

OIL & GAS DEMONSTRATION SUCCESS STORY

International Collaboration to Advance Emissions Reductions

PetroChina - Changqing Oilfield Company

Shaanxi Province, China

OVERVIEW OF OIL & GAS PROJECT:

In-country teaming partner for this demonstration project is Xi'an Changqing Technology Engineering Co., Ltd. (the compressor and process designer). The demonstration occurred in Hequan Village, Dingbian County, Shaanxi Province, China. The block belongs to No. 3 Oil Production Factory, PetroChina Changqing Oilfield Company.

The demonstration involved installing synchronal rotary compressors and walking beam compressors at wellpad sites, injecting casing gas into oil pipes, and building light hydrocarbon recovery plant. The gas gathered was used to generate power and produce LPG and light oil for sales. Use of this technology is possible at production and processing facilities.

ACTUAL ANNUAL EMISSION REDUCTIONS: 15,000 MTCO₂E

PROJECT DETAILS

In the demonstration area, synchronal rotary compressors and walking beam compressors were installed on oil wellpads to inject casing gas into oil pipes. This approach decreases wellhead back pressure to ensure crude oil production and avoid casing gas flaring or venting.

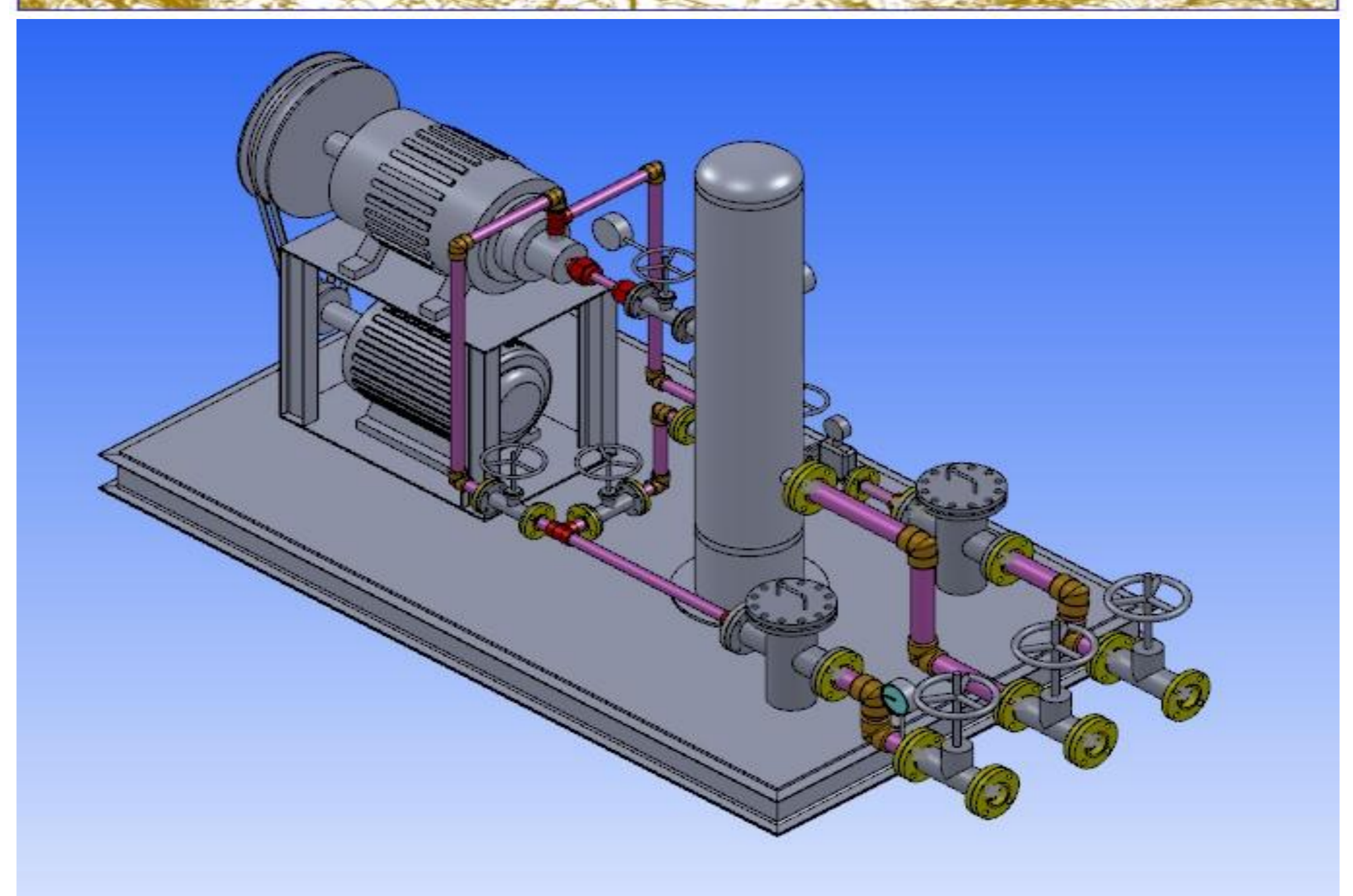
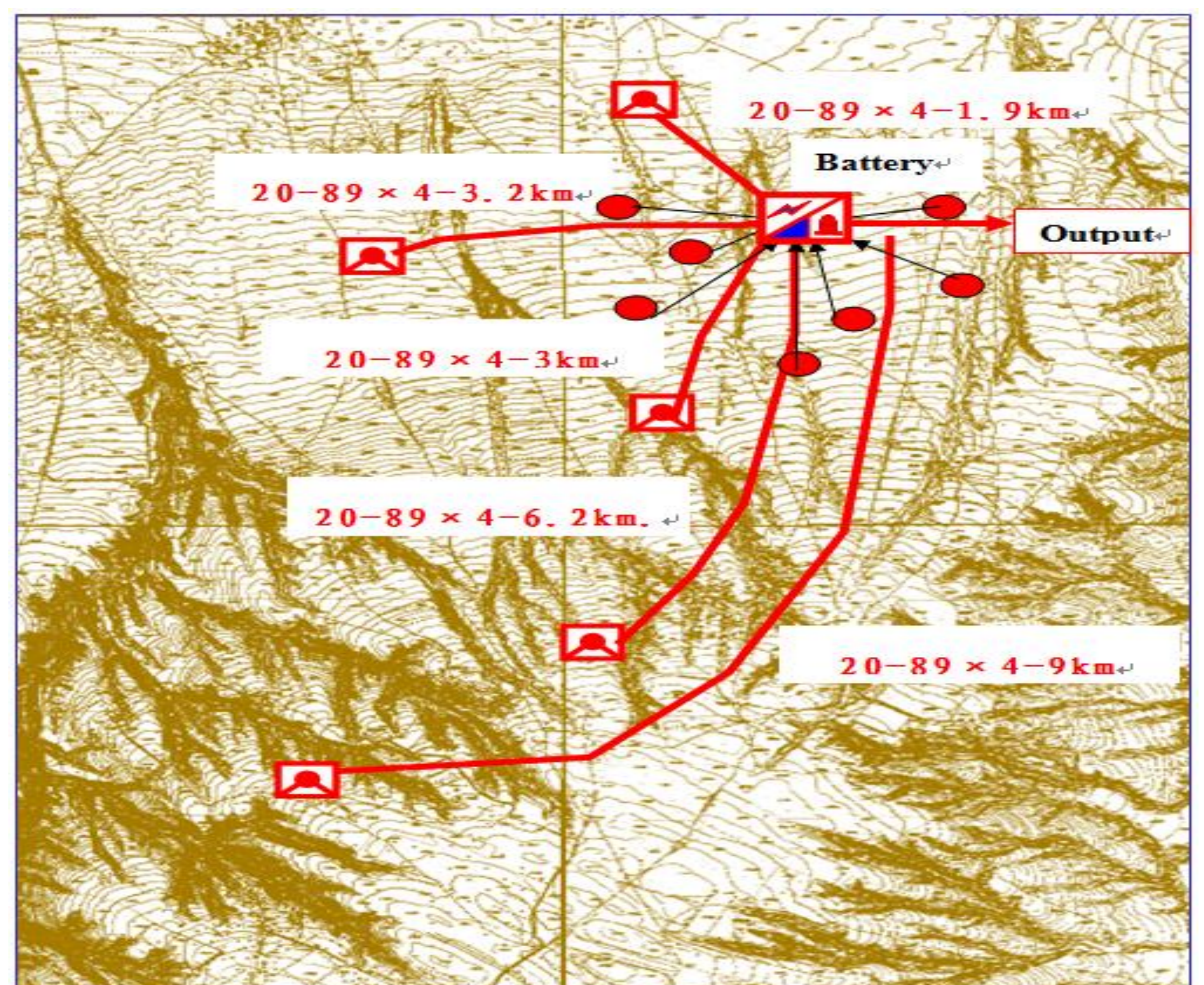
The oil and gas mixture is transported to batteries where a light hydrocarbon recovery plant has been built. Dry gas, LPG and stable light oil are produced from the mixture using a separation and refrigeration process. LPG and light oil are shipped to market, and the dry gas is used to generate electric power.

