

1. Geothermal generation by using high temperature in preserver

Concept design:

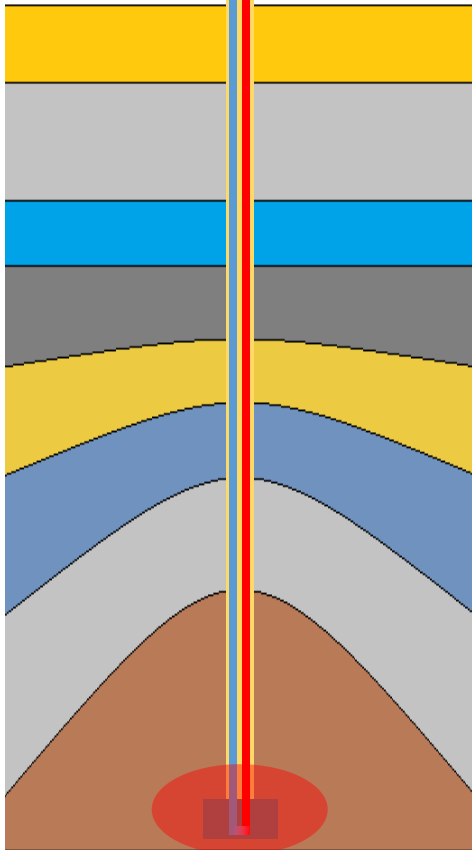
Concept 1:

Turbine

Condenser

Turbine

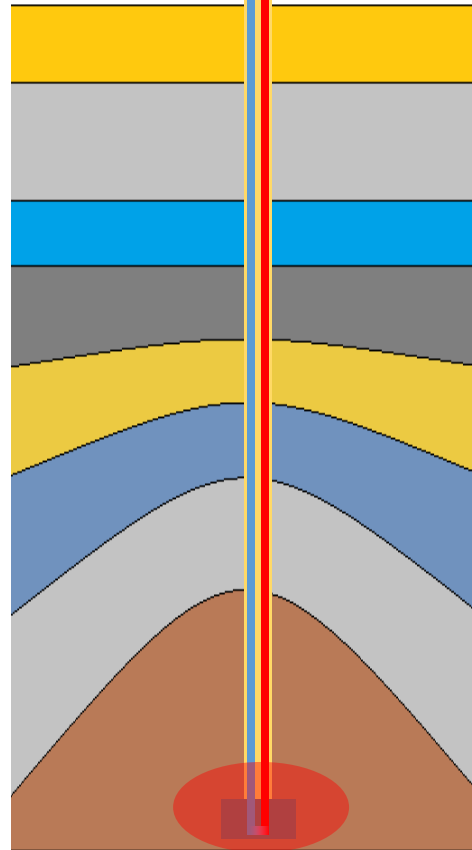
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Concept 2: TEG

Thermoelectric generator (TEG)

G



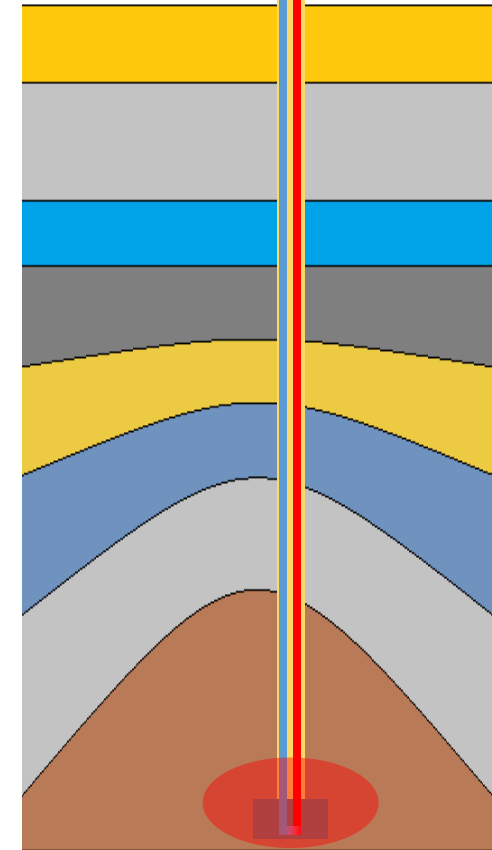
Concept 3:

Combined

Thermoelectric generator (TEG)

