

Table S1

Properties of feedstock.

Items	Value
Density (20 °C), g·cm ⁻³	0.9273
Refractive index (70 °C)	1.5015
Carbon residue, wt%	3.45
Viscosity (80 °C), mm ² ·s ⁻¹	27.86
Viscosity (100 °C), mm ² ·s ⁻¹	15.0
Condensation point, °C	29
Elemental Composition	
C, wt%	86.54
H, wt%	12.30
S, wt%	1.05
N, wt%	0.18
Group composition, wt%	
Saturates	59.4
Aromatics	31.1
Resins	9.0
Asphaltenes	0.5
Metal content, µg·g ⁻¹	
Ni	7.1
V	6.9
Fe	3.0

Table S2

Properties of hydrogenation catalysts.

Items	Value
Specific surface area, $\text{m}^2 \cdot \text{g}^{-1}$	150
Pore volume, $\text{cm}^3 \cdot \text{g}^{-1}$	0.26
Crush strength, $\text{N} \cdot \text{mm}^{-1}$	29
Chemical composition, wt%	
WO_3	15~30
NiO	4~10

Table S3

Properties of FCC catalysts.

Items	Value
Specific surface area, $\text{m}^2 \cdot \text{g}^{-1}$	104
Pore volume, $\text{cm}^3 \cdot \text{g}^{-1}$	0.159
Microactivity index	64
Particle size distribution, wt%	
0~40 μm	19.7
40~80 μm	48.5
80~149 μm	28.6
>149 μm	3.2
Average particle size, μm	62.4
Metal content, wt%	
Fe	0.43
Ni	0.66
V	0.85
Sb	0.23

Table S4

Gasoline properties of routine FCC and synergistic process.

Process	Routine FCC	Synergistic process
Density (20 °C), g·cm ⁻³	0.7276	0.7367
Elemental Composition		
C, wt%	86.33	86.59
H, wt%	13.67	13.41
S, µg·g ⁻¹	537.4	346.6
N, µg·g ⁻¹	41.2	37.1
Group composition, wt%		
Saturates	55.4	56.5
Olefins	20.3	15.9
Aromatics	24.3	27.6
RON	92.4	93.0

Figure S1

Schematic diagram of the fixed-bed reactor.

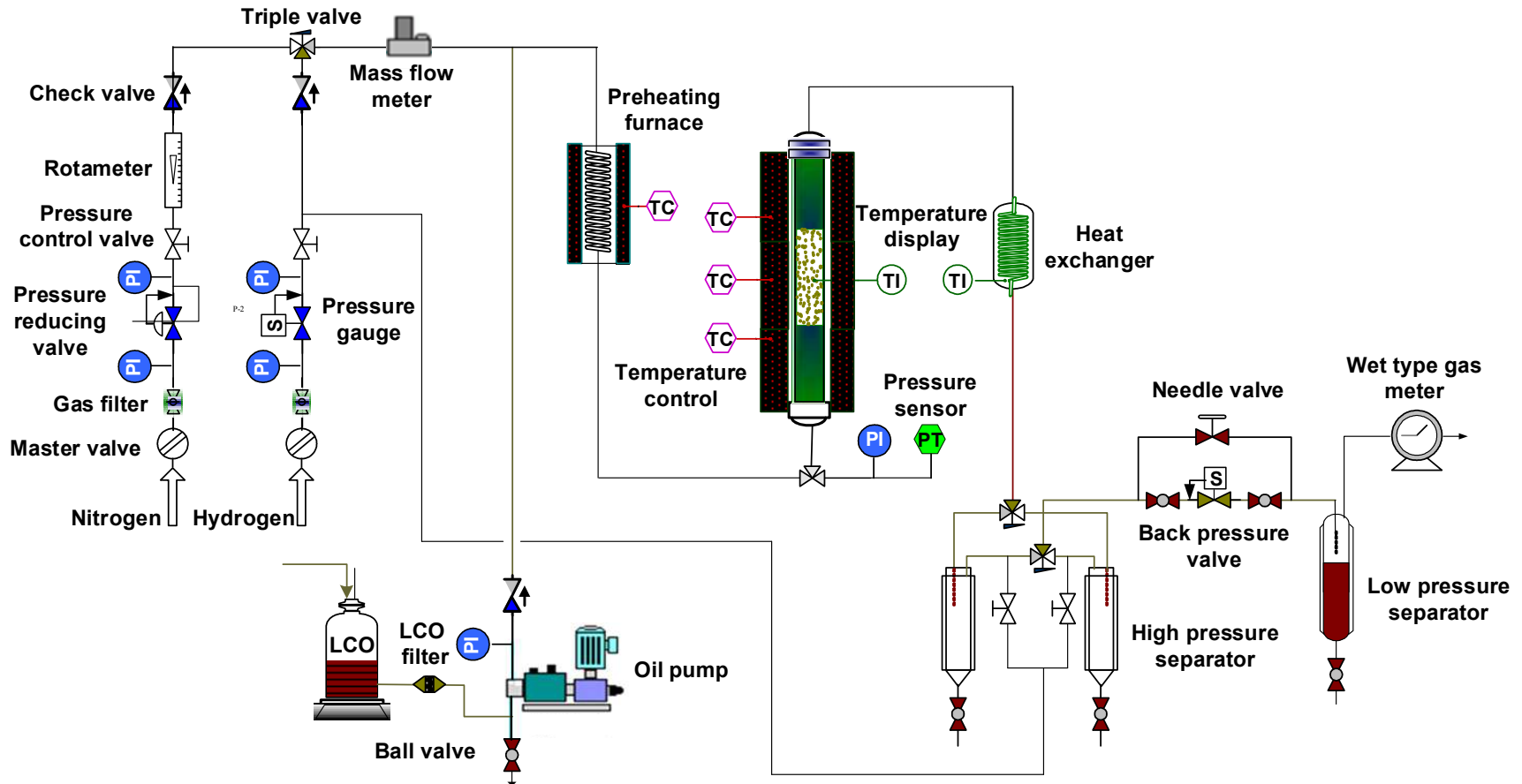


Figure S2

Schematic diagram of technical pilot scale riser FCC apparatus (TPSR).

