DURSTEEL® 3000C

PRODUCT BROCHURE

Austeel Liners

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Company Expansion and Key Milestones

2003
Establishment of Taihang Metallurgical Machinery Manufacturing Co., Ltd. in Shexian County

2005
Relocated to a self-built factory at Gengle Road

2007
Achieved ISO9002 Quality Management System Certification and ISO14000 Environmental Management System Certification; started producing ceramic-lined wear-resistant composite steel pipes.

2008
Moved to Kaiyuan Avenue in the Development Zone; founded Handan Shiwei Metallurgical Equipment Materials Co., Ltd.

2009
Became a member of the Hardfacing Association

2010
Launched the production of "Cast Bimetallic Wear-Resistant Plates."

2012
Expanded into import and export trade; introduced large-diameter (1200mm) ceramic wear-resistant composite steel pipes; obtained one utility model patent; founded Beijing Dingwei Wear-resistant Technology Co., Ltd. and Shandong Jinwei Wear-resistant Technology Co., Ltd.; developed Ti metal ceramic materials and introduced high polymer polyurethane material production projects

2013
Obtained four utility model patents; launched production of "Nickel-Based Alloy Rollers."

2014
Renamed Handan Shiwei Metallurgical Equipment Materials Co., Ltd. to Handan Shiwei New Material Co., Ltd.; obtained one utility model patent.

2016
Secured one utility model patent

2017
Acquired three utility model patents; recognized as a "High-Tech Enterprise of Hebei Province."

2019
Granted six invention patents.

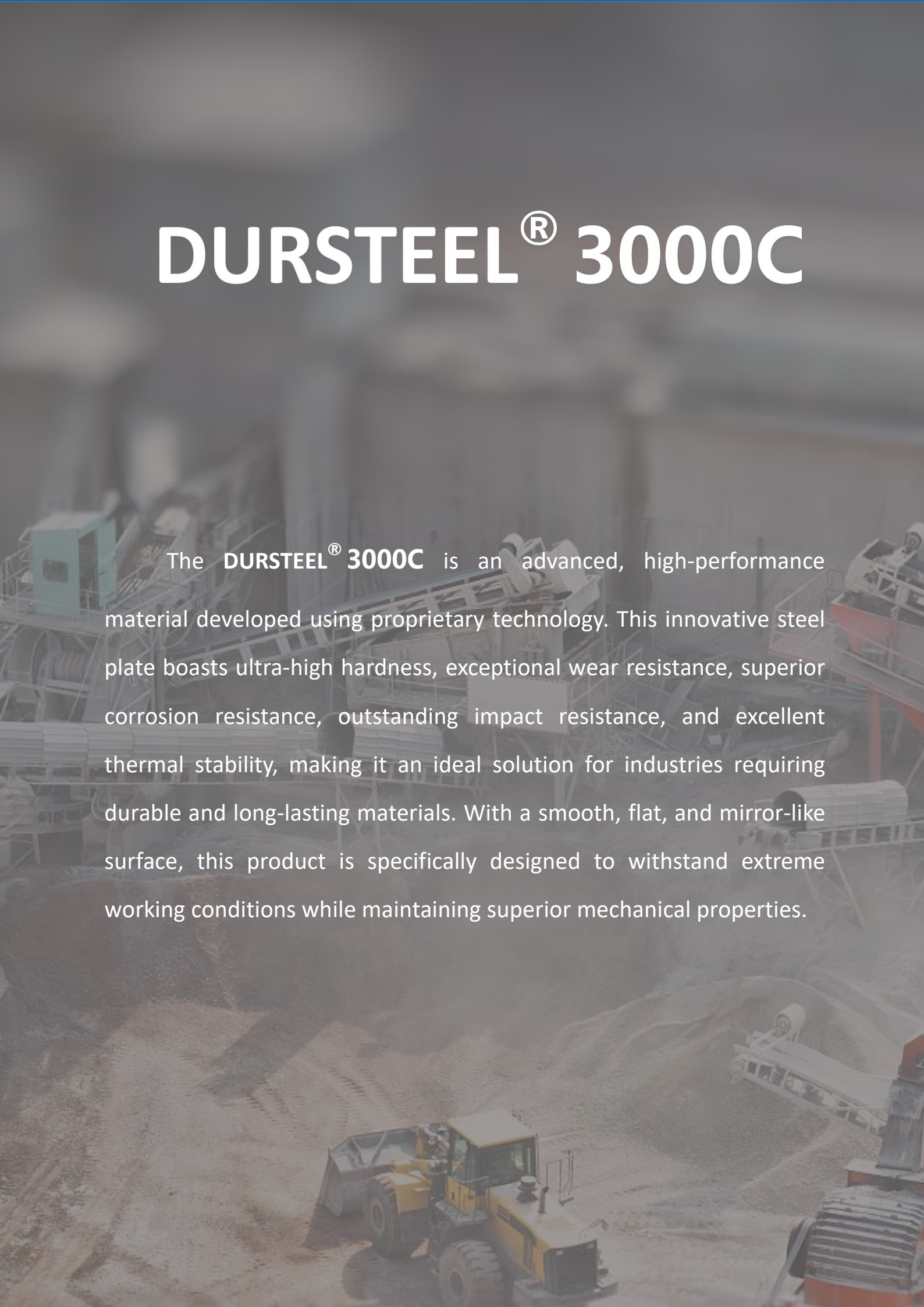
2020
Launched the "Crack-Free Wear-Resistant Plates."

