

# Challenges with the Production of Heavier Crudes: PDVSA Perspectives

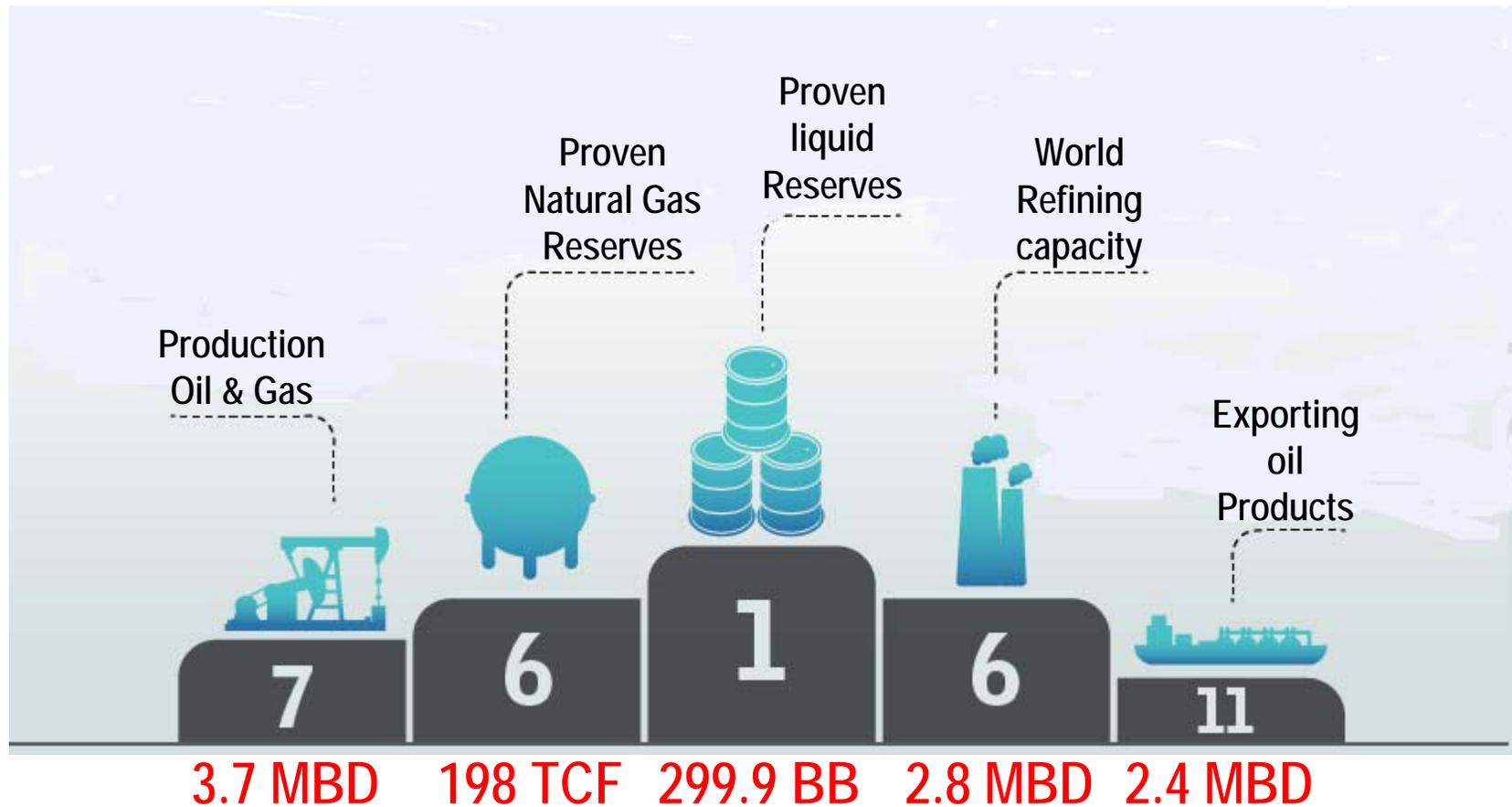
**Wilfredo Briceño**



**4th Meeting of the Heavy Oil Working Group  
September 22, 2015  
Bogotá, Colombia**

- PDVSA at a glance
- Current situation
- Challenge ahead
- A view from the FAJA
- Revolutionary Join Ventures
- New developments in FAJA
- Building a new infrastructure
- Production increment
- PDVSA-Intevep technological commitment
- Overview

