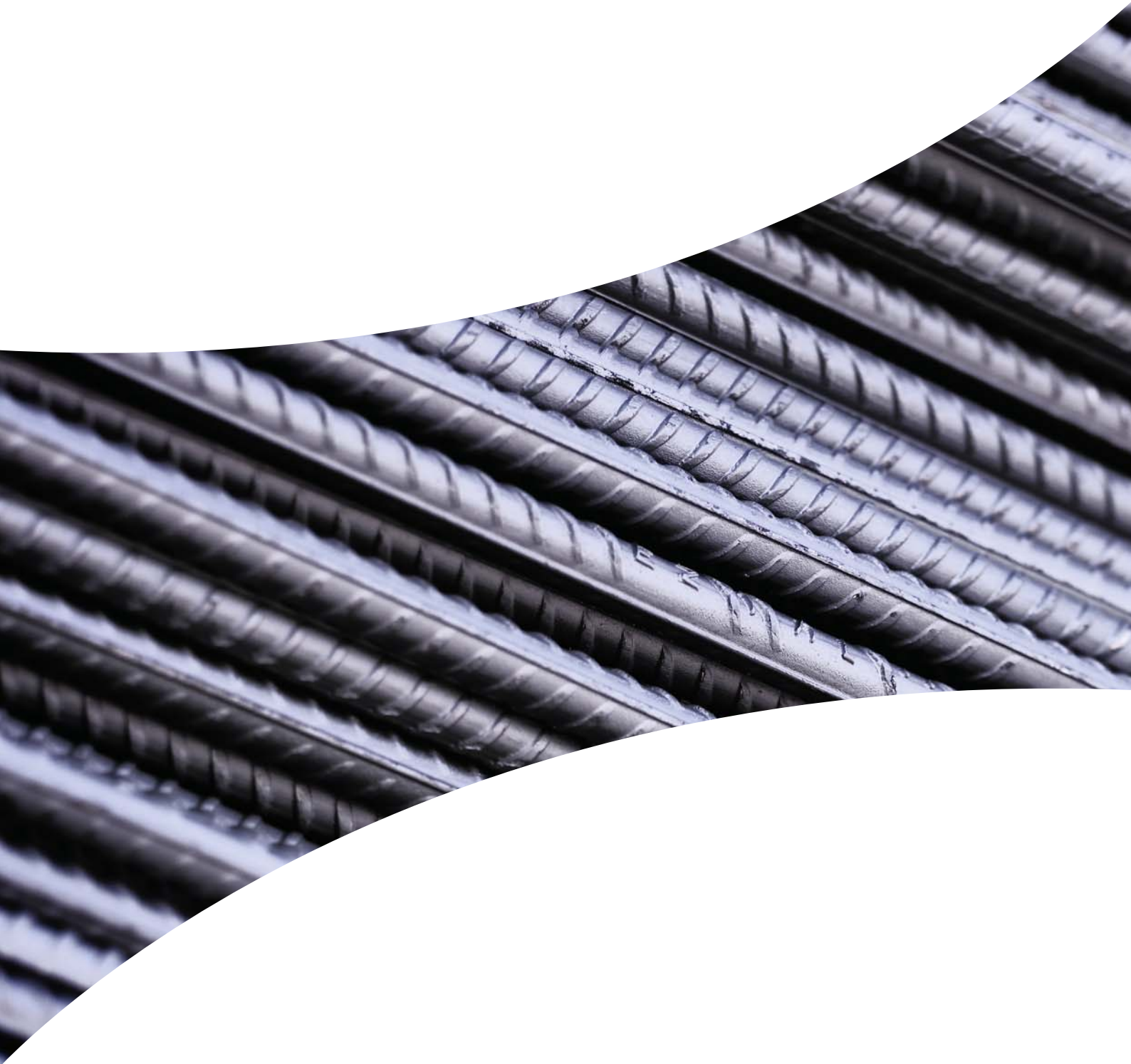


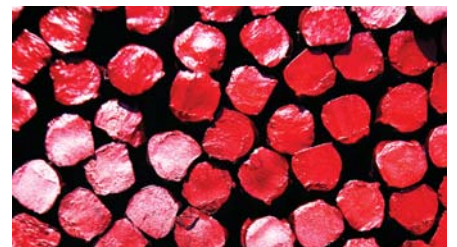
# LONG PRODUCTS CATALOGUE





# CONTENTS

GROWTH OF A GLOBAL STEELMAKER	5
FULLY INTEGRATED STEELMAKING	6
PRODUCTS THAT PERFORM	9
STEEL THAT MAKES THE GRADE	10
HEALTHY PEOPLE, HEALTHY PLANET	13
STEEL IN ACTION	14
UNLIMITED HORIZONS	16
CLOSER TO CUSTOMERS	18
TECHNICAL SPECIFICATIONS	20
EZZ STEEL AT A GLANCE	26





5.3 million tons per year

# GROWTH OF A GLOBAL STEELMAKER

**Ezz Steel** is the leading steel producer in the Middle East, with a growing presence in markets around the world. The company's combination of high-quality products and unrivalled customer service has strengthened its reputation as a trusted supplier to customers from the USA and Canada to Europe and China.



Established by the acquisition of Al Ezz Steel Rebars (ESR) in Al-Ezz Dekheila Steel (formerly, Alexandria National Iron and Steel) in 2000, Ezz Steel unites the long-standing expertise of these two companies in a progressive, highly efficient steelmaking operation – firmly focused on meeting the demands of today's global marketplace.

Modern, purpose-built and fully integrated plants in Alexandria, Suez, Sadat City and 10th Ramadan City produce a wide range of rebar, wire rod, wire mesh and flat steel products to international quality standards.