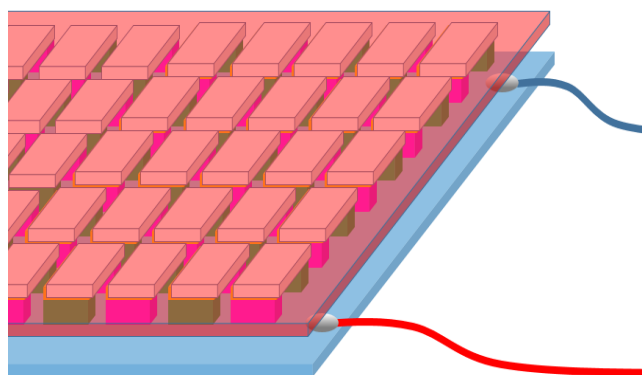
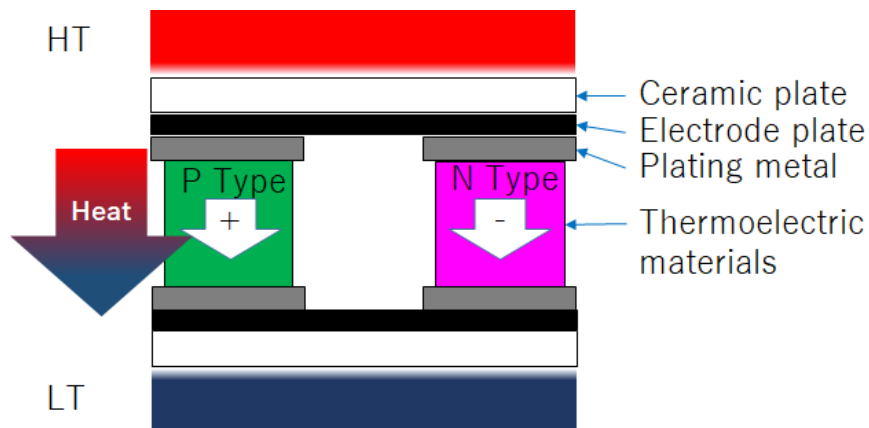
Synchronizer

G



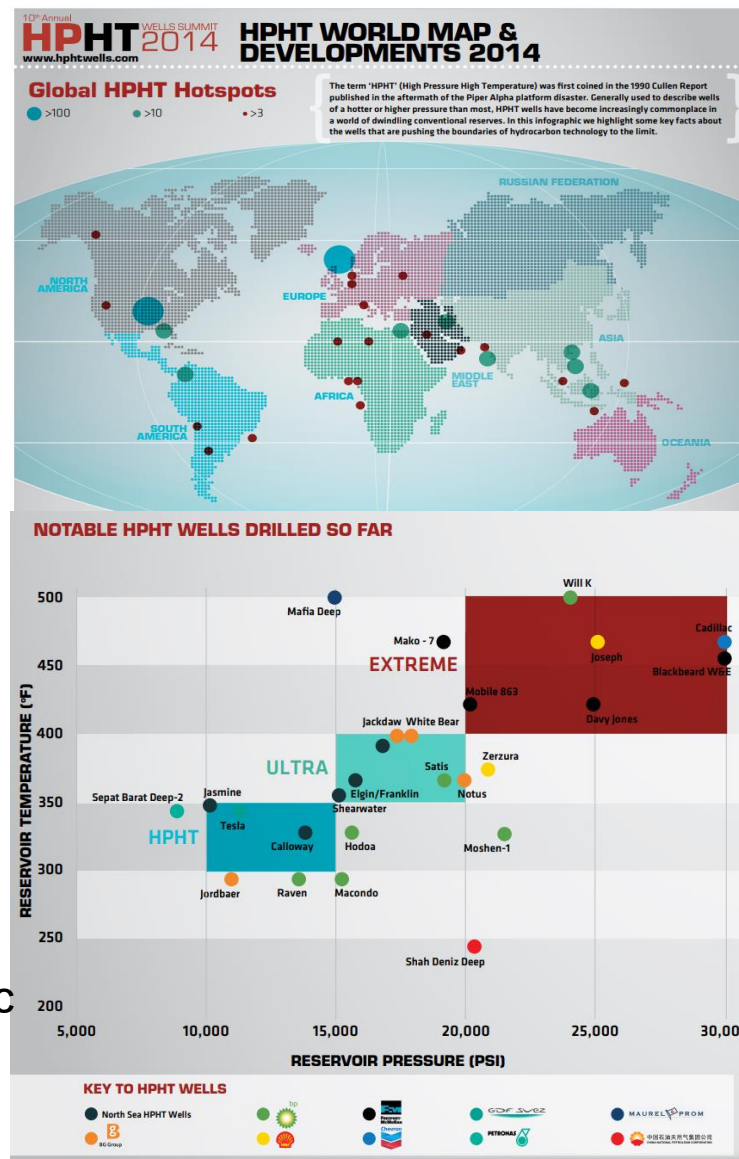
Using the abandoned HT wells' heat to generate electricity.
Reducing cost of plugging the abandoned wells and reuse them.

