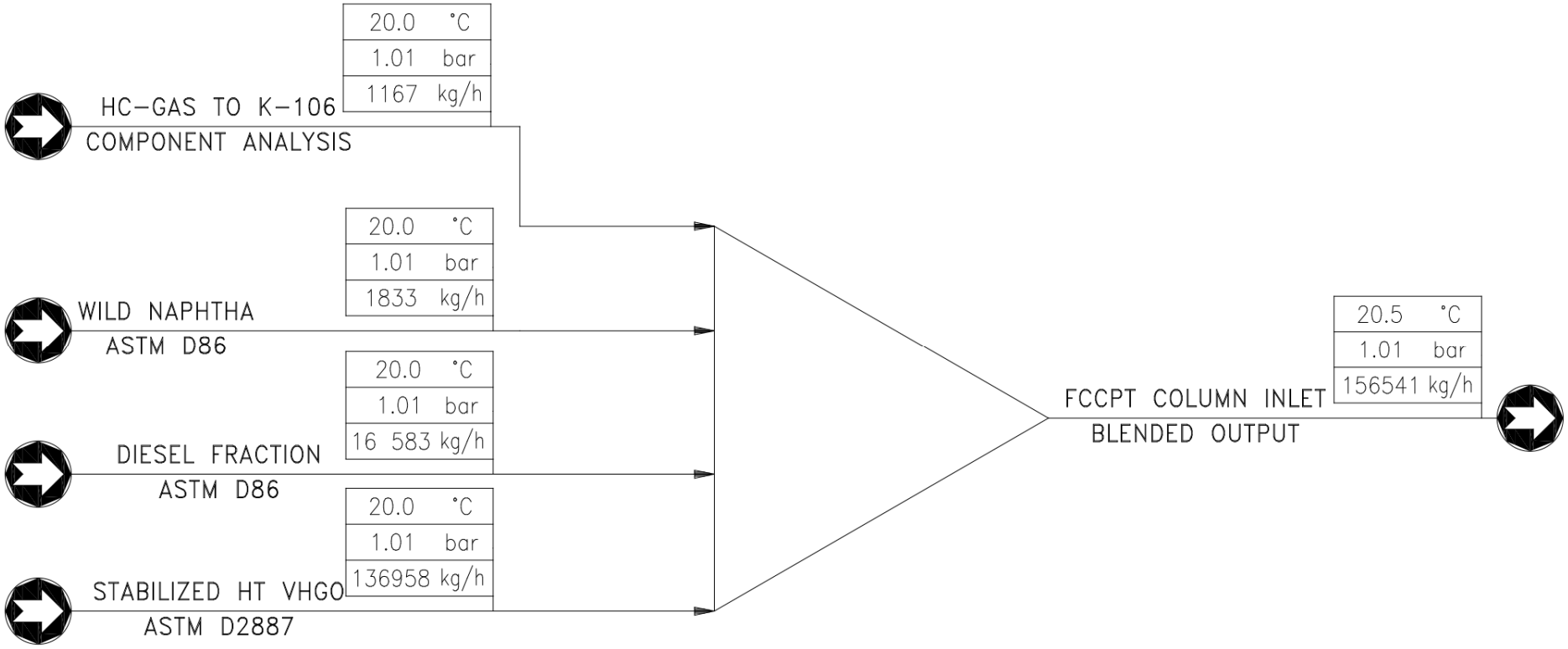
Figure S1: FCCPT Stabilization Section outlet stream summation to make-up the K-101 feed composition for Simulation Case 1



Note: K-106 is the Amine absorber for sweetening the hydrocarbon gas leaving FCCPT stabilization column

Figure S2: Simulation Flow diagram for performing Heat and Material balance for Simulation Case 1 with calculated (assumed) process variables vs instrument readings

