



LAKSEL Technologies





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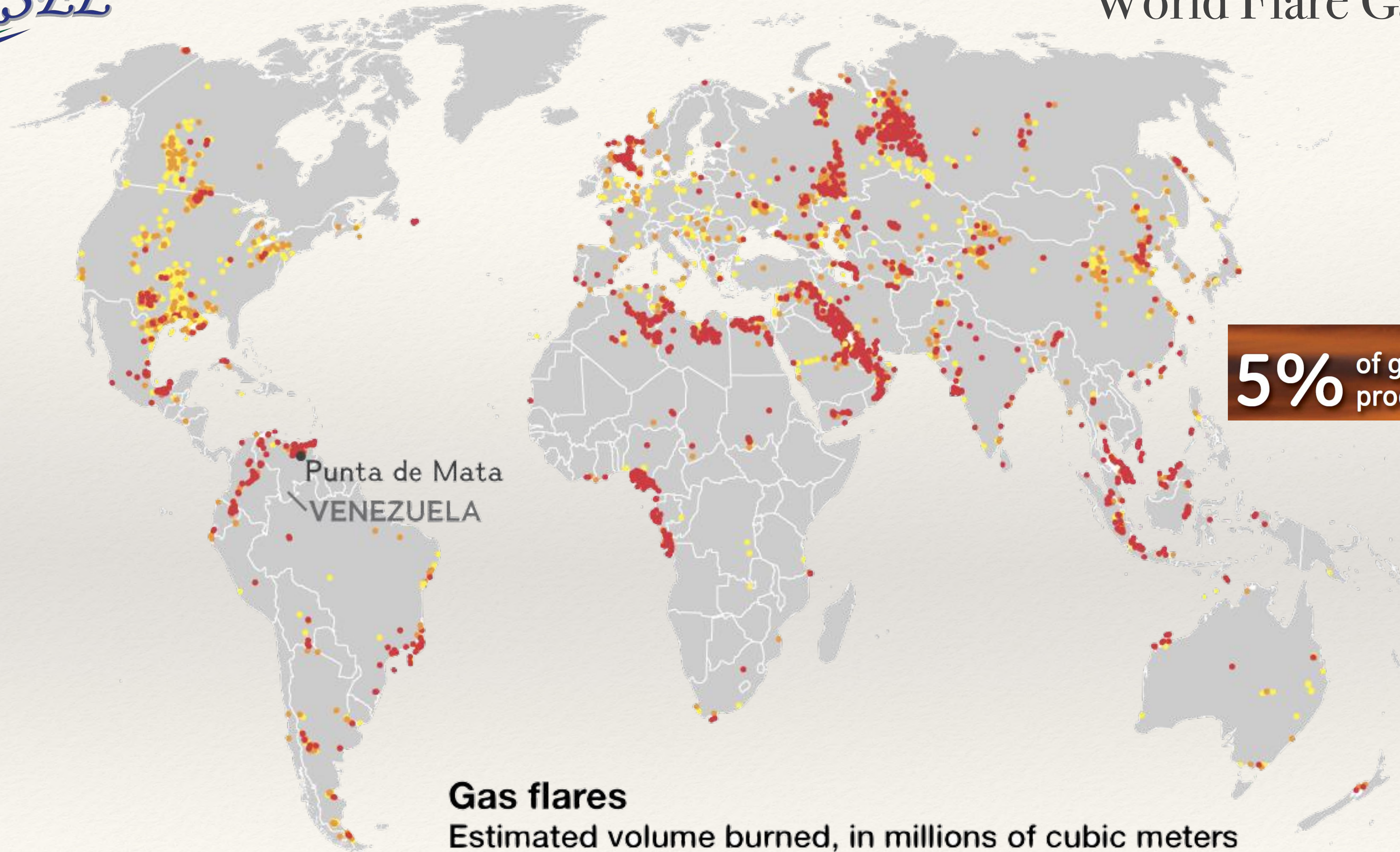
- ❖ World Flare Gas
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World Flare Gas



World Flare Gas Status

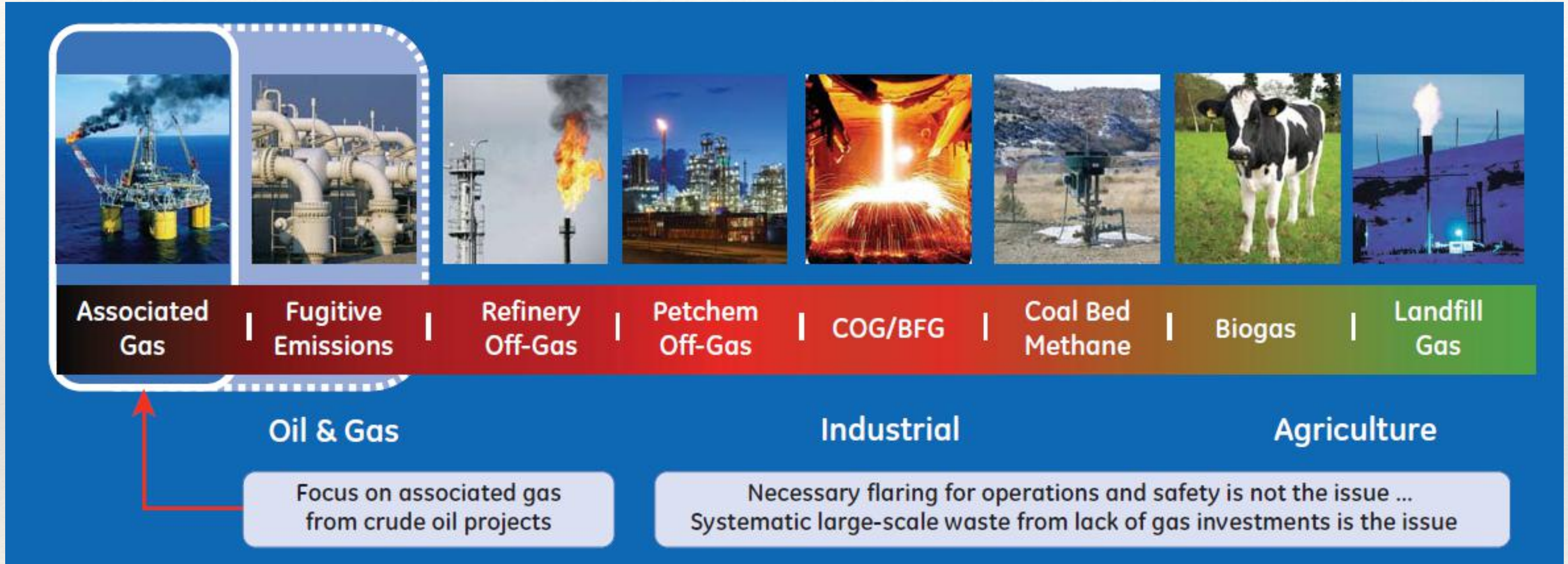


5% of global gas production ... wasted

Punta de Mata
VENEZUELA

Gas flares
Estimated volume burned, in millions of cubic meters

● Less than 2	● 2 - 10	● More than 10
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Zero Routine Flaring by 2030...

“Zero Routine Flaring by 2030” initiative, introduced by the World Bank, brings together governments, oil companies, and development institutions who recognize the flaring situation described above is unsustainable from a resource management and environmental perspective, and who agree to cooperate to eliminate routine flaring no later than 2030.

The Initiative pertains to routine flaring and not to flaring for safety reasons or non-routine flaring, which nevertheless should be minimized. Routine flaring of gas is flaring during normal oil production operations in the absence of sufficient facilities or amenable geology to re-inject the produced gas, utilize it on-site, or dispatch it to a market. Venting is not an acceptable substitute for flaring.

Governments that endorse the Initiative will provide a legal, regulatory, investment, and operating environment that is conducive to upstream investments and to the development of viable markets for utilization of the gas and the infrastructure necessary to deliver the gas to these markets.



Zero Routine Flaring by 2030...

Oil companies that endorse the Initiative will develop new oil fields they operate according to plans that incorporate sustainable utilization or conservation of the field's associated gas without routine flaring.

Development institutions that endorse the Initiative will facilitate cooperation and implementation, and consider the use of financial instruments and other measures, particularly in their client countries.



Zero Routine Flaring by 2030...

Zero Routine Flaring by 2030 x


beta.worldbank.org/en/programs/zero-routine-flaring-by-2030

Apps Webmail Login Ramani's blog - Ed... ஆரோக்கிய உணவுக... World Energy Combined Cycle Sy... Online Tamil Conve... Learn more about the beta version of worldbank.org.

