



# LPN PLATE MILL

PUBLIC COMPANY LIMITED



LPN PLATE MILL



We are dedicated to our world class manufacturing facilities to produce highest quality products with continuous improvement and highly focus on individual customer needs. We delight all our Stakeholders, who are involved in the business activity.



Dr.PIPAT PREEDAWIPHAT



# LPN PLATE MILL

## PUBLIC COMPANY LIMITED

LPN Plate Mill PCL was established in 1990 by Dr. Pipat Preedawiphat who has more than 40 years of experience and expertise in steel industry. His experiences has gradually built up a strong foundation and deep understanding towards customers' requirement, enabling the Company to establish the Hot Rolled Steckel mill that meets the diversified requirements of both local and overseas customers with a production capacity of 360,000 tons/year.

LPN Plate Mill PCL as a manufacturer of specialty hot rolled plate and coil with the widest plate width in S-E Asia. The company imports the best quality of steel slabs from the most reputed steel mills in the world.

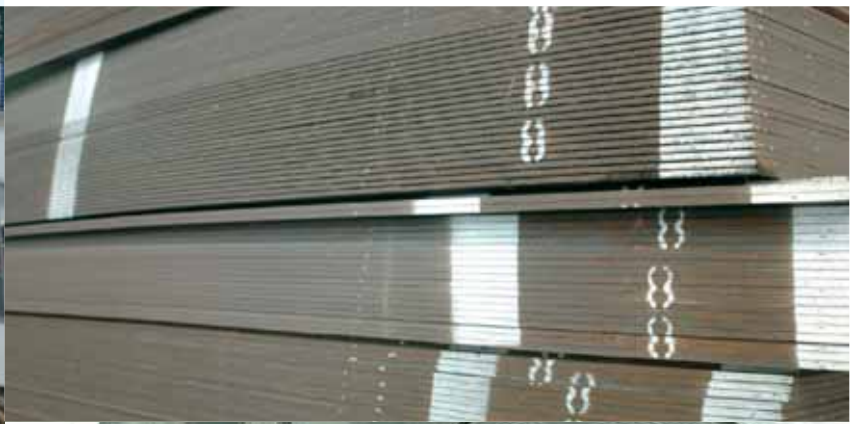
LPN Plate Mill PCL has used the state-of-art 4Hi-Reversing Steckel mill from Tippins Incorporated USA. Accordance with the company production policy that not only focuses on making a wide range of products in terms of size and quality, but also incorporated a highly flexible manufacturing systems that enables the company to manufacture and deliver the products as demanded by the customers.



# Products

The company produces various grades of Hot Rolled Plate with maximum width of 3,048 mm, thickness up to 150 mm and Length up to 30 meter. The slab is sourced from the world-class mills, who attains the highest quality standard in their production process. The company also produces the Hot Rolled coil with maximum width of 2,500 mm and thickness up to 25 mm.

The finished products are used in the Energy Industry (like oil & gas pipeline, power plant, etc), Chemical plant, Construction Industry, Machinery manufacturing industry, and other downstream industries.



- High-strength Low-Alloy Nb-V, specialty steel for structural support that require high strength such as building and bridge structures
- Ship building quality
- High grade pressure vessel quality, which sustains moderate and low temperature, sustains intermediate and high temperature services
- Hot rolled steel plate for pipeline application, offshore platform and also used in other Energy Industry.

### Salient features of the Rolling Mill

- a** Walking Beam Reheat Furnace - the capacity is 100t/hr
- b** High pressure descaler uses 160 bar pressure.
- c** 4Hi-Reversing Steckel Mill
  - Work roll: dia 820 mm with a length of 3,403 mm
  - Back up roll: dia. 1,450 mm with a length of 3,406 mm
  - Hydraulic Automatic Gauge Control (HAGC)
  - Separating force of 4,000T
  - Two 4,500 HP Motors
- d** Hot Dividing Shear
- e** TMCP
- f** Hot Leveller
- g** Cooling Bed: length of 30 meter
- h** Trimming and Shearing line