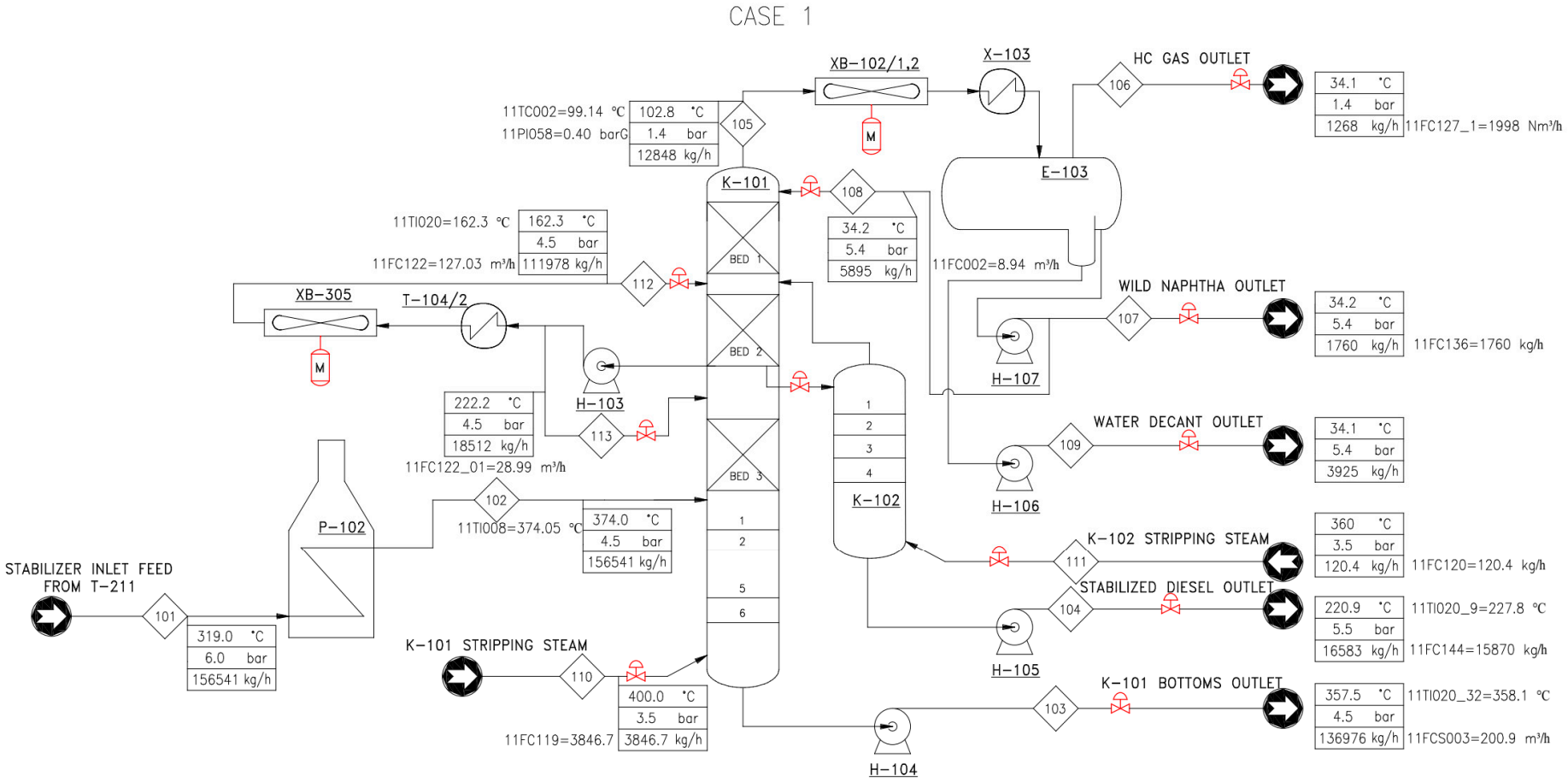


Figure S3: FCCPT Stabilization Section outlet stream summation to make-up the K-101 feed composition for Simulation Case 2. The characterization of the H-Oil VGO Blend and the Stabilized HTVGO is based on ASTM D 1160.