Zero Routine Flaring by 2030

✉️ 🖨️ TWEET SHARE in SHARE +

FEATURED < 1 / 6 >



Oman's Oil Industry Affirms Fight Against Flaring
January 31, 2017 — Petroleum Development Oman (PDO), the major national oil production company in the Sultanate, has endorsed the "Zero Routine Flaring by 2030" Initiative. The World Bank appreciates this decision and encourages all national and international oil companies on the Arabian peninsula to join. [Read More >](#)

INITIATIVE TEXT ENDORSERS BENEFITS Q&A REPORTING GET INVOLVED FLARING IN THE NEWS

Governments, oil companies, and development institutions around the world are encouraged to endorse the "Zero Routine Flaring by 2030" Initiative. Read the full text below:

During oil production, associated gas is produced from the reservoir together with the oil. Much of this gas is utilized or conserved because governments and oil companies have made substantial investments to capture it; nevertheless, some of it is flared because of technical, regulatory, or economic constraints. As a result, thousands of gas flares at oil production sites around the globe burn approximately 140 billion cubic meters of natural gas annually, causing more than 300 million tons of CO₂ to be emitted to the atmosphere.



Benefits and commitments for endorsing Governments..

Benefits:

- Better resource management.
- Environmentally-friendly oil production.
- Global recognition.
- Regional impact.
- Nationally Determined Contribution (NDC) implementation.
- Attract experienced oil industry investors.
- Foster innovation.
- Network advantages.
- Your legacy.

Commitments:

- What you endorse
- Reporting.
- Not legally binding, but...



Benefits and commitments for endorsing Oil Companies..

Benefits:

- Better resource management.
- Environmentally-friendly oil production.
- Global recognition.
- Regional impact.
- Levelling the Playing Field.
- Foster innovation.
- Network advantages.
- Your legacy.

Commitments:

- What you endorse
- Reporting.
- Not legally binding, but...



Endorsers of Zero Routine Flaring by 2030...

Governments

Angola	Republic of Congo	Mexico	Russia
Azerbaijan	France	Netherlands	Turkmenistan
Bahrain	Gabon	Nigeria	United States
California (U.S.)	Germany	Norway	Uzbekistan
Cameroon	Iraq	Oman	
Canada	Kazakhstan	Peru	

Nigeria Raises Own Goal to 2020



Economic & Climatic Impact

Gas Flaring in Perspective

Size of the problem

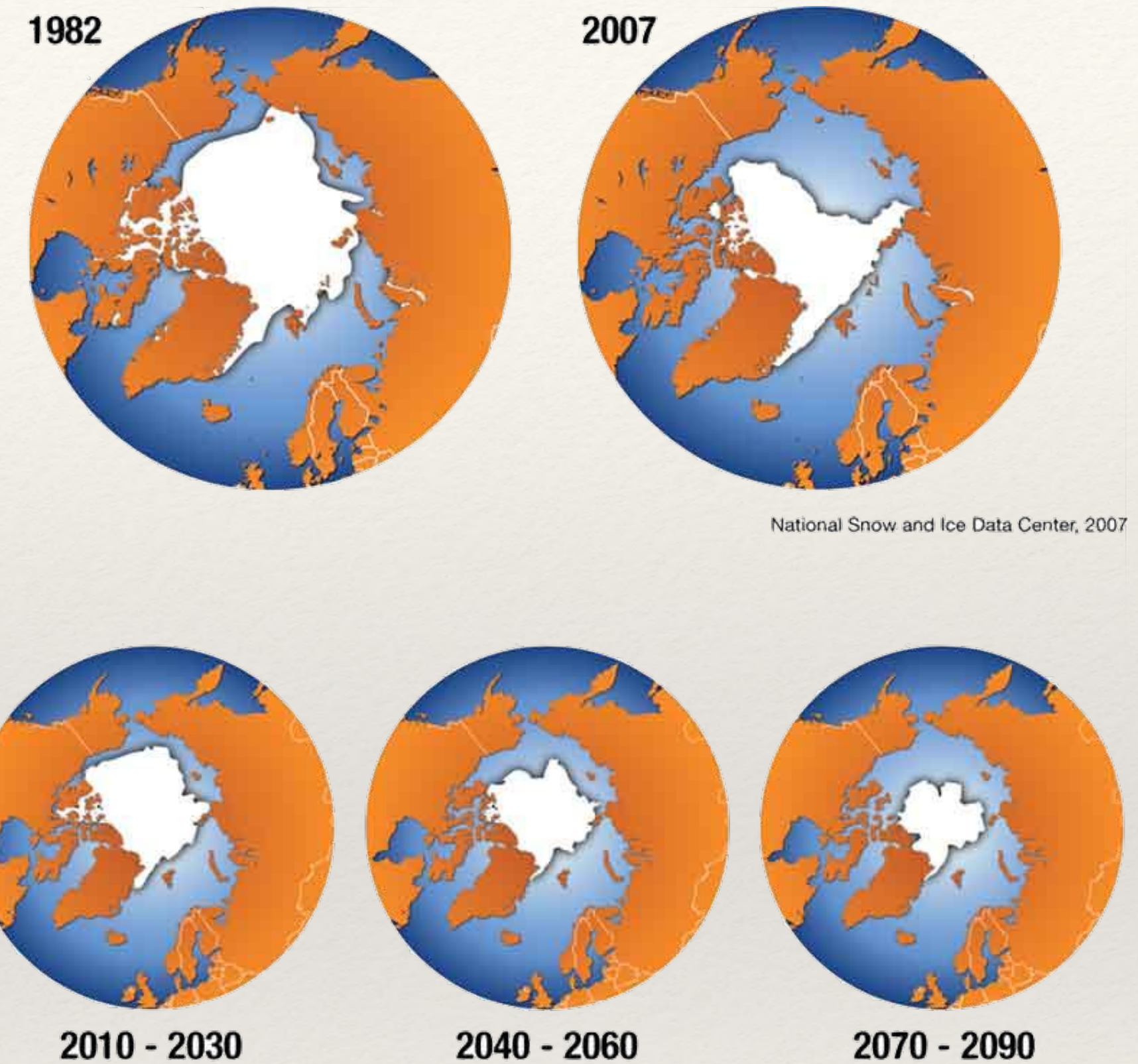
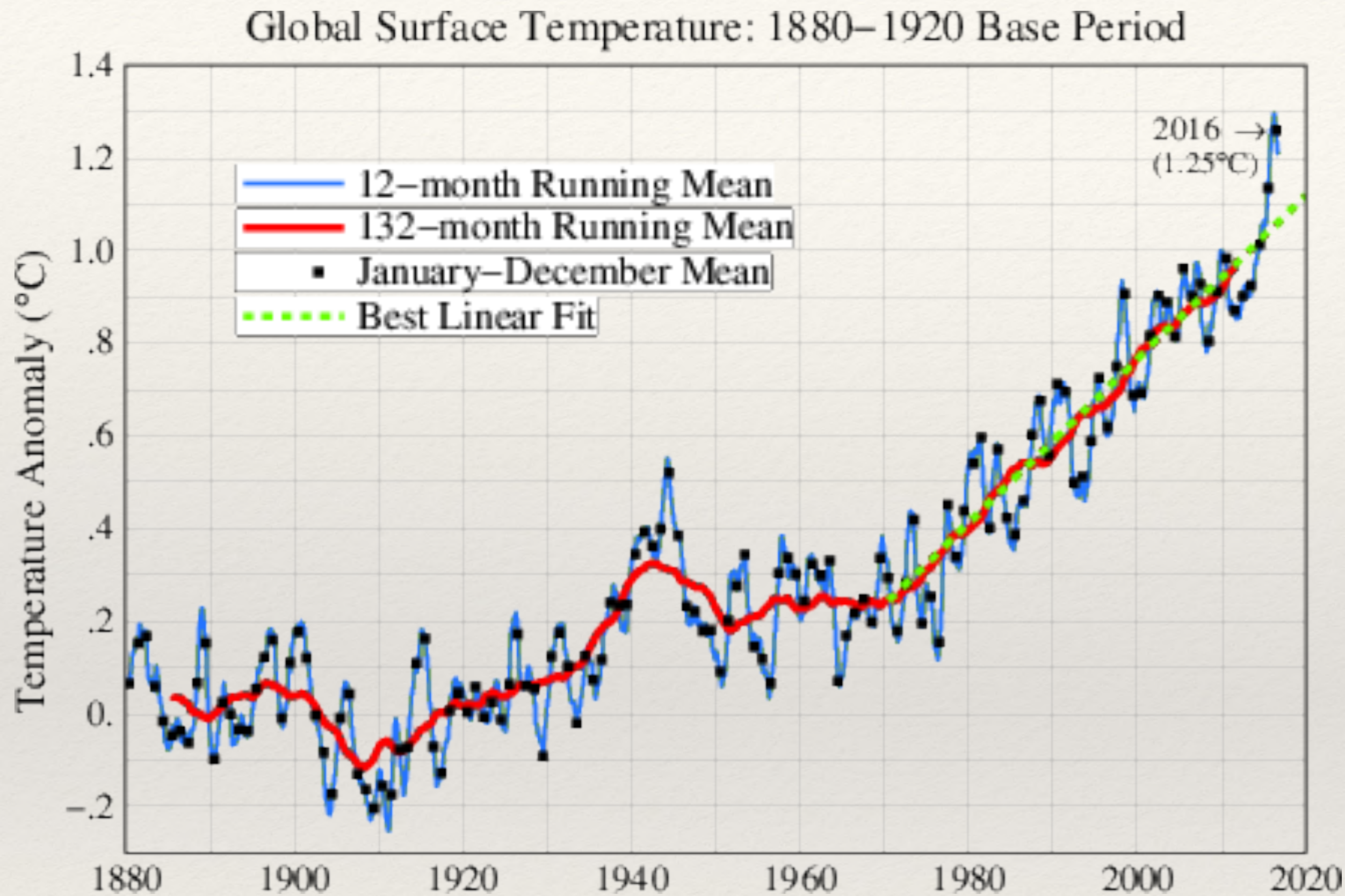
150 billion cubic meters per year of flared gas is roughly equivalent to ...