1. Geothermal generation by using high temperature in preserver



Expected benefit

- Cost reduction of decommissioning
- High capacity factor as the renewable energy
- Might be Applicable to geothermal in Japan

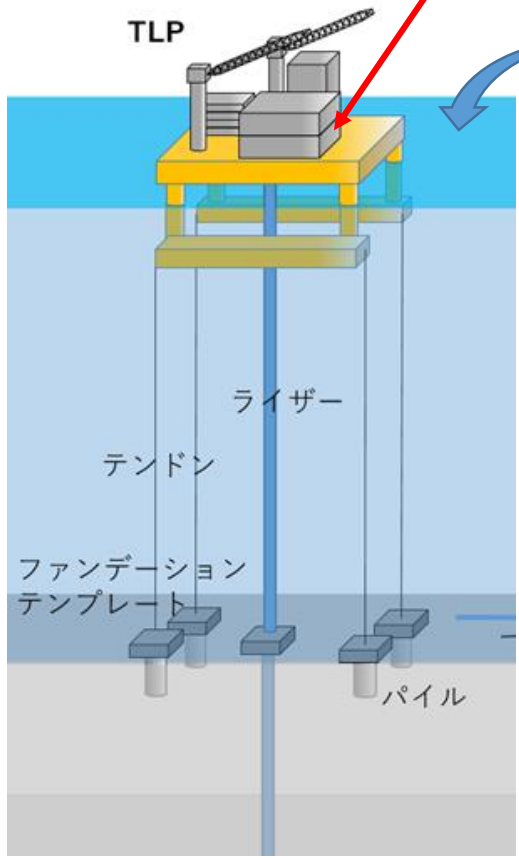
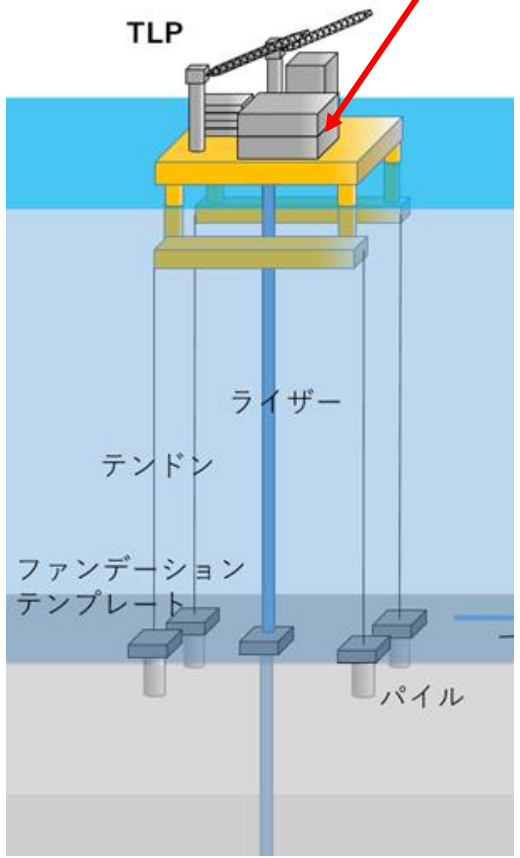