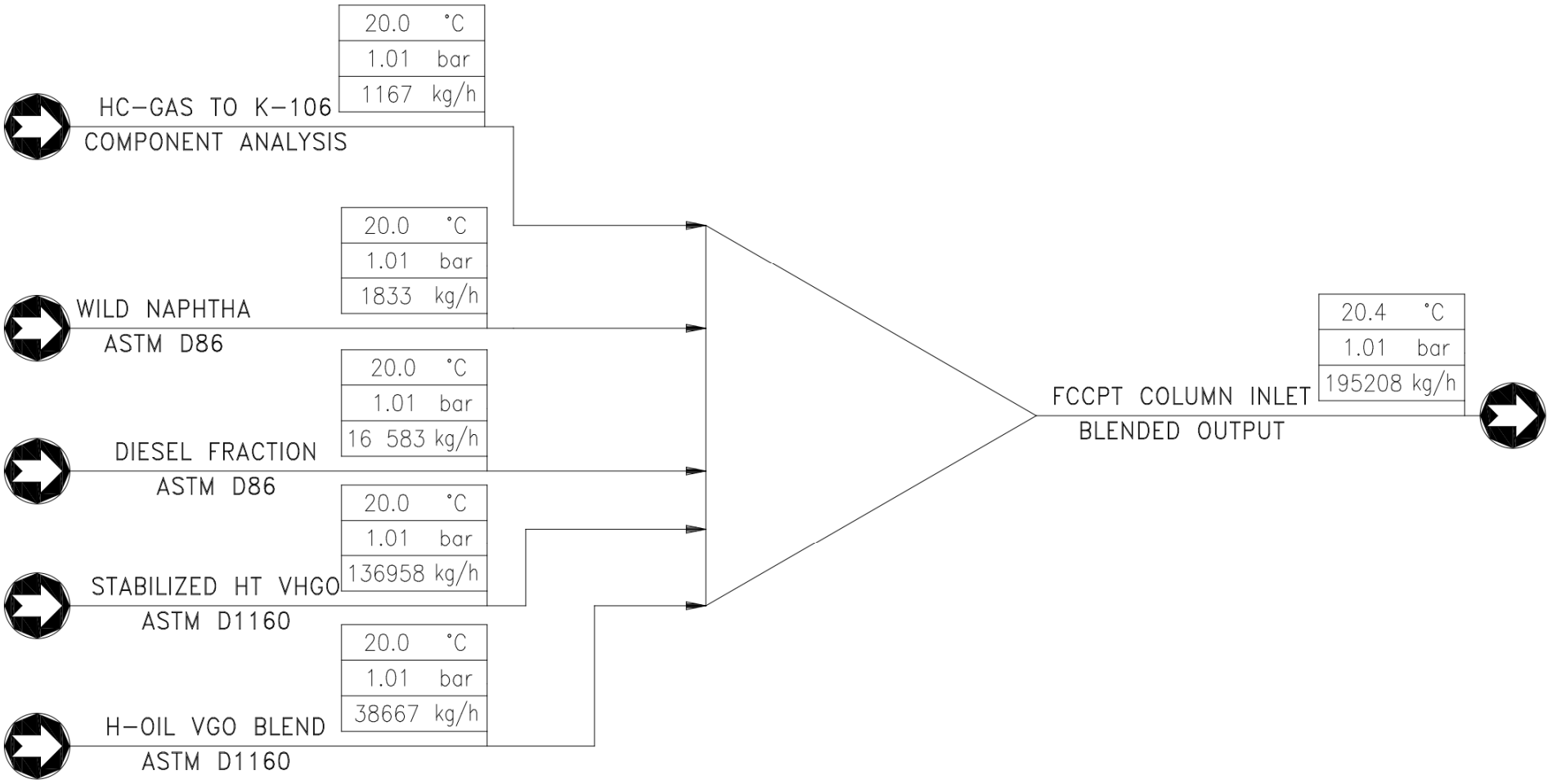


Figure S4: Simulation Flow diagram for performing Heat and Material balance for Simulation Case 2 – ASTM D 1160 with calculated (assumed) process variables vs instrument readings

