

Solutions for Heavy Oil Upgrading

Key Issues in Oil Refining

Chiyoda is continuously monitoring energy trends and worldwide environmental considerations in order to provide optimum solutions for the oil refining business. Chiyoda's aim in solving these issues is to increase refinery values and margins and enhance long term business security.

Growing Demand for Development of High Sulfur Heavy Crude and Non-conventional Oil

More Demand for Lighter Distillate Products

Stringent Environmental Requirements / Regulations

Chiyoda's Solution

Master planning and feasibility studies to provide optimized solutions for grass root refineries, expansion, revamping and petrochemical integration by utilizing fit-for-purpose technologies.

■ Chiyoda's own technology ■ Under development by Kobe Steel, Ltd. & Chiyoda

Heavy Oil Upgrading

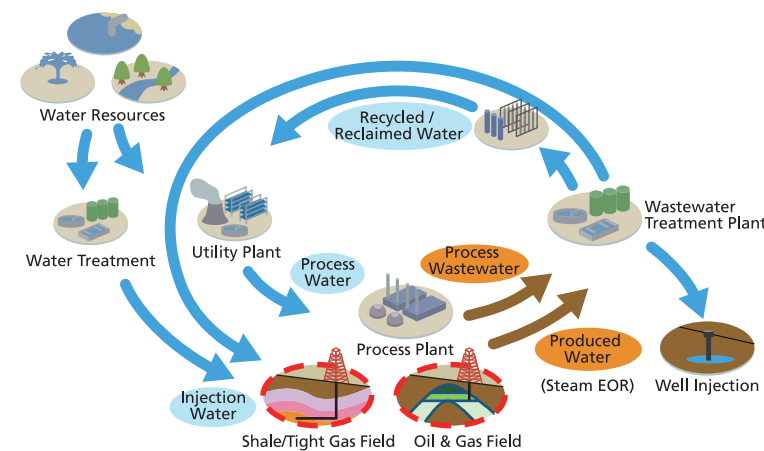
- ◆ Ultimate Hydrocracker by KOBELCO SPH
- ◆ Residual Oil Conversion by EUREKA
- ◆ Bottomless Refinery by EUREKA + Gasification
- ◆ Synthetic Crude Production by CDMax
- ◆ Hydrogen Management

Technologies for Environmental Issues

- ◆ Carbon Lifecycle Engineering
- ◆ Ultra-deep Desulfurization by Hybrid Titania Catalyst
- ◆ Flue Gas Desulfurization by CT-121/CASOX
- ◆ Water Management



Flue Gas Desulfurization Plant(CT-121) Kobe Steel, Ltd.



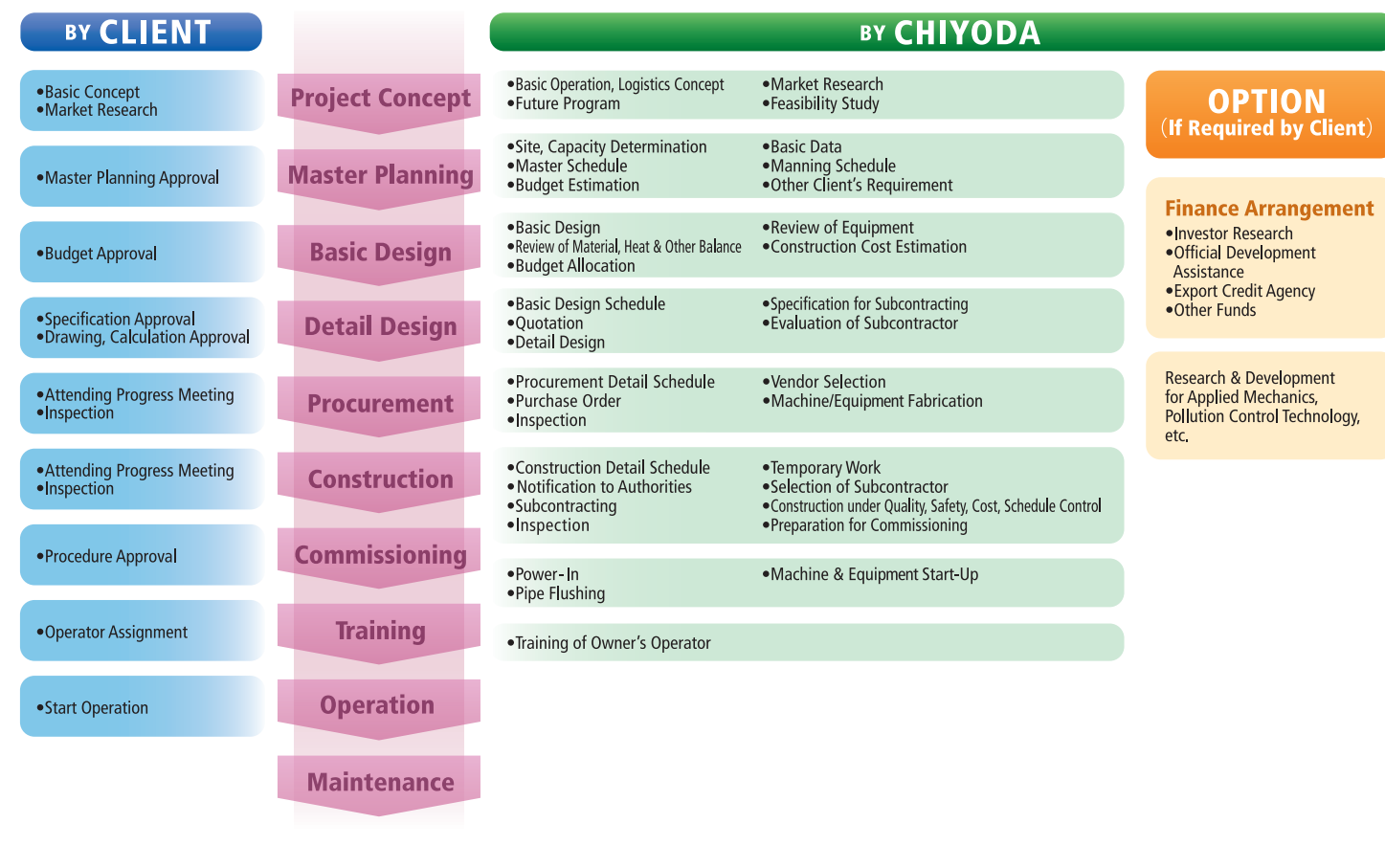
"Using Our Most Advanced Technologies for Your Future"

