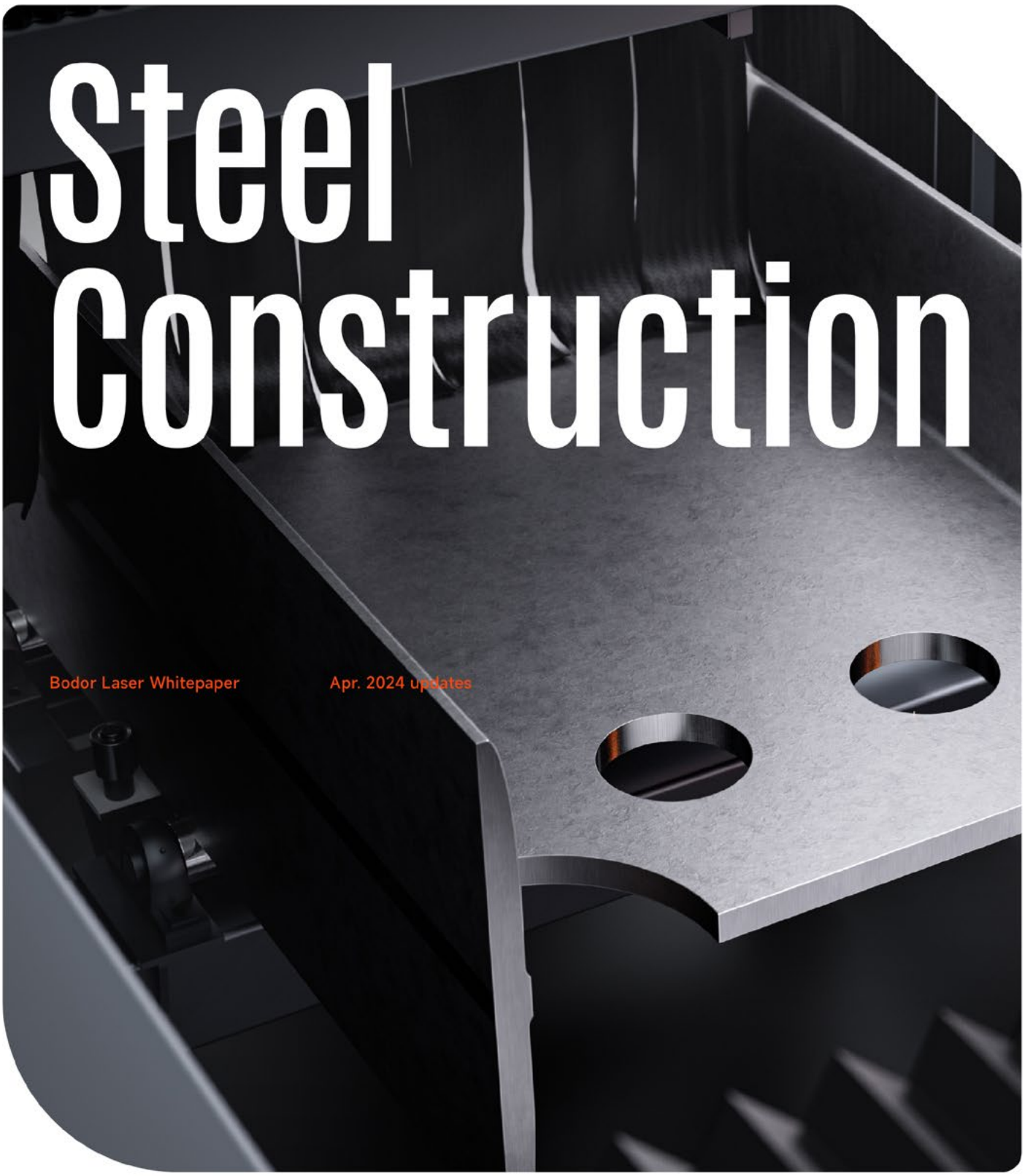
Steel Construction



Bodor Laser Whitepaper Apr. 2024 updates

Laser cutting innovation leads the way for steel construction

bodor

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Foreword

In modern construction, steel stands as a symbol of strength, versatility, and innovation. As the backbone of countless architectural marvels, structural steel serves as the cornerstone upon which cities rise and infrastructure thrives. As depicted by the American Institute of Steel Construction (AISC), structural steel is the smart choice for construction, offering ground-breaking new design and construction methods, unmatched resilience, and overall cost-effectiveness.

This whitepaper serves as an illuminating exploration into the dynamic industry of steel construction, offering an overview of its intricacies, challenges, and potential. Each section delves into key aspects shaping the industry's landscape, from the fundamental information underlying steel construction to the cutting-edge technologies revolutionizing its processing.

With a steadfast aim to empower steel construction manufacturers, this white paper endeavors to deepen their comprehension of the industry and equip them with the knowledge to harness cutting-edge technology for enhanced production processes. Together, let us embark on an exploration of the steel construction industry, uncovering its nuances and charting a course toward innovation and excellence.

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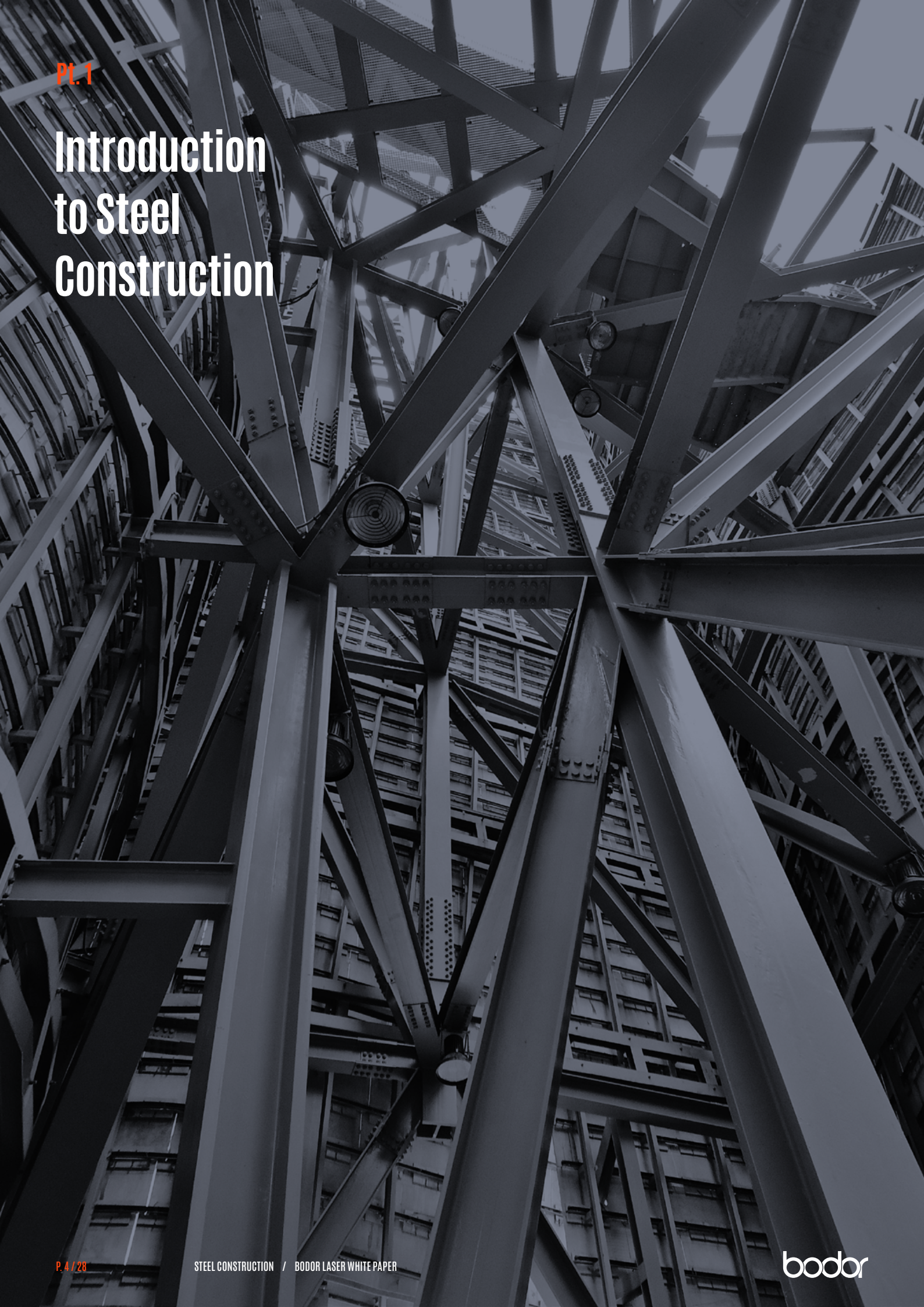