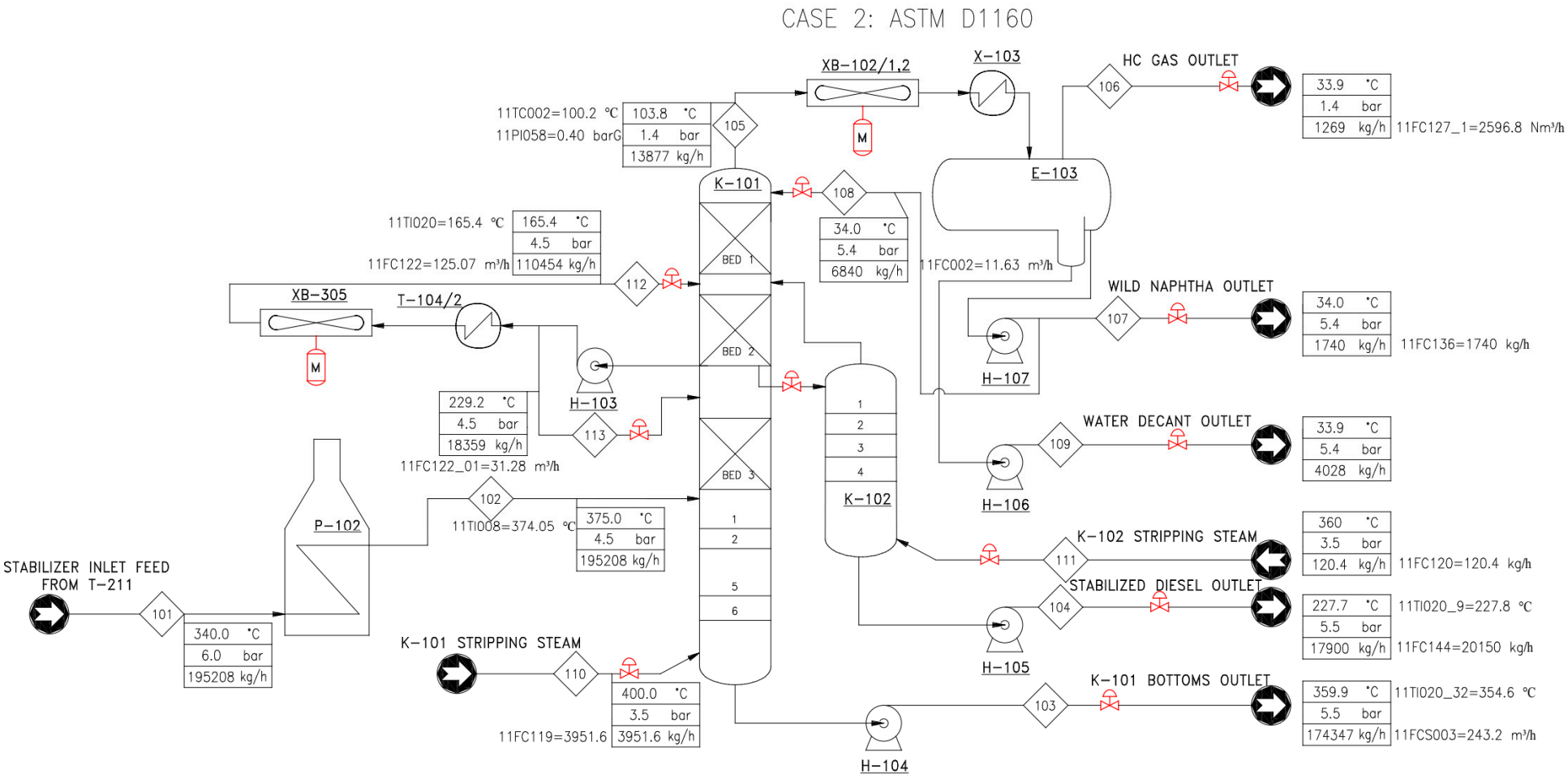


Figure S5: FCCPT Stabilization Section outlet stream summation to make-up the K-101 feed composition for Simulation Case 3. The characterization of the H-Oil VGO Blend and the Stabilized HTVGO is based on ASTM D 7169.

