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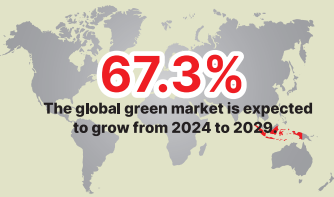
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## BUILD BEYOND LIMITS: FORTISE and FORTISE+

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### The Indonesian Steel Landscape: GRP's Low-Carbon Opportunity



The need for green steel is driven by increasing awareness of environmental issues and promoting sustainable practices.

Based on application, the market is segmented into building & construction, automotive, renewable energy infrastructure, home appliances, and others.  
Source : Global Market Estimates.

**Indonesia Market**  
While blast furnace technology, dependent on coal and coke, remains common in Indonesia, the transition to cleaner, more efficient production methods is becoming increasingly essential.



**In Indonesia: Realizing Sustainability in the Steel Industry**  
For the national steel industry, emissions reductions are being implemented step by step, considering several factors such as government regulations/policies, industry competitiveness, existing technology, availability of Net Zero Emission (NZE).  
Source : IISIA

### GRP's Position

"Next level green initiatives" signify an advanced commitment to sustainability through transparent communication of environmental performance.  
**A Growing Range Of High-Quality Steel Products.**

### Delivering Value and Sustainability Through FORTISE and FORTISE+

FORTISE and FORTISE+ are produced using Electric Arc Furnace (EAF) technology—enabling a more efficient and environmentally responsible steelmaking process aligned with global sustainability standards.

FORTISE+ offers enhanced circularity by utilizing approximately 70% scrap input, contributing to the reduction of embodied carbon and supporting low-emission development goals.

Complementing these efforts, GRP operates a Rooftop Solar Panel system with an installed capacity of 9.3-megawatt peak (MWp), positioning it among the largest rooftop installations in West Java and reinforcing our commitment to responsible energy use.



Photo documentation of Solar Panel Phase #1 (2022) partially in the Forming Service Center (FSC) area, and Solar Panel Phase #2 (2023) partially in the Coil Service Center (CSC) area.

### What is FORTISE and FORTISE+?

## FORTISE FORTISE+ BUILT ON STRENGTH COMBINE STRENGTH & SUSTAINABILITY

#### General Standard

Its versatile structural properties make it ideal for a broad range of projects, meeting basic market demands.

#### High Valued Initiatives

Designed to meet the demands of high-performance ecosystem, this product is ideal for applications such as high-specification buildings, shipbuilding, and pressure vessels.  
Its superior strength and lightweight properties help optimize both safety and efficiency.

### Advantages of FORTISE and FORTISE+



**FORTISE** Reliable and cost-efficient for general structural applications.

**FORTISE+** Enhanced strength and durability for demanding use, with long-term savings on materials and maintenance.

### Beyond Carbon Reductions

At GRP, sustainability goes beyond emissions. GRP integrates environmental responsibility across its operations — offering steel products that meet leading national and international benchmarks for eco-efficiency.  
GRP's commitment is recognized through the following certifications:



#### • Environmental Product Declaration (EPD)

GRP's steel products are backed by verified EPDs, providing transparent, third-party data on carbon footprint and life cycle impact. This will help our customers to meet with green building and procurement standards.



#### • Green Label Indonesia

Certified by the Green Product Council Indonesia, GRP's products are acknowledged for their lower environmental impact and support for sustainable construction.



#### • Standar Industri Hijau (SIH)

As part of Indonesia's standard for responsible industrial operations, this certification from the Ministry of Industry affirms GRP's continuous efforts in optimizing energy use, material efficiency, and environmentally sound production.

These achievements reflect GRP's role in enabling cleaner, more sustainable development through certified steel solutions.

### Let's talk about FORTISE and FORTISE+

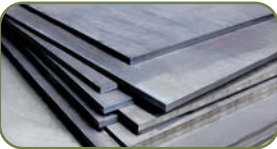
Discover how GRP's latest steel innovations support high-value, sustainable applications across industries.



Range Product

High-quality Steel for Building the Nation and Globally. Product portfolio that continues to grow and adapt to market needs.

Main Products



STEEL PLATE

Key Specification

ASTM A-285 / ASME A-285, ASTM A-36 / ASME A-36, ASTM A-573 / ASME SA-573, ASTM A-131 , ASTM A-709 / ASME SA 709, JISG 3101, JIS G 3101, EN 1002502:2004, EN 10025-3:2004, DIN 17100 (1980), AS/NZS 3678 ACRS Certificate No. 171202, BS 4360, BS 4360.

BKI, DNV, LR, ASTM A-131 (Ship Building)

Grade

SS-400, SM 400 A, SM 400 B, SM 400 C, S 235 JR, S 235 JO, S 235 J2, S 275 JR, S 275 JO. S275 J2, S 275 N, S 275 NL, ST 37.2, ST 44.2 etc.