Pt. 1

Introduction to Steel Construction

1.1 Steel construction

Steel construction refers to a form of structure composed of steel plates with a thickness of more than 10mm and hot-rolled or welded structural steel (such as I-beams, H-beams, round tubes, pressed steel plates, etc.) connected by connectors (bolts, rivets, etc.), capable of bearing various static and dynamic loads. Its components are usually connected by welding, bolts, or rivets. Steel construction is one of the main types of building structures.

It is worth mentioning that the narrow sense of steel construction mainly refers to steel structure buildings in the field of residential construction, while the broad sense of steel construction also includes drilling and oil extraction platforms, transmission tower frames, etc.

As an essential component of steel construction, structural steel refers to a type of steel utilized for fabricating construction materials with various shapes. Commonly, structural steel shapes resemble elongated beams with specific cross-sectional profiles. Many structural steel shapes, such as I-beams, exhibit high second moments of area, contributing to their exceptional stiffness relative to their cross-sectional area. This characteristic allows them to support heavy loads without significant sagging.

1.2 Structural steel classification

According to the shape of the cross-section, structural steel can be generally divided into the H-beam, I-beam, angle, channel, etc. The table below shows some typical structural steel.

STRUCTURAL STEEL	DESCRIPTION
I-beam	I-shaped cross-section In Britain, these include Universal Beams (UB) and Universal Columns (UC); in Europe, they include the IPE, HE, HL, HD, and other sections; in the US, they include Wide Flange (WF or W-Shape) and H sections.
H-beam	H-shaped cross-section The web of an H-beam is much thicker than that of an I-beam. A thicker web means a stronger beam, which allows for more load-bearing capacity.
Z-shape	Half a flange in opposite directions
HSS/SHS	Hollow structural section/Structural hollow section E.g., square, rectangular, circular (pipe), and elliptical cross-sectio
Angle	L-shaped cross-section
Channel/C-beam/PFC	C-shaped cross-section
Tee	T-shaped cross-section
Rail profile	Asymmetrical I-beam E.g., railway rail, Vignoles rail, flanged T rail, and grooved rail
Bar	A long piece with a rectangular cross-section, but not so wide to be called a sheet.
Rod	A round or square section long compared to its width
Plate	Metal sheets thicker than 6 mm or 1⁄4 in

Different regions have different standards for categorizing structural steel. For more information related, please click here.

1.3 Steel construction classification

According to application scenarios, steel construction can be classified into equipment steel construction, heavy building steel construction, light building steel construction, bridge steel construction, and spatial steel construction.

In addition, according to internal usage, steel construction can be classified into load-bearing structure, secondary structure, enclosure structure, and light steel structure.

1.4 Characteristic of steel construction

Advantages	HIGH STRENGTH AND LIGHTWEIGHT	Accessible to transport and install Suitable for large spans, high heights, and heavy loads
	DURABLE AND LONG-LASTING	Suitable for bearing impact and dynamic loads Good seismic performance and a long lifespan
	GOOD SEALING	It can be made into high-pressure vessels with excellent air and water tightness.
	RAPID AND CONVENIENT CONSTRUCTION	Does not require formwork and frame support. It can be erected in almost all weather conditions.
	HIGH SAFETY	Reduce labor by 70%, which means a safer construction site.
	ECO-FRIENDLY	Reduce the use of sand, stone, and lime. The materials used are mainly green and 100% recyclable or degradable materials.
Disadvantages	POOR HIGH-TEMPERATURE RESISTANCE	Its strength decreases with increasing temperature until it can not bear any loads at all over 600°C.
	POOR CORROSION RESISTANCE	Poor corrosion resistance, especially in humid and corrosive environments. Need to be de-rusted, galvanized, or coated.
	COMPLEX QUALITY ISSUES	The analysis, judgment, and handling of quality issues are complicated, and quality issues can continue to evolve.

Pt. 2

Industry Overview

According to the Structural Steel Market Size, Share & Trend Analysis Report of Grand New Research, the global structural steel market reached USD 117.12 billion in 2023, highlighting the significant role of structural steel in the construction industry. The market outlook demonstrates considerable vitality and growth potential with a projected Compound Annual Growth Rate (CAGR) of 5.9% from 2024 to 2030.

2.1 Structural steel supply chain

THE STRUCTURAL STEEL INDUSTRY COMPRISES FOUR KEY COMPONENTS:

- Producers of structural steel products include producers of hot-rolled structural sections like H-beams, sheet metal, channels, and angles, as well as producers of hollow structural sections, formerly known as tubular steel.
- Service Centers act as storage facilities and offer limited preprocessing of structural material before fabrication.
- Structural Steel Fabricators are responsible for physically preparing structural steel for buildings or bridges. This process involves creating detailed drawings based on construction drawings, managing materials, cutting-off, punching, shop fitting, painting or galvanizing, and shipping.
- Erectors are tasked with assembling structural steel members into a frame on or off the project site. They accomplish this by bolting and field welding structural steel components together in accordance with the construction documents.

2.2 Structural steel market forces

INFRASTRUCTURE DEVELOPMENT

Continued infrastructure development in both developing and developed countries is the key driver of structural steel demand. This encompasses infrastructure projects such as bridges, roads, railways, ports, and more, directly impacting the demand for structural steel.

HOUSING DEMAND AND POPULATION GROWTH

The growth in housing demand driven by global population growth is also a crucial factor propelling the demand for structural steel products. A sustained increase in the demand for housing drives the demand for structural steel.

GREEN BUILDING INITIATIVES

Structural steel is considered a green building material because of its recyclability. With the rising awareness of environmental sustainability, the demand for sustainable building materials is increasing, providing additional market opportunities.

HIGH-RISE BUILDING BOOM

As urbanization progresses, the demand for high-rise buildings is increasing, thereby providing sustained growth momentum for the structural steel market.

Pt. 3

Status of Structural Steel Processing

3.1 Traditional processing methods

OUTDATED CUTTING EQUIPMENT

Currently, plasma cutting and saw cutting are the mainstream processing methods in the steel construction industry. However, both methods have their respective disadvantages.

Plasma cutting

- Tapered Cutting Surface: Plasma cutting often results in tapered cutting surfaces, especially in thicker materials. This can lead to challenges in achieving precise dimensions and may require additional machining or grinding to correct the taper.
- Slag Formation: Plasma cutting produces a significant amount of slag along the cut edges, which needs to be manually removed. This additional step adds to the production time and labor costs.

Saw cutting

- Material Loss: Saw cutting results in a certain amount of material loss due to the width of the saw blade. This reduces material efficiency and increases production costs, especially for high-value materials.
- Limited Precision: Saw cutting may not achieve the same level of precision as other cutting methods, especially for intricate designs or tight tolerances. This can lead to dimensional inaccuracies and compromise the quality of the final product.
- Noise and Vibration: Saw cutting generates a great deal of noise and vibration during operation, which can be disruptive in the workplace.