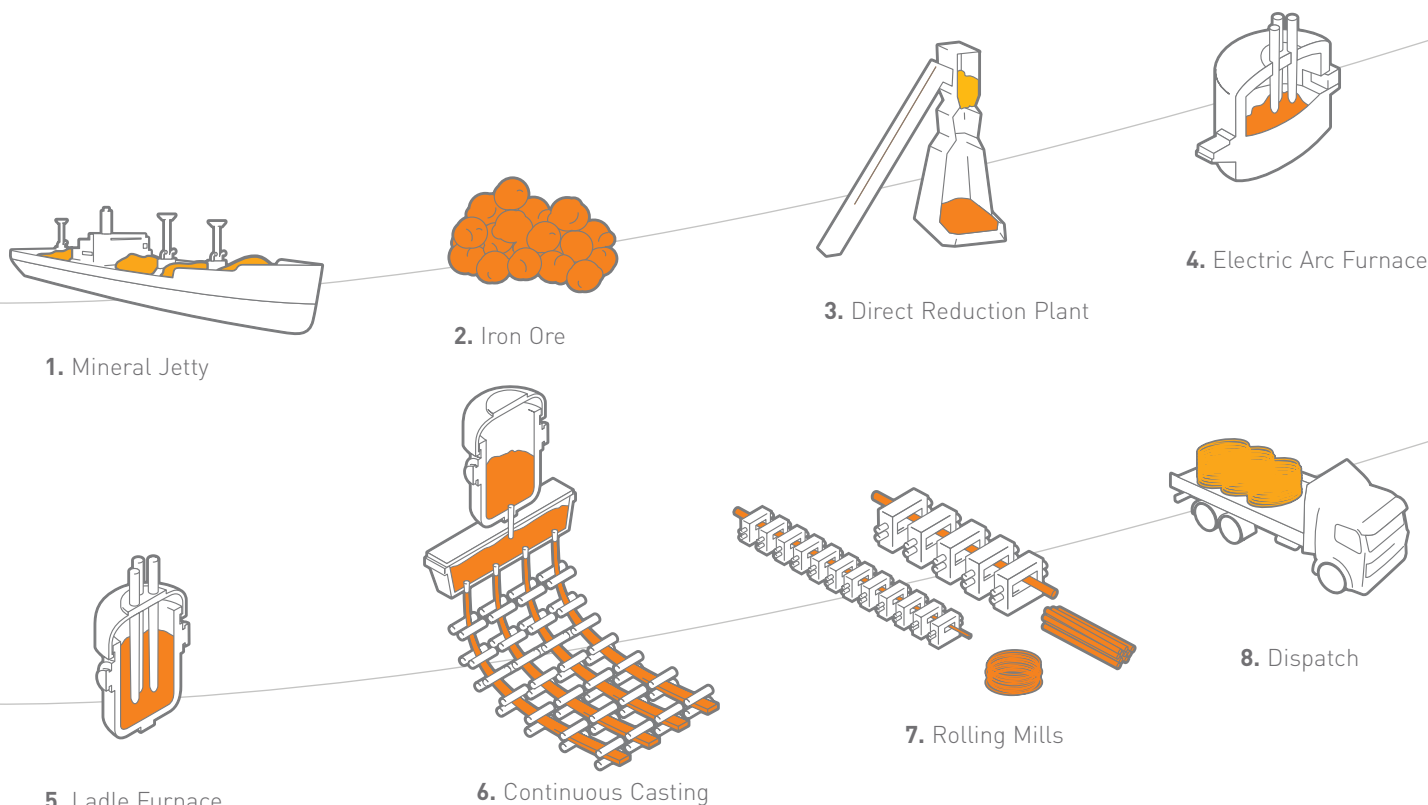
Continuous investment has built the company's overall capacity to 5.3 million tons per year, including over three million tons of long products.

Ezz Steel has built its capacity steadily, year-on-year, in line with increasing customer demand. Today it is a company of dedicated professionals, committed to quality products, efficient processes and continuous development. The company has a policy of ongoing investment in its plants and people to ensure that its capabilities keep pace with evolving customer demand.

Such dedication to improvement is delivering continued growth as more customers from local, regional and worldwide markets discover the exceptional steel and service offered by Egypt's premier steelmaker.

# FULLY INTEGRATED STEELMAKING

Ezz Steel operates state-of-the-art steel plants, specially designed for maximum efficiency. All processes are integrated to create a streamlined flow of material, from raw material delivery through to storage and dispatch of the finished product. Such intelligent plant integration assures customers of uncompromising levels of quality, efficiency, accuracy and productivity.



Ezz Steel has one of the highest levels of productivity in the world, at over 800 tons per employee per year.

At Ezz Steel's long products plants, raw material processing, steelmaking, casting, rolling and finishing operations are all part of a continuous, computer-controlled process. Highly trained personnel in fully automated control pulpits monitor steel production from beginning to end, ensuring that steel is always manufactured in line with strict quality standards.

## Raw materials

Iron ore in the form of oxide pellets or lump ore is delivered by sea from Brazil, Canada and Sweden to the nearby port of Dekheila. On arrival, it is transported by a system of belt conveyor to the Direct Reduction Plant (DRP).

## Direct reduction plant

Ezz Steel operates three direct reduction plants (DRP) from MIDREX Technologies Inc. with a combined output of around 3.2 million tons/year, this equipment converts iron ore into iron metal with low levels of residual elements. Using such high-purity raw materials gives Ezz Steel greater control over the metallurgical properties of its steel, which ultimately helps to ensure the consistent quality of the end product.

Ezz Steel's direct reduction plants achieve exceptionally high productivity levels – an achievement recognized by MIDREX through the award of their 'Recognition of Achievement' certificate. Up to 90% of the steelmaking furnace charge is direct-reduced iron, while the remainder coming from high-grade scrap steel.