PROJECT STATUS

The walking beam compressors were installed in 2011 and have been in use for more than 14 months. The synchronal rotary compressors were installed in 2010 and have been in use for more than one year. The related light hydrocarbon recovery plant was built in 2011 and is fully operational.

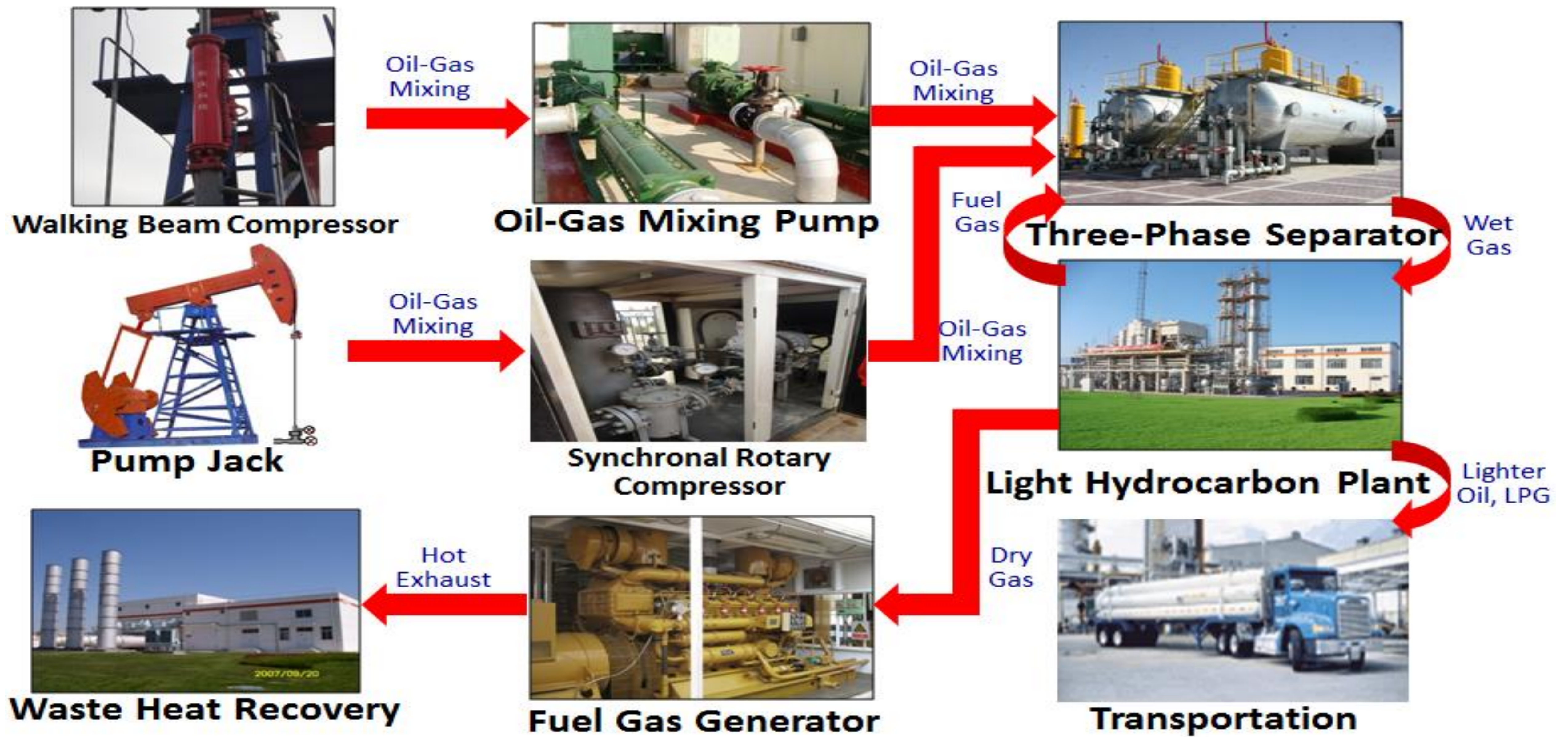
PROJECT RESULTS

Collectively, the gas-gathering and processing devices can recover more associated gas—up to 20,000 cubic meters per day—and reduce GHG emission by 15,000 tonnes CO₂E yearly.