COMPLEX DRAWING COMPONENT SEPARATING

Most structural steel manufacturers nowadays use design software to create component drawings. However, traditional nesting software cannot directly recognize these drawings, requiring separating layers and format conversion. Separating and converting can be time-consuming and labor-intensive, which can significantly impact the organization's overall productivity.

HARD TO PROCESS H-BEAMS/I-BEAMS

The steel construction industry demands the processing of large H-beams and I-beams, which often involves cutting-off and notch cutting. The stability of connection points is crucial for overall structural safety in large structures, such as bridges and buildings. Notches can enlarge the contact area at connection points, enhancing stability and load-bearing capacity.

However, traditional methods like plasma and saw cutting can only complete the cut-off process. As a result, many companies have to use additional hand-held flame cutting machines to cut notches. Such methods involve manual work, resulting in poor quality, low efficiency, and high labor costs.

HARD TO MANUFACTURE SHEET METAL COMPONENTS

Manufacturing H-beams typically involves processing the web and flanges. Plasma cutting is predominantly used in conventional methods. However, this approach suffers from quality drawbacks. Plasma cutting generates a significant heat affected zone during the process, leading to material distortion. Plasma cutting often produces rough and uneven edges. The cutting quality problem significantly affects the structure of the H-beam products.

LOW BEVELING AND PUNCHING EFFICIENCY

To facilitate subsequent welding and installation processes, structural steel fabricators have a strong demand for beveling and punching. After unloading, flame/plasma beveling machines and punching machines are typically used to process bevels and holes on sheets or tubes. However, this process often involves secondary handling, re-marking, and repositioning, leading to low efficiency.

3.2 Innovative laser cutting

Laser cutting is a technology that uses a laser to vaporize materials, resulting in a cut edge. While typically used for industrial manufacturing applications, it is now used by schools, small businesses, architecture, and hobbyists.

The primary working principle of laser cutting involves the use of a high-precision, high-density laser beam for tracking and scanning, thereby increasing the local temperature in the scanning area and causing a shape change in the cut material. The material then either melts, burns, vaporizes away, or is blown away by a jet of gas, leaving an edge with a high-quality surface finish.

Laser cutting offers advantages such as high precision, high quality, high efficiency, and low cost. From emergence to maturity, laser cutting technology brings new vitality to the steel construction industry.

3.3 Laser cutting in the steel construction industry

PERFORMANCE AND COSTS

Laser cutting offers advantages such as high cutting speed, high processing accuracy, and no need for post-cutting grinding. Compared to flame and plasma cutting, high-power laser cutting has significantly improved cutting speeds. For example, when cutting 20mm carbon steel, the cutting speed per meter of a 60,000W laser device is 7.5 times faster than that of a 300A plasma device and 20 times faster than that of a flame cutting device.

Comparison of processing speed

CARBON STEEL THICKNESS (MM)	FLAME CUTTING SPEED (M/MIN)	300A PLASMA CUTTING SPEED (M/MIN)	30KW LASER CUTTING SPEED (M/MIN)		60KW LASER CUTTING SPEED (M/MIN)	
			Air	O_2	Air	O_2
3	Below 0.6	1.8	35-40	3.5-5.5	40-45	3.5-5.5
6	Below 0.6	3.1	22-30	3-4.5	32-38	3.0-4.5
10	Below 0.6	3.5	13-16	3.4-3.8	20-23	2.2-2.8
16	Below 0.6	2.3	6-9	3-3.5	14-16	1.5-2.0
20	Below 0.6	1.6	4.5-6.5	2.8-3.5	10-12	1.5-1.9
30	Below 0.6	1.4	1.7-2.8	1.8-2.5	4.5-5.2	1.1-1.4
40	Below 0.6	0.75	–	1-1.6	2.8-3.2	1.0-1.2
50	Below 0.6	0.4	–	0.8-1.2	2.0-2.4	0.6-1.0

In addition, there is a significant reduction in cutting costs per meter for high-power lasers compared to plasma cutting. For example, to cut 20mm carbon steel, the operating cost per meter of a 300A plasma machine is 9.6 times that of a 60kW laser machine.

Comparison of processing cost

COST ITEMS	30KW LASER CUTTING MACHINE (BODOR H24)	60KW LASER CUTTING MACHINE (BODOR H24)	300A PLASMA CUTTING MACHINE
Equipment consumables (CNY/hour)	8	15	70
Average equipment power consumption (CNY/hour)	105	180	70
O2 consumption (CNY/hour)	–	–	12
Air compressor average power consumption (CNY/hour)	22	37	22
Transportation and grinding cost (CNY)	0	0	60
Drilling and positioning cost (CNY)	0	0	60
Fixed cost (CNY/hour)	135	232	294
Running cost per meter (20mm carbon steel) (CNY/m)	0.35	0.32	3.06
Running cost per meter (30mm carbon steel) (CNY/m)	0.8	0.74	3.5

H-BEAMS/I-BEAMS PROCESSING

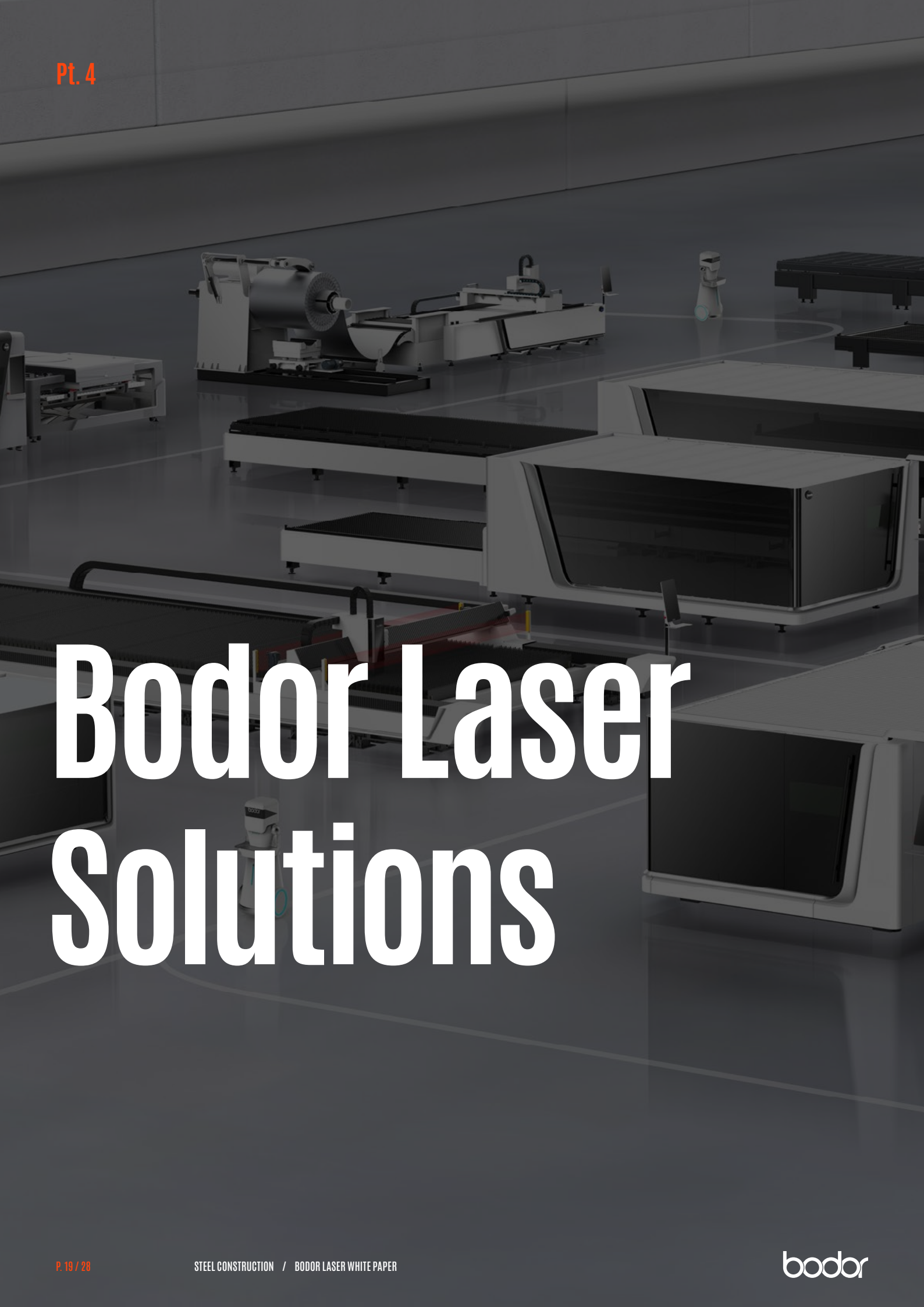
Laser cutting offers the advantages of high efficiency and quality when cutting various structural steel. Nevertheless, traditional laser tube cutting machines are limited by chuck holding range and load-bearing capacity and are unable to meet the processing requirements of ultra-large structural steel. Due to the obstruction of the flanges of H-beams/I-beams, it is also difficult for laser cutters to cut a notch.