## Steelmaking

Molten steel is produced in ultra high-power Electric Arc Furnaces (EAF), each with a capacity of 80 tons. These furnaces run with continuous charging of Direct Reduced Iron (DRI). The molten steel is next transferred to the ladle furnaces using a technique designed to reduce slag carry over, thereby maintaining steel cleanness. Here, the control on additions of alloying elements, gas stirring and heating in the ladle furnace result in precise chemical composition required for each grade of steel and low levels of inclusions.

The steel is then cast into billets in multi-strand continuous casting machines, capable of casting speeds up to 3.2m/min. The billets produced measure 16 meters long with a cross section of 130mm x 130mm.

LOCATION OF PLANTS	PRODUCTS	CAPACITY	COMMISSION YEAR
Alexandria	Rebar, Wire Rod	1.7mt	1986
Sadat City	Rebar	1.0mt	1996
10th of Ramadan City	Rebar, Wire Rod	0.4mt	1993
		<b>3.1mt</b>	

### Rolling and finishing

Billets from the casters pass directly into one of Ezz Steel's long-product multi-stand rolling mills, producing either bar or rod. The billets are reheated in a furnace before being rolled into rods or bars with diameters ranging from 5.5mm to 40mm (see page 8). A controlled cooling system and continuous monitoring equipment ensure that rods and bars are produced with excellent surface quality and dimensional accuracy.

### In-process and final quality inspection

Ezz Steel's quality department apply a strict procedure of quality inspection along the entire process route. Starting with detailed inspections of the raw materials, quality is then monitored

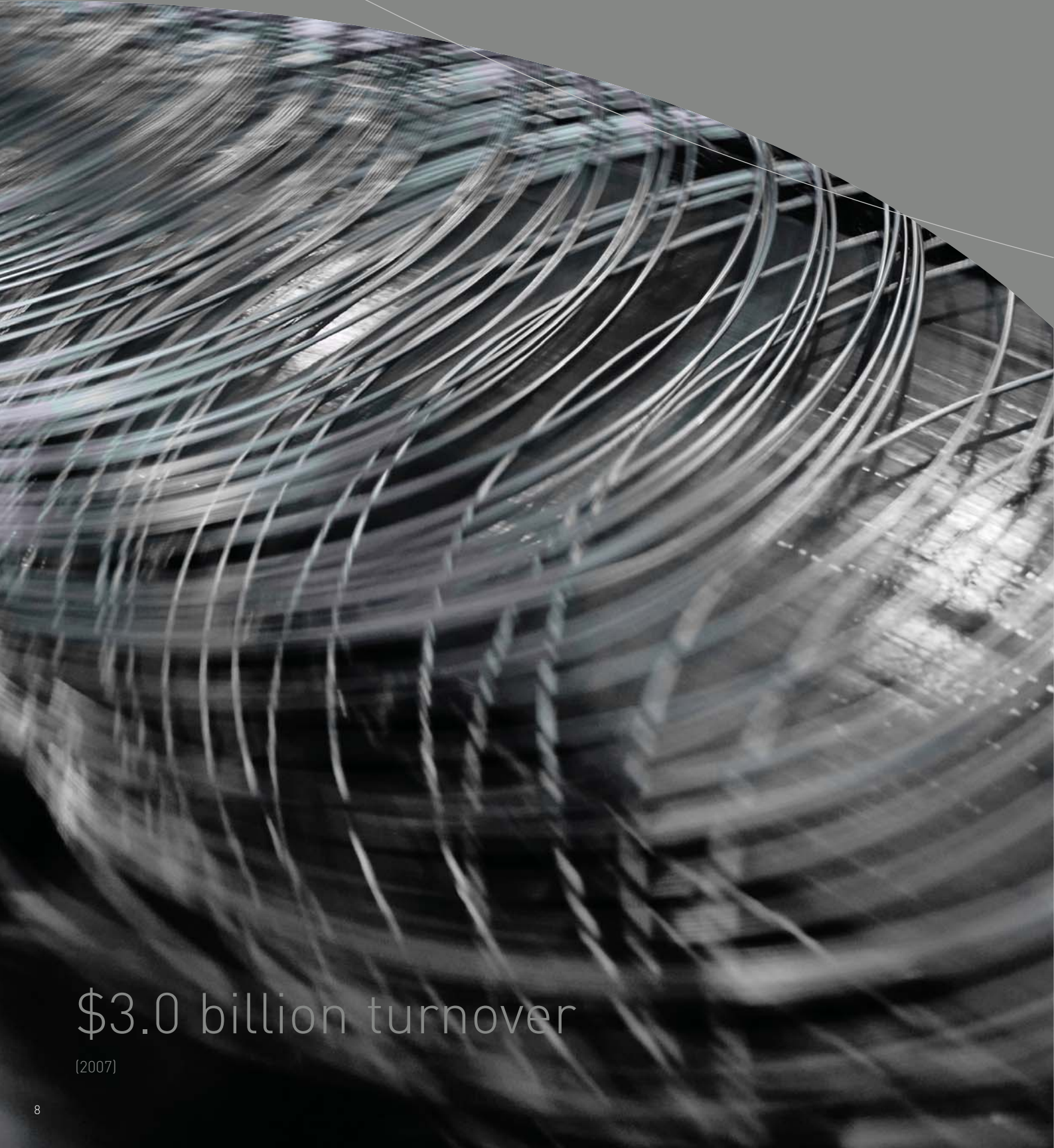
through in-process inspections of semi-finished product (billet) and concludes with the final inspection of finished products. This procedure guarantees that only material that meets the required quality levels is approved for further processing.