- Gas use in all US residences for a year
- 5% of global natural gas production
- 23% of US natural gas use
- 30% of EU natural gas use
- US\$10 Billion lost revenue at \$2.00 per MMBtu
- 2.4 Million barrels of oil equivalent per day

Climate impact

400 million tonnes per year of CO₂ is roughly equivalent to ...

- Annual emissions from 77 Million cars (34% of US fleet)
- 2% of global CO₂ emissions from energy sources
- US\$6 Billion carbon credit value at \$15.00 per Metric Tonne
- 20% of global steel industry CO₂ emissions
- 35% of global cement industry CO₂ emissions
- Output from 125 medium-sized coal plants about 63 gigawatts (GW)
 - 63 GW is ~20% of the current US coal fleet
 - 63 GW is ~67% of India's current coal fleet



The combined average temperature over global land and ocean surfaces for December 2016 was 1.25°C (2.25°F) above the 20th century average of 13.7°C (56.7°F) since global records began in 1880.



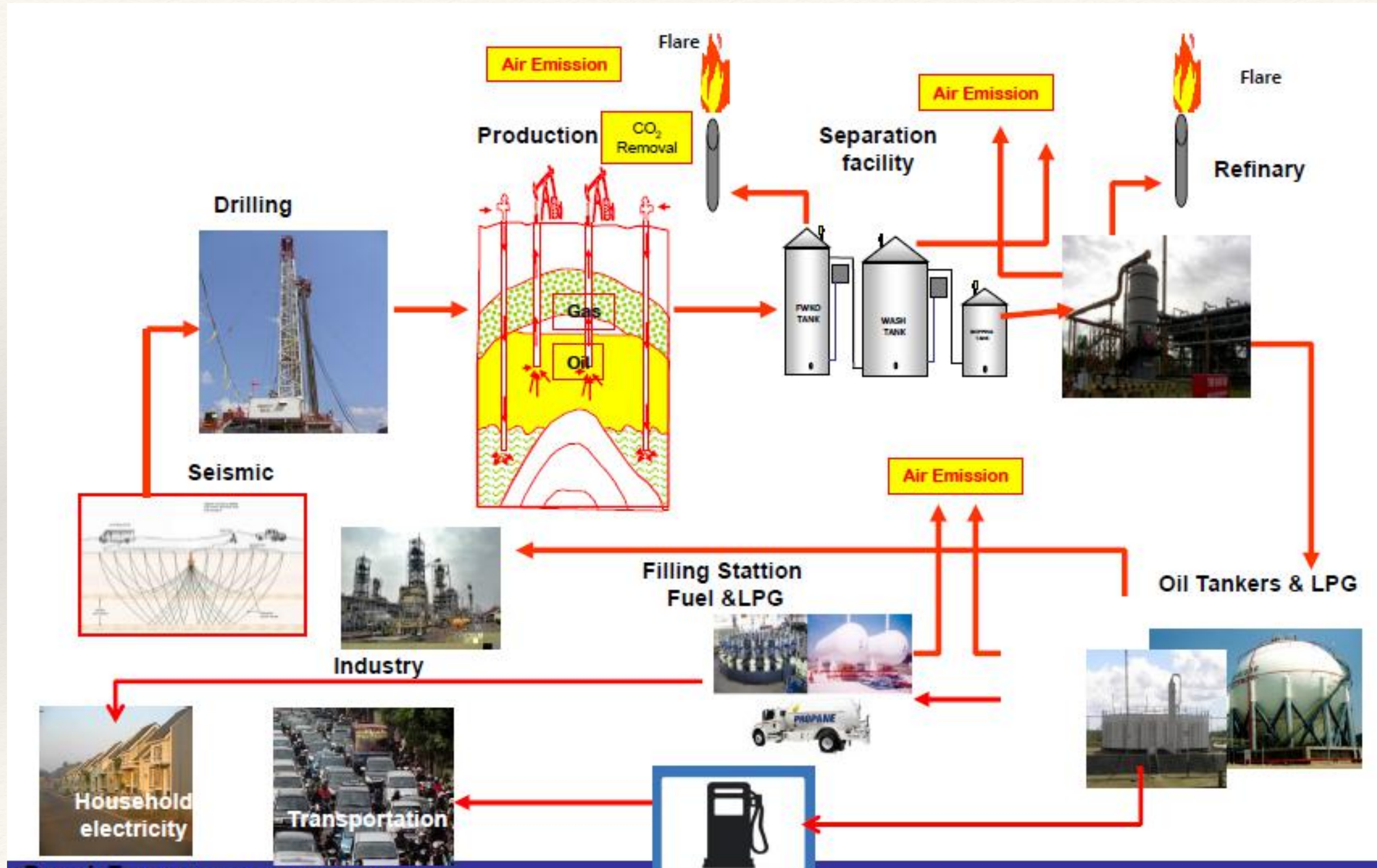
INDONESIA - Flare Gas Market



Indonesia - Flaring Source

Natural Gas associated with oil production is often flared when there is no infrastructure in place to make use of the gas. Indonesia ranks 10th in global natural gas flaring, according to the Global Gas Flaring Reduction (GGFR) initiative. 1,000 cubic feet of raw natural gas may hold up to 12 gallons of NGLs, principally ethane, propane, butane, and natural gasoline. All of these have commercial value. Flaring the gas means that owners earn no income on the gas or its NGLs.