SHEET METAL PROCESSING

Laser cutting stands out as the ideal method for producing web and flange plates for H-beams, primarily due to its superb quality. Its precision laser beam guarantees accuracy in dimensions and shapes, ensuring consistency across every piece. Furthermore, the process yields flawlessly smooth cutting surfaces, eliminating imperfections and irregularities. By virtue of its minimal heat affected zones, laser cutting preserves the structural integrity of H-beams, enhancing their durability and reliability.

BEVELING AND PUNCHING

Laser bevel cutting allows for fast speed, high precision, and one-pass cutting. Regrettably, traditional laser machines' operating systems cannot directly process bevel graphics, requiring the manual use of third-party nesting software before cutting, leading to increased labor costs. Also, it's difficult for them to deliver fast and precise punching for medium-thick plates.

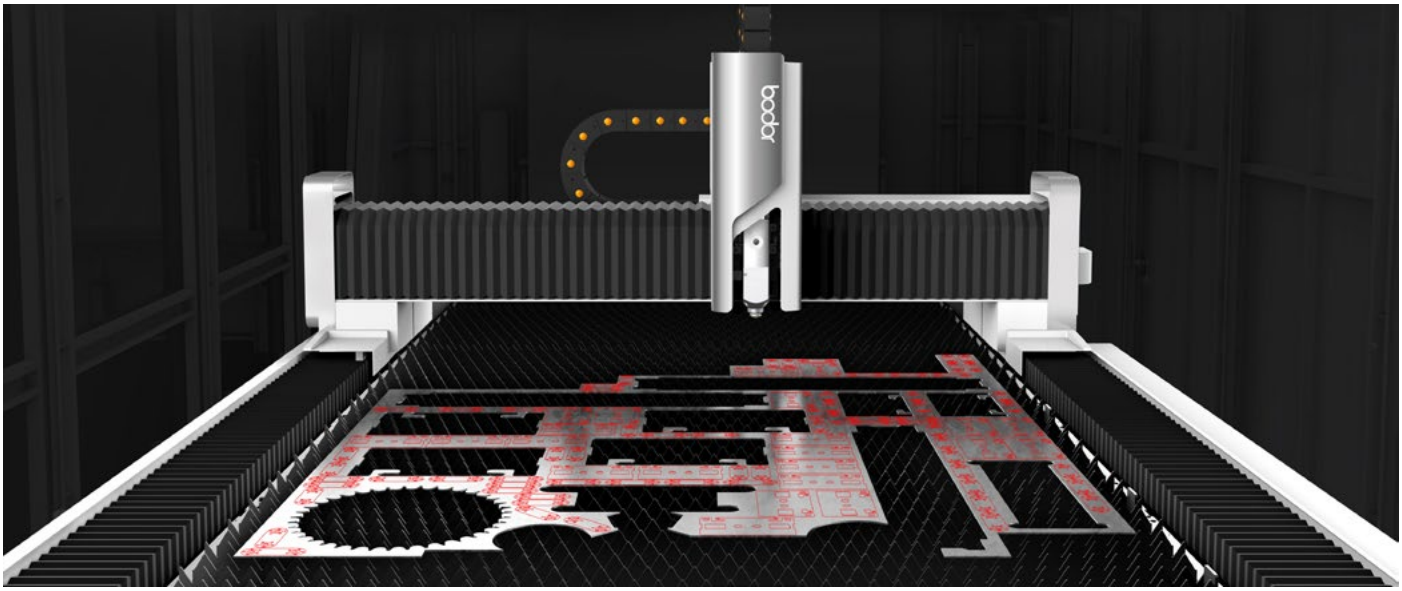


Bodor Laser Solutions

4.1 Bodor laser cutting superiority

REDUCED COSTS

Bodor has independently developed the BodorPower laser source, boasting an impressive electro-optical conversion efficiency of up to 40% and unparalleled light beam quality. It can actually help to lower the running costs.



BodorNest, the nesting software for Bodor sheet metal laser machines, can enhance nesting speed and elevate material utilization rate. Additionally, Bodor machines are equipped with an intelligent remnant layout function that can help save on costs further. With uploaded pictures, Bodor machines can automatically finish the positioning and nesting process, achieving a maximum material utilization rate at maximum.

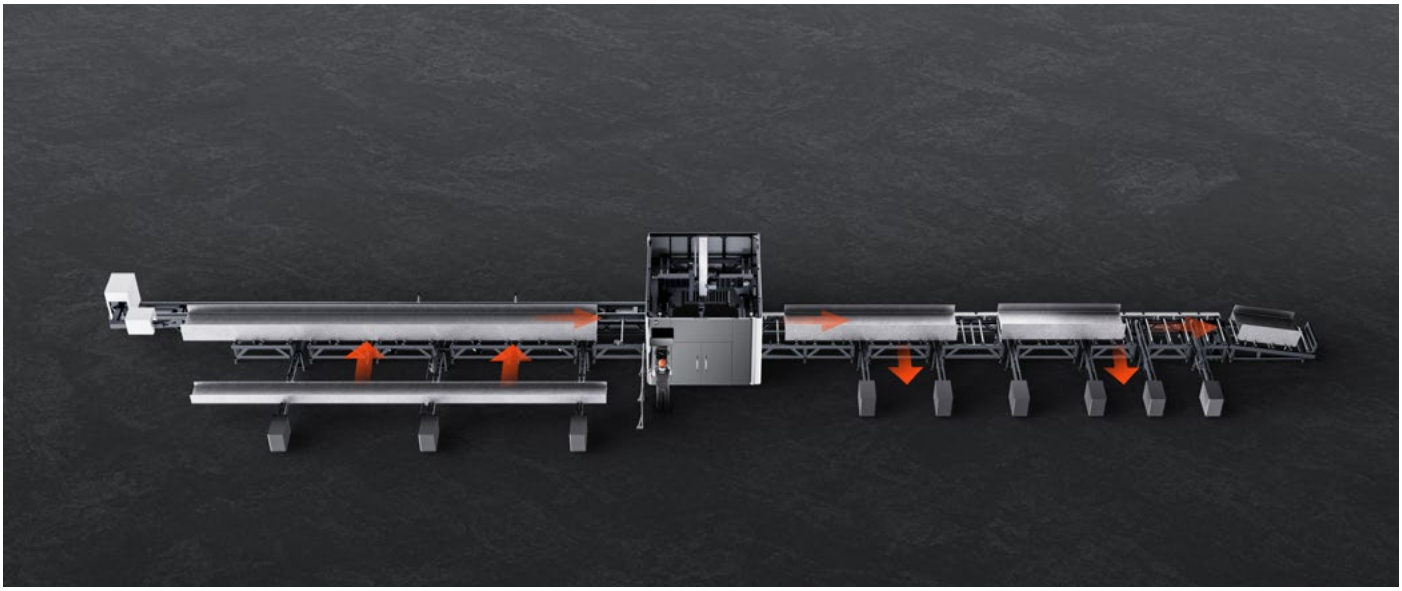
SEAMLESS COMPATIBILITY WITH TEKLA

Tekla is a specialized drawing software for the steel construction industry that is capable of efficiently guiding cutting equipment for nesting. Bodor has conducted in-depth research for the software, which is tailored to create specialized nesting software for the industry. It can directly recognize nc1 files generated by Tekla and embed them into the self-developed operating system, achieving seamless integration with Tekla software. Work efficiency is significantly improved, with expected labor efficiency reaching 23-27 tons/person.