### Storage and dispatch

To complete the fully integrated process, dispatch yards are located at the end of the rod and bar mills, minimizing handling of the end products. Weigh bridges are also located in this area, and Ezz Steel plants are strategically situated for excellent road and sea links – facilitating speedy delivery of all products to any destination, within the region or worldwide.

### The future

Continued investment is at the heart of Ezz Steel's plans for ongoing improvement in its steel products. Ezz Steel is committed to investing in only the best new technology, processes and people. This growth strategy will enable Ezz Steel to increase its capacity in line with its own ambitious targets as demand continues to rise.



	DIAMETER	LENGTHS	WIDTHS	COIL WEIGHT
Rebar	10mm to 40mm	6m to 24m	-	-
Wire Rod	5.5mm to 14mm	-	-	2t
Welded Wire Mesh	5mm to 12mm	12m (max)*	2.8m (max)*	-

\*pitches and free ends as per requirements

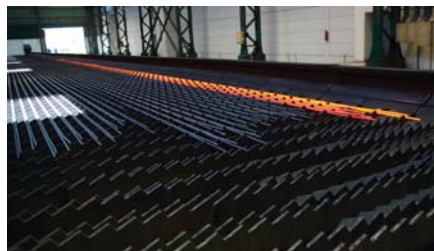
\$3.0 billion turnover

(2007)



# PRODUCTS THAT PERFORM

Ezz Steel manufactures an impressive range of long-product sizes and grades to meet the requirements of a wide variety of end applications. Its products are available in the size ranges shown opposite.



## Product development

As new standards emerge and customer demands evolve, Ezz Steel's robust program of product development enables it to keep pace with the ever-changing requirements of its many markets. Its highly skilled and experienced technical teams have dramatically increased the number of grades produced in recent years, and the company is constantly extending its product range, both in terms of sizes and grades.

Ezz Steel now manufactures more than 50 steel grades that meet many challenging international standards and customer specifications.

Ezz Steel is proud of the capability it has developed to produce low-carbon grades with exceptional mechanical properties that provide excellent welding characteristics. In addition, Ezz Steel's wire rod mill is working towards the production of high-grade, extra-clean steel qualities that will offer improved drawing performance.

For comprehensive information on Ezz Steel's full range of long products, please refer to the Technical section of this catalogue (pages 20-25).

# STEEL THAT MAKES THE GRADE

The consistent product quality achieved by Ezz Steel is highly regarded by customers around the world. Such recognition is the result of years of experience and a policy of continuous improvement, combined with a Quality Management System developed according to ISO 9001:2000.

Ezz Steel quality assurance has won the respect of the international steel industry and offers complete peace of mind to customers.

### **Purity from the start**

Achieving consistent steel quality begins with the selection of high-grade raw materials, and Ezz Steel uses up to 90% direct-reduced iron. The remainder consists of high-quality scrap, which results in very low levels of impurities in the finished product.

### **Robust analysis**

Rigorous testing takes place throughout the steelmaking and rolling processes to ensure that quality standards are maintained. During steelmaking, a series of samples is taken for testing in Ezz Steel's advanced laboratories, where the latest analytical equipment and techniques are used to verify each heat's precise chemical composition. The test results are fed immediately back to the plant, so that sensitive adjustments can be made to correct steel composition where necessary.

The company's well-equipped laboratories also conduct exacting mechanical tests on samples of the finished product, guaranteeing their compliance with relevant standards.

A final quality check is conducted in the dispatch yard before the product is shipped to customers.

### **Rapid rectification**

In the rare event of a quality failure at any stage in the production process, Ezz Steel takes immediate action to rectify the problem and ensure that it does not recur. Similarly, if any steel fails during processing at a customer's plant, Ezz Steel will investigate the problem to identify and tackle the root cause. Any quality issues that arise are always used as a catalyst for improving the company's processes and practices.

### **Approvals and certification**

Steel from Ezz Steel meets – and in many cases exceeds – the steel industry's quality and efficiency benchmarks, and complies with the most demanding national, international and customer standards. Ezz Steel meets standards set by:

- Egypt
- ISO
- France
- Germany
- Italy
- Spain
- UK (CARES)
- USA





6000 employees



# HEALTHY PEOPLE, HEALTHY PLANET

Environmental protection is a passion at Ezz Steel. Investing in sustainable development is as much a priority as investing in steel production improvements. The company's environmental management system is ISO 14001 accredited and its safety management system is OHSAS 18001 certified – both recognized as among the highest certification standards in the world.

## Environmental investment

Ezz Steel has invested extensively in environmental protection at its plants, ranging from filters to purify emissions to the maintenance of large green spaces at all sites. All of its steel plants meet internationally recognized environmental and occupational health and safety standards, with very tight controls over gaseous, dust and other airborne emissions, as well as liquid effluents, noise levels and even electrical pollution that could affect national electric grid and other consumers.

Solid waste is recycled at all plants, and each has its own sophisticated water treatment facilities for recycling all water used on site.

## Well protected

Ezz Steel has an uncompromising approach to the health and safety of its employees and visitors. All employees receive comprehensive and regular training to ensure that they work on site in the safest possible manner every day, and that environmental awareness is foremost in their minds.



# STEEL IN ACTION

It's hard to imagine a world without steel. Without the nails, bolts and fasteners that hold together everything from our cars to our cookers; without the springs in our chairs and beds, the electrical wires in our homes, or the keys for our doors; and without some of today's greatest construction achievements, from long-span bridges to high-rise buildings.

Steel is an integral part of our lives – Ezz Steel can be found all around us in an increasing range of components and structures.