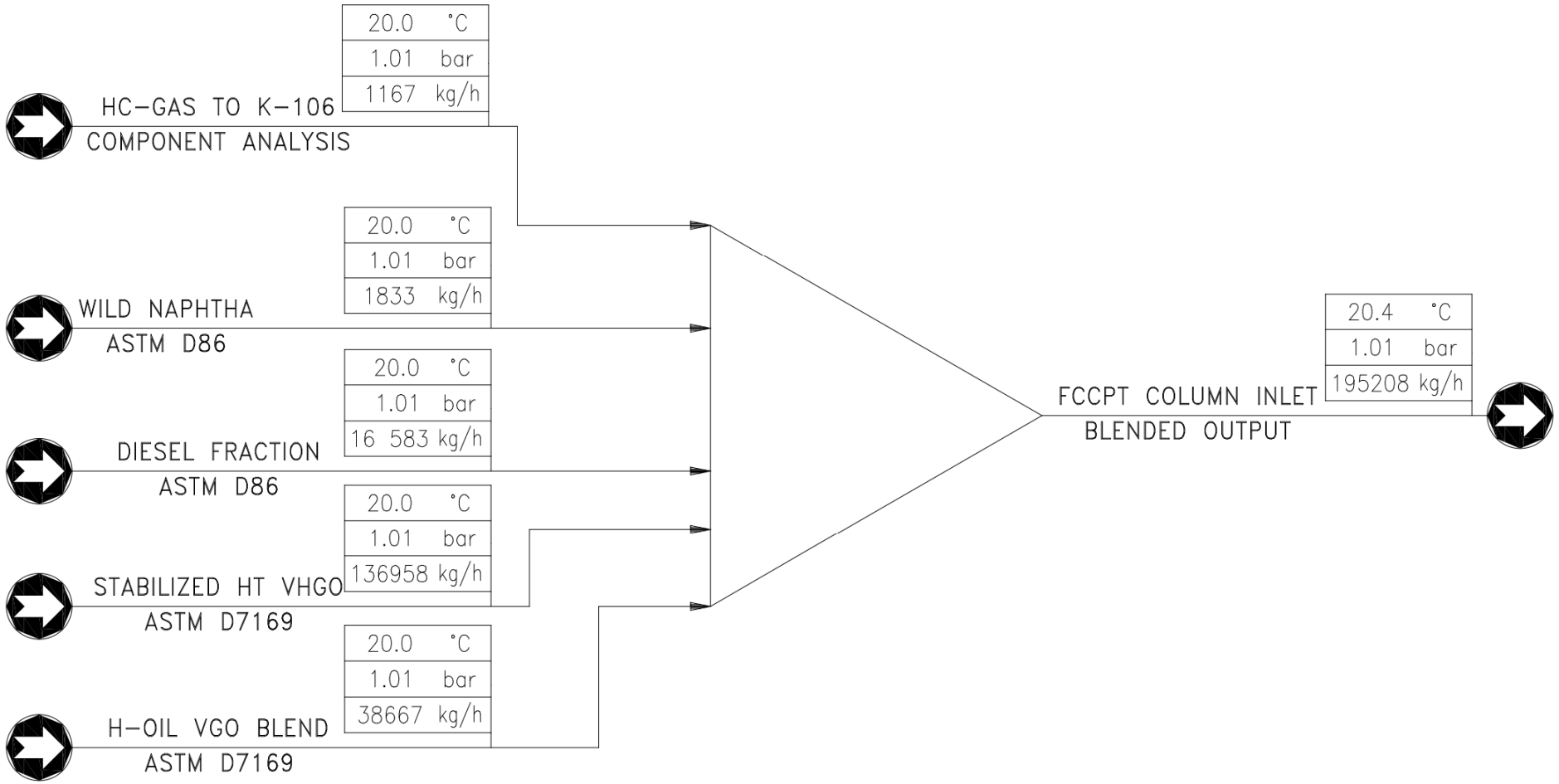


Figure S6: Simulation Flow diagram for performing Heat and Material balance for Simulation Case 3 – ASTM D 7169 with calculated (assumed) process variables vs instrument readings