Application of steel grade & specification

APPLICATION	STANDARD	PRODUCT GRADE	MECHANICAL PROPERTIES			
			Tensile Strength	Yield Strength	Elongation	C
			Min, Mpa	Min, Mpa	Min, %	Max, %
HOT ROLLED STEEL PLATE FOR STRUCTURAL QUALITY	ASTM	A36	400-550	250	20	0.25
		A283 Gr.C	380-515	205	22	0.24
		A573 Gr.70	485-620	290	18	0.27
	JIS	SM400A	400-510	235	22	0.23
		SM400B				0.20
		SM490A	490-610	315	21	0.18
		SM490B				
		SM490YA				
		SM490YB				
		SM520B	520-640	355	19	0.20
		SM520C				
		SN400A	400-510	235	21	0.24
		SN400B			22	0.20
		SS400	490-610	245	21	0.20
	SS490	285				
	EN	S235 JR	360-510	235	22	0.17
		S235 J0				
		S235 J2				
		S275 JR	410-560	275	19	0.21
		S275 J0				0.18
		S275 J2				
		S355 JR	470-630	355	18	0.24
		S355 J0				0.20
	S355 J2					
AS	3678 Gr.250	410	280	22	0.22	
	3678 Gr.300	430	320	21		
	3678 Gr.350	450	360	20		
HOT ROLLED STEEL PLATE FOR PRESSURE VESSEL QUALITY	ASTM	A285 Gr.C	380-515	205	23	0.28
		A515 Gr.60	415-550	220	21	0.24
		A515 Gr.70	485-620	260	17	0.31
		A516 Gr.60	415-550	220	21	0.21
		A516 Gr.70	485-620	260	17	0.27
HIGH-STRENGTH LOW ALLOY STEEL FOR STRUCTURAL QUALITY	ASTM	A572 Gr.50	450	345	18	0.23
		A572 Gr.55	485	380	20	0.25
		A572 Gr.60	520	415	18	0.26
		A572 Gr.65	550	450	19	
		A709 Gr.50	450	345	18	0.23
HOT ROLLED STEEL PLATE FOR LINE PIPE	API	2W Gr.50	448	345-517	23	0.16
		5L X42	414-758	290-496	30	0.22
		5L X60	517-758	414-565	24	
		5L X65	531-758	448-600		
		5L X70	565-758	483-621		
HOT ROLLED STEEL PLATE FOR HULL STRUCTURAL	ABS	Gr.A	400-520	235	22	0.21
		AH32	440-590	315		
		AH36	490-620	355	21	0.18
		DH32	440-590	315	22	
		DH36	490-620	355	21	
		EH32	440-590	315	22	
		EH36	490-620	355	21	
	Lloyd's	Gr.A	400-520	235	22	0.21

Note : Mechanical properties and chemical composition table shows basic chemical contents of each steel standard, they might be changed according to the

CHEMICAL COMPOSITION											
Mn	Si	P	S	Cr	Ni	Cu	Mo	Nb	V	Ti	
%	%	Max, %	Max, %	%	%	%	%	%	%	%	
0.80-1.20	0.15-0.40	0.040	0.050								
0.90 Max		0.035	0.040								
0.85-1.20											
0.50-1.20		0.035									
0.60-1.40	0.35 Max										
1.60 Max	0.55 Max										
1.65 Max											
1.65 Max											
-	-	0.05									
0.6-1.4	0.35 Max	0.03	0.015								
		0.050	0.050								
1.40 Max		0.035	0.035			0.55 Max					
		0.030	0.030								
		0.025	0.025								
1.50 Max		0.035	0.035								
		0.030	0.030								
		0.025	0.025								
1.60 Max	0.55 Max	0.035	0.035								
		0.030	0.030								
		0.025									
1.70 Max	0.55 Max	0.040	0.040	0.30 Max	0.50 Max	0.40 Max	0.10 Max			0.040 Max	
		Nb+V+Ti=0.150 Max									
0.90 Max	0.15-0.40	0.035	0.035	0.30 Max	0.40 Max	0.40 Max	0.12 Max	0.02 Max	0.03 Max	0.03 Max	
1.20 Max											
0.60-1.20											
0.85-1.20											
1.35 Max	0.15-0.40	0.040	0.050					0.005-0.05	0.01-0.15	0.006-0.04	
1.15-1.60	0.05-0.50	0.030	0.010	0.25 Max	0.75 Max	0.35 Max	0.08 Max	0.03 Max	0.01 Max	0.007-0.02	
1.30 Max		0.025	0.015					Nb+V+Ti=0.150 Max			
1.40 Max											
1.45 Max											
1.65 Max											
0.50-1.20	0.50 Max	0.035	0.035								
0.90-1.60	0.10-0.50			0.20 Max	0.40 Max	0.35 Max	0.08 Max	0.02-0.05	0.05-0.10	0.02 Max	
0.50-1.20	0.50 Max										

their remarks or regulations.