Indonesia - Flaring Locations

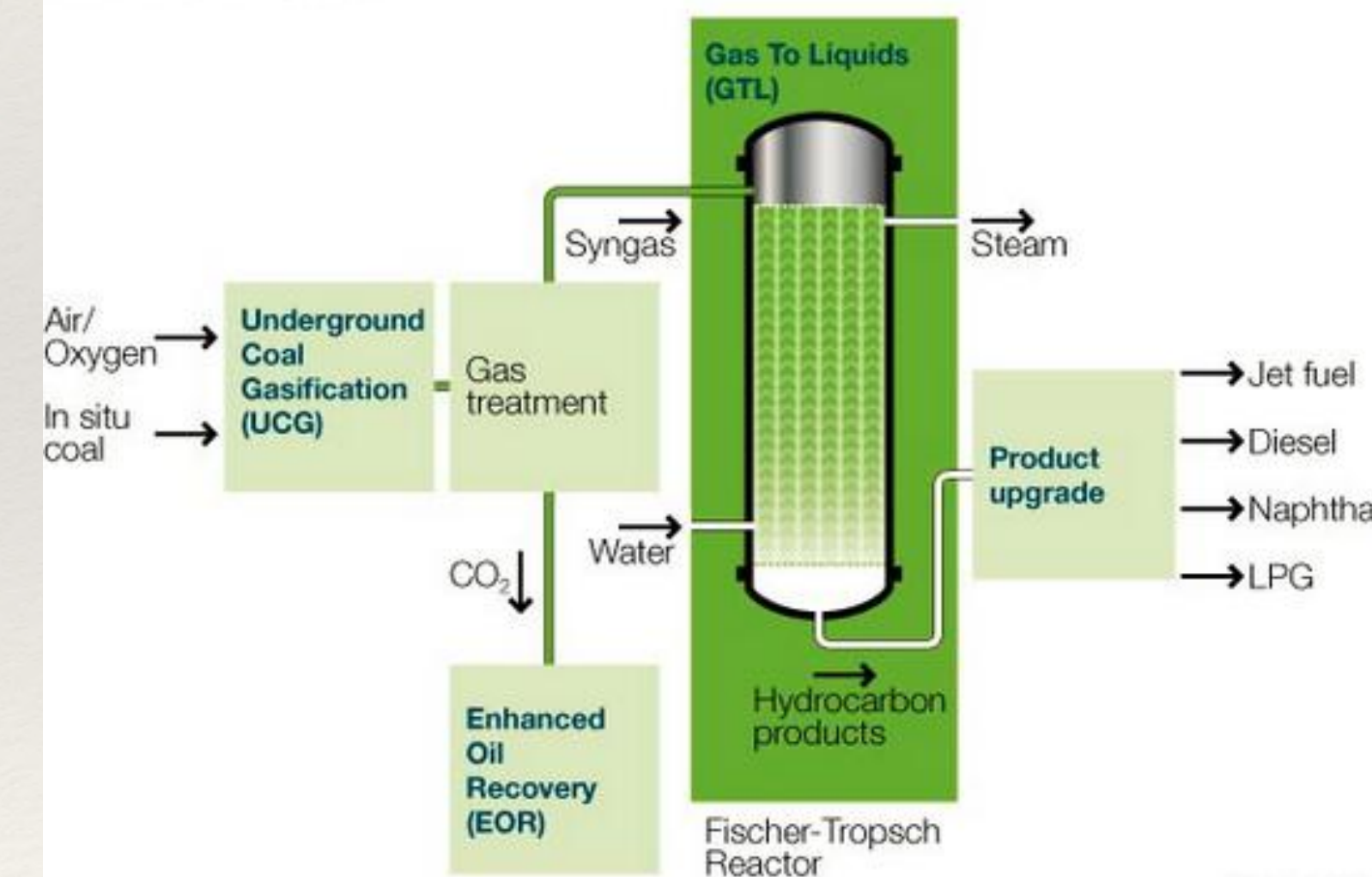
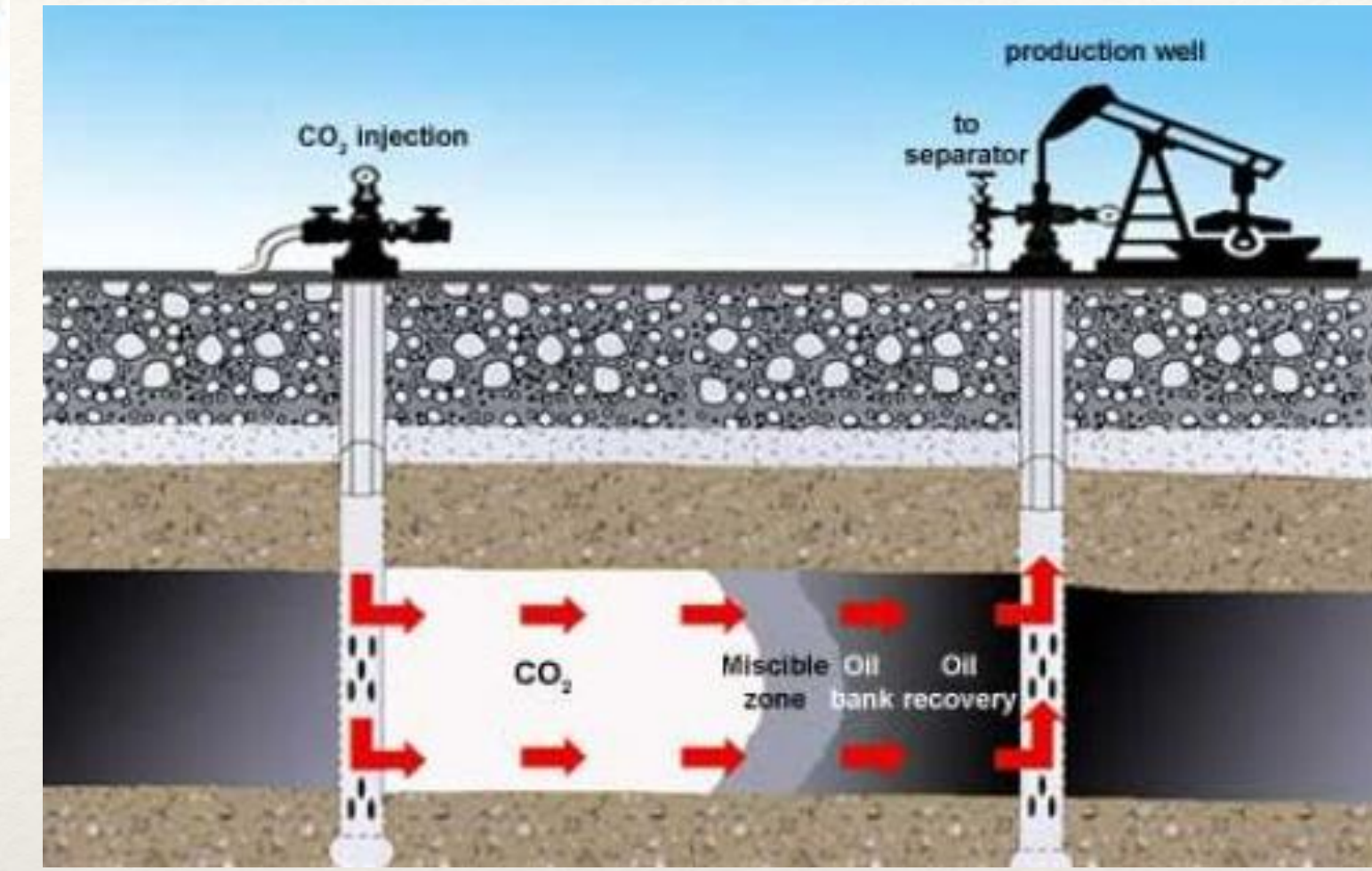
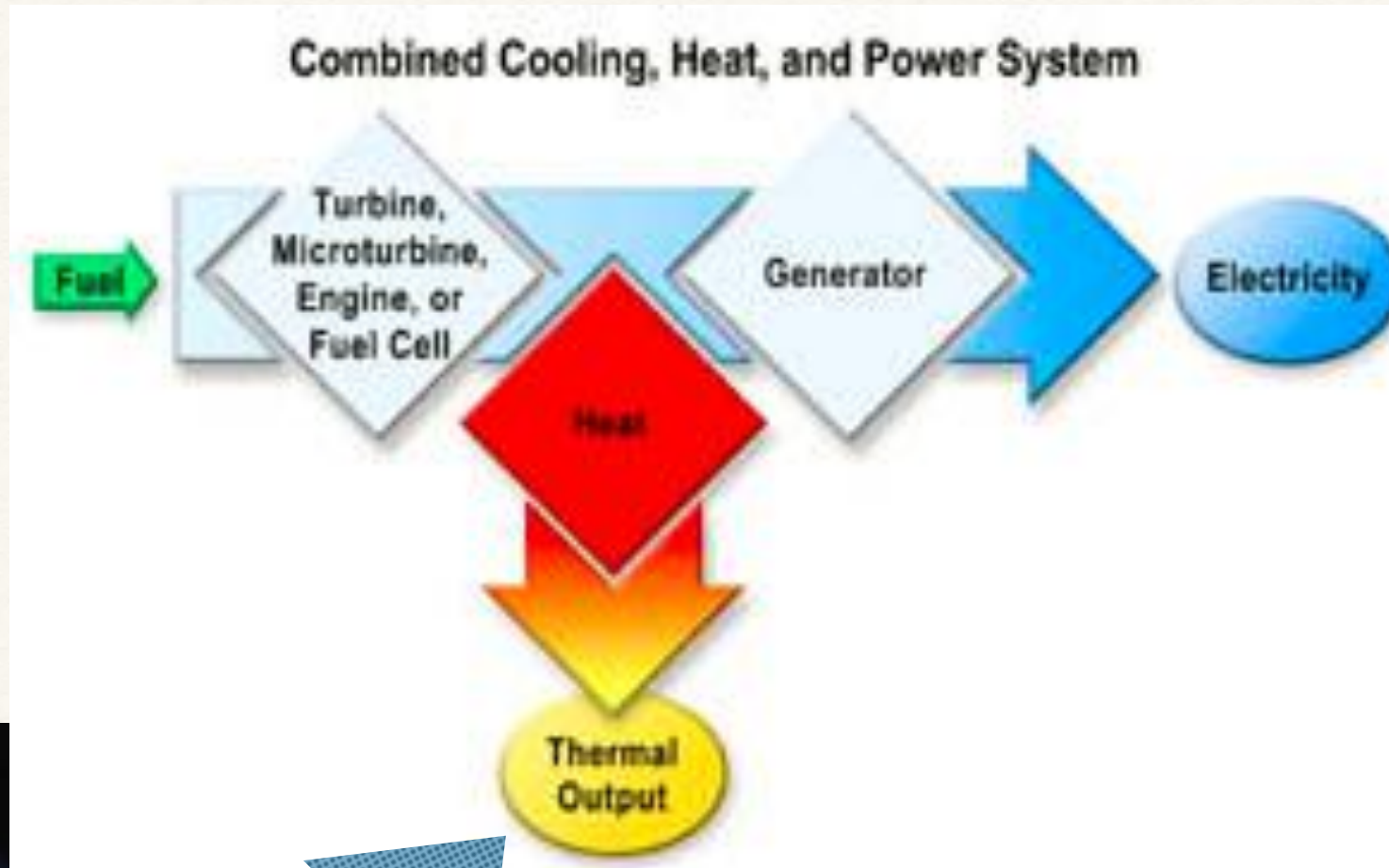


