materials causes the liquid to be pulled out of the stream and adhere to the solid desiccant.

OPERATION

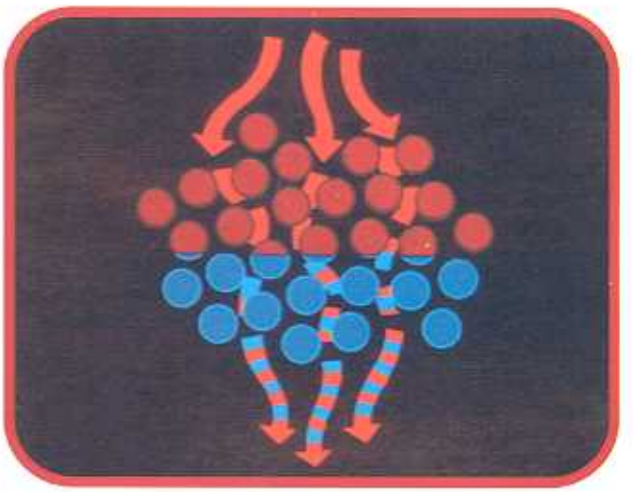
The natural gas stream containing liquefiable vapors is passed through a vesselgenerally vertical-containing a continuous bed of dry desiccants. The gas stream normally flows from the top of the vessel downward through the beds and out the bottom of the tower. During this downward passage, the liquefiable vapors carried by the gas stream are attracted and held by the desiccant material. With liquids being held by the desiccants, dry gas exits from the vessel.

RECONDITIONING THE DESICCANT BEDS

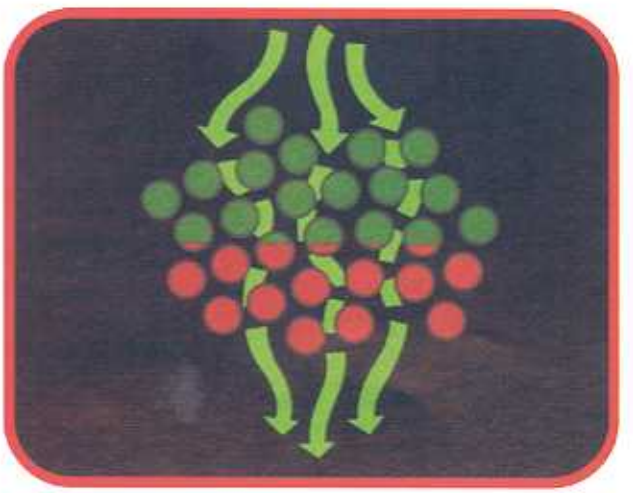
When the desiccant beds have reached their maximum adsorption capacity, they must be reconditioned. To provide a continuous operating system, a minimum of two desiccant towers must be used. A second tower to continue the adsorption process while the saturated first tower is being reconditioned.