EXCELLENT PROCESSING OF H-BEAMS/I-BEAMS

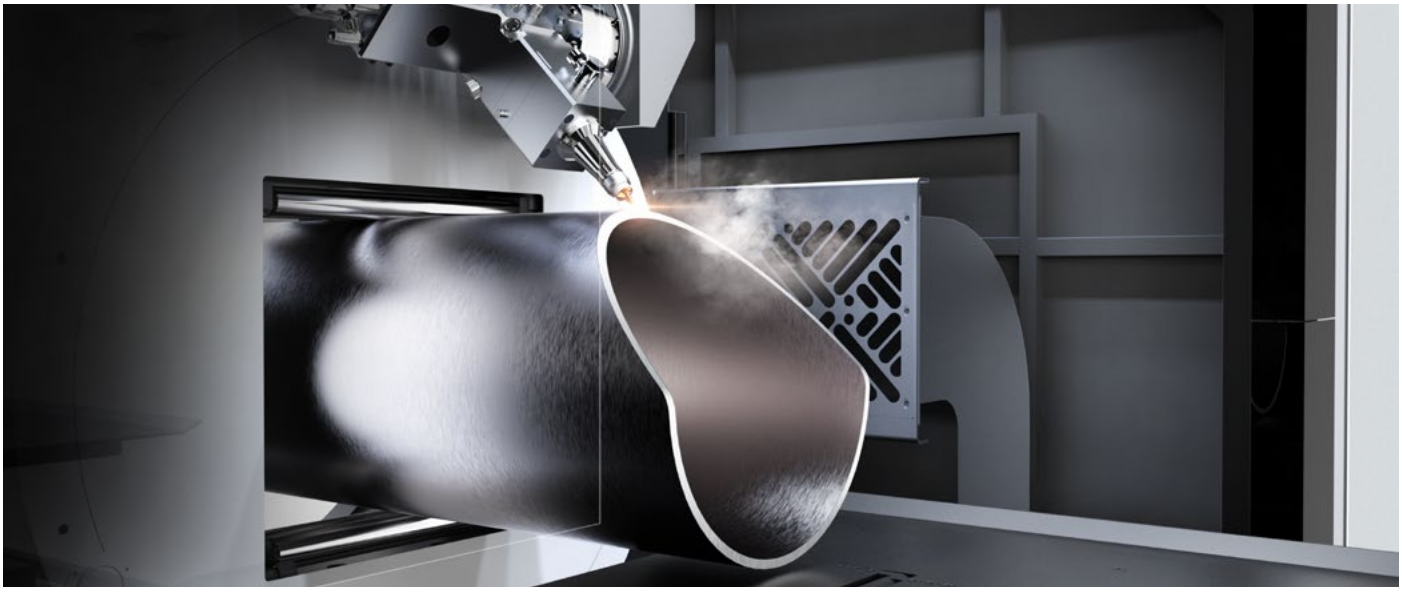
Bodor G series and H series ultra-large format laser cutting machines are equipped with exclusive customization of an ultra-long fiber laser source and are compatible with large format laser cutting machines, eliminating the need for laser tracking trolleys. Long workpieces can be cut in one go without secondary processing.

Moreover, the special structural steel laser cutting machine, Bodor U10 Pro, can process ultra-long H-beams/I-beams up to 13500mm, meeting the customers' needs effortlessly. With laser head height adjustment technology, the U10 Pro completes notch cutting in just one pass. It can master six processes, including auto-loading punching, notching, cutting, beveling, and auto-unloading. With the 180° round-trip movement and 5-axis linkage (across A, C, X, Y, and Z linear axes), the U10 Pro guarantees precise cuts of H-beams/I-beams in all directions.



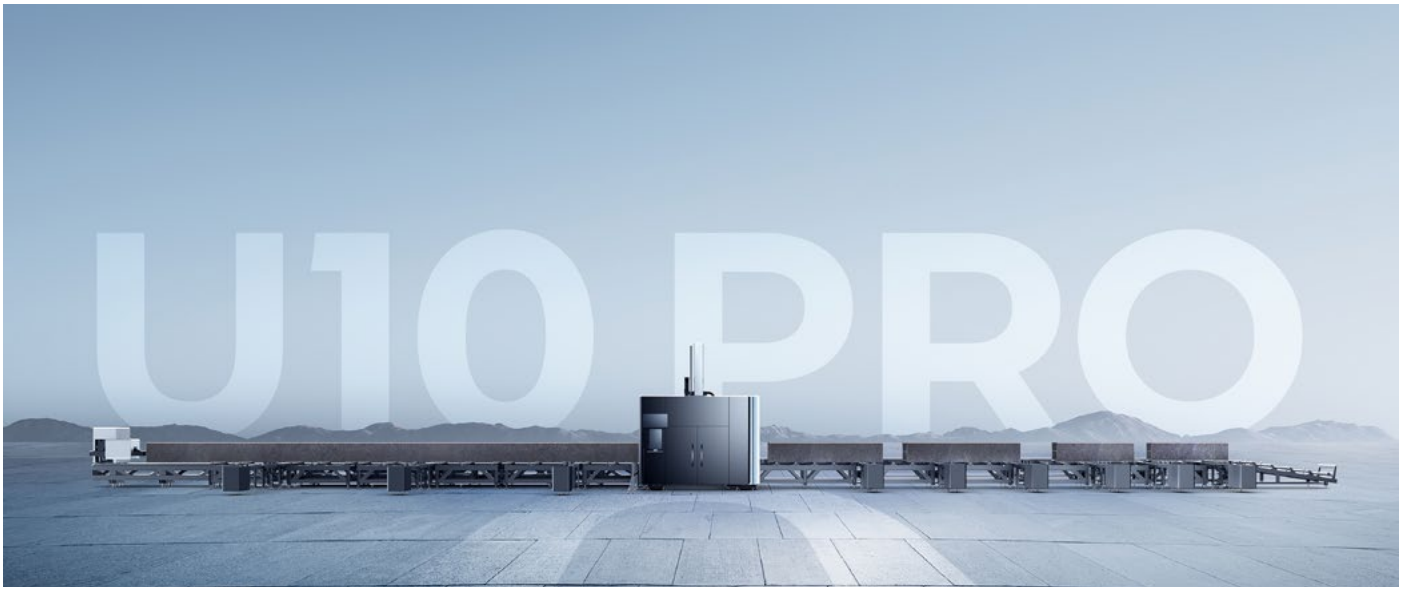
ONE-STEP BEVELING AND PUNCHING

Bodor's self-developed professional bevel laser cutting machine seamlessly integrates nesting software with the operating system, eliminating the need for third-party nesting software. Only one person can complete nesting and cutting operations, achieving one-step processing of various bevels and holes without secondary handling.