- Indonesia rank # 10 Globally
- GHG emissions ~ 20 Million Tonnes of Co2 Eq.
- CH4 emissions volumes are huge
- Black carbon emitting during flaring increases the warming effect of flaring





Flare to \$\$\$





MINISTRY OF ENERGY AND MINERAL RESOURCES
DIRECTORATE GENERAL OF OIL AND GAS

February 22nd, 2011

POLICY AND TARGETS

OF INDONESIA OIL & GAS MANAGEMENT

PETROLEUM POLICY

- ◆ Oil and Gas Supply Security
- ◆ Oil And Gas Utilization
- ◆ Oil and Gas Pricing Policy
- ◆ Unconventional Oil and Gas Business
- ◆ Conservation Of Oil and Gas Production
- ◆ Increasing National Capacity In Oil And Gas Industry

FUEL POLICY

- ◆ Feedstock & Fuel Supply Security
- ◆ Fuel Categorization
- ◆ Pricing Policy
- ◆ Fuel Diversification
- ◆ Fuel Standard and Quality
- ◆ Fuel Efficiency

TARGETS FOR 2025

- Maintain oil production level of 1 Million BOPD
- 50% national operatorship
- Security of domestic Fuel Supply and Industrial Feedstock
- 91% local content (goods and services)
- 99% skilled national workforce
- Achieving oil and gas safety, **zero accidents, zero failure,** and achievement of **zero flares,** and **zero waste**

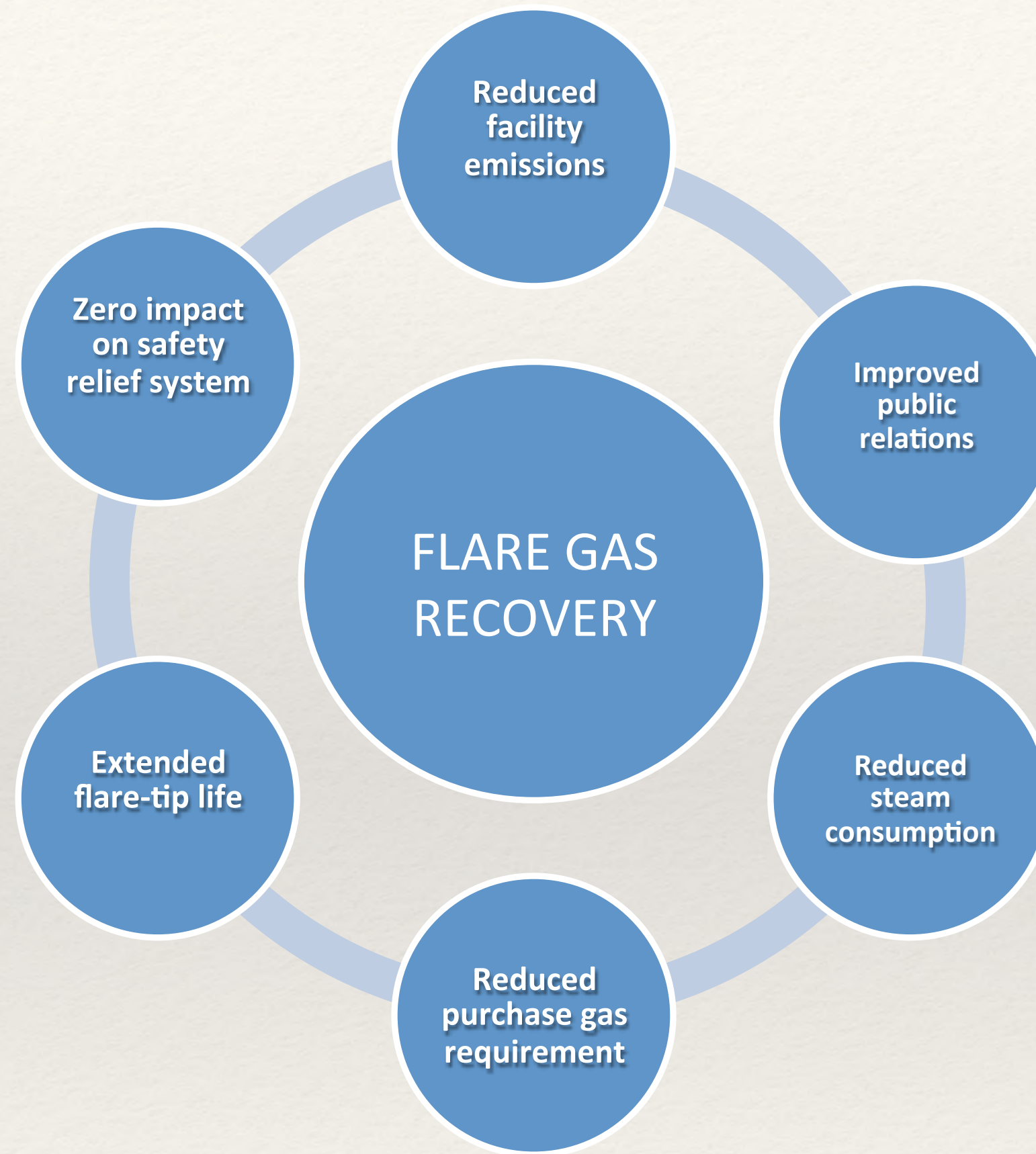


Why Flare Gas Recovery

- The huge Heat value available in the flare gas which will replace the systems installation in very short time.
- For the past few decades Environmental guidelines are become more stringent to the Oil & Gas fields, refineries world wide.
- The energy conservation becoming very important worldwide as the available Oil and Gas Energy resources are not enough to fulfill the world energy requirement.
- There are many Flare recovery systems installed world wide recovering huge valuable Hydro carbon gases . Through reliability, flexibility and rugged design using **Liquid Ring Technology System**.
- LRT is proven in varies locations for the smooth recovery of Flare Gas due to this unique features