## PLATE STANDARD SIZE RANGE

PRODUCT GROUP	DESIGNATION GRADE	WIDTH (mm.)		MAXIMUM LENGTH [M.]					
				THICKNESS (mm.)					
		1,000 TO 1,350	1,351 TO 1,650	1,651 TO 1,950	1,951 TO 2,250	2,251 TO 2,550	2,551 TO 2,850	2,851 TO 3,048	
LOW-INTERMEDIATE STRENGTH	A283 Gr.C / A285 Gr.C	5 - 7	13	13	13	13	13		
	A36 / A515 Gr.60	7 - 8	13	13	13	13	13	13	13
	A516 Gr.60 / ABS Gr.A	8 - 9	13	13	13	13	13	13	13
	Lloyd's Gr.A / SS 400	9 - 10	13	13	13	13	13	13	13
	SM 400 A,B	10 - 12	14	14	14	14	14	14	14
	S 235 JR,J0,J2	12 - 15	14	14	14	14	14	14	14
	S 275 JR,J0,J2	15 - 20	14	14	14	14	14	14	14
	AS 3678 Gr.250, 300	20 - 26	14	14	14	14	14	14	14
	SN 400 A,B	26 - 40	14	14	14	14	14	14	14
	and other equivalent	40 - 75	16	16	16	16	16	16	16
		75 - 90	16	16	16	16	16	16	14
		90 - 127	10	10	10	10	10		

## PLATE STANDARD SIZE RANGE

PRODUCT GROUP	DESIGNATION GRADE	WIDTH (mm.)		MAXIMUM LENGTH [M.]					
				THICKNESS (mm.)					
		1,000 TO 1,350	1,351 TO 1,650	1,651 TO 1,950	1,951 TO 2,250	2,251 TO 2,550	2,551 TO 2,850	2,851 TO 3,048	
AS ROLLED - HIGH STRENGTH LOW ALLOY STEEL	A572 Gr.50,55,60,65	5 - 7							
	A709 Gr.50	7 - 8	13	13	13				
	S355 JR,J0,J2	8 - 9	13	13	13	13	13		
	SM 490 YA, SM 490 YB	9 - 10	13	13	13	13	13		
	AS 3678 Gr.350	10 - 12	14	14	14	14	14	14	
	ABS AH 32, AH 36	12 - 15	14	14	14	14	14	14	13
	ABS DH 32, DH 36	15 - 20	14	14	14	14	14	14	14
	API 5L X42	20 - 26	14	14	14	14	14	14	14
	SM 520 B, SM 520 C	26 - 40	14	14	14	14	14	14	14
	and other equivalent grades	40 - 75	16	16	16	16	16	16	16
		75 - 90							
		90 - 127							



## PLATE STANDARD SIZE RANGE

PRODUCT GROUP	DESIGNATION GRADE	WIDTH (mm.)		MAXIMUM LENGTH [M.]					
				THICKNESS (mm.)					
		1,000 TO 1,350	1,351 TO 1,650	1,651 TO 1,950	1,951 TO 2,250	2,251 TO 2,550	2,551 TO 2,850	2,851 TO 3,048	
HIGH STRENGTH	A515 Gr.70	5 - 7	13	13	13				
	A516 Gr.70	7 - 8	13	13	13	13	13		
	A573 Gr.70	8 - 9	13	13	13	13	13	13	
	SS 490	9 - 10	13	13	13	13	13	13	13
	SM 490 A	10 - 12	14	14	14	14	14	14	14
	SM 490 B	12 - 15	14	14	14	14	14	14	14
	and other equivalent grades	15 - 20	14	14	14	14	14	14	14
		20 - 26	14	14	14	14	14	14	14
		26 - 40	14	14	14	14	14	14	14
		40 - 75	16	16	16	16	16	16	16
		75 - 90	16	16	16	16	16	16	14
		90 - 127	10	10	10	10	10		

