AIR PERMIT ROUTING/APPROVAL SLIP-Permits

8-29-24

AI No.	**126578**	**Company**	**Shintech Louisiana LLC**	**Date Received**	**February 1, 2024**
Activity No.	**PER20240004**	**Facility**	**Shintech Louisiana LLC - Shintech Plaquemine Plant**	**Permit Type**	**PSD Mod**
CDS No.	**1280-00118**	**Permit No.**	**PSD-LA-731(M-3)**	**Expedited Permit**	☐ yes ☒ no

1. Technical Review	**Approved**	**Date rec'd**	**Date FW**	**Comments**
Permit Writer	ALR	2/20/24	5/1/24	
Air Quality / Modeling				
Toxics				
PSD/NNSR				
Technical Advisor	CW		6/3/2024	as noted
Supervisor				
Other				
2. Management Review (if PN req'd)	**Approved**	**Date rec'd**	**Date FW**	**Comments**
Supervisor				
Manager				
Administrator				
Assistant Secretary (PN)				Public hearing ☐ yes ☐ no
3. Response to Comments (if PN req'd)	**Approved**	**Date rec'd**	**Date FW**	**Comments**
Supervisor				
Manager				
Administrator				
Legal (BFD)				
4. Final Approval	**Approved**	**Date rec'd**	**Date FW**	**Comments**
Supervisor				
Manager	ASV		7/24/24	as noted
Administrator	BDJ		8/26/24	as noted
Assistant Secretary	AGV		8/28/24	

1. Technical Review

PN of App needed	☐ yes ☒ no	Date of PN of App		Newspaper	
Fee paid	☒ yes ☐ no				
NSPS applies	☒ yes ☐ no	PSD/NNSR applies	☒ yes ☐ no	NESHAP applies	☒ yes ☐ no

2. Post-Technical Review

Company technical review	☒ yes ☐ no ☐ n/a	E-mail date	5/1/2024	Remarks received	☐ yes ☐ no
Surveillance technical review	☒ yes ☐ no ☐ n/a	E-mail date	5/1/2024	Remarks received	☐ yes ☐ no

3. Public Notice

Public Notice Required	☐ yes ☒ no	minor Mod	
Library			
LDEQ Website	PN Date		
Company notification e-mail sent	Date e-mailed		
EPA PN notification e-mail sent	Date e-mailed		
OES PN mailout	Date mailed		

4. Final Review

Public comments received	☐ yes ☐ no	EPA comments rec'd	☐ yes ☐ no	
Company comments received	☐ yes ☐ no	PN info entered into Permit Sec VI	☐ yes ☐ no	
Comments				11275830

JEFF LANDRY
GOVERNOR

AURELIA S. GIACOMETTO
SECRETARY

STATE OF LOUISIANA

DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL SERVICES

Certified Mail No. 7021 1970 0001 4416 9969

Agency Interest (AI) No. 126578
Activity No. PER20240004

Mr. Timothy Bergeron
EHS Manager
Shintech Louisiana, LLC
PO Box 358
Addis, LA 70710-0358

RE: Prevention of Significant Deterioration (PSD) Permit, PSD-LA-731(M-3)
Shintech Louisiana, LLC - Shintech Plaquemine Plant 2
Plaquemine, Iberville Parish, Louisiana

Dear Mr. Bergeron:

Enclosed is your permit, PSD-LA-731(M-3).

Please be advised that pursuant to provisions of the Environmental Quality Act and the Administrative Procedure Act, the Department may initiate review of a permit during its term. However, before it takes any action to modify, suspend or revoke a permit, the Department shall, in accordance with applicable statutes and regulations, notify the permittee by mail of the facts or operational conduct that warrant the intended action and provide the permittee with the opportunity to demonstrate compliance with all lawful requirements for the retention of the effective permit.

Should you have any questions, contact Anthony Randall of the Air Permits Division at (225) 219-3494 or anthony.randall@la.gov.