2023
Introduced laser cladding additive manufacturing. Main products include: impeller balancing, ceramic wear-resistant composite steel pipes, cast bimetallic wear-resistant plates, crack-free wear-resistant plates, nickel-based alloy laminar rollers, conveyor rollers, distributing rollers, cone crusher liners, jaw crusher liners, tooth plates, slide plates, hardfacing molds, and cutting picks.

2024
Established presence in Perth, Australia

DURSTEEL® 3000C

The **DURSTEEL® 3000C** is an advanced, high-performance material developed using proprietary technology. This innovative steel plate boasts ultra-high hardness, exceptional wear resistance, superior corrosion resistance, outstanding impact resistance, and excellent thermal stability, making it an ideal solution for industries requiring durable and long-lasting materials. With a smooth, flat, and mirror-like surface, this product is specifically designed to withstand extreme working conditions while maintaining superior mechanical properties.



DURSTEEL® 3000C

Material Composition

Unlike conventional bimetallic wear-resistant plates, **DURSTEEL® 3000C** incorporates a meticulously engineered alloy composition. In addition to traditional wear-resistant elements such as Chromium (Cr), Manganese (Mn), Iron (Fe), Carbon (C), and Silicon (Si), our proprietary formulation enhances performance by integrating Titanium (Ti) and Aluminum (Al), which contribute to its superior hardness, thermal stability, and wear resistance.

Through an innovative high-temperature metallurgical process, the selected alloy elements are precisely blended and uniformly applied to the steel substrate. A high-temperature combustion reaction generates an exothermic fusion, forming an ultra-hard Titanium Carbide (TiC) and Alumina Ceramic (Al_2O_3) wear-resistant layer, which is metallurgically bonded to the base steel plate. This results in an exceptionally durable and long-lasting protective surface, capable of withstanding high-impact loads, extreme temperatures, and abrasive conditions.

DURSTEEL® 3000C

Performance Data

Through extensive testing, we evaluated the hardness, impact toughness, and wear resistance of **DURSTEEL® 3000C**. The results confirm its exceptional durability, making it ideal for demanding industrial applications.

1. Hardness Testing

The test results confirm that the ALNF10 and QNF10 bimetallic composite wear-resistant steel plates exhibit exceptional hardness, achieving values of HRC 64.35 and HRC 67.58, respectively. This places them among the highest-performing wear-resistant steel plates available, ensuring outstanding resistance to abrasion and

	Vickers Hardness HV30					HRC
Item Number	d1/μm	d2/μm	Average	Hardness value		
	268.63	259.72	264.18	796.98		
	265.90	255.82	260.86	817.36		
ALNF10	260.41	266.43	263.42	801.56	809.51	64.35
	257.79	264.92	261.36	814.27		
	258.54	263.18	260.86	817.36		
	243.61	247.96	245.79	920.70		
	242.80	247.59	245.20	925.14		
QNF10	241.22	248.52	244.87	927.60	923.42	67.58
	247.08	243.64	245.36	923.90		
	248.50	243.32	245.91	917.77		

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Performance Data

2. Impact Toughness Testing

Impact toughness is a critical factor in evaluating a material’s resistance to sudden force and mechanical stress. Our test results reveal that the addition of different alloying elements significantly influences impact resistance. Among all tested materials, the ALNF10 **DURSTEEL®3000C** demonstrated the highest impact toughness, reaching 16.15 J/cm^2 , making it the most resistant to impact and mechanical shock.