Chiyoda for Refinery Projects

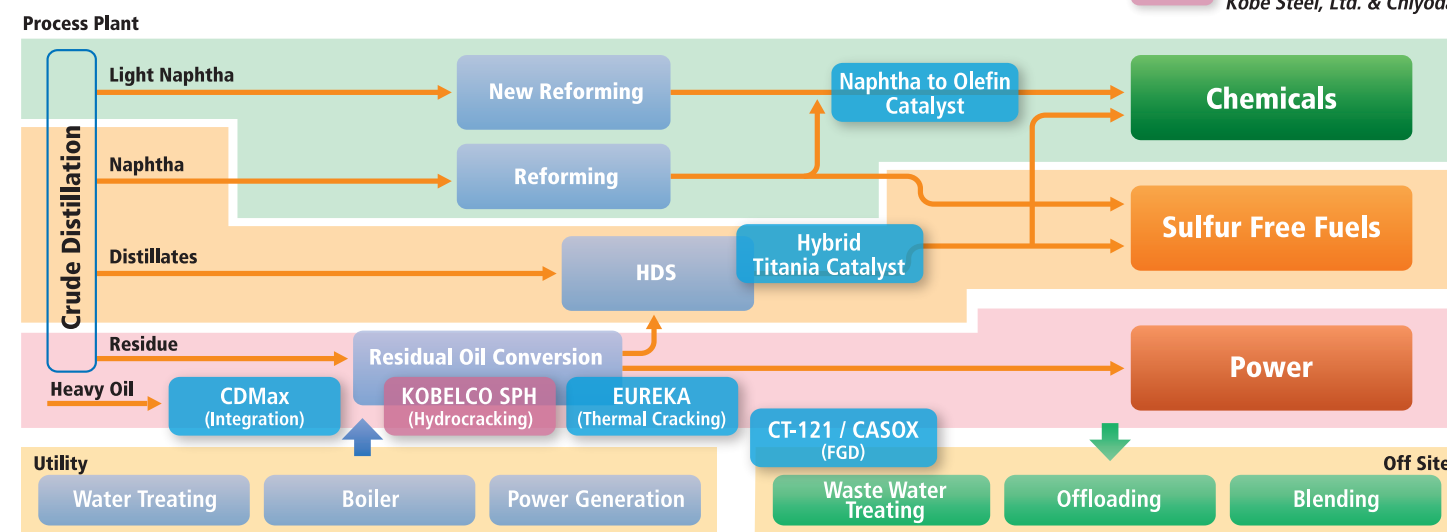
Chiyoda's Services

Chiyoda provides a wide range of services from the planning phase all the way through to EPC, O&M, expansion, revamping etc., with high standards in health, safety and environment awareness, based on our extensive experience, and our knowledge of project life cycle engineering.