## 5th Petroleum Corporation in the World

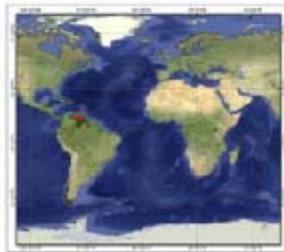


1. Petroleum Intelligence Weekly, November 18, 2014; 2. PDVSA official numbers 2014

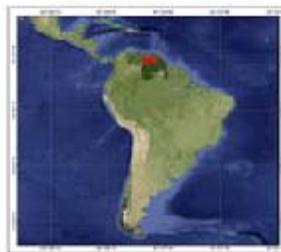
From the Venezuela 299.9 BB of proven oil reserves, **92%** correspond to Heavy and Extra Heavy Crude Oil from the Faja Petrolífera del Orinoco – “Hugo Chavez”



**WORLD**



**REGIONAL**



**NATIONAL**



**LOCAL**



Heavy and Extra heavy crude oil suffer from:

Low API gravity

High viscosity

High initial boiling point in distillation processes

High carbon residue

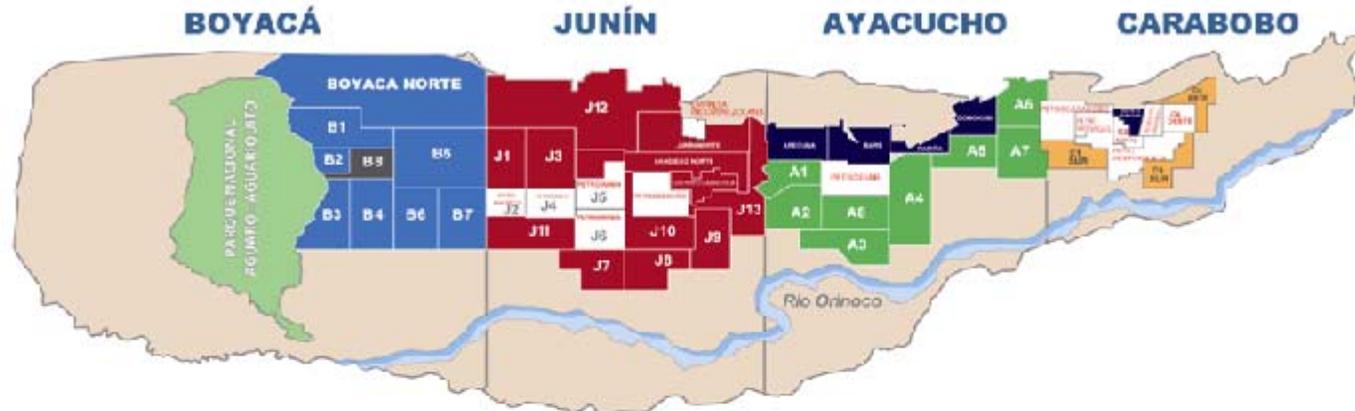
High sulfur and nitrogen content

High metal content

High asphaltenes and resin constituents

Only with blending is possible its distillation

**Upgrading** is an essential step in processing



### SIZE

- Area: 55,314 km<sup>2</sup>

### FIELDS, RESERVOIRS AND WELLS

- Fields: 204
- Active Reservoirs : 1,066
- Active Wells: 5,349

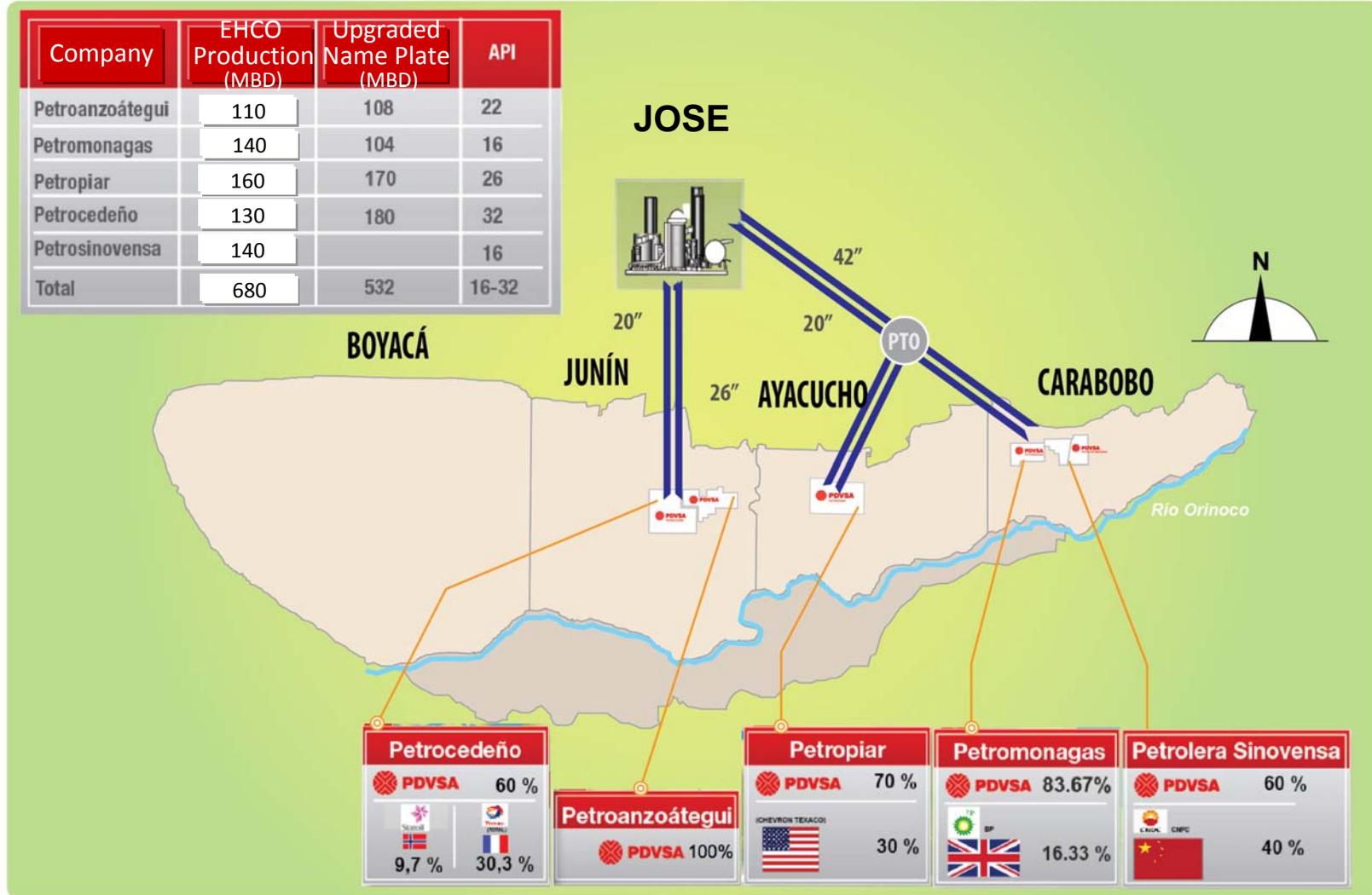
### PROVEN RESERVES

- Crude Oil : 259.5 Billion Barrels
- Natural Gas : 58.3 Trillion Cubic Feet

**The Faja Petrolifera del Orinoco  
“Hugo Chavez” oil reserves is one  
of the world certified reserves**

