

# China

## 中国

The Great Wall of China undulates over the mountains near Badaling, People's Republic of China.

中国八达岭依山连绵起伏的长城。

在钢材和不锈钢生产过程中, 高效利用原材料和减少生产工序中的排放物起着至关重要的作用。由安德里茨轧钢及带钢表面处理部开发的酸回收和再生系统, 几乎可回收全部用过的酸洗酸。安德里茨以其不断开发的技术来大大降低来自退火炉和酸洗线的氮氧化物废气的排放。

In the production of steel and stainless steel, the efficient use of raw materials and reduction of emissions from production processes play an important role. The acid recovery and regeneration systems developed by the Andritz Rolling Mills and Strip Processing Lines Business Area allow almost complete recovery of used pickling acids. Also, Andritz has developed technologies to substantially reduce the emissions of  $\text{NO}_x$  in waste gas streams from furnaces and pickling lines.

Li Pi Hsien, Chairman, Lianzhong Stainless Steel Corporation, China  
中国联众不锈钢有限公司李必贤董事长

**“ANDRITZ’S  
STRENGTH IS THAT  
THEY THINK FROM  
THE CUSTOMER’S  
SIDE TO OFFER THE  
BEST SERVICE.”**

“安德里茨公司的优势在于为客户着想, 提供最好的服务。”



中国广州联众不锈钢有限公司的不锈钢热轧带卷的退火酸洗线可处理的带钢厚度为2到10毫米,最大宽度1600毫米,穿带速度可达100米/分钟。

**The annealing and pickling line for hot-rolled stainless steel strip at LISCO, Guangzhou, China processes stainless steel strip of 2 to 10 mm thickness and up to 1,600 mm wide, at speeds of up to 100 m/min.**

# SUSTAINABLE STAINLESS STEEL MANUFACTURING

Interview with Li Pi Hsien

Chairman, Lianzhong Stainless Steel Corporation, China

## 持续性不锈钢生产

采访李必贤先生  
中国联众不锈钢有限公司董事长

**China's consumption of stainless steel now leads all nations in the world. To reduce imports, China's share of global stainless steel production has risen from approximately 8% to over 12% in the last three years. After an investment of 800 million US dollars and a five-year construction period, the Lianzhong Stainless Steel Corporation (LISCO), part of the E-United Group, has become the leading integrated stainless steel manufacturer in southern China. Li Pi Hsien, Chairman of LISCO, talks about the market situation, environmentally sustainable technologies, and Andritz's contribution.**

现今中国不锈钢的消费量牵动着世界所有的国家。为了减少进口量,在过去的三年里中国的不锈钢产量在全球范围内所占的份额已经从8%上升到超过12%。联众(广州)不锈钢有限公司(LISCO)作为台湾义联集团的子公司,在投资了八亿美元和经过五年的建设期之后,已经成为中国华南地区领头的不锈钢综合制造商。联众不锈钢公司的董事长李必贤先生谈及了市场环境,环境可持续发展技术以及安德里茨公司(Andritz)的贡献。

### Personal background

After graduating from School of Laws at Osaka City University, Japan, I joined the E-United Group. I have been working for the steel industry for more than 20 years now. I also served as Chairman of the Boards of I-Shou University, Taiwan, and as congressman for the Taiwanese Congress (two times for six years). At present, I am Chairman of the Board at Lianzhong Stainless Steel Corporation, and Member of the Boards of the E-United Group's other subsidiary companies.

### 人物背景

于日本大阪城市大学毕业后,旋即加入义联集团。迄今已于钢铁行业从业超过20年,期间曾经担任义守大学董事长,两届六年台湾立法委员,现任联众不锈钢有限公司董事长,同时担任集团下属多家公司的董事会成员。

### Company background

Since its establishment as Yieh Hsing Enterprise in 1978, the E-United Group of Taiwan has expanded from its core steel business into the education, medical, and real estate sectors. This demonstrates the Group's commitment to paying back to society. Our intention from our founding has been to keep investing so we can make contributions to the general public.

### 公司背景

台湾义联集团自1978年首创烨兴公司迄今,已从钢铁基础产业发展至教育事业,并跨足医疗体系,展现了企业“取之于社会,用之于社会”的理念。

The LISCO subsidiary, for which I am responsible, has about 1,800 employees. Here on the Chinese mainland, LISCO is a portfolio project for the E-United Group, which means we play an important role in the Group's sustainable expansion.

我所管理的联众子公司拥有1800名员工,义联集团在中国大陆投资的联众不锈钢有限公司是重要的投资综合项目,在整个集团的持续发展中起着非常重要的作用。

Our customers are mainly in the Pearl River Delta, which is the largest consuming region of stainless steel in China. Because the GDP of China is growing so fast and the middle-class population in China has more available income, I strongly believe that the consumption of stainless steel will also show continued growth in the future.

我们的客户主要在珠江三角洲,它是中国最大的不锈钢需求地区。中国的GDP飞速提高,中产阶级的有了更多的富余收入,我坚信在未来不锈钢消费量仍然会持续增长。

### The Guangzhou facility

Our integrated facility at Guangzhou is one of the largest and environmentally most advanced stainless steel production facilities in the world.

### 广州厂的设备情况

我们广州厂采用的集成生产线是世界上生产能力最高、最环保和先进的不锈钢生产线。

The facility has the first integrated WRAP line (white rolling, annealing, pickling, skin pass mill, and tension levelling) in the world. It is over 600 meters long and the stainless strip length is over 2,000 meters.