Why Flare Gas Recovery



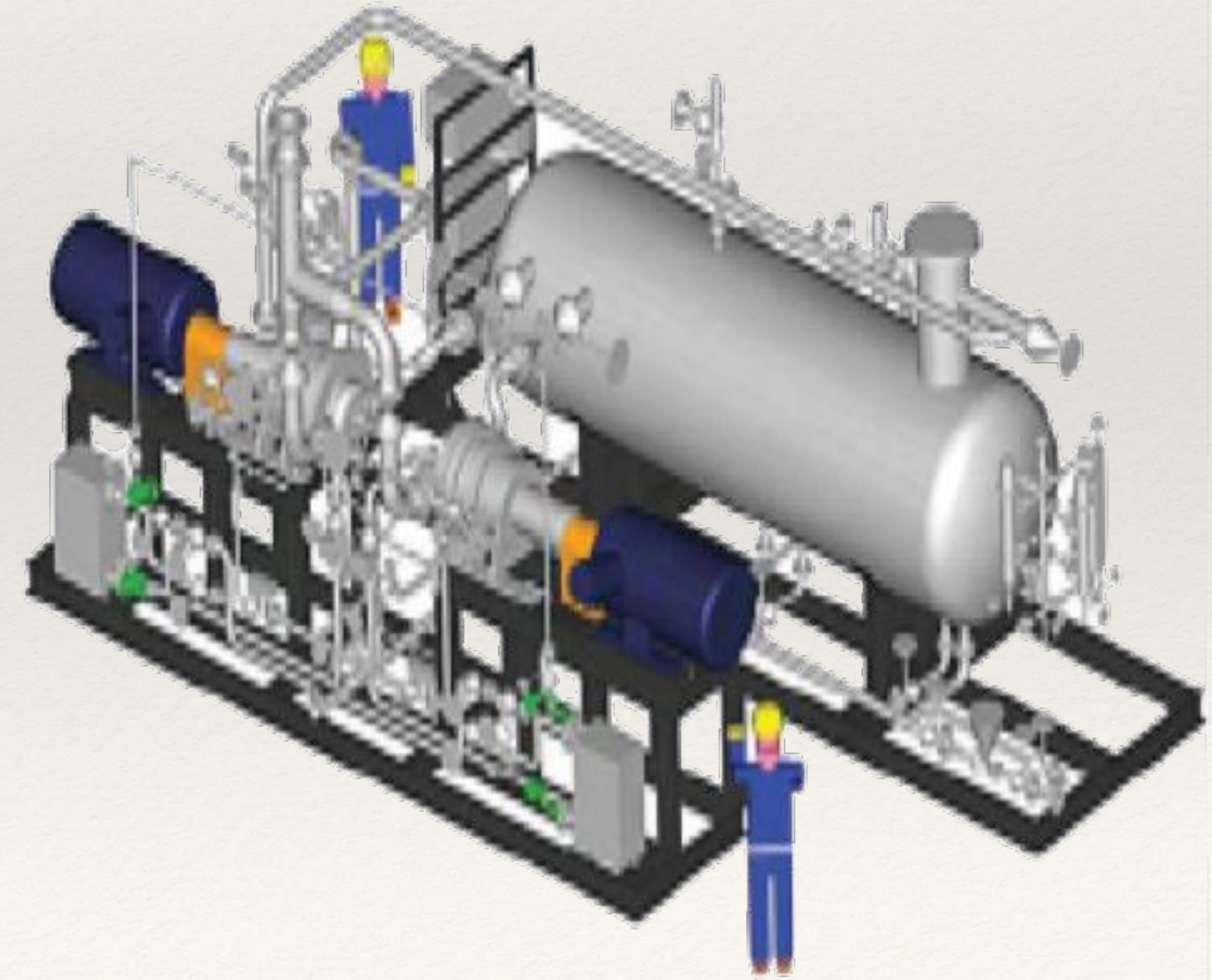
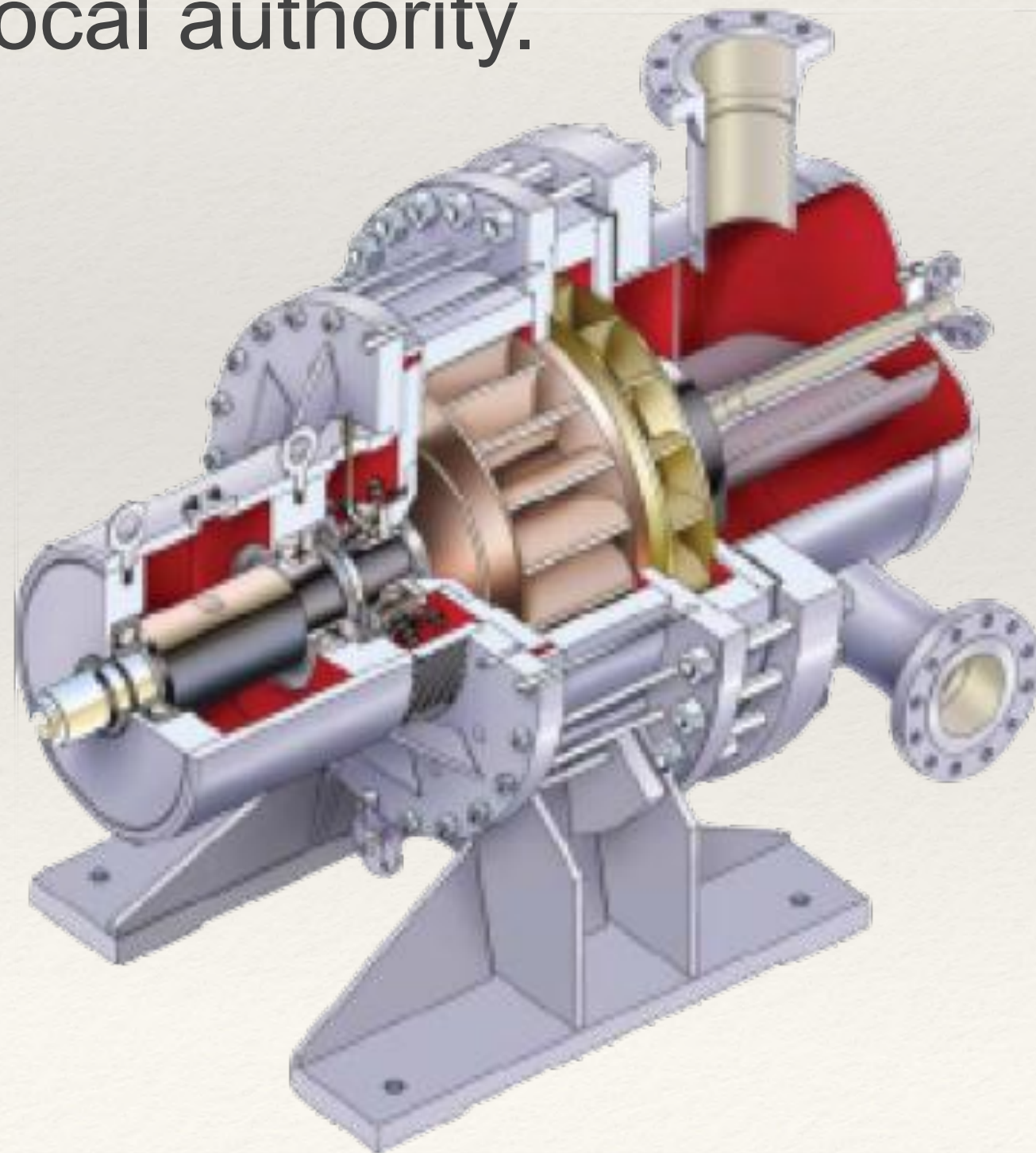