# REVOLUTIONARY JOINT VENTURES

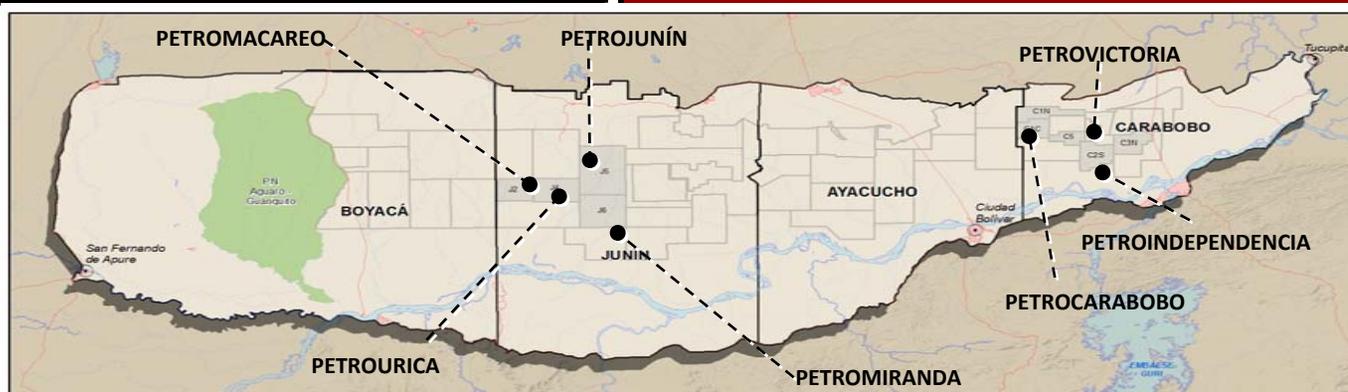
Company	EHCO Production (MBD)	Upgraded Name Plate (MBD)	API
Petroanzoátegui	110	108	22
Petromonagas	140	104	16
Petropiar	160	170	26
Petrocedeño	130	180	32
Petrosinovenosa	140		16
<b>Total</b>	<b>680</b>	<b>532</b>	<b>16-32</b>

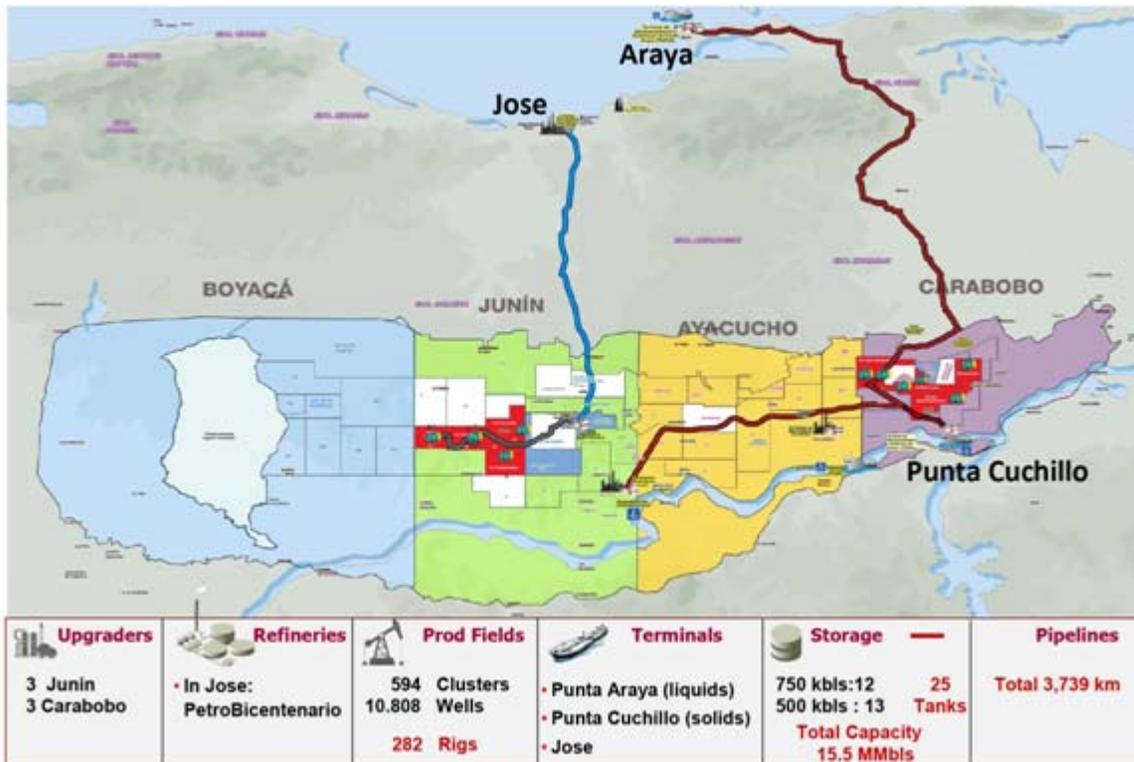


## NEW DEVELOPMENTS IN FAJA

Block	Partners	Producción (MBD)
PetroMacareo	PDVSA 60% Petrovietnam 40%	200
PetroUrica	PDVSA 60% CNPC 40%	400
PetroJunin	PDVSA 60% ENI 40%	240
PetroMiranda	PDVSA 60% Rosneft 24% Gazprom 8% Lukoil 8%	450
<b>Junín Total</b>		<b>1.290</b>