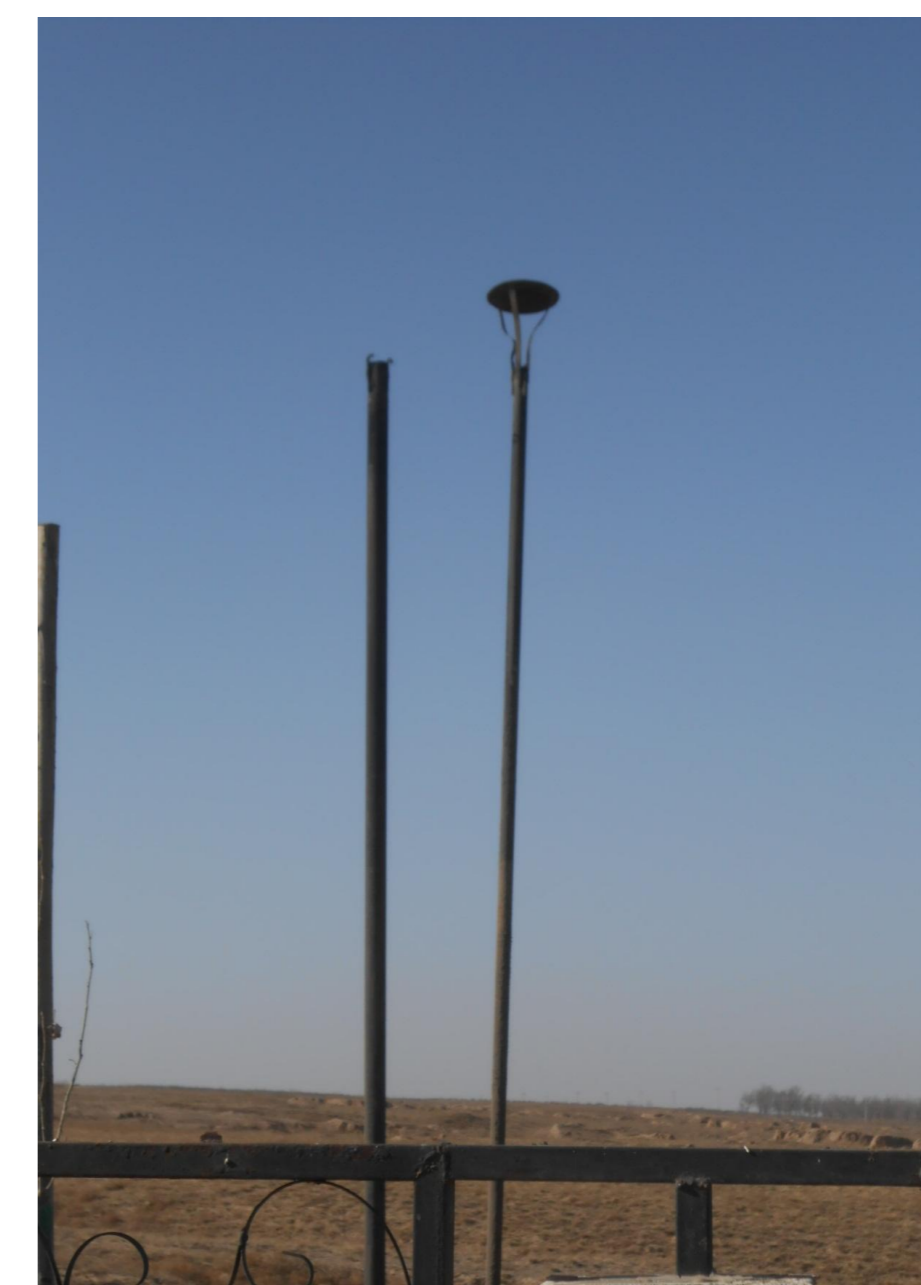
Synchronal Rotary Compressor Model

DEMONSTRATED TECHNOLOGIES



PROJECT CHALLENGES

It is difficult to collect/gather casing gas given the number of wells and their location in an undulating terrain without separate gas pipelines. To solve this obstacle, synchronal rotary compressors were specifically designed for this demonstration area.



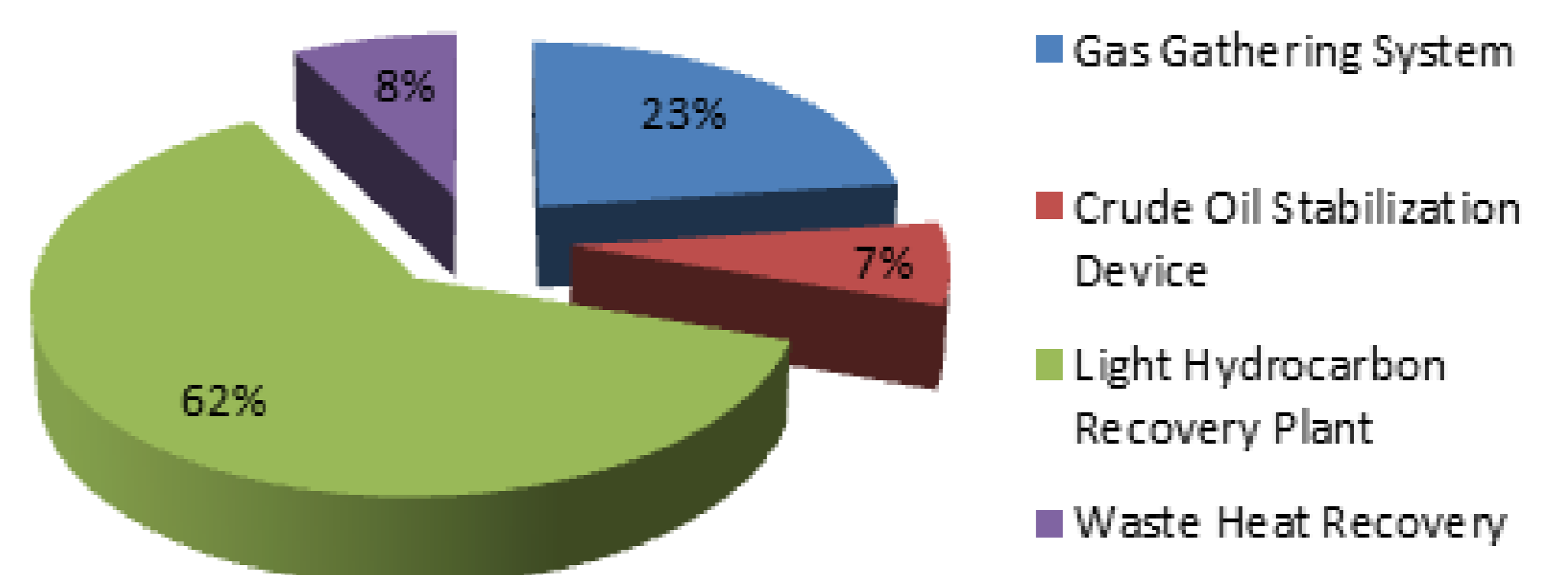
Extinguished Flare

ECONOMIC ANALYSIS/BENEFITS

Total investment: \$8.2 million (USD) including gas gathering system, crude oil stabilization device, light hydrocarbon recovery plant, waste heat recovery, etc.

Payback periods: 4.5 years

Rates of return (IRR): 22.5%



Percentage of Investment Cost by Type of Equipment

FOR MORE INFORMATION

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