## Varied applications

Ezz Steel rebar and wire rod is employed across the Middle East region and worldwide in a variety of structural, engineering and mechanical applications, including:

- Concrete reinforcement bars for foundations and structural supports
- Nails, bolts and tacks
- Welding tools
- Electrical components
- Furniture springs
- Drawn and galvanized wire
- Wire mesh



## Major projects

Steel from Ezz Steel is an essential component in myriad projects around the world, including many impressive large-scale buildings. Here's just a sample of some of the prestigious structures in which Ezz Steel has played a crucial part:

### Suez Canal Hanging Bridge

Connecting Africa and Asia, the 9.5km-long Suez Canal Bridge sweeps across the water south of Kantara City. Its obelisk-shaped towers soar to a height of 70 meters above water level, providing the anchors for cables supporting a 20-meter-wide roadway with a carrying load of 90 tons. The strength in these immense concrete towers is provided by 60,000 tons of reinforcing steel bars from Ezz Steel.



Suez Canal Hanging Bridge

### Mubarak Pump Station, Toshka

One of the largest pump stations in the world, the Mubarak Station pumps water from Lake Nasser to the Sheikh Zayed Canal for irrigation in the North Wadi area. Constructed at a cost of LE1.5 billion, the facility was built using 28,000 tons of rebar from Ezz Steel. The project required special sizes and lengths of rebar that only Ezz Steel could supply.



Mubarak Pump Station, Toshka

**Bibliotheca Alexandrina  
(Alexandria Library)**

The stunning new Alexandria Library creates a bold landmark on the Mediterranean coast, extending 37 meters above ground and a further 18 meters below. Designed to revive the old Bibliotheca Alexandrina – one of the Seven Wonders of the World – it provides 121,000 square meters of floor space,

houses one of the largest collections of knowledge in the world, and cost \$220 million to build. Forming the extensive foundations of this ambitious structure are 20,000 tons of rebar supplied exclusively by Ezz Steel.



# UNLIMITED HORIZONS

Ezz Steel is the dominant steel supplier for Egypt and is a leading supplier to the Middle East region. Now, thanks to its ongoing expansion, continued investment and well-recognized quality standards, the company has become firmly established as a significant player in the global steel marketplace.

## Global reach

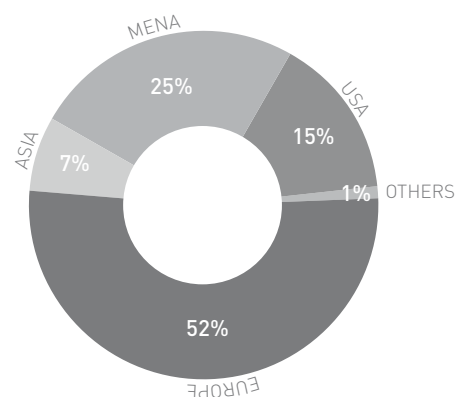
Ezz Steel has developed very strong relationships with many North American customers, built up since it first began supplying steel to the US and Canada in 1994. The importance of Ezz Steel to this market has grown over the years, as local North American steelmakers struggle to keep up with demand.

Across Europe too, Ezz Steel is in demand. The company exports its products to countries throughout the European Union, including the UK, Germany, Italy, Belgium and Spain. Steel from Ezz Steel offers comparable quality to that of many European suppliers, and increasing numbers of European customers are realizing the benefits of Ezz Steel's consistent quality, reliable supply and competitive prices.

Closer to home, Ezz Steel supplies steel to many African and Arabic countries. One of Ezz Steel's largest markets is Saudi Arabia, where many of the country's cities are geographically closer to Ezz Steel than they are to its own domestic steel plants.

Ezz Steel assures customers of efficient and timely deliveries to markets around the world.

The chart below illustrates the breakdown of export sales around the world for the last 3 years.