Source: HPHT Wells Summit 2014

2. Wind power/Ocean current power generation to supply offshore oil& gas production facilities

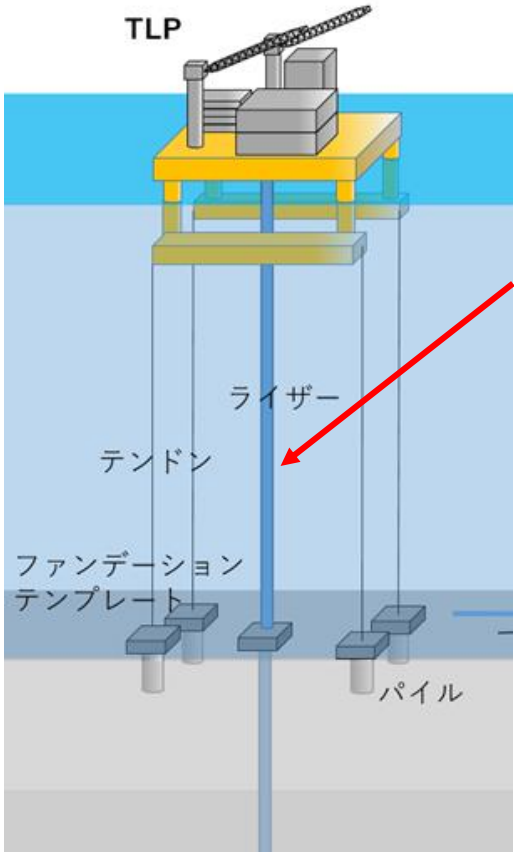
Power generator

Backup power generator



As much as possible, wind turbine supply electricity, and 50% capacity factor is expected.

3. Cost reduction technology for flammable gas removal and re-injection at production facilities



Oil/ Water/
Methane/CO2/ H2S

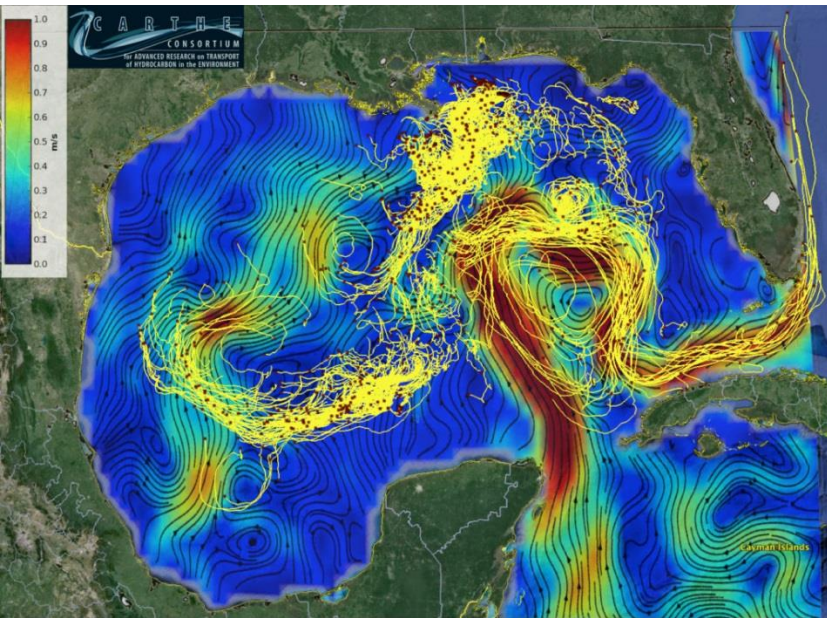


Now:
Still some facilities flaring methane
and release CO2



Future:
Capturing all methane
and CO2, then inject into
the reservoirs

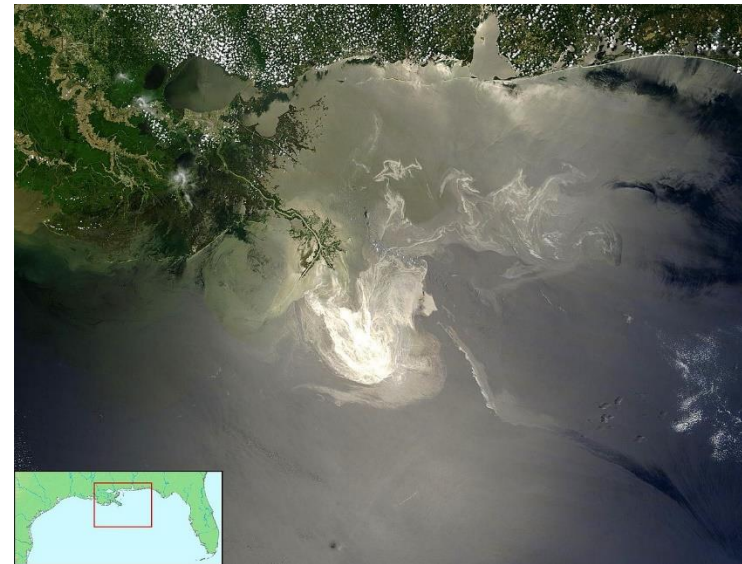
4. Cost reduction technology for flammable gas removal and re-injection at production facilities