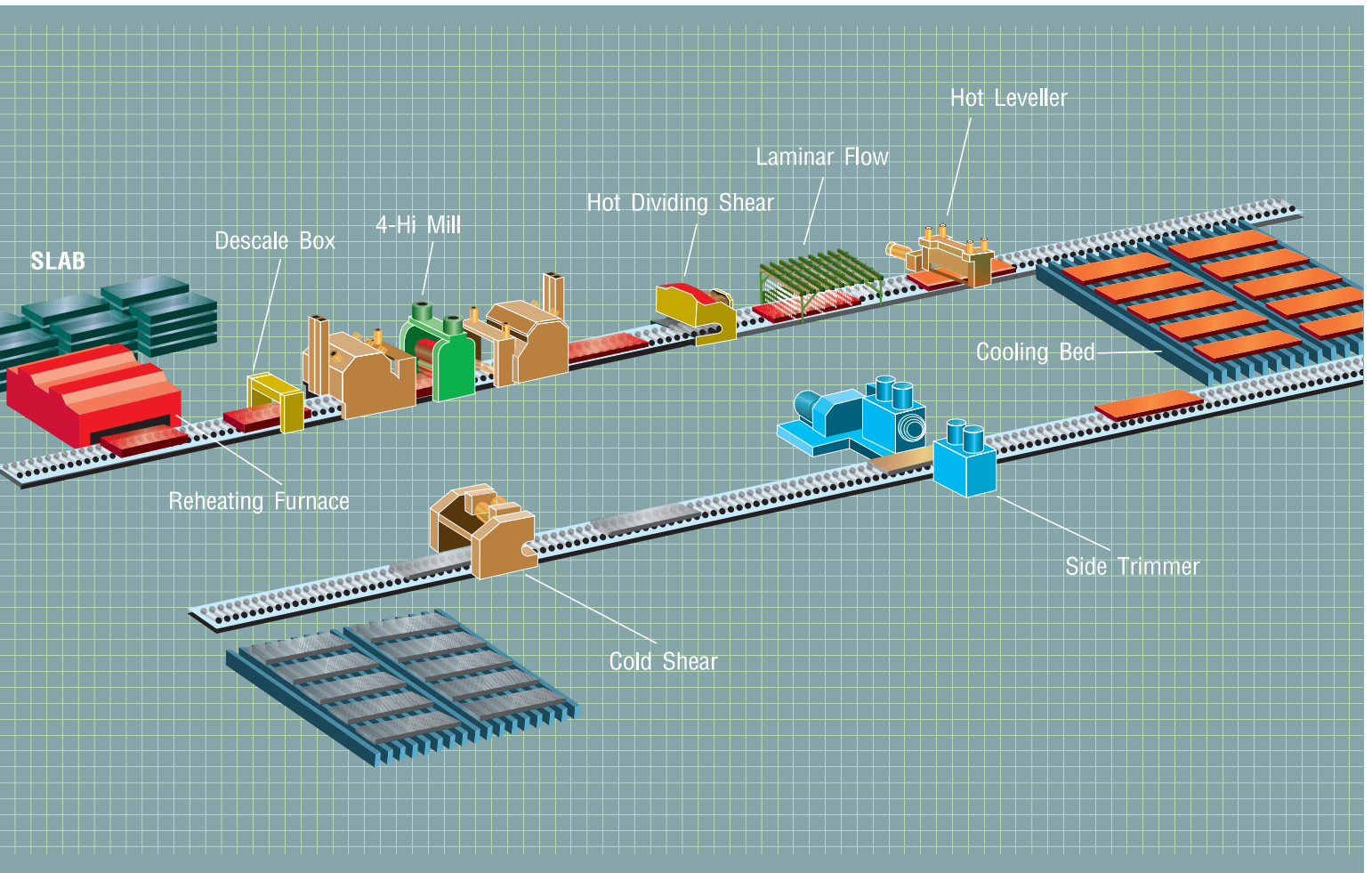
## PLATE STANDARD SIZE RANGE

PRODUCT GROUP	DESIGNATION GRADE	WIDTH (mm.)		MAXIMUM LENGTH [M.]					
				THICKNESS (mm.)					
		1,000 TO 1,350	1,351 TO 1,650	1,651 TO 1,950	1,951 TO 2,250	2,251 TO 2,550	2,551 TO 2,850	2,851 TO 3,048	
TMCP - HIGH STRENGTH LOW ALLOY STEEL	ABS EH 32, 36	5 - 7							
	API 2W Gr.50	7 - 8							
	API 5L X60, 65, 70	8 - 9	13	13	13	13			
	and other equivalent grades	9 - 10	13	13	13	13	13		