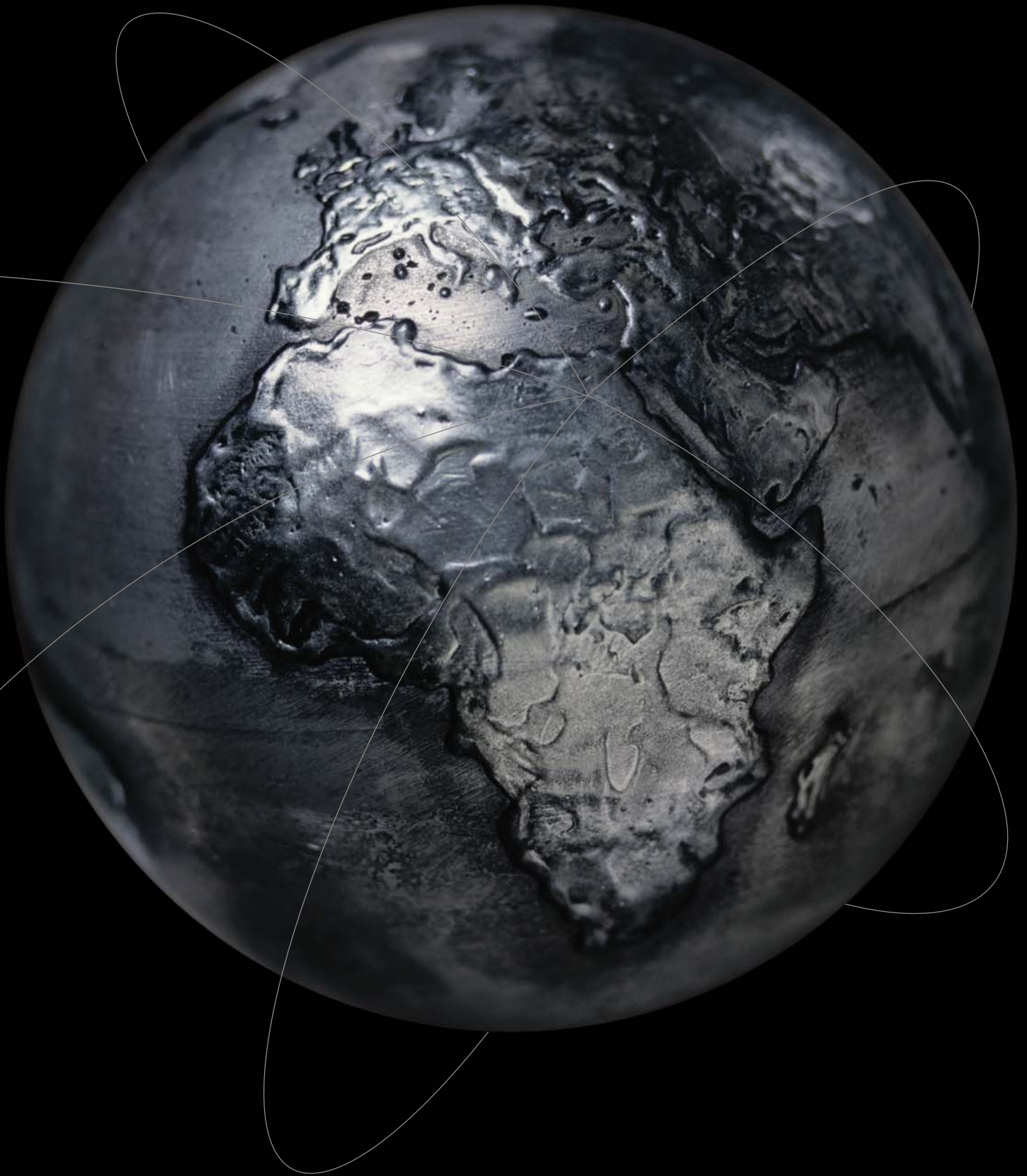
## Strategic location

All Ezz Steel plants are ideally located close to major ports at Alexandria and Suez. Steel is easily transported to these international distribution hubs via major highways or waterways. This means that Ezz Steel products are very quickly transferred from the company's steelmaking operations to ports for immediate shipment overseas.



\$768 million export sales

(2007)



# CLOSER TO CUSTOMERS

The quality of Ezz Steel products is matched only by its exceptional standards of customer service. The company seeks to develop long-term relationships with all customers and end users, regardless of their size or location.

Ezz Steel prides itself on building customer relationships based on trust and mutual understanding.

## **Relationships that work**

Ezz Steel works in partnership with customers to understand their specific requirements and to ensure that customers fully understand its capabilities. The company conducts regular customer satisfaction surveys to gauge customer opinion of the service it provides.

With offices in Egypt and the UK, Ezz Steel is well positioned to keep in touch with the needs of its customers and to respond rapidly to requests and queries.

## **Expert advice**

Ezz Steel specialists provide expert advice to customers on specifying precisely the right steel to meet their individual requirements. Once an initial

customer enquiry is received, the company conducts a thorough technical study before advising the customer of feasibility and availability. Ezz Steel's efficient processes mean it can offer excellent stock availability and short lead times.

## **Ongoing support**

The service from Ezz Steel does not end with the delivery of its products. Support is always available from sales teams, and the company's technical specialists regularly visit customers around the world to provide technical support and training, and to assess how Ezz Steel products are performing. These visits help to forge closer links with customers. They also enable Ezz Steel to investigate any difficulties that customers may experience from time to time, and offer rapid solutions to ensure that Ezz Steel continues to offer the best possible performance.

## **Dedicated professionals**

Ezz Steel's skilled and committed workforce is fundamental to the high levels of customer service, support and product quality that the company is able to maintain. From sales teams to pulpit controllers and technical liaison staff, everyone has a key role to play.

Many key personnel even live on site in Ezz Steel's own residential complex, providing 24-hour cover so that any issues can be resolved swiftly and effectively. Sales and technical staff also attend training courses run by the world's top educational organizations, ensuring that they remain up to date with trends in the industry and are well equipped to service Ezz Steel's growing global customer base.



# TECHNICAL SPECIFICATIONS

## 1 Rebar and coil specifications

#	Standards	Country	Grade	Sizes			
				Coils		Bars	
				Plain	Deformed	Plain	Deformed
1	ES 262 / 2000	Egypt	ES 240 ES 360 ES 400	6 ~ 14	10 ~ 12 10 ~ 12	10 ~ 40	10 ~ 40 10 ~ 40
2	BS 4449 / 1997*	UK	BS 460B				10 ~ 32
3	BS 4449 / 1997	UK	BS 250	8 ~ 12		10 ~ 16	
4	BS 4449 / 2005*	UK	BS 500B				10 ~ 32
5	ASTM A 615 A / A 615 M / 2000	USA	ASTM 40 (300) ASTM 60 (420)		8 ~ 12		10 ~ 32 10 ~ 40
6	ASTM A 706 A / A 706 M / 1998	USA	ASTM 60 (420)				10 ~ 40
7	ASTM A 615 A / A 615 M / 2005	USA	ASTM 40 (300) ASTM 60 (420)		8 ~ 12		10 ~ 32 10 ~ 40
8	NF A35 - 016 / 1986	France	Fe E 400		8 ~ 12		10 ~ 40
9	NF A35 - 016 / 1996	France	Fe E 500-2 Fe E 500-3		8 ~ 12		10 ~ 32 10 ~ 40
10	UNI FEB 44K / 1985*	Italy	FEB 44K		8 ~ 12		10 ~ 25
11	UNE 36068 / 1994*	Spain	B 500S		8 ~ 12		10 ~ 25
12	DIN 488 / 1986*	Germany	BS t 500S		8 ~ 12		10 ~ 28
13	DSTU 37 60 / 1998	Ukraine	A 240C	8 ~ 12		10 ~ 40	
14	DSTU 37 60 / 1998	Ukraine	A 300C A 400C A 500C		8 ~ 12		10 ~ 32 10 ~ 32 10 ~ 40

\* Covered by a homologation certificate.