Impact Toughness Test					
Item Number	d1/μm	d2/μm	Area/cm^2	Impact Energy/J	Impact Toughness
ALNF10	1.010	0.987	0.997	16.1	16.15

DURSTEEL® 3000C

Performance Data

3. Relative Wear Resistance Testing

The comparative wear resistance test demonstrated that ALNF10 **DURSTEEL®3000C** possesses a wear resistance that is higher than that of GTF0, a conventional bimetallic composite wear-resistant plate. This remarkable improvement ensures extended service life and reduced maintenance costs, making ALNF10 an ideal solution for industries facing severe wear challenges.

Item Number		Initial Weight						Average
1	GTF0	45 Steel	74.5943	74.5943	74.5944	74.5943	74.5945	74.5944
		Specimen	78.6624	78.6624	78.6625	78.6626	78.6624	78.6625
2	QNDK10	45 Steel	78.1517	78.1517	78.1517	78.1515	78.1516	78.1516
		Specimen	72.3994	72.3995	72.3994	72.3994	72.3993	72.3994
3	TNXK10	45 Steel	76.6149	76.6148	76.6149	76.6149	76.6149	76.6149
		Specimen	73.2576	73.2574	73.2577	73.2575	73.2576	73.2576
4	YNXK10	45 Steel	76.7336	76.7335	76.7336	76.7335	76.7334	76.7335
		Specimen	71.0931	71.0931	71.0933	71.0934	71.0933	71.0932
5	CRNF10	45 Steel	76.9992	76.9989	76.9989	76.9989	76.9990	76.9990
		Specimen	72.1332	72.1331	72.1330	72.1329	72.1330	72.1330
6	QNXK10	45 Steel	75.7968	75.7967	75.7968	75.7968	75.7969	75.7968
		Specimen	74.3401	74.3401	74.3402	74.3399	74.3400	74.3401
7	ALNF10	45 Steel	75.6243	75.6243	75.6242	75.6243	75.6244	75.6243
		Specimen	75.9095	75.9094	75.9095	75.9094	75.9095	75.9095
8	QNF10	45 Steel	76.3836	76.3836	76.3837	76.3837	76.3836	76.3836
		Specimen	68.7844	68.7843	68.7843	68.7844	68.7845	68.7844
9	YNF10	45 Steel	77.6231	77.6229	77.6232	77.6231	77.6232	77.6231
		Specimen	74.8281	74.8280	74.8279	74.8280	74.8279	74.8280

Item Number		Weight After First Wear						Average	Difference	Relative Wear Resistance Test
1	GTFO	45 Steel	74.5926	74.5927	74.5928	74.5926	74.5927	74.5927	0.0017	0.6131
		Specimen	78.6595	78.6597	78.6601	78.6595	78.6598	78.6597	0.0027	
2	QNDK10	45 Steel	78.1497	78.1498	78.1500	78.1499	78.1498	78.1498	0.0018	0.2671
		Specimen	72.3927	72.3926	72.3927	72.3927	72.3926	72.3927	0.0067	
3	TNXK10	45 Steel	76.6127	76.6128	76.6129	76.6130	76.6128	76.6128	0.0020	0.9107
		Specimen	73.2554	73.2554	73.2553	73.2553	73.2552	73.2553	0.0022	
4	YNXK10	45 Steel	76.7318	76.7319	76.7317	76.7317	76.7319	76.7318	0.0017	0.8113
		Specimen	71.0911	71.0910	71.0911	71.0912	71.0912	71.0911	0.0021	
5	CRNF10	45 Steel	76.9974	76.9973	76.9973	76.9974	76.9973	76.9973	0.0016	2.1579
		Specimen	72.1322	72.1323	72.1324	72.1322	72.1323	72.1323	0.0008	
6	QNXK10	45 Steel	75.7942	75.7941	75.7941	75.7942	75.7940	75.7941	0.0027	1.1167
		Specimen	74.3377	74.3376	74.3375	74.3377	74.3378	74.3377	0.0024	
7	ALNF10	45 Steel	75.6222	75.6223	75.6223	75.6222	75.6225	75.6223	0.0020	1.7857
		Specimen	75.9083	75.9083	75.9084	75.9084	75.9083	75.9083	0.0011	
8	QNF10	45 Steel	76.3819	76.3820	76.3818	76.3818	76.3819	76.3819	0.0018	1.3968
		Specimen	68.7832	68.7831	68.7830	68.7831	68.7832	68.7831	0.0013	
		45 Steel	77.6216	77.6215	77.6216	77.6215	77.6214	77.6215	0.0016	1.5192