		10 - 12	14	14	14	14	14	14	
		12 - 15	14	14	14	14	14	14	
		15 - 20	14	14	14	14	14	14	
		20 - 26	14	14	14	14	14	14	14
		26 - 40	14	14	14	14	14	14	14
		40 - 75							
		75 - 90							
		90 - 127							

# Hot Rolled Plate



# Plate Manufacturing Process



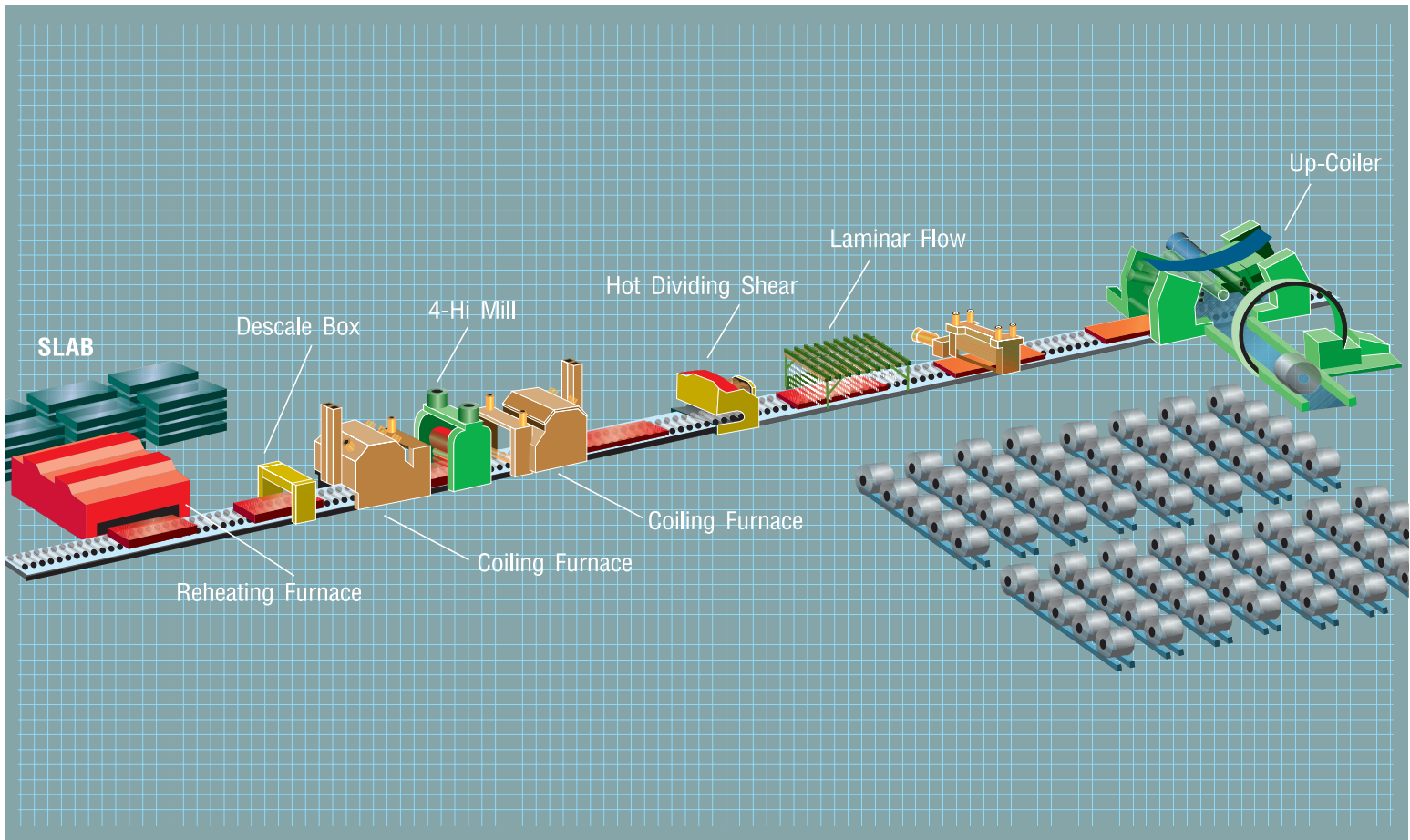
## Plate Manufacturing Process

Based on the finished product size, the slab is gas cut and charged into the Reheat Furnace until the temperature reaches to 1,250 deg C.