## TECHNICAL SPECIFICATIONS

### 2 Bar unit-weight data

Size	U.W (Kg/Mt)	No. of bars/bundle	Theoretical weight (Kg/bundle)
10	0.617	270	1999.08
12	0.888	188	2003.32
14	1.21	138	2003.76
16	1.58	106	2009.76
18	2.00	84	2016.00
20	2.47	68	2015.52
22	2.98	56	2002.56
25	3.85	44	2032.80
28	4.83	34	1970.64
32	6.31	26	1968.72
40	9.86	17	2011.44

- 
- Unit-weight data is based on nominal cross-sectional area. Ezz Steel bar unit weights satisfy the tolerances of relevant national and international standards.
-

## TECHNICAL SPECIFICATIONS

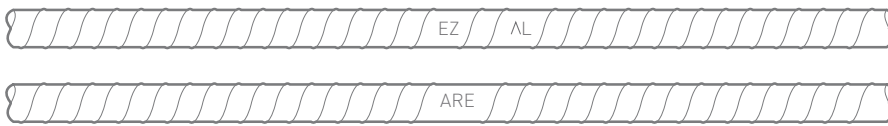
### 3 Bar length

Bar lengths range from 6 meters to 24 meters, according to customer requirements.

### 4 Rib geometry

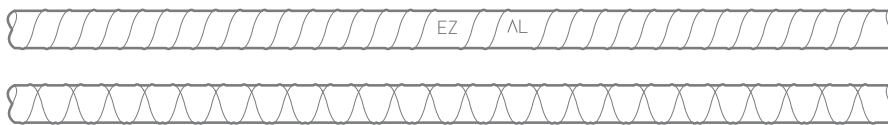
#### a. Parallel crescent-shaped rib on both bar sides

Applied for all national and international standards, except German and Spanish Homologation standards.



#### b. Parallel crescent shape rib on one side and zigzag rib on the other side

Applied for German and Spanish Homologation standards.



### 5 Bar theoretical weight

Ezz Steel produces rebar according to the requested standards, with a slight tolerance in weight per unit meter. We use a theoretical weight basis to fulfill orders that require a fixed number of bars per bundle.

### 6 Coil dimensions and weight

#### a. Coil weight

- 2.0 tons (+/- 150kg) for export.
- 800kg - 2.0 tons for local markets.

#### b. Wire rod dimensions

- Ezz Steel produces plain wire rod with diameters ranging from 5.5mm to 14mm, and deformed coils with diameters from 8mm to 12mm.
- Wire dimensional tolerances and ovality satisfy all product standard tolerances.

#### c. Coil dimensions

- Coil inner diameter: 800-850mm
- Coil outer diameter: 1200-1250mm
- Coil length: 1500-2000mm  
(Dimensions determined by wire rod diameter and shape).

## TECHNICAL SPECIFICATIONS

### 7 Chemical composition of AISI-compliant grades

Ezz Steel produces plain wire for cold drawing according to the following American Iron and Steel Institute (AISI) standards:

#	AISI	C	Mn	P max.	S max.
1	1006	0.08 max	0.25 / 0.40	0.040	0.050
2	1008	0.10 max.	0.30 / 0.50	0.040	0.050
3	1010	0.08 / 0.13	0.30 / 0.60	0.040	0.050
4	1012	0.10 / 0.15	0.30 / 0.60	0.040	0.050
5	1015	0.13 / 0.18	0.30 / 0.60	0.040	0.050
6	1018	0.15 / 0.20	0.60 / 0.90	0.040	0.050
7	1030	0.28 / 0.34	0.60 / 0.90	0.040	0.050
8	1037	0.32 / 0.38	0.70 / 1.00	0.040	0.050
9	1045	0.43 / 0.50	0.60 / 0.90	0.040	0.050
10	1050	0.48 / 0.55	0.60 / 0.90	0.040	0.050
11	1059	0.55 / 0.65	0.50 / 0.80	0.040	0.050
12	1060	0.55 / 0.65	0.60 / 0.90	0.040	0.050
13	1064	0.60 / 0.70	0.50 / 0.80	0.040	0.050
14	1065	0.60 / 0.70	0.60 / 0.90	0.040	0.050

### 8 Bar marks

- All Ezz Steel rebar products have a unique bar mark – EZAL. Rebar product diameters range from 10mm to 40mm.
- Ezz Steel produces rebar according to European homologation standards. These require a special bar mark with bold ribs or dot and dash marks between the normal transverse ribs.
- Plain coils have no marks on the wire rings, since they are subjected to cold-drawing processes.

## TECHNICAL SPECIFICATIONS

### 9 Labeling

#### a. For local market

One label at the coil or bundle end.



#### b. For export products

Two labels at both ends of the coil or bundle.