Sincerely,

Amanda Vincent, PhD, PMP
Assistant Secretary
Office of Environmental Services

August 28, 2024
Date

AV:alr

c: US EPA Region VI

Agency Interest No. 126578

PSD-LA-731(M-3)

AUTHORIZATION TO OPERATE A MODIFIED MAJOR SOURCE PURSUANT TO THE PREVENTION OF SIGNIFICANT DETERIORATION REGULATIONS IN LOUISIANA ENVIRONMENTAL REGULATORY CODE, LAC 33:III.509

In accordance with the provisions of the Louisiana Environmental Regulatory Code, LAC 33:III.509,

Shintech Louisiana, LLC
P.O. Box 358
Addis, LA 70710-0358

is authorized to operate the Shintech Plaquemine Plant 2 at

26270 Hwy 405
Plaquemine, Louisiana 70764

subject to the emissions limitations, monitoring requirements, and other conditions set forth hereinafter.

Signed this 28th day of August, 2024.

Amanda Vincent, PhD, PMP
Assistant Secretary
Office of Environmental Services
Louisiana Department of Environmental Quality

BRIEFING SHEET

Shintech Plaquemine Plant 2
Agency Interest No.: 126578
Shintech Louisiana, LLC
Plaquemine, Iberville Parish, Louisiana
PSD-LA-731(M-3)

PURPOSE

To authorize the use of hydrogen as an alternative fuel for the cracking furnaces located at Shintech Plaquemine Plant 2.

RECOMMENDATION

Approval of the proposed modification of the permit.

REVIEWING AGENCY

Louisiana Department of Environmental Quality, Office of Environmental Services, Air Permits Division

PROJECT DESCRIPTION

Shintech Louisiana, LLC (Shintech) requested authorization to use hydrogen as an alternative fuel for the following furnaces:

- EPN 2M-1 Cracking Furnace A (EQT0122),
- EPN 2M-2 Cracking Furnace B (EQT0123),
- EPN 2M-3 Cracking Furnace C (EQT0124), and
- EPN 2M-4 Cracking Furnace D (EQT0125).

The original BACT for these furnaces was determined to be combustion of clean burning fuels (PM_{10} and CO) and combustion of natural gas (NO_X). Shintech requested that these determinations be changed to combustion of natural gas/hydrogen.

TYPE OF REVIEW

SPP-2 will not be physically modified; therefore, a best available control technology (BACT) analysis is not required.

BEST AVAILABLE CONTROL TECHNOLOGY

Previous BACT determinations for the equipment addressed by this permit are as follows:

Shintech utilizes good design and maintenance, good combustion practices, and burning gaseous fuels to limit PM_{10} and CO emissions from affected equipment at the plant.

Shintech utilizes good combustion practices, low NO_X burners (LNB), flue gas recirculation (FGR), and selective catalytic reduction (SCR) to control NO_X emissions to a degree equivalent to the Lowest Achievable Emission Rates (LAER) to fulfill BACT requirements of the PSD program.

BRIEFING SHEET

Shintech Plaquemine Plant 2
Agency Interest No.: 126578
Shintech Louisiana, LLC
Plaquemine, Iberville Parish, Louisiana
PSD-LA-731(M-3)

Shintech monitors fuel usage for each of the sources subject to BACT requirements for emissions of GHG. Further, Shintech utilizes, improved combustion measures, proper insulation, operational monitoring and proper maintenance to limit CO_2e emissions.

AIR QUALITY IMPACT ANALYSIS

This permit modification will not allow for a significant increase in emissions of any regulated NSR pollutant; therefore, an air quality impact analysis is not required.

ADDITIONAL IMPACTS

Soils, vegetation, and visibility will not be adversely impacted by the proposed permit modification, nor will any Class I area be affected. The permit action will not result in any significant secondary growth effects.

PROCESSING TIME

Application Dated:	February 1, 2024
Application Received:	February 1, 2024
Effective Completeness Date:	May 1, 2024

PUBLIC NOTICE

Public notice is not required for a minor modification of a PSD permit.

PRELIMINARY DETERMINATION SUMMARY

Shintech Plaquemine Plant 2
Agency Interest No.: 126578
Shintech Louisiana, LLC
Plaquemine, Iberville Parish, Louisiana
PSD-LA-731(M-3)
May 1, 2024

I. APPLICANT

Shintech Louisiana, LLC
P.O. Box 358
Addis, LA 70710-0358

II. LOCATION

Shintech Louisiana, LLC's Shintech Plaquemine Plant 2 is located at 26270 Highway 405 (River Road South), Plaquemine, Louisiana. Approximate UTM coordinates are 675.712 kilometers East and 3350.274 kilometers North, Zone 15.