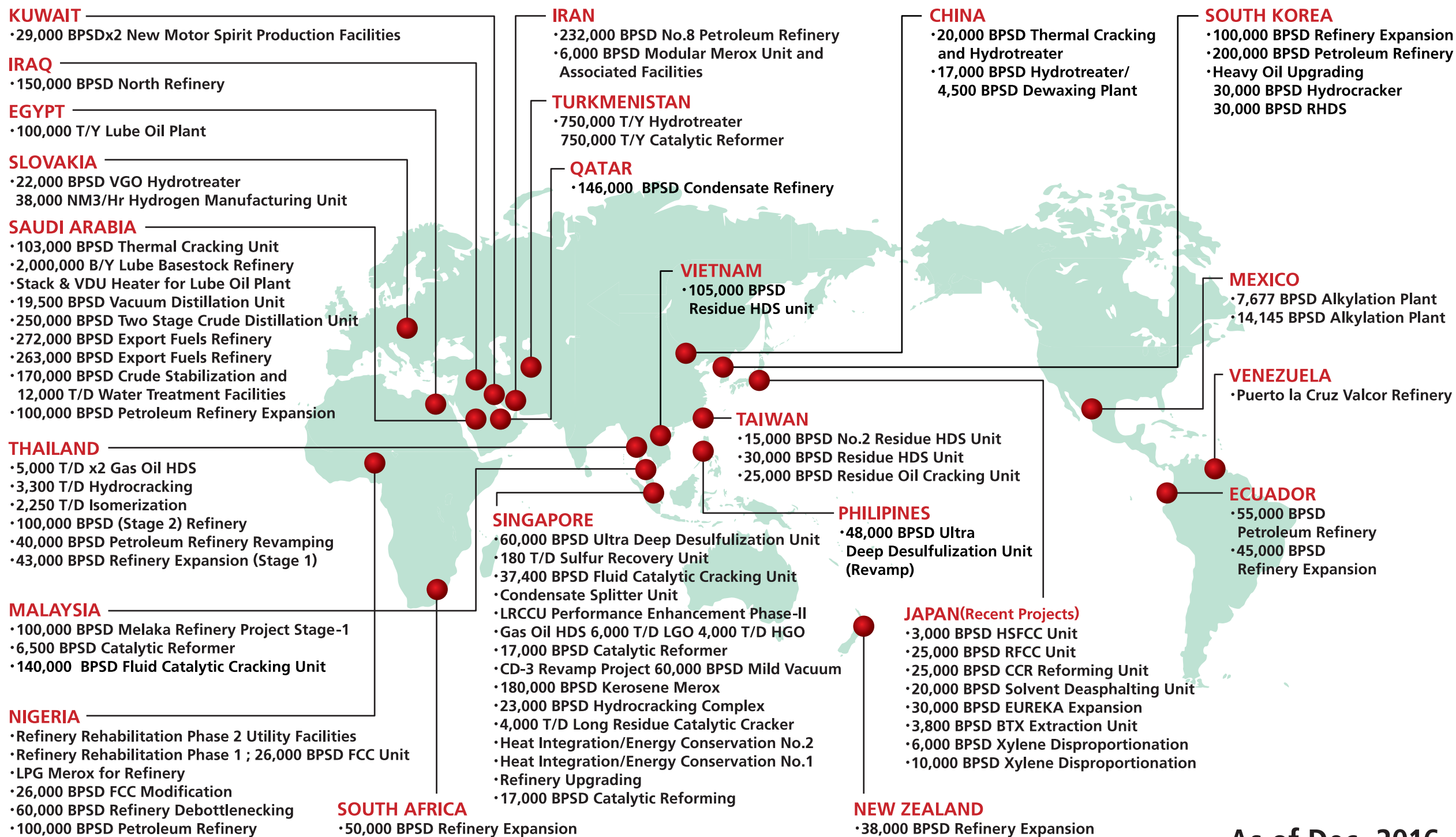
Range of Services



Refinery Technology Map



Chiyoda's Refinery Experiences Worldwide



As of Dec, 2016

Major Experience in Refining

◆Crude Distillation Unit	75	◆Hydrocracking Unit	11	◆Catalytic Reforming Unit	60
◆Residue Hydrodesulfurization Unit	23	◆VGO Hydrodesulfurization Unit	23	◆Para-Xylene Unit	13
◆Residue Thermal Cracking Unit	16	◆Gasoline Selective Desulfurization Unit	7	◆Light Paraffin to BTX Unit	4
◆RFCC/FCC	25	◆Extra-Deep Gas Oil Hydrodesulfurization Unit	21	◆Hydrogen Manufacturing Unit	51