4.2 Bodor laser cutting machines

PROCESSING H-BEAMS / I-BEAMS - U10 PRO

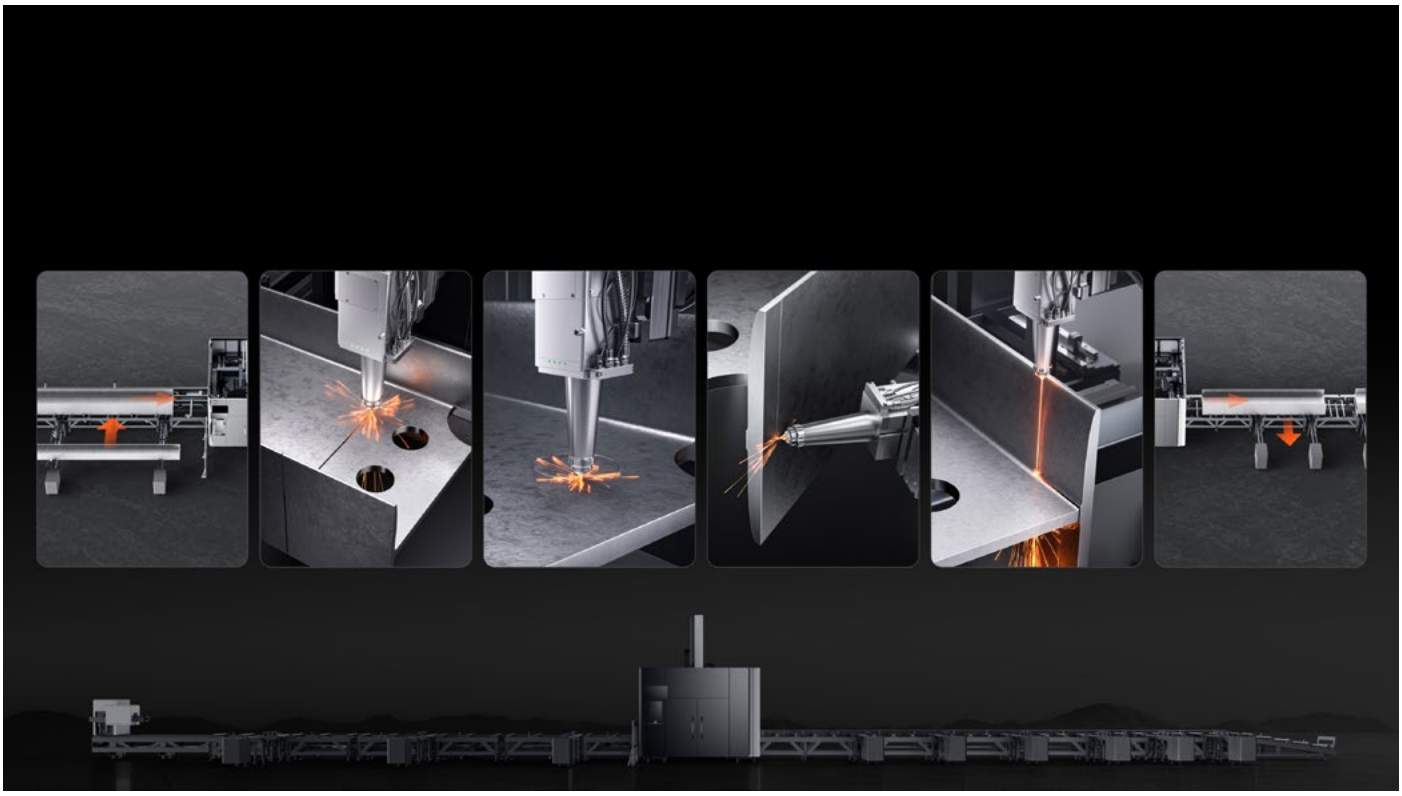


Special structural steel laser cutting machine

BASIC INFO:

Structural steel types	H-beams / I-beams
Laser output power	12000W/ 24000W
Structural steel size range	600mm*300mm-1000mm*600mm
Structural steel length	6200mm-13500mm
Max. machinable weight	6t
Workpiece length	1400mm-13500mm (with full-automatic unloading)

Why choose the U10 Pro:



Notch cutting in one operation

The laser head maintains a specific distance above the workpiece for one-pass notching, doubling the efficiency improvement.

Full-automatic loading and unloading

The material is transported fully automatically from loading to unloading, ensuring a seamless workflow without human intervention.

Mastering six processes in one machine

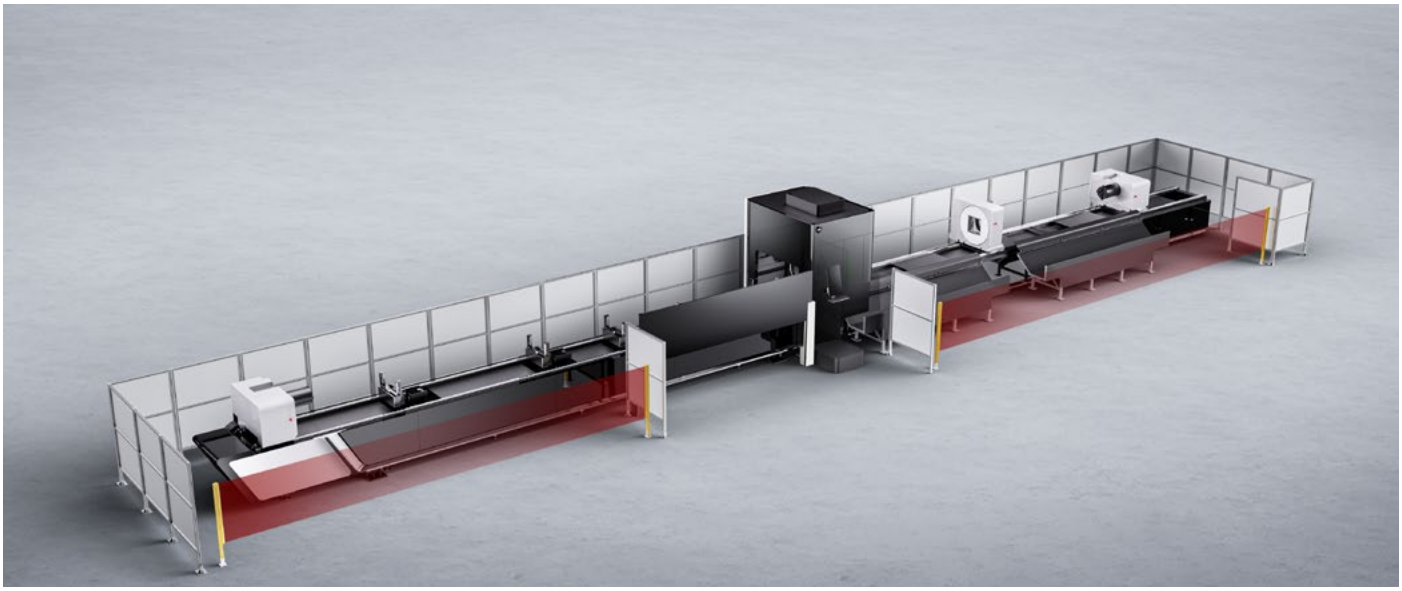
The U10 Pro excels at tasks including auto-loading, punching, notching, beveling, cutting, and auto-unloading, all in one machine, experiencing a remarkable 200% increase in productivity.

Precision with 5-axis linkage cutting

Thanks to the 180° reciprocating motion and coordination of the A-axis, C-axis, X-axis, Y-axis, and Z-axis, the U10 Pro processes all sides of an H-beam part in a single setup, enabling bevel cuts.

4.2 Bodor laser cutting machines

PROCESSING METAL TUBES WITH 0 WASTE - M SERIES



Flagship fiber laser metal tube cutting machine

BASIC INFO:	M2	M3	M5
Laser Output Power	6000W / 3000W / 1500W	6000W / 3000W	12000W / 6000W
Chuck Quantity	4	4	4
Shortest Remaining Material	0	0	0
Effective Square Tube Cutting Scope	□8*8-□230*230mm	□25*25-□356*356mm	□60*60-□530*530mm
Rectangular Tube Edge Length	8mm-230mm	25mm-356mm	60mm-530mm
Effective Round Tube Cutting Diameter	Φ8-Φ230mm	Φ25-Φ356mm	Φ60-Φ530mm
Max. Machinable Tube Length	6500mm	12000mm	12000mm
Max. Chuck Rotating Speed	110r/min	75r/min	40r/min
X/Y-Axis Positioning Accuracy	0.06mm/m	0.06mm/m	±0.05mm/m
X/Y-Axis Repositioning Accuracy	0.04mm	0.04mm	±0.03mm
Max. Tube Weight	300kg	800kg	2500kg

Why choose the M series:

Gas-saving nozzle with steady flow

Engineered to maintain a steady flow with minimal turbulence, enhancing cutting performance and efficiency.