III. PROJECT DESCRIPTION

Shintech requested authorization to use hydrogen as an alternative fuel for the following furnaces:

- EPN 2M-1 Cracking Furnace A (EQT0122),
- EPN 2M-2 Cracking Furnace B (EQT0123),
- EPN 2M-3 Cracking Furnace C (EQT0124), and
- EPN 2M-4 Cracking Furnace D (EQT0125).

The original BACT for these furnaces was determined to be combustion of clean burning fuels (PM_{10} and CO) and combustion of natural gas (NO_X). Shintech requested that these determinations be changed to combustion of natural gas/hydrogen.

IV. SOURCE IMPACT ANALYSIS

A proposed net increase in the emission rate of a regulated pollutant above de minimis levels for new major or modified major stationary sources requires review under Prevention of Significant Deterioration regulations, LAC 33:III.509. PSD review entails the following analyses:

A. A determination of the Best Available Control Technology (BACT);

B. An analysis of the existing air quality and a determination of whether or not preconstruction or postconstruction monitoring will be required;

C. An analysis of the source's impact on total air quality to ensure compliance with the National Ambient Air Quality Standards (NAAQS);

D. An analysis of the PSD increment consumption;

E. An analysis of the source related growth impacts;

F. An analysis of source related growth impacts on soils, vegetation, and visibility;

G. A Class I Area impact analysis; and

H. An analysis of the impact of toxic compound emissions.

A. BEST AVAILABLE CONTROL TECHNOLOGY

Under current PSD regulations, an analysis of "top down" BACT is required for the control of each regulated pollutant emitted from a modified major stationary in excess of the specified significant emission rates. The top down approach to the BACT process involves determining the most stringent control technique available for a similar or identical source. If it can be shown that this level of control is infeasible based on technical, environmental, energy, and/or cost considerations, then it is rejected and the next most stringent level of control is determined and similarly evaluated. This process continues until a control level is arrived at which cannot be eliminated for any technical, environmental, or economic reason. A technically feasible control strategy is one that has been demonstrated to function efficiently on identical or similar processes. Additionally, BACT shall not result in emissions of any pollutant which would exceed any applicable standard under 40 CFR Parts 60, 61, or 63.

SPP-2 will not be physically modified; therefore, BACT is not required. Previous BACT determinations for the equipment addressed by this permit are as follows:

BACT Analyses for CO and PM_{10}

Utility Boilers EQT0112 and EQT0113 (EPN 2U-1 and 2U-2)

BACT was determined as good combustion practices of clean burning fuels.

BACT Emission Limits

Pollutant	Emission Limit
PM_{10}	0.005 lb/MM BTU
CO	0.0362 lb/MM BTU

Cooling Towers EQT0120 and EQT0128 (EPN 2C-4 and 2M-7)

BACT was determined to design and operate the cooling towers using mist eliminators to meet the emission limits in the table below.

BACT PM_{10} Emission Limits

Unit	Flow Rate	Cycles of Concentration	Total Dissolved Solids	Emission Limit
EQT0120 (2C-4)	38,750 gpm	4	226 mg/L	0.00008 lb/M gal
EQT0128 (2M-7)	106,000 gpm	3	226 mg/L	0.00006 lb/M gal

VCM Cracking Furnaces EQT0122, EQT0123, EQT0124, & EQT0125 (EPN 2M-1, 2M-2, 2M-3, & 2M-4)

BACT was determined as good combustion practices of natural gas/hydrogen.

BACT Emission Limits

Pollutant	Emission Limit
PM_{10}	0.007 lb/MM BTU
CO	0.046 lb/MM BTU

Gas Thermal Oxidizers EQT0126 and EQT0127 (EPN 2M-5 & 2M-6)

BACT was determined as good combustion practices of clean burning fuels.