Block	Partners	Producción (MBD)
PetroCarabobo	PDVSA 60% Repsol 11% ONGC 11% IOC&OIL 7,0%	400
PetroIndependencia	PDVSA 60% Chevron 34% Mitsubishi 2,5% Inpex 2,5% Suelopetrol 1%	400
PetroVictoria	PDVSA 60% Rosneft 40%	400
<b>Carabobo Total</b>		<b>1.200</b>

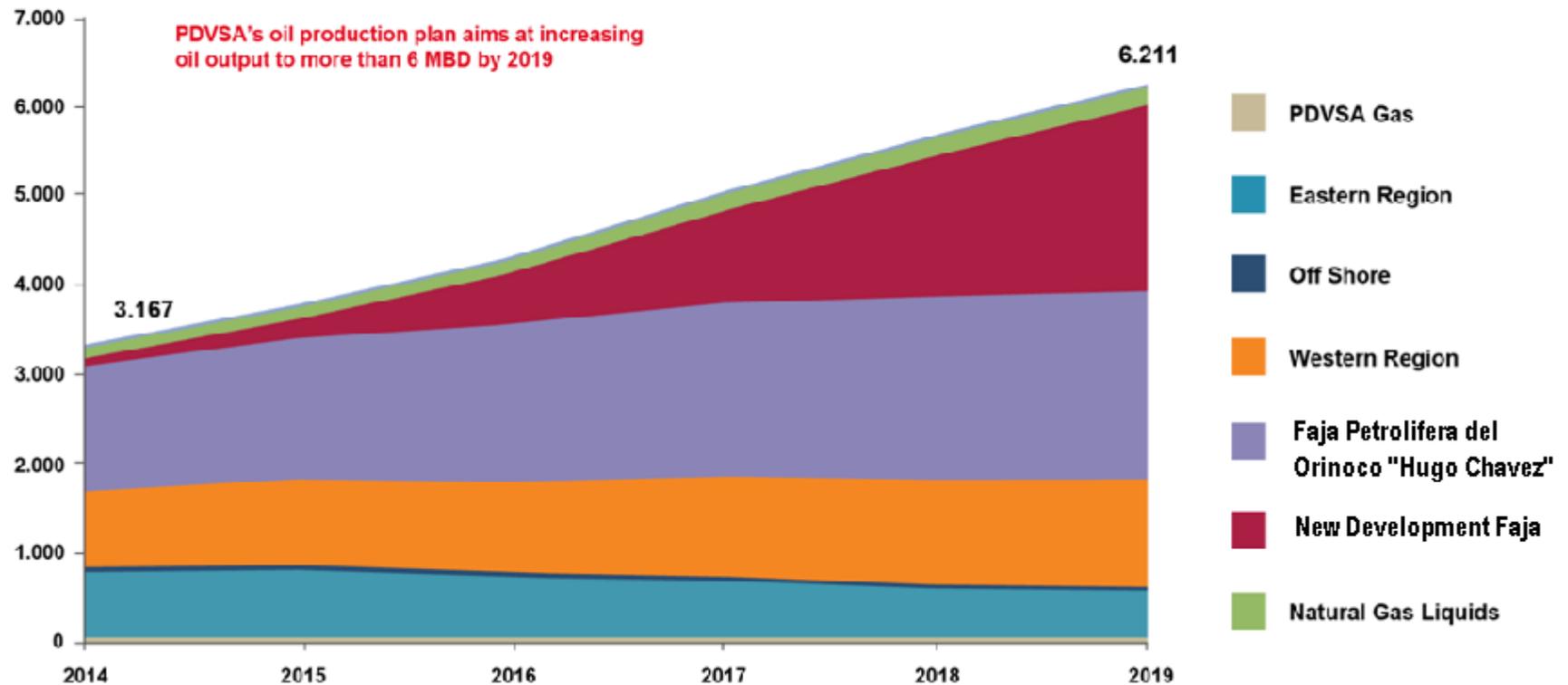




The cluster scheme “macolla” is a group of integrated wells in an environmental sensible area, that concentrates a number of wells:

- Simplifies drilling, completion and workover operations
- Low environmental impact, since it requires a 93% smaller area than conventional wells layout
- Improves production project economics by reducing construction and operational costs

Million Barrels / Day



**FAJA WILL ACCOUNT FOR 4 MBD BY 2019 (65%)**

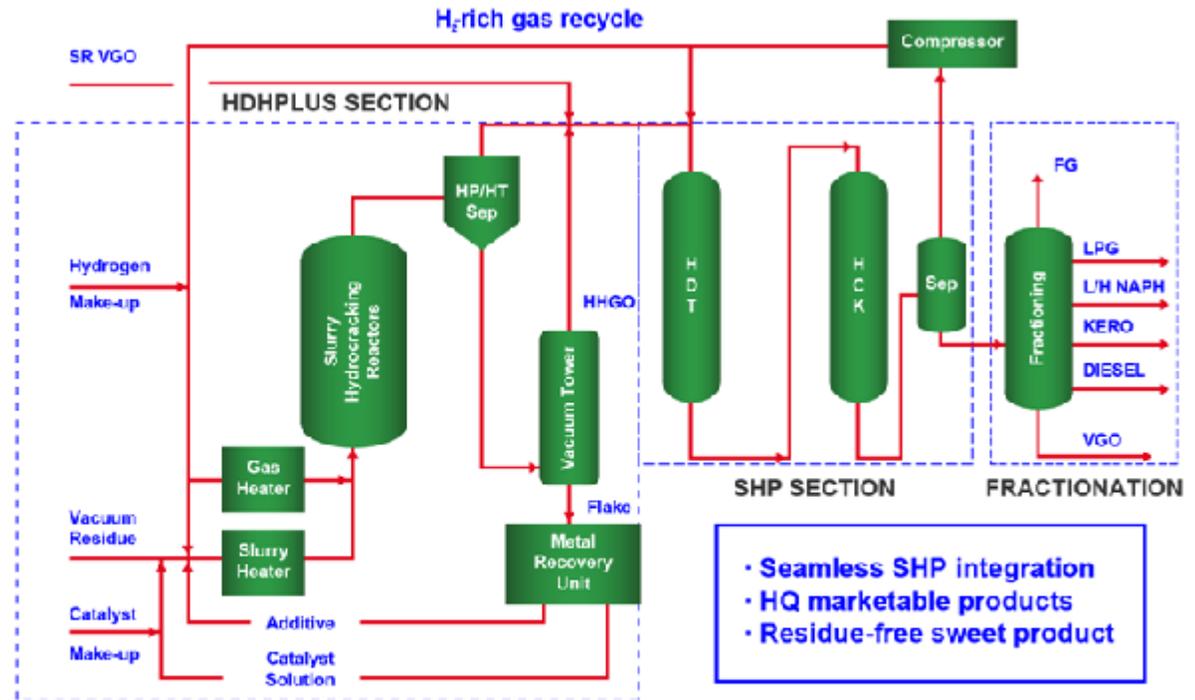
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HDHPLUS®/ SHP\*  
PROCESS OVERVIEW

HDHPlus®

\*SHP is a Proprietary IFP  
Technology

INT-MECS®



Catalytic hydroconversion of vacuum residue slurry (85-93% deep conversion) in the presence of hydrogen, and additive and a catalyst to obtain light products: naphtha, kerosene, gasoline, diesel and gasoil. 60% more products than delayed coking.

HYDROGEN ADDITION **HDHPlus®**  
IS BEING IMPLANTED AT PLC REFINERY

- The technological challenges in heavy oil are immense
- Securing diluents is a constant dilemma for heavy oil production
- The approach for development in FAJA is association in joint ventures
- Traditional upgrading technology will be part of the solution
- New technologies such as HDHPlus<sup>®</sup> will ease the current carbon rejection tendency
- GTPP is a channel for development integrated HCO solutions

*Thank you*