A, B, D, E (Ship Building)



COIL PLATE

Features: Structural Steel

Key Specification

ASTM A36 / ASME SA36, ASTM A283 / ASME SA283, ASTM A285 / ASME SA285, JISG 3101, AS 1594, JIS G 3101 EN 1002502:2004, DIN 17100 (1980), etc.

Grade

SS-400, HA 250, HU 250, SM 400 A, SM 400 B, SM 400 C, S 235 JR, S 235 JO, S 235 J2, S 275 JR, S 275 JO. S275 J2.

Key Specification

ASTM A 572 / ASME SA 572, ASTM A 573 / ASME SA 573, JISG 3101, JIS G 3106, etc.

Grade

50, 55, 60, 70, SS-490, SM 490 A, SM 490 B. SM 490 C, SM 490 YA, SM 490 YB, SM 520 B, SM 520 C, etc.

Features: Pressure Vessel Steel (Yield Strength >300 Mpa)

Key Specification

JISG 3101, ASTM A537/ASME SA537, EN 10028-2.

Grade

55, 60, 65, 70, SG 255, SG 295, CLASS 1, P265 GH, P295 GH



WELDED BEAM

Tailored Strength for Every Project

For general applications and projects requiring mild steel, our welded beams can be fabricated using FORTISE grade materials. This ensures reliable performance for standard construction needs.

When your project demands high strength and an advanced commitment to sustainability, our welded beams can be manufactured with FORTISE+.

We supply welded beams in compliance with various international standards, including JIS, ASTM, EN, BS, AS, ABS, and AS/NZS 3679.2. Our production capabilities allow for:

- Flange Width Range: 200 - 1,000 mm
- Web Height Range: 200 - 3,000 mm
- Thickness Flange Range: 8 - 100 mm
- Maximum Length: 25,000 mm

Customization and Flexibility: Tailored to specific project needs in terms of size, shape, and length, perfect for non-standard designs.

Suitable for Complex Structures: Ideal for intricate geometries or specific load-bearing requirements, such as bridges, industrial buildings, and heavy-duty equipment.

High Strength and Durability: Properly welded beams deliver excellent strength and durability, capable of handling significant loads and stresses.

Mechanical Properties

Property	FORTISE	FORTISE+
Yield Strength (Mpa) min	235	345
Tensile Strength (Mpa)	400-550	485-600
Elongation (%) min	17	15
Hardness (HV 10) max	210	210
Impact (Joule) min at any temperature (+20 up to -40)	27	34
Weather resistant	-	If the grade comply with specification of weather resistant grades. The steel should be have chemical content Cu (0,15-0,50%), Cr (0,35-1,05)

Carbon Emission (Include % Scrap)

- 1

FORTISE+: Confirmed of Green Content (Approximately 70% scrap material)
- 2

FORTISE+ Steel is produced with a thickness up to 120 mm.
- 3

FORTISE+ with yield strength exceeding 345 MPa and tensile strength over 450 MPa.

The differentiation between FORTISE and FORTISE+ supports Indonesia's broader decarbonization efforts in several ways:

- Material Efficiency:

FORTISE+ offers greater strength-to-weight ratios, which translates to less steel used per structure — supporting lower embodied carbon per project.
- Energy and Emission Reductions:

The adoption of high-strength steel products in construction and manufacturing enables lower fuel and energy consumption during transport and installation.
- Support for Net Zero Roadmaps:

By enabling downstream sectors (especially construction and infrastructure) to use lower-impact materials, these brands align with Indonesia's climate commitment to net-zero emissions by 2060.

Applications

FORTISE targets general structural applications. It is suitable for:



Residential and commercial construction.



General infrastructure (e.g., standard bridges, buildings).



Automotive and light machinery with standard strength requirements.



High-rise and green-certified buildings.



Shipbuilding and offshore structures.



Pressure vessels and industrial-grade piping.

WHY?

FORTISE+ offers superior strength, customizable alloying, and potential weight reduction — key for projects needing durability, compliance with international specs, and sustainability targets.

→ Consultant, Data center project owner, multinational project (oil and gas, etc) should be this segments target.

Project Portfolio

GRP supports major local and international projects with reliable and high quality solutions tailored to project need.



Stadium



Train Station



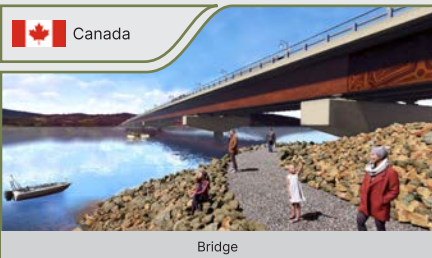
Airport



Factory



Oil Refinery



Bridge



Commercial Building



Commercial Building



Transportation



... and more than 40 countries

BUILD BEYOND LIMITS:  
FORTISE and FORTISE+



FORTISE & FORTISE+ LANDING PAGE