Why LAKSEL Technology

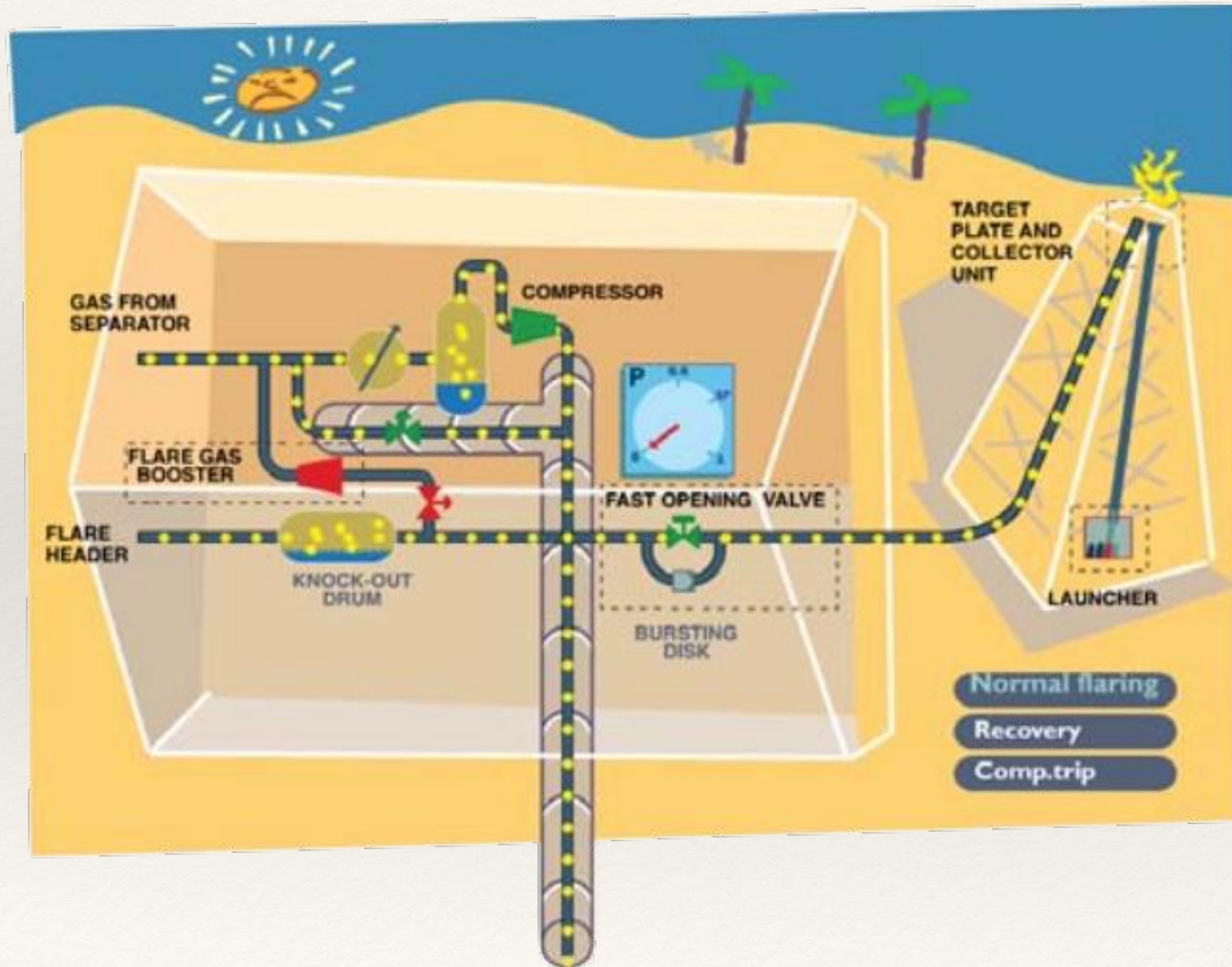


Why Laksel Technology

Flare Gas Recovery system one of the major environmental and energy conservation issue in almost all the Oil & Gas, Refinery and Chemical Industry. These valuable Hydrocarbon vapours are efficiently recovered in our Flare Gas Recovery using **Liquid Ring Compressor Systems**. The key is to correctly engineer & design the system for the variable availability of feed. Recovering these value of Hydrocarbons are giving grate savings to the users in-terms of energy conservation and environmental benefits from the local authority.



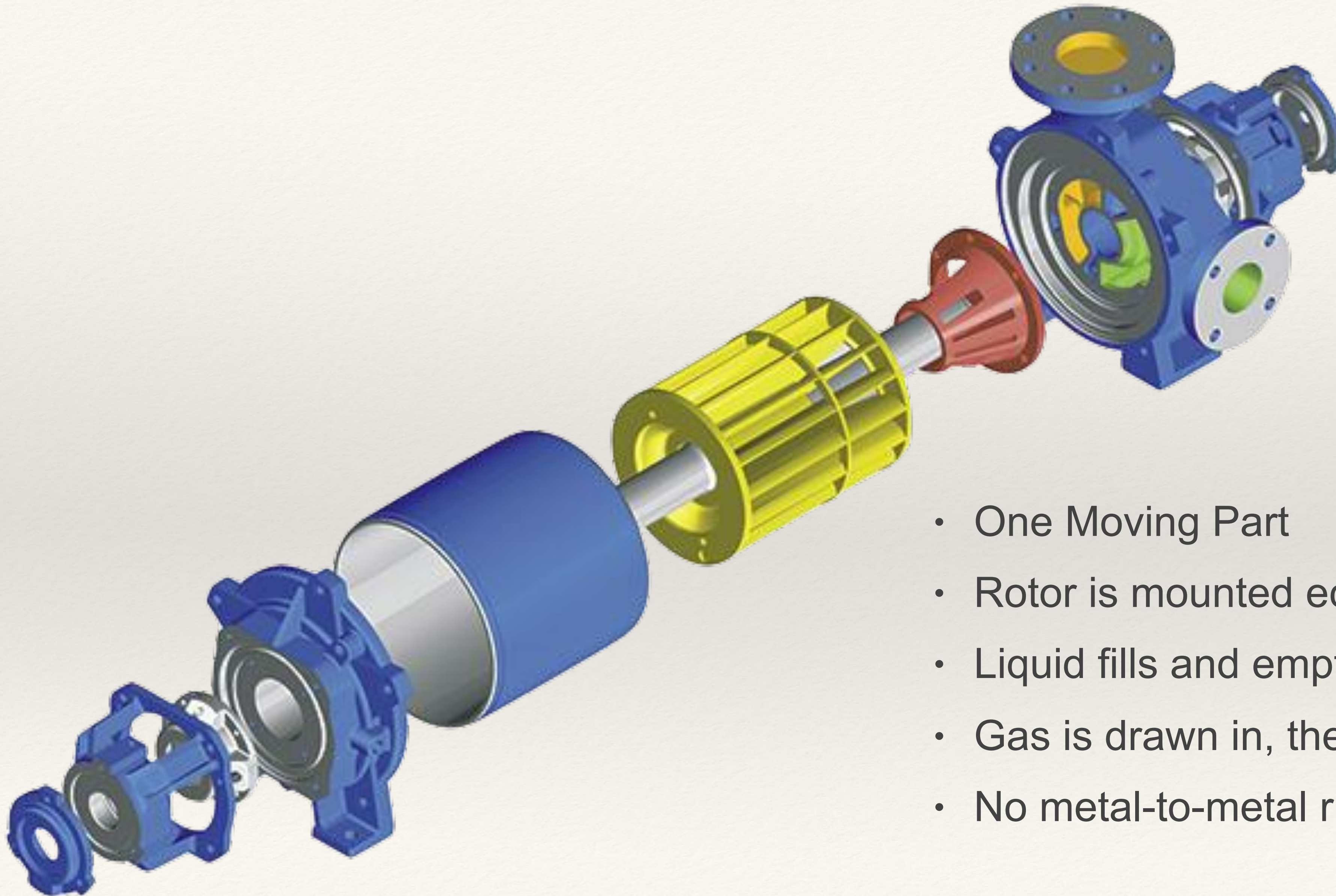
Normal Flaring Mode



Recovery Mode



How Liquid Ring Technology Works ??