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Performance Data

Item Number			Weight Before the Second Wear Test					Average
1	GTFO	45 Steel	74.5926	74.5927	74.5928	74.5926	74.5927	74.5927
		Specimen	78.6595	78.6597	78.6601	78.6595	78.6598	78.6597
2	QNDK10	45 Steel	78.1475	78.1476	78.1476	78.1475	78.1475	78.1475
		Specimen	72.3869	72.387	72.3871	72.3871	72.387	72.3870
3	TNXK10	45 Steel	76.6127	76.6128	76.6129	76.613	76.6128	76.6128
		Specimen	73.2554	73.2554	73.2553	73.2553	73.2552	73.2553
4	YNXK10	45 Steel	76.7318	76.7319	76.7317	76.7317	76.7319	76.7318
		Specimen	71.0911	71.091	71.0911	71.0912	71.0912	71.0911
5	CRNF10	45 Steel	76.997	76.9968	76.9968	76.9967	76.9967	76.9968
		Specimen	72.1323	72.1322	72.1323	72.1323	72.1323	72.1323
6	QNXK10	45 Steel	75.7942	75.7941	75.7941	75.7942	75.794	75.7941
		Specimen	74.3377	74.3376	74.3375	74.3377	74.3378	74.3377
7	ALNF10	45 Steel	75.6218	75.622	75.6221	75.6221	75.622	75.6220
		Specimen	75.9084	75.9083	75.9084	75.9083	75.9083	75.9083
8	QNF10	45 Steel	76.3816	76.3817	76.3816	76.3817	76.3817	76.3817
		Specimen	68.7831	68.7831	68.7831	68.7831	68.7832	68.7831
9	YNF10	45 Steel	77.6216	77.6215	77.6216	77.6215	77.6214	77.6215
		Specimen	74.8269	74.8270	74.8269	74.8270	74.8269	74.8269

Item Number			Weight After the Second Wear Test					Average	Difference	Relative Wear Resistance Test
1	GTFO	45 Steel	74.5918	74.5919	74.5917	74.5916	74.5916	74.5917	0.0010	0.8889
		Specimen	78.6588	78.6587	78.6586	78.6586	78.6585	78.6586	0.0011	
2	QNDK10	45 Steel	78.142	78.1419	78.1420	78.1419	78.142	78.1420	0.0056	1.2740
		Specimen	72.3826	72.3827	72.3826	72.3827	72.3826	72.3826	0.0044	
3	TNXK10	45 Steel	76.6087	76.6087	76.6087	76.6087	76.6088	76.6087	0.0041	1.4406
		Specimen	73.2524	73.2526	73.2524	73.2524	73.2525	73.2525	0.0029	
4	YNXK10	45 Steel	76.7304	76.7305	76.7305	76.7305	76.7303	76.7304	0.0014	0.4789
		Specimen	71.0882	71.0883	71.0884	71.0882	71.0883	71.0883	0.0028	
5	CRNF10	45 Steel	76.994	76.9941	76.9941	76.994	76.9941	76.9941	0.0027	2.6863
		Specimen	72.1312	72.1312	72.1313	72.1313	72.1313	72.1313	0.0010	
6	QNXK10	45 Steel	75.7915	75.7916	75.7915	75.7916	75.7915	75.7915	0.0026	1.9545
		Specimen	74.3364	74.3363	74.3364	74.3362	74.3364	74.3363	0.0013	
7	ALNF10	45 Steel	75.6155	75.6154	75.6154	75.6153	75.6154	75.6154	0.0066	1.9075
		Specimen	75.9048	75.9048	75.9049	75.9049	75.905	75.9049	0.0035	
8	QNF10	45 Steel	76.3803	76.3804	76.3804	76.3804	76.3804	76.3804	0.0013	1.8286
		Specimen	68.7824	68.7824	68.7823	68.7825	68.7825	68.7824	0.0007	
9	YNF10	45 Steel	77.6189	77.6188	77.6189	77.6188	77.6188	77.6188	0.0027	1.2072
		Specimen	74.8247	74.8247	74.8246	74.8248	74.8248	74.8247	0.0022	

DURSTEEL® 3000C

Applications

- **Mining** – Conveyor systems, chutes, hoppers, and liners **Metallurgy** – Blast furnace linings, sintering equipment, and wear-resistant components
- **Power Generation** – Coal pulverizers, ash handling systems, and boiler components
- **Building Materials** – Cement plants, brick and tile manufacturing, and aggregate handling
- **Glass Manufacturing** – Glass kilns, forming tables, and mold components
- **Maritime & Shipping** – Cargo handling equipment, deck plating, and offshore structures