The oxide (scale) formed during the reheating stage is removed by the high pressure descaler before delivery to 4-Hi Reversing Mill. The slab is then rolled to the desired thickness, width and length controlled by Hydraulic Automatic Gauge Control (HAGC) and X-Ray Gauge system.

The plate is then passed through the Hot Plate Leveller. Based on the product grade requirement, TMCP, as Rolled and air cooling technology is applied. The quality inspection is performed at the cooling bed and the sample is send to our own laboratory for chemical and mechanical testing. Then the plate is passed through the side trim and shearing line. Marking on the plate is done prior to delivery to the customer.

# Coil Manufacturing Process



## Coil Manufacturing Process

Based on the finished product size, the slab is gas cut and charged into the Reheat Furnace until the temperature reaches 1,250 deg C. The oxide (scale) formed during the reheating stage is removed by the high pressure descaler before delivery to 4-Hi Reversing Mill. The slab is then rolled to desired thickness controlled by a Hydraulic Automatic Gauge Control (HAGC) and X-Ray Gauge System. During the rolling process, the product length will extend continuously and the Coil box technology is used in order to maintain the appropriate rolling temperature. The rolled steel then passes through the rapid water cooling system to achieve the suitable mechanical properties. The QA /QC member performs the various inspections before the product is delivered to the W/H and customers.

# Logistics



The slab is delivered from approved sources to Koh-Sichang anchorage. The slab is loaded from the vessel to the barges and towed through Chao Phraya River to LPN port.

Based on the quantity to be exported, small quantity of plates is delivered by trucks to the loading port such as Bangkok port, Leam Chabang port and Si-Racha port. In case for large quantity, plates are delivered by barges to Koh-Sichang port for loading.

## INTERNATIONAL TESTING LABORATORY

In the year 1999, LPN Plate Mill PCL. started its state-of-art testing laboratory for performing both destructive and non-destructive tests to meet the International standards. The laboratory has been approved by ISO/IEC 17025 version 2007 for measuring mechanical properties and chemical analysis, of the steel products according to ASTM and other standards. The laboratory has been designated to be one of the official testing labs for the Thai Industrial Standards Institute (TISI).





- Tensile Test - To determine the tensile strength, yield strength and elongation of steel by using 200ton universal tensile testing machine. The test result can be simply read from a computer display screen.
- Bending Test - To test the ability of cold forming into various shapes.
- Impact Test - To determine the toughness of the material and measure the energy absorption by the material before breaking at the specific test temperature. The test material is prepared in proper sizes and beveled into V-shaped (Charpy V-Notch). Its size is then measured by Profile Projector with the accuracy of 10 micron before put to test at temperatures controlled by Multi-Cool which can be as low as - 70 Degrees Celsius. A regular calibration of this testing machine based on the Standard Reference Material (SRM) is undertaken directly with NIST, USA.
- Hardness Test - Using Rockwell and Vickers Standard Indenter. To measure steel resistance to permanent deformation.
- Chemical Analysis - To test chemical contents of the products or to confirm the analytical result of raw material derived from the suppliers in relation to the analysis standard of ASTM E415 by relying on Spark Emission Method. The method can indicates over 16 elements upon a chemical composition analysis of iron and steel metals.
- Non-destructive Testing - Such as ultrasonic tests to check cracks or internal defects, magnetic particle methodology by magnetic yoke and penetration testing to locate defects in the material surface by the level II ASNT laboratory personnel and the level III