Lightning piercing

Complete the entire piercing process while the cutting head is falling without the need for additional movements and time.

Zero excess material processing

As the M series is equipped with four chucks, the cutting cost is saved without wasting materials. Save on cutting costs while maximizing productivity.

Structural steel cutting

Tailored for structural steel cutting, effortlessly handling angle steel and channel steel without the need for additional installations.

Four-side edge searching

Optimized edge searching method and algorithm guarantee higher cutting precision and better steadiness of the laser cutter.

OPTIONAL FUNCTION RECOMMENDATION:

Excellent bevel cuts

Produce high-precision bevel cuts in +/- 45 degrees, optimizing subsequent assembly procedures and welding performance.

BodorMes system

A production information management system that helps improve efficiency and make production more transparent, visualized, and quantifiable.

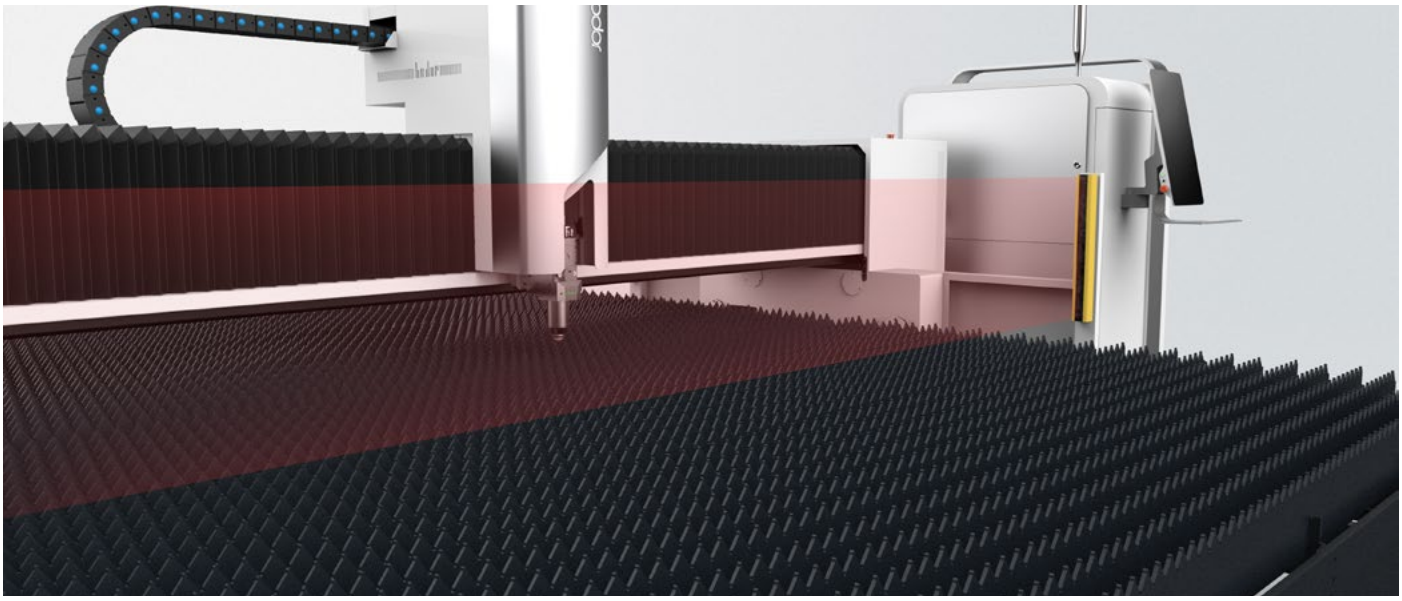
4.2 Bodor laser cutting machines

PROCESSING ULTRA-LARGE METAL SHEETS - G SERIES

Base ultra-large format sheet metal laser cutting machine

MODEL:		WORKING AREA	LASER OUTPUT POWER	POSITIONING ACCURACY	REPOSITIONING ACCURACY	MAX. LINKAGE SPEED
G3000	G3000-12	12500mm*3200mm	60kW / 30kW / 24kW / 12kW	±0.1mm/m	±0.1mm/m	50m/min
	G3000-16	16500mm*3200mm				
	G3000-20	20500mm*3200mm				
	G3000-24	24500mm*3200mm				
	G3000-28	28500mm*3200mm	30kW / 24kW / 12kW			
G4000	G4000-12	12500mm*4200mm				
	G4000-16	16500mm*4200mm				
	G4000-20	20500mm*4200mm				
	G4000-24	24500mm*4200mm				
	G4000-28	28500mm*4200mm				
G5000	G5000-12	12500mm*5150mm				
	G5000-16	16500mm*5150mm				
	G5000-20	20500mm*5150mm				
	G5000-24	24500mm*5150mm				

Why choose the G series:



Ultra-large format & modular bed

Customized ultra-large processing area, meeting the needs of large structural steel processing

Lightning piercing

Complete the entire piercing process while the cutting head is falling without the need for additional movements and time.

Intelligent remnant layout

Upload remnant pictures via mobile for G series to automatically position and nest, maximizing material utilization.

Protective light curtain

Workers are prevented from danger even if they come to the cutting area accidentally.

Overheating offset

Tailored for cutting thick metal sheets, overheating offset technology counteracts the temperature drift to guarantee cutting stability and accuracy.

10kW+ cutting process package

Ensure faster carbon steel oxygen cutting, more gas-saving low-pressure stainless steel nitrogen cutting, and better-quality carbon steel air cutting.

Active obstacle avoidance system

Detect obstacles and automatically avoid potential collisions, ensuring cutting stability and efficiency.

OPTIONAL FUNCTION RECOMMENDATION:

Excellent bevel cuts

Produce high-precision bevel cuts in +/- 45 degrees, optimizing subsequent assembly procedures and welding performance.

BodorMes system

A production information management system that helps improve efficiency and make production more transparent, visualized, and quantifiable.

4.2 Bodor laser cutting machines

PROCESSING ULTRA-LARGE METAL SHEETS - H SERIES

Ultra-large format sheet metal laser cutting machine

MODEL:		WORKING AREA	LASER OUTPUT POWER	POSITIONING ACCURACY	REPOSITIONING ACCURACY	MAX. LINKAGE SPEED
H3000	H3000-12	12500mm*3200mm	60kW / 30kW / 24kW / 12kW	±0.5mm/m	±0.3mm/m	80m/min
	H3000-16	16500mm*3200mm				
	H3000-20	20500mm*3200mm				
	H3000-24	24500mm*3200mm				
H4000	H4000-12	12500mm*4200mm	30kW / 24kW / 12kW			
	H4000-16	16500mm*4200mm				
	H4000-20	20500mm*4200mm				
	H4000-24	24500mm*4200mm				
H5000	H5000-32	32500mm*5150mm	24kW / 12kW			

Why choose the H series:

Separate modular bed

Long-term use without precision decreases.

Ultra-large processing area, meeting the needs of large structural steel processing.

Dynamic dust removal

Real-time smoke exhaust, reducing dust pollution, protecting the health of operators.

Active obstacle avoidance system

Detect obstacles and automatically avoid potential collisions, ensuring cutting stability and efficiency.

Lightning piercing

Complete the entire piercing process while the cutting head is falling without the need for additional movements and time.

10kW+ cutting process package

Ensure faster carbon steel oxygen cutting, more gas-saving low-pressure stainless steel nitrogen cutting, and better-quality carbon steel air cutting.