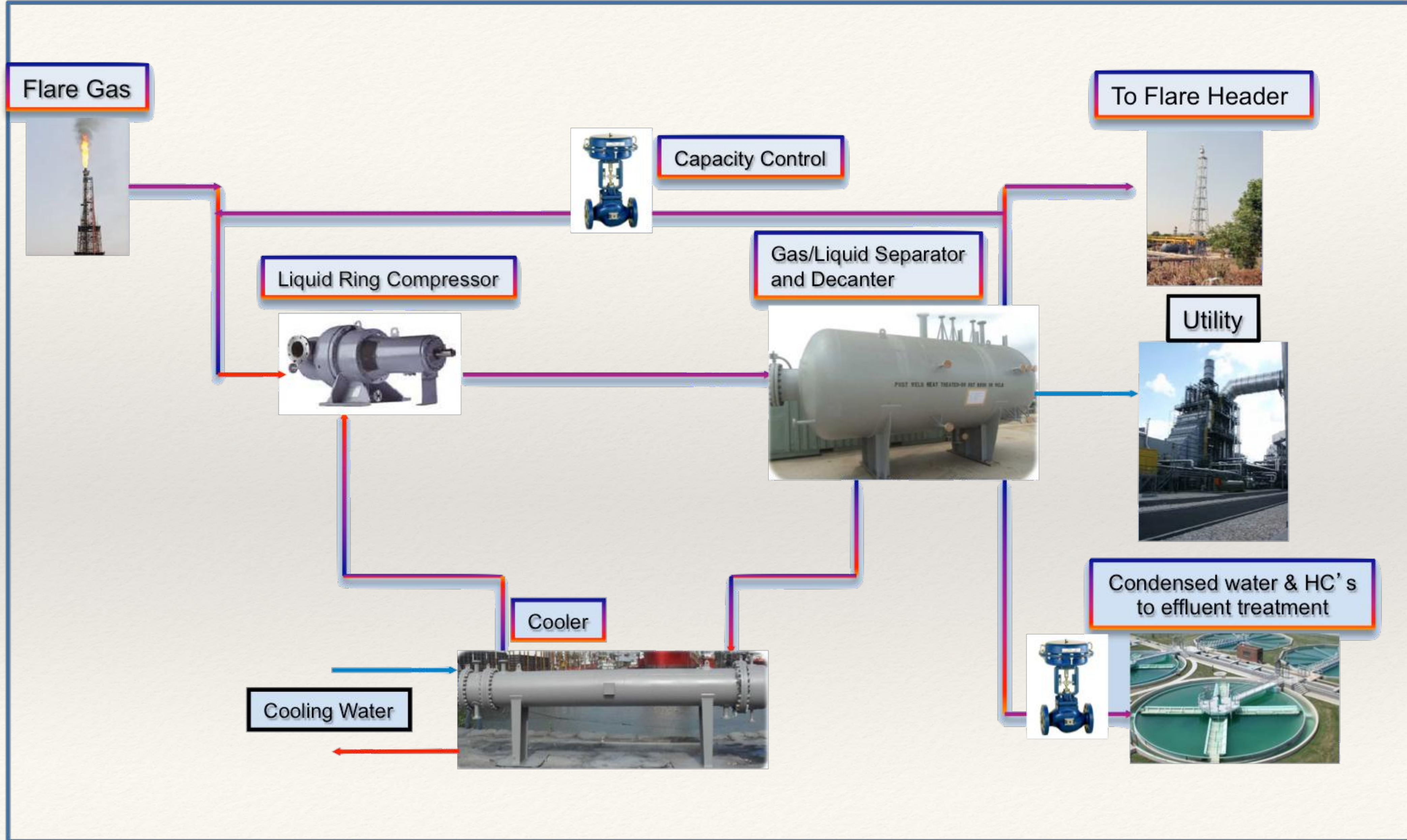


- One Moving Part
- Rotor is mounted eccentric to the casing
- Liquid fills and empties each rotor chamber
- Gas is drawn in, then compressed
- No metal-to-metal rubbing surfaces



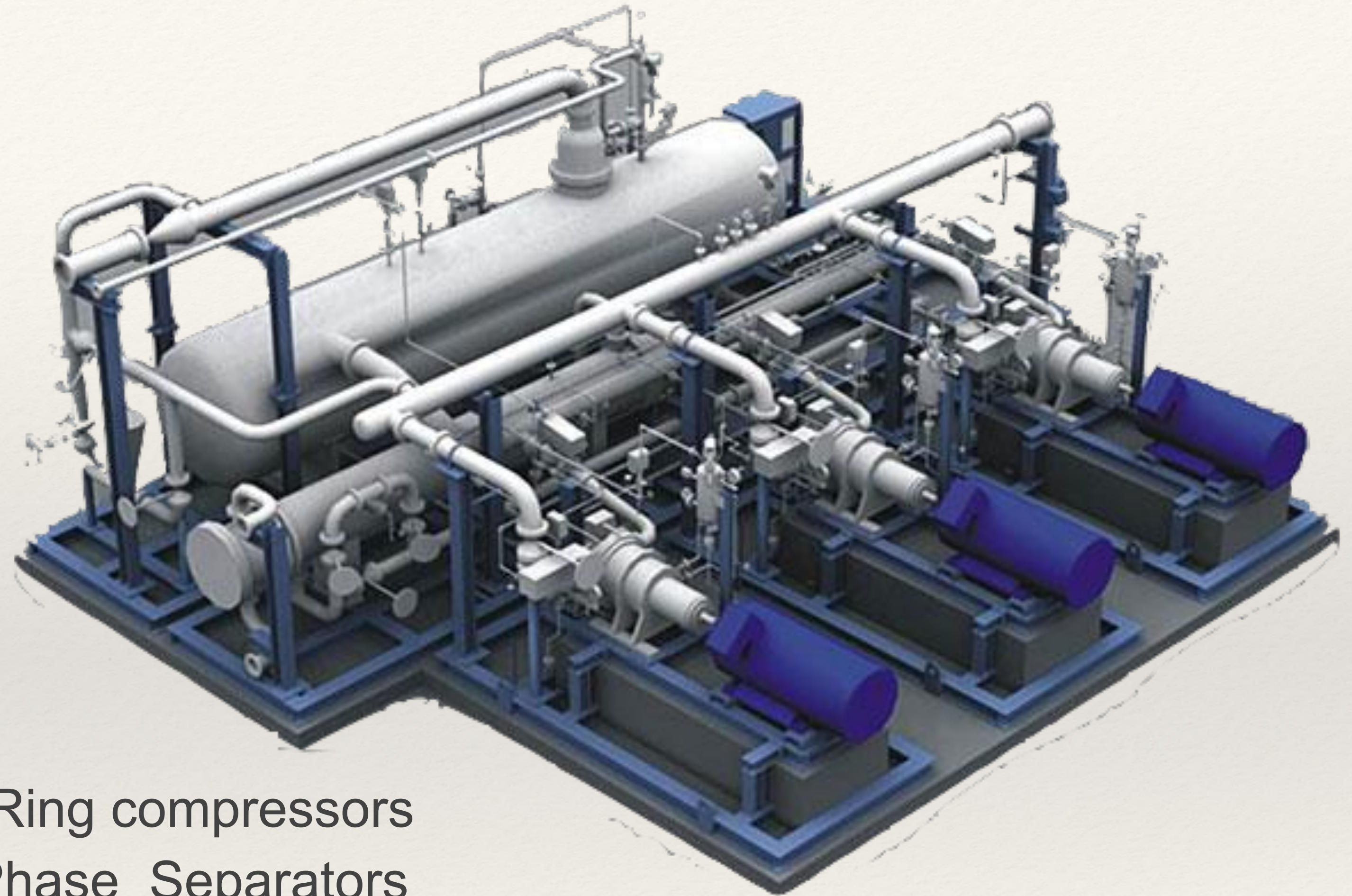
Why Laksel FGR System??

- Laksel in House IP Technology in FGR
- In House Separators Design
- In House Systems Design
- Performance guarantee of the system
- Proven Track record with leading clients like Shell, ONGC & SRC
- The End to End Solution for Flare Handling
- Flare to Fuel Technology
- 3 D Model
- Easy Operation
- Smart FGR Dehy and Smart FGR Sweet.
- Modular Design for easy mobility
- 100% turn down Ratio
- Self Cooling
- Safer operation due to LR Technology
- Off take Spec for LPG, LNG and Condensate
- Emission control of waste gases





Laksel's In-House Capabilities



- In House Design and supply of Liquid Ring compressors
- In House Design and supply of 2& 3 Phase Separators
- In house Skid Mounted Package System Design :
Process, mechanical ,Structural , Piping & E&I and Process Guarantee



Advantages of Liquid Ring Technology

LIQUID RING TECHNOLOGY

- Isothermal Compression operates at Lower Temperature
- Highest Volumetric Efficiency –90%
- Lower Speed Operation
- Reliable and calls for low Maintenance on account of low operating temperature, lower operational speed and external Bearings
- Lesser No. of Seals
- Accepts Carry over, Solids and Process upset.
- Lesser Controls on account of isothermal sturdy design and external bearings
- Improved Safety Non Sparking
- Higher HP due to LR
- Lower Equipment / Spare Cost
- Standard Oil for Lubrication
- Liberal Clearance

OTHER AVAILABLE TECHNOLOGIES

- Adiabatic Compression Operates at Higher Temp
- Lower Efficiency
- Higher Speed Operation
- High Maintenance for Bring ,Lube system, Vibration Control ,Surge Control & Protection System since bearings are internal
- More No. of Seals
- Can not Handle Carry Over , Solids and Saturated loads
- Very Sophisticated Controls required.
- Possibility of sparking
- Relatively Lower HP
- Higher Equipment / Spare Cost
- Synthetic Oil for Lubrication.
- Very fine / tight Clearance



Laksel FGR - 3D Module