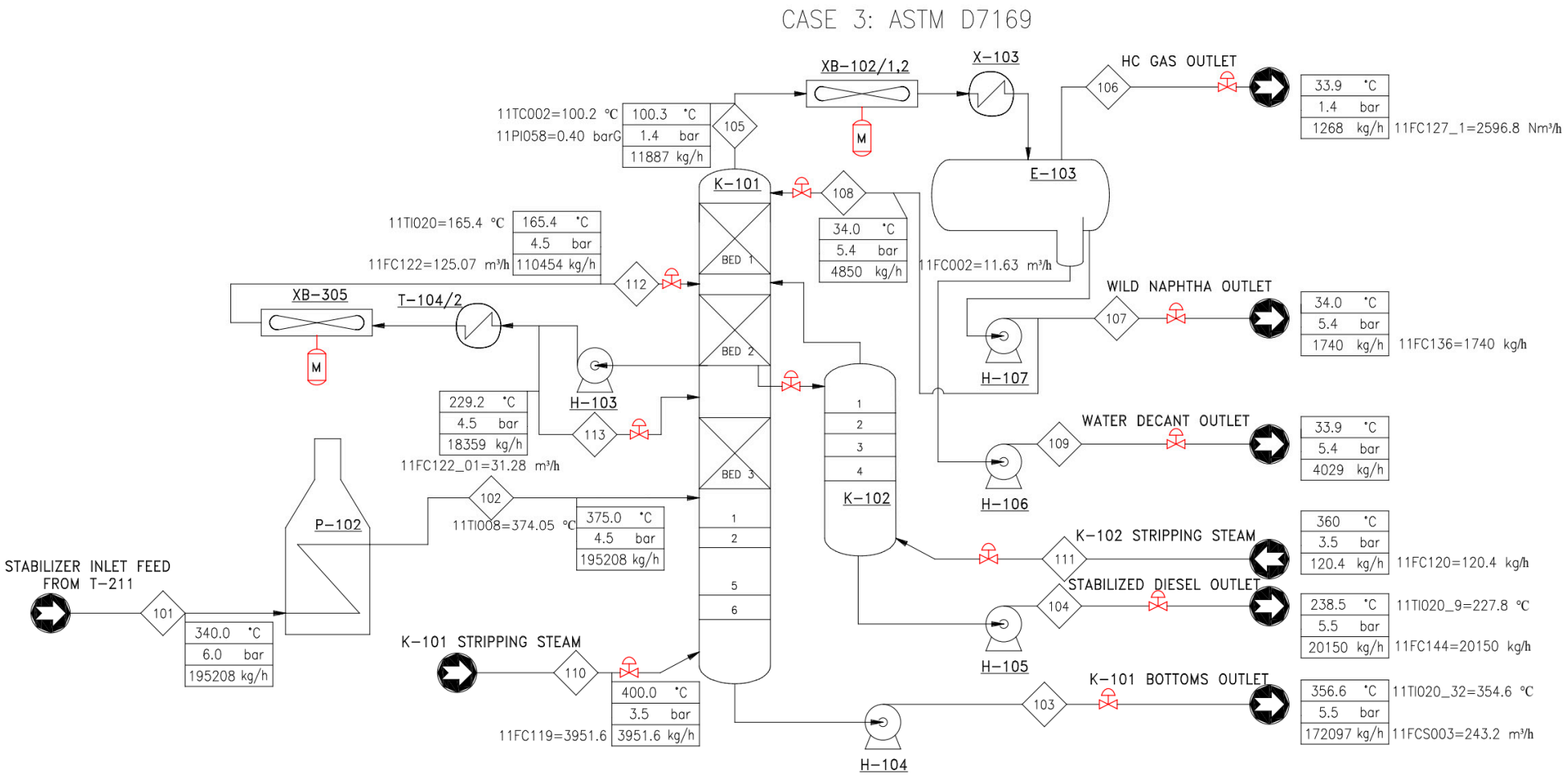


Table S1. Properties of wild naphtha from the FCC hydrotreating section (FCC pretreater) for both studied cases