BACT Emission Limits

Pollutant	Emission Limit
PM_{10}	0.0077 lb/MM BTU
CO	0.08 lb/MM BTU

Diesel-Fired Emergency Engines EQT0115, 0116, 0121, and 0129 (EPN 2U-5, 2U-6, 2C-6, and 2M-11)

BACT was determined as good combustion practices.

BACT Emission Limits

Pollutant	Emission Limit
PM_{10}	Engines < 600 HP: 0.0022 lb/HP-hr Engines > 600 HP: 0.0007 lb/HP-hr
CO	Engines < 600 HP: 0.0067 lb/HP-hr Engines > 600 HP: 0.0055 lb/HP-hr

BACT Analyses for NOx

Utility Boilers EQT0112 and EQT0113 (EPN 2U-1 and 2U-2)

BACT was determined to be 0.01 lb NOx/MM BTU for natural gas/hydrogen combustion using LNB and SCR.

VCM Cracking Furnaces EQT0122, EQT0123, EQT0124, & EQT0125 (EPN 2M-1, 2M-2, 2M-3, & 2M-4)

BACT was determined to be 0.009 lb NOx/MM BTU for natural gas/hydrogen combustion using LNB and SCR.

Gas Thermal Oxidizers EQT0126 and EQT0127 (EPN 2M-5 & 2M-6)

BACT was determined to be 0.02 lb NOx/MM BTU.

BACT Analyses for CO_2e

Cracking Furnace E EQT0233 (EPN 2M-17)

Shintech implements the energy efficiency measures listed below as BACT for CO_2e. In addition, Shintech monitors fuel usage for each of the sources subject to BACT requirements for emissions of GHG. Further, Shintech complies with the CO_2e emissions limit in Specific Condition 2 as BACT for emissions of GHG.

Shintech utilizes improved combustion measures for Cracking Furnace E (EPN 2M-17). Improved combustion measures consists of combustion tuning, optimization, and installation of instrumentation and controls according to the manufacturer's specifications.

Shintech uses proper installation of insulation for Cracking Furnace E (EPN 2M-17) according to the manufacturer's specifications.

Shintech conducts operational monitoring as well as proper maintenance for Cracking Furnace E (EPN 2M-17) according to the manufacturer's specifications in order to minimize air infiltration.

B. ANALYSIS OF EXISTING AIR QUALITY

Facilities that are subject to PSD review are required to conduct an ambient air quality impact analysis to demonstrate that major stationary sources and/or major modifications to major sources will not cause or contribute to a violation of any applicable NAAQS or PSD Increment.

The permit modification will not allow for a significant increase in emissions of any regulated NSR pollutants; therefore, an air quality impact analysis is not required.

C. NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) ANALYSIS

Refined modeling was not required.

D. PSD INCREMENT ANALYSIS

A determination of increment consumption was not required.

E. SOURCE RELATED GROWTH IMPACTS

This permit modification is not expected to have any significant effect on residential growth or industrial/commercial development in the area of the facility. No significant net change in employment, population, or housing will be realized. As a result, there will not be any significant increases in pollutant emissions indirectly associated with this permit action.

F. SOILS, VEGETATION, AND VISIBILITY IMPACTS

There will be no significant impact on area soils, vegetation, or visibility.

G. CLASS I AREA IMPACTS

Louisiana's Breton Wildlife Refuge, the nearest Class I area, is over 100 kilometers from the site, precluding any significant impact.

H. TOXIC EMISSIONS IMPACT

The selection of control technology based on the BACT analysis included consideration of control of toxic emissions.

V. CONCLUSION

The Air Permits Division has made a preliminary determination to approve the PSD permit modification for Shintech Plaquemine Plant 2 located near Plaquemine in Iberville Parish, Louisiana, subject to the attached specific and general conditions. In the event of a discrepancy in the provisions found in the application and those in this Preliminary Determination Summary, the Preliminary Determination Summary shall prevail.

SPECIFIC CONDITIONS

Shintech Plaquemine Plant 2
Agency Interest No.: 126578
Shintech Louisiana, LLC
Plaquemine, Iberville Parish, Louisiana
PSD-LA-731(M-3)

1. Comply with the Louisiana General Conditions as set forth in LAC 33:III.537.

2. The permittee is authorized to operate in conformity with the specifications submitted to the Louisiana Department of Environmental Quality (LDEQ) as analyzed in LDEQ's document entitled "Preliminary Determination Summary" dated May 1, 2024, and subject to the following emissions limitations and other specified conditions. Specifications submitted are contained in the application and Emission Inventory Questionnaire dated February 1, 2024.