DATE	
HEAT No.	
SERIAL No.	
SIZE	
LENGTH	
WEIGHT	
No. of BARS/BUNDLE	
SPECIFICATION	

IML Tel: +44(0) 114 246 5771 Fax: +44(0) 114 240 3410 Email: [iml@enterprisenet](mailto:iml@enterprisenet)

### 10 Packing

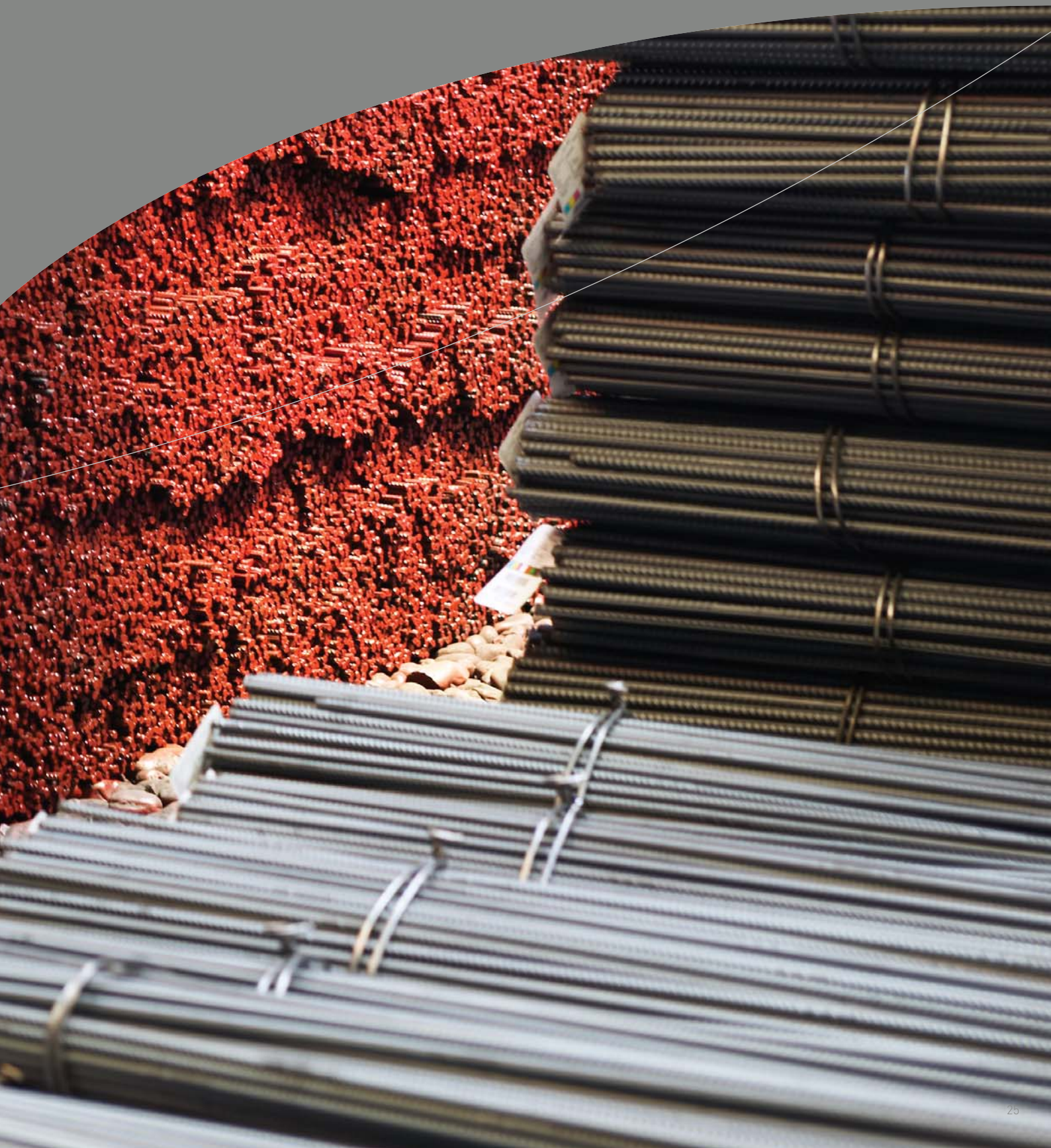
#### Bundle packing

Ezz Steel applies compact packing using tying wires (the number of wires used varies with bundle length).

#### Coil packing

Ezz Steel applies compact packing using tying wires and belly bands. Single or double tying is used, according to the coil destination.





# EZZ STEEL AT A GLANCE

Ezz Steel was formed following the acquisition of Al Ezz Steel Rebars (ESR) in Al Ezz Dekheila Steel (formerly, Alexandria National Iron and Steel) in 2000.

## Statistics

- 5.3 million tons of finished output (57% of Egypt's total output)
- \$3.0 billion turnover (2007)
- \$768 million export sales (2007)
- 6,000 employees
- Worker productivity: over 800 tons per employee per year

## Export sales breakdown (2005-2007)

Europe:	52%
MENA:	25%
USA:	15%
Asia:	7%
Others:	1%

## Main export markets

- Italy
- KSA
- Spain
- Lebanon
- Greece
- Turkey
- Netherlands
- Belgium
- France
- Morocco

## Approvals and certification

More than 50 grades of steel produced to customer and international standards, including:

- Egyptian
- ISO
- French
- German
- Italian
- Spain
- UK (CARES)
- US

## Management systems

Safety Management System  
(OHSAS 18001:1999)

Environmental Management System  
(ISO 14001:2004)

Quality Management System  
(ISO 9001:2000)



LOCATION OF PLANTS	PRODUCTS	CAPACITY	COMMISSION YEAR
Alexandria	Rebar, Wire Rod	1.7mt	1986
Sadat City	Rebar	1.0mt	1996
10th of Ramadan City	Rebar, Wire Rod	0.4mt	1993
		<b>3.1mt</b>	

	DIAMETER	LENGTHS	WIDTHS	COIL WEIGHT
Rebar	10mm to 40mm	6m to 24m	-	-
Wire Rod	5.5mm to 14mm	-	-	2t
Welded Wire Mesh	5mm to 12mm	12m [max]*	2.8m [max]*	-

\*pitches and free ends as per requirements