FCCPT wild naphtha product			
Indeces/method	Unit	Value	
		Case 1	Case 2
Density at 15°C / BDS EN ISO 3675	kg/m³	766	759.4
Distillation BDS EN ISO 3405 (equivalent to ASTM D 86)			
Initial boiling point	°C	37.8	38.5
5%	°C	83.5	85.8
10%	°C	96.1	95.3
50%	°C	133.6	129.8
90%	°C	169.9	163.8
95%	°C	178.5	170.9
Final boiling point	°C	194.8	178.3
Recovery	% (v/v)	98.5	97.8

Table S2. Properties of diesel fraction from the FCC hydrotreating section (FCC pretreater) for both studied cases

FCCPT diesel fraction product			
Indeces/method	Unit	Value	
		Case 1	Case 2
Density at 15°C / BDS EN ISO 3675	kg/m³	891.2	889.4
Sulphur content / ASTM D 4294	%m/m	0.0301	0.105
Distillation BDS EN ISO 3405 (equivalent to ASTM D 86)			
Initial boiling point	°C	220.6	217.6
5%	°C	242.1	241.3
10%	°C	255.4	255.2
50%	°C	321.4	323.6
90%	°C	355.9	356.4
95%	°C	-	364.8
boiling ≤ 360°C	% (v/v)	92.3	92.4

Table S3. Properties of stable hydrotreated VGO from the FCC hydrotreating section (FCC pretreater) for both studied cases

FCCPT Stable hydrotreated VGO			
Indeces/method	Unit	Value	
		Case 1	Case 2
Micro carbon content / BDS EN ISO 10370	% (m/m)		0,12
Density at 15°C / BDS EN ISO 3675	kg/m³	901.1	910
Sulphur content / ASTM D 4294	% (m/m)	0.085	0.207
Distillation / ASTM D 2887ext			
5%	°C	353	351
10%	°C	371	366
50%	°C	440	434
90%	°C	517	513
95%	°C	536	531

Table S4. Properties of hydrocarbon gas product from the FCC hydrotreating section (FCC pretreater) for both studied cases

Method	Property	Case 1	Case 2
BDS EN ISO 6976	density at 20°C, kg/m³	1,223	1,239
In-house method	Hydrogen, % (v/v)	23,7	23,1
In-house gas chromatograph method	CO2, % (v/v)	<0.1	<0.1
	Oxygen, % (v/v)	0.5	0.5
	Nitrogen, % (v/v)	1.7	1.8
	CH4, % (v/v)	22.3	21.8
	CO, % (v/v)	<0.1	<0.1
In-house gas chromatograph method	C2H6, % (v/v)	17.6	17.8
	C2H4, % (v/v)	<0.1	<0.1
	C3H8, % (v/v)	15.9	16.6
	C3H6, % (v/v)	0.1	<0.1
	Σ C_4 hydrocarbons, % (v/v)	10.2	10.5
	Σ C_5 hydrocarbons, % (v/v)	4.6	4.7
	Σ C_6 hydrocarbons, % (v/v)	3.4	3.2
Sulphur components, total sulphur / ASTM D 5504	H_2S, ppm (v/v)	-	0.9
	Σ Sulphur compounds, ppm (v/v)	-	8.5

Table S5. Properties of FCCPT vacuum gas oil feed for both studied cases

VGO feed for FCCPT unit			
Indeces/method	Unit	Value	
		Case 1	Case 2
Density at 15°C / BDS EN ISO 3675	kg/m³	923.9	927.3
Sulphur content / ASTM D 4294	%m/m	2.05	2.08
Micro carbon content / BDS EN ISO 10370	% (m/m)	0.34	0.37
Distillation / ASTM D 2887ext			
5%. °C	°C	354	354
10%. °C	°C	372	372
50%. °C	°C	445	444
90%. °C	°C	525	523
95%. °C	°C	542	540