ID No.	Description		PM_{10}	NO_X	CO	CO_2e
EQT0112 & EQT0113	2U-1 Utility Boilers & 2U-2 Utility Boilers	lb/MM Btu lb/hr	0.005 1.25	0.01 3.00	0.0362 10.86	-
EQT0120	2C-4 Cooling Tower	lb/M Gal lb/hr TPY	0.00008 0.21 0.77	-	-	-
EQT0128	2M-7 Cooling Tower	lb/M Gal lb/hr TPY	0.00006 0.43 1.58	-	-	-
EQT0122, EQT0123, EQT0124, & EQT0125	2M-1, 2M-2, 2M-3, & 2M-4 – VCM Cracking Furnaces	lb/MM Btu lb/hr TPY	0.007 0.80 2.94	0.009 0.96 3.50	0.046 5.00 18.26	-
EQT0126 & EQT0127	2M-5 & 2M-6 – Gas Thermal Oxidizers	lb/MM Btu lb/hr	0.0077 0.54	0.02 1.40	0.08 6.09	-
GRP0005	2M-CAP – Gas Thermal Oxidizers CAP	TPY	2.35	6.14	26.68	
EQT0115, EQT0116, EQT0121, & EQT0129	2U-5, 2U-6, 2C-6, and 2M-11 – Diesel Fired Emergency Engines	lb/HP-hr (<600 HP) (>600 HP)	 0.0022 0.0007	-	 0.0067 0.0055	-
FUG0006	2U-4 Fugitive Emissions	lb/hr TPY	-	-	-	-
FUG0008	2M-8 Fugitive Emissions	lb/hr TPY	-	-	-	-
FUG0009	2M-9 VCM Equipment Opening for Turnaround	lb/hr TPY	-	-	-	-
FUG0010	2M-10 VCM Equipment Opening for Routine Operations	lb/hr TPY	-	-	-	-
EQT0233	2M-17 Cracking Furnaces E	TPY				46,125

TABLE I: BACT COST SUMMARY

Shintech Plaquemine Plant 2
Agency Interest No.: 126578
Shintech Louisiana, LLC
Plaquemine, Iberville Parish, Louisiana
PSD-LA-731(M-3)

Control Alternatives		Availability/ Feasibility	Negative Impacts (a)	Control Efficiency	Emissions Reduction (TPY)	Capital Cost ($)	Annualized Cost ($)	Cost Effectiveness ($/ton)	Notes
	(N/A)								
Notes: a) Negative impacts: 1) economic, 2) environmental, 3) energy, 4) safety									

TABLE II: AIR QUALITY ANALYSIS SUMMARY

Shintech Plaquemine Plant 2
Agency Interest No.: 126578
Shintech Louisiana, LLC
Plaquemine, Iberville Parish, Louisiana
PSD-LA-731(M-3)

Pollutant	Averaging Period	Preliminary Screening Concentration ($\mu g/m^3$)	Level of Significant Impact ($\mu g/m^3$)	Significant Monitoring Concentration ($\mu g/m^3$)	At the Monitoring Station		Background ($\mu g/m^3$)	Maximum Modeled Concentration ($\mu g/m^3$)	Modeled + Background Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Modeled PSD Increment Consumption ($\mu g/m^3$)	Allowable Class II PSD Increment ($\mu g/m^3$)
					Monitored Values ($\mu g/m^3$)	Modeling results ($\mu g/m^3$)						
PM_{10}	24-hour	NR	5	10						150		30
	Annual	NR	1	-						-		17
SO_2	3-hour	NR	25	-						1300		512
	24-hour	NR	5	13						365		91
	Annual	NR	1	-						80		20
NO_X	Annual	NR	1	14						100		25
CO	1-hour	NR	2000	-						40,000		-
	8-hour	NR	500	575						10,000		-
Lead	3-month	NR	-	0.1						1.5	-	-

NR = Not required.