OPTIONAL FUNCTION RECOMMENDATION:

Excellent bevel cuts

Produce high-precision bevel cuts in +/- 45 degrees, optimizing subsequent assembly procedures and welding performance.

BodorMes system

A production information management system that helps improve efficiency and make production more transparent, visualized, and quantifiable.

Strategic Recommendations

TECHNOLOGICAL INNOVATION AND AUTOMATION

To drive innovation and automation, steel construction companies should invest in advanced manufacturing technologies and automation systems to enhance production efficiency and quality. Strengthening research and development efforts can promote innovation in new materials that offer greater strength, durability, and sustainability to meet the market demand for high-quality and environmentally friendly products.

QUALITY MANAGEMENT AND CERTIFICATION

Companies should ensure that their products meet international standards and customer requirements. Obtaining certifications such as ISO quality management system certification can validate the quality and reliability of its products, thereby enhancing its competitiveness in the market.

MARKET EXPANSION AND CUSTOMER RELATIONS

Expanding markets and customer relations involves actively exploring both domestic and international markets. By establishing long-term and stable partnerships with construction companies, engineering contractors, and other collaborators and participating in major infrastructure projects domestically and abroad, the companies can expand their product sales and market share.

SUPPLY CHAIN MANAGEMENT

Strengthening supply chain management is essential for ensuring stable raw material supply and controllable production cycles. Companies can adopt strategies such as integrated supply chain management, lean supply chain management, and enhanced supply chain transparency. This will help reduce costs and improve delivery speed to meet customers' timely demands.

BRAND BUILDING AND MARKETING PROMOTION

In terms of promotion, companies should enhance their brand visibility and reputation through various channels such as advertising, exhibitions, and online platforms. Establishing good communication and cooperation with customers will facilitate sales growth.

SUSTAINABLE DEVELOPMENT

Sustainable development is a key focus area in which the company should prioritize environmental protection and sustainable practices, such as implementing energy-saving and emission-reduction measures in the production process, improving resource utilization efficiency, and promoting the development of a circular economy.

Conclusions

This whitepaper has provided a comprehensive exploration of the steel construction industry. From exploring the situation of structural steel and its industry to examining the transformative potential of laser cutting technology, each section has contributed to a deeper understanding of this vital sector.

This whitepaper starts with an introduction, unraveling the essence of steel construction and its classification while showing its characteristics. It then pivots towards an in-depth analysis of the industry itself, tracing the intricate supply chain of structural steel and unveiling the latest market trends. Transitioning further, it delves into the current status of structural steel processing, exploring the cutting-edge equipment and software driving efficiency and precision in fabrication.

The upcoming section showcases Bodor Laser solutions. This segment demonstrates the practical applications and advanced machinery of Bodor laser cutting, highlighting the transformative power of advanced technology in steel processing.

Finally, this whitepaper culminates with strategic recommendations in terms of technological innovation and automation, quality management and certification, market expansion and customer relations, supply chain management, brand building and marketing promotion, and sustainable development. This recommendation charts a course toward sustained growth and success in the ever-evolving landscape of steel construction.

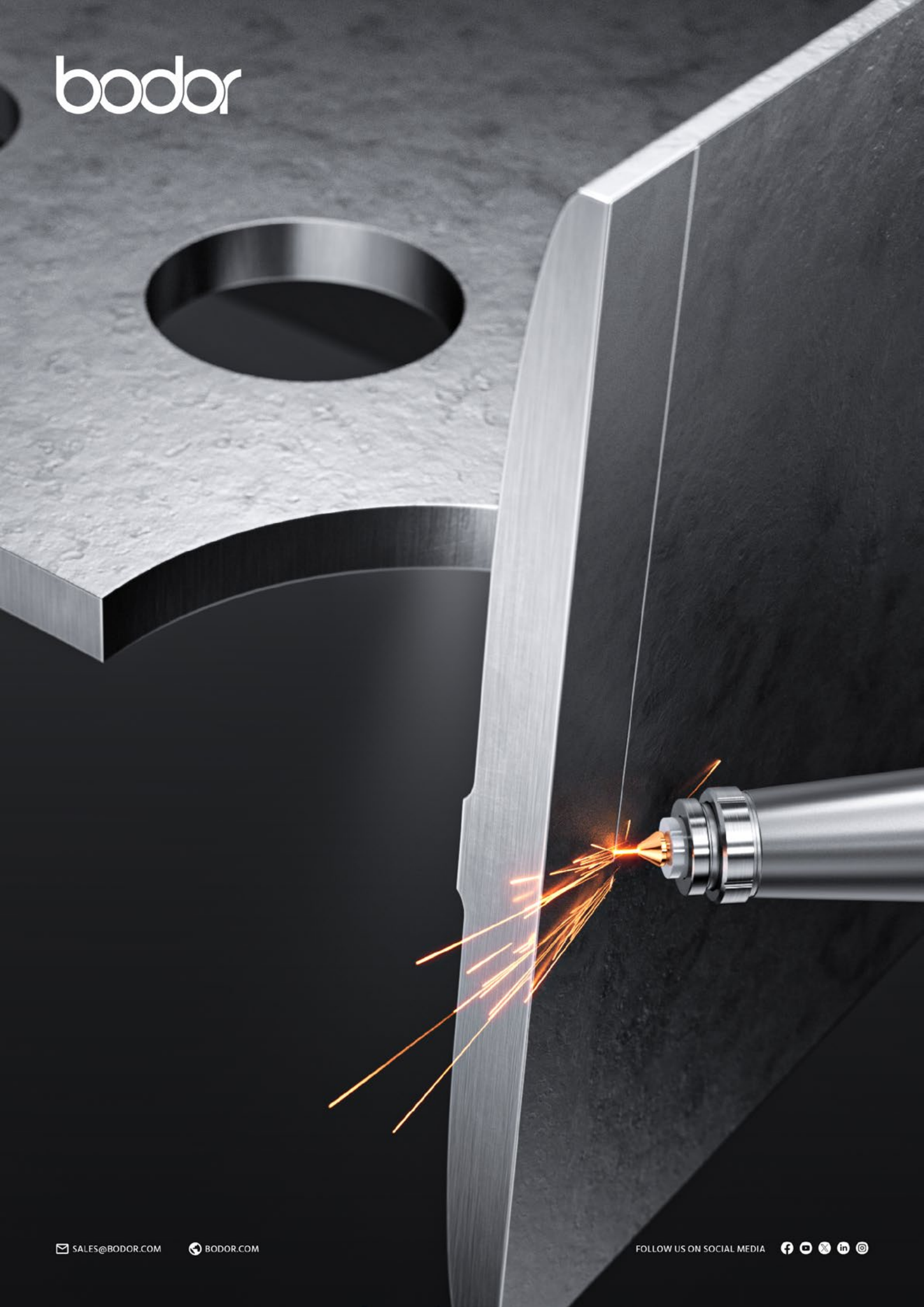
As the steel construction industry continues to evolve, it is imperative for manufacturers to adapt to emerging trends and embrace technological innovations to ensure long-term success and sustainability. By leveraging the insights and recommendations presented in this whitepaper, stakeholders can navigate challenges, capitalize on opportunities, and contribute to the continued growth and advancement of the steel construction industry.

About Bodor

Founded in 2008, Bodor is a leading international laser solution provider, possessing independent intellectual property rights and core technologies. Our mission is to change human life with laser technologies. Aiming to leverage laser applications and create a revolutionary user experience, we assist manufacturing professionals in producing high-quality, cost-effective metal products using our innovative and reliable laser technologies. Bodor's products, including laser cutting and welding machines, find applications in sectors like automobiles, aviation, medical care, electronics, metal processing, and many more.

If you are considering transforming your current production methods and achieving remarkable advancements, CONTACT US (www.bodor.com)!

Explore a wealth of information about our state-of-the-art laser cutting machines and grant us the privilege of offering you in-depth knowledge, captivating demonstrations, and engaging discussions that will help you gain a competitive advantage in the steel construction industry.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