The currents of the GOM are complex and change from moment to moment

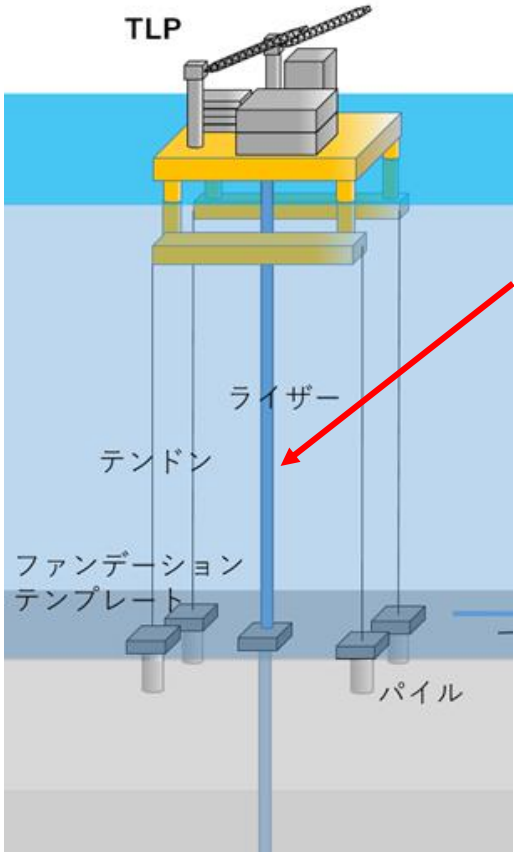


Continuous monitoring of ocean currents by drone



Enables effective oil spill response by improving simulation accuracy

5. Hydrogen related technologies



Oil/ Water/
Methane/CO2/ H2S

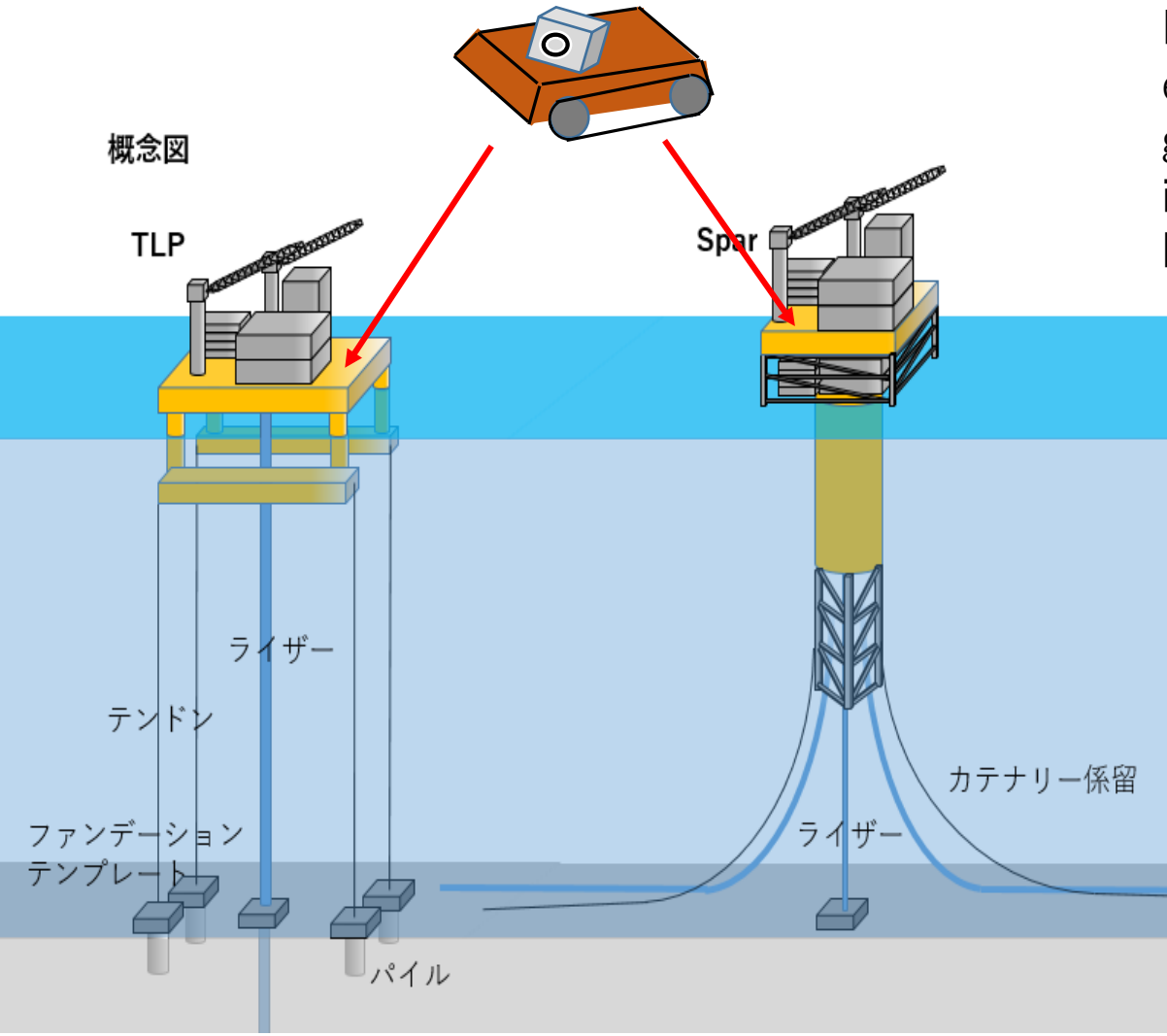


Now:
Still some facilities flaring methane
and release CO2



Future:
Reforming Methane into
Hydrogen and CO2, then utilize
Hydrogen and inject CO2 into the
reservoirs

6. Safety related techs including NUF (normally unattended facilities) and robotics