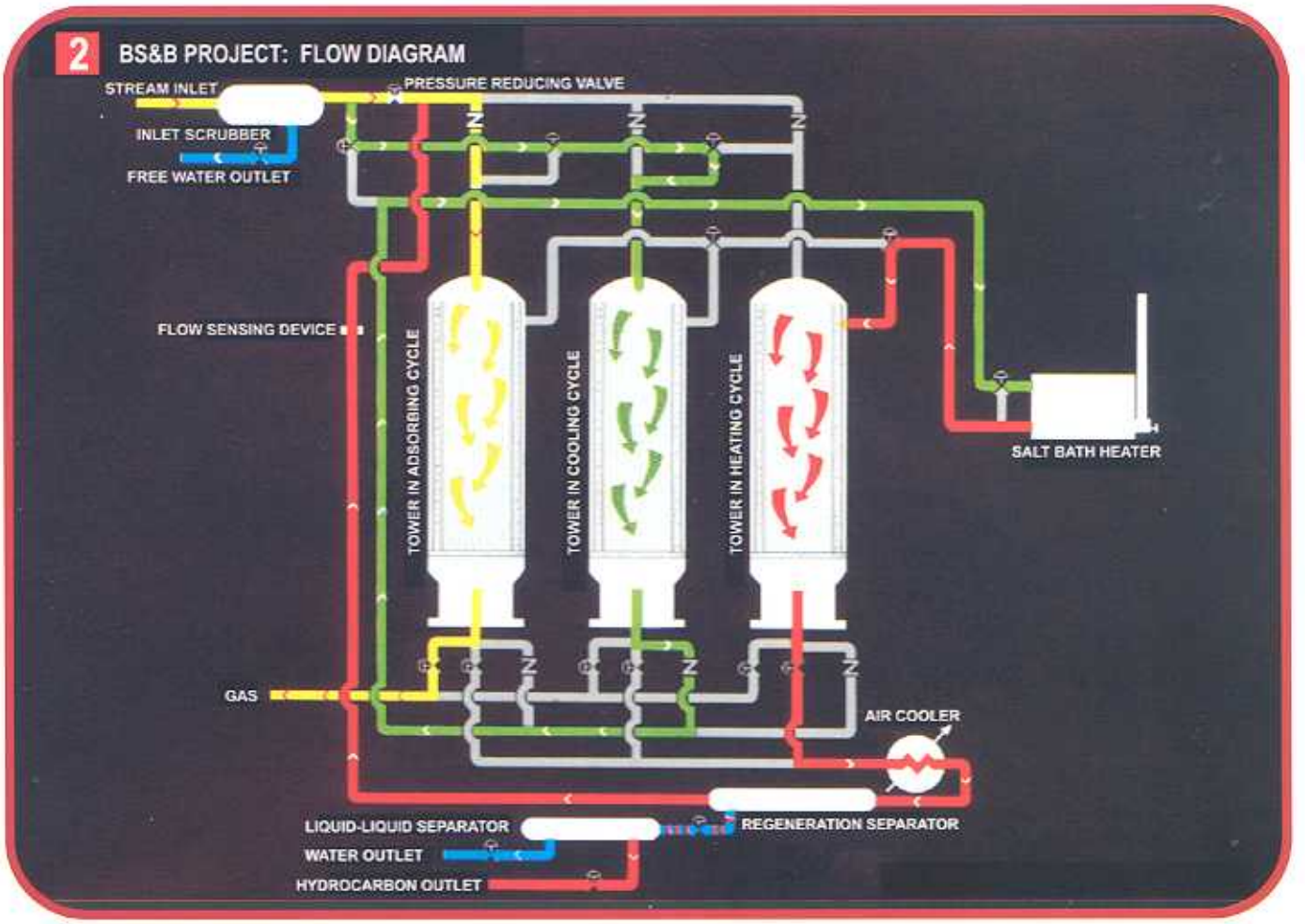
ADSORBING

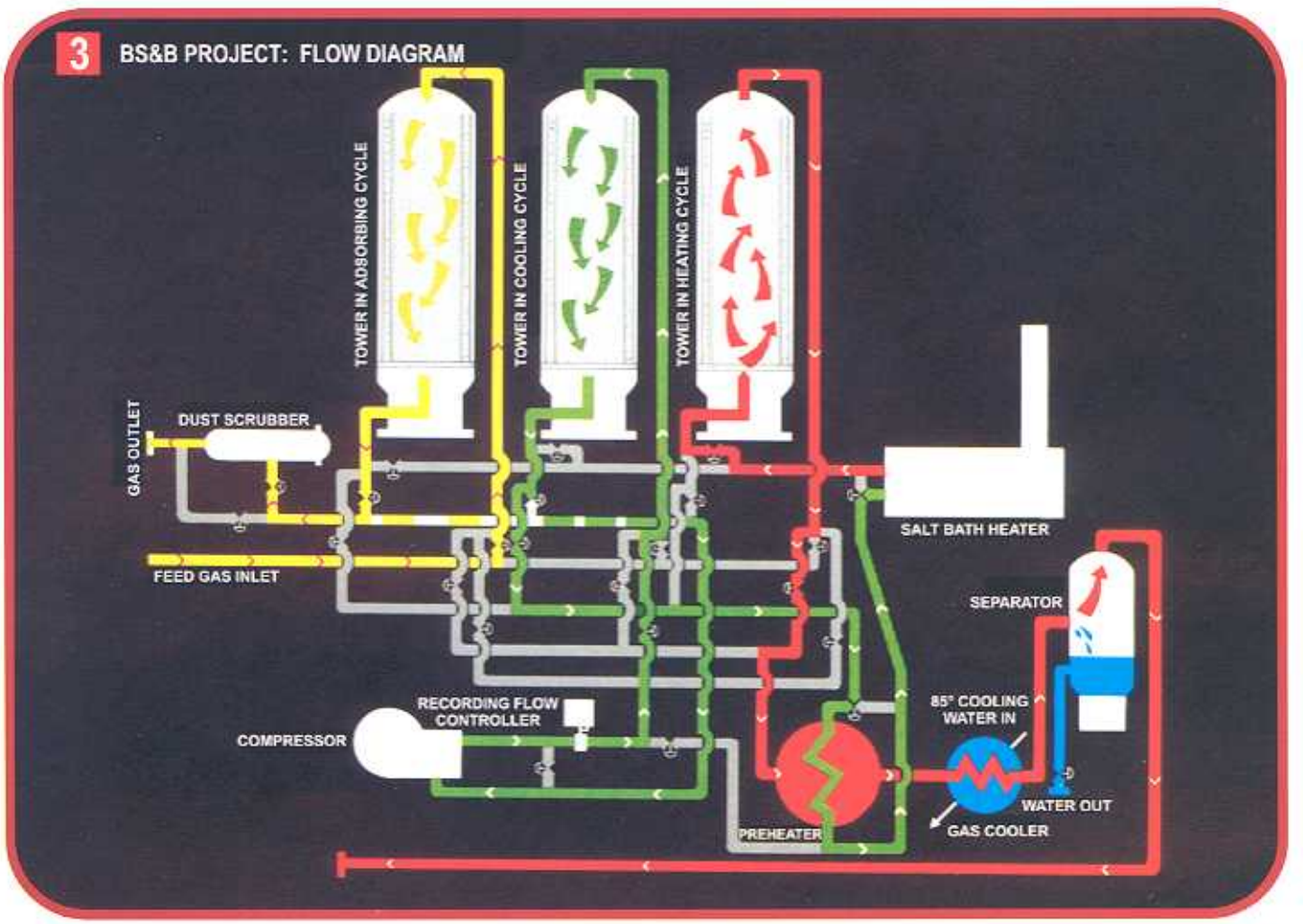


HEATING



COOLING


2
BS&B PROJECT: FLOW DIAGRAM
STREAM INLET
PRESSURE REDUCING VALVE
INLET SCRUBBER
FREE WATER OUTLET
FLOW SENSING DEVICE
TOWER IN ADSORBING CYCLE
TOWER IN COOLING CYCLE
TOWER IN HEATING CYCLE
SALT BATH HEATER
GAS
AIR COOLER
LIQUID-LIQUID SEPARATOR
REGENERATION SEPARATOR
WATER OUTLET
HYDROCARBON OUTLET


3
BS&B PROJECT: FLOW DIAGRAM
TOWER IN ADSORBING CYCLE
TOWER IN COOLING CYCLE
TOWER IN HEATING CYCLE
GAS OUTLET
DUST SCRUBBER
FEED GAS INLET
SALT BATH HEATER
SEPARATOR
RECORDING FLOW CONTROLLER
COMPRESSOR
85° COOLING WATER IN
WATER OUT
PREHEATER
GAS COOLER

Information needed with inquiries

Please Specify:

Gas flow rate

Operating pressure

Maximum working pressure

Inlet temperature

Outlet temperature

Outlet water content

or dew point depression

Corrosion allowance

Gas analysis -MOL%

R.V.P. product desired

Ambient air temperature

Grains H_2S, inlet

CO_2 content

Other impurities

Allowable pressure drop

Utilities available

Required hydrocarbon dewpoint

BS&B PROCESS SYSTEMS