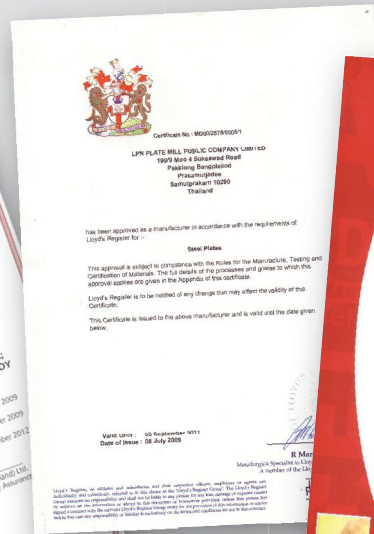
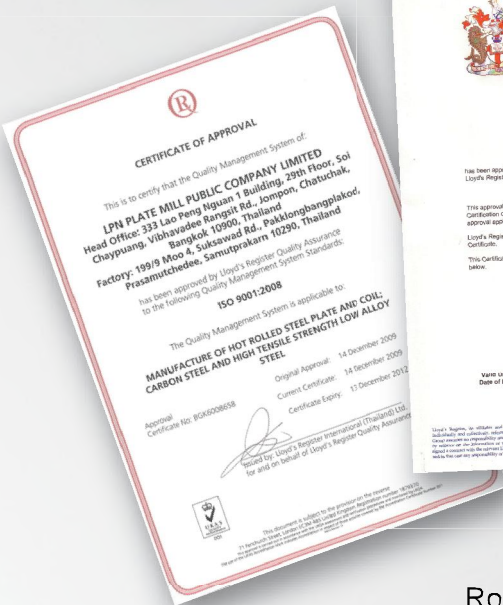
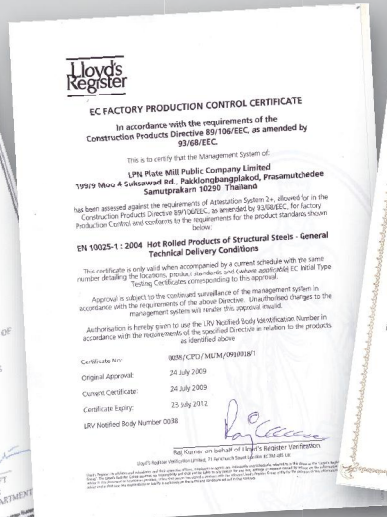


# Clients





# Certificate



## Road to International Trust

- ABS (American Bureau of Shipping)
- API (American Petroleum Institute) - Spec 2W : Certificate number 2w-0012
- AS (Australian Standard)
- ASTM (American Society for Testing and Materials)
- CE Mark
- DIN (Deutsches Institut fur Normung e.V.)
- EN (Euronorms Standard)
- Lloyd's (Lloyd's Register's Rules and Regulations)
- ISO (International Organization for Standardization)
- Conform to JIS (Japanese Industrial Standard)
- NK (Nippon Kaiji Kyokai)

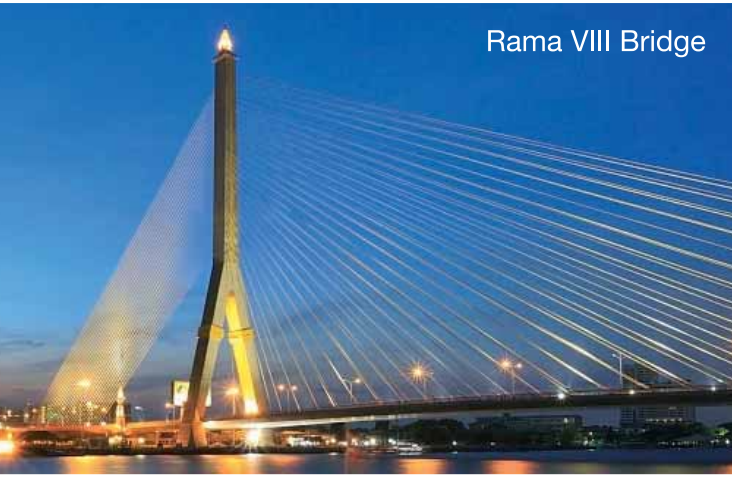
And other industrial standards



Offshore



Suvarnabhumi International Airport



Rama VIII Bridge

# Profile



Suvarnabhumi International Airport



LPN PLATE M  
PUBLIC CO



Tank Farm



Ship building



Doha International Airport



MRT Purple Line



Suksawad Bangplee Bridge

e

ILL  
MPANY LIMITED

Power plant



Oil & Gas pipe



LPN PLATE MILL

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