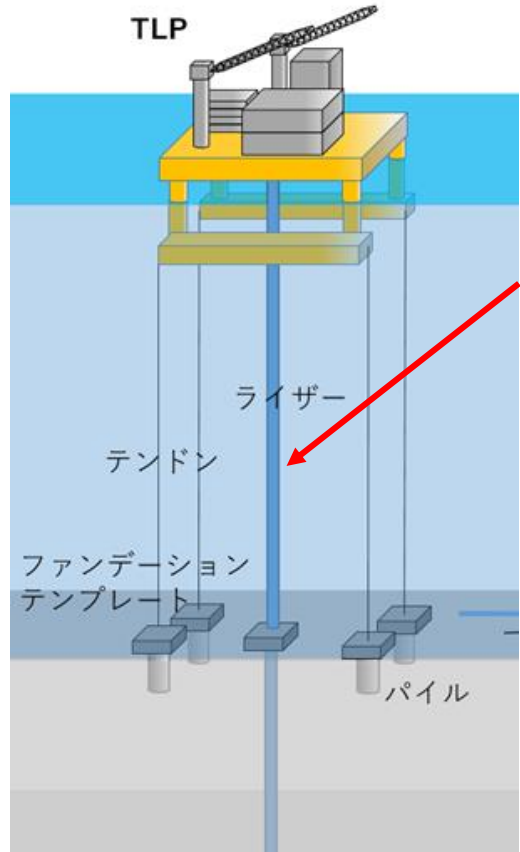


Even in environments where explosive gases are generated, periodical inspections are conducted by operators



Place an explosion-proof robot to minimize the burden on operators and contribute to ensuring safety

7. Water treatment related technologies

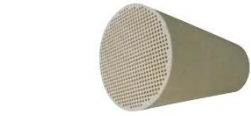
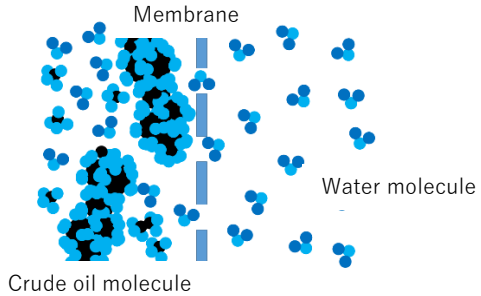


Associated water from Oil & Gas Field



Utilizing filtration device, then make associated water very clean

Filtration device



Ceramic membrane