公司具有第一条集成(轧机,退火,酸洗,SPM和矫直机)的WRAP产线,600米长,不锈钢带的长度超过2000米。

The line we call HAPL #1 is one of the largest and fastest annealing and pickling lines for hot-rolled stainless steel strip in the world. It is 555 meters long and has a capacity of up to 800,000 tons per year. It is truly an international line, featuring the most advanced equipment from Andritz and other international suppliers. It is the first in China that can process strip up to 10 mm thickness, which is in strong demand by the petrochemical industry.

我们称作HAPL #1的产线是世界上最大最快的退火酸洗线,555米长,年产量80万吨。它是一条国际化的产线,安装的是安德里茨公司(Andritz)和其他国际供应商最先进的设备,这是在中国第一条可以处理10毫米厚钢板的生产线,厚板应用于石化产业。

The acid regeneration plant uses the Andritz Pyromars process and is the world's largest regeneration system for mixed acids. It has the highest efficient acid recovery rate in China.

酸回收再生产线(ARP)使用了安德里茨公司(Andritz)的Pyromars工艺,是世界上最大的混合酸回收再生系统,在中国具有最高的酸再生率。

The CAPL, supplied by Andritz, can produce up to 3 mm thick cold-rolled strip. It, too, has the most advanced technology, which fits into our overall strategy.

由安德里茨公司(Andritz)提供的CAPL产线能够生产3毫米厚的冷轧不锈钢钢板,它同样也使用了最先进的技术,并能符合我们联众公司公司的全盘规划。 →



中国广州联众不锈钢有限公司的热轧带卷退火酸洗线上的在线退火炉是世界上同类产品中的最大的炉子。

**The furnace of the annealing and pickling line for hot-rolled stainless steel strip at LISCO, Guangzhou, China is one of the largest of its kind worldwide.**

### Andritz relationship

There is a history of cooperation between Andritz and the E-United Group, dating back almost 25 years. Andritz has supplied pickling lines for carbon steel, skin pass mills, roll grinding machines, acid regeneration systems, degreasing lines, and complete annealing and pickling lines for hot-rolled and cold-rolled stainless steel strip. In total, there have been about 20 projects over the years. We are most definitely a good customer for Andritz and everything speaks in favor of continuing this long-term relationship.

#### 和安德里茨公司的关系

安德里茨集团公司和义联集团公司的合作已经差不多25年之久了,安德里茨公司供应过调质延轧机,抛光线,酸再生系统,除油脱脂线以及热轧和冷轧全套生产线。总计已达20多条产线。我们绝对是安德里茨公司一个好客户,并且愿意保持这种长期的合作关系。

### The HAPL #1 project

The main drivers for our investment in the hot-strip line were to meet the demand of a vigorously growing market and to become a strong competitor for thick hot-rolled sheets. Of all the projects we have done with Andritz, the HAPL #1 project is the most remarkable in my mind.

#### HAPL 一号项目

我们投资这条热轧线主要是为了满足旺盛的市场需求,成为热轧厚板的强有力竞争者。在我印象中,HAPL一号项目是和安德里茨所有合作项目中最出色的。

When we signed the contract with Andritz, we scheduled "first coil" processing for April 2005. It was actually achieved on April 28, 2005. This is quite remarkable considering the difficulties we experienced with the civil work which was outside Andritz's scope, and the delivery of terminal equipment. Even with the delays in these areas, Andritz, in cooperation with LISCO, still managed to install, commission, and start-up the line on schedule. For example, the strip transport drives were not installed and started up until the beginning of April. Two weeks later, Andritz had stainless steel strip threaded into the line for the first time. The furnace dry-out was actually completed one week ahead of schedule.

在和安德里茨签署合同时我们计划在2005年4月份处理“第一卷”钢卷,实际的完成时间是在2005年的4月28日。我们经历了土木工程建设和设备制造交货周期的困难,就这些超出安德里茨公司范围的困难来说,取得这样的成绩是非常出色的。尽管在这些方面出现了延期,安德里茨公司还是按时成功完成了安装,调试和产线的开机。例如,在4月初产线钢板的运输传动还没有安装和开机,但是2个星期之后,安德里茨就完成了产线的第一次穿带工作。退火炉烘炉工作比原计划整整提前一个星期完成。

The high speed of commissioning was, I believe, due to skillful project and site management on Andritz's part and the tireless work of LISCO's commissioning team. It is an example of successful cooperation between partners.

我相信,调试工作速度之快,主要是安德里茨成熟的项目管理经验以及联众连续调试作业的共同努力结果。

### Performance

First, the project schedule was adhered to even though the local supply was not delivered on time. This was an outstanding achievement. As far as operation is concerned, the performance of the Andritz equipment is improving daily. The process is stable and this is the most important aspect. We have been able to achieve our targets in terms of production, quality, reliability, maintainability, and environmental compliance. My people have a very close cooperation with Andritz. We continually learn from each other. This cooperation is the result of long-term trust and respect. Andritz's most important strength is that it thinks from the customer's side to offer the best service possible.

#### 性能

首先,在国内制造没有按期交货的情况下,项目的进度得到的维持,这是非常杰出的表现。在工作运行中,安德里茨公司设备的性能每天都得到提升,工艺非常稳定,这是最重要的一方面。我们在生产,质量,稳定性,维护性和环境的适应性都达到了目标。我方人员和安德里茨公司的人员有着紧密的合作,我们相互学习,这是长期信任和尊重的结果。安德里茨公司最重要的优势在于为客户着想提供最优的服务。

### Sustainable production

Bearing in mind that the earth is our common home, sustainable development in the stainless steel manufacturing industry is critical. We are using very advanced technologies at LISCO to reduce our demands on the environment.

#### 持续性生产

牢记地球是我们共同的家园,可持续发展在不锈钢制造业是至关重要的,我们在联众使用最先进的技术,以降低我们对环境的要求。

For example, all of our heating processes use clean LPG as a source of energy and low NO<sub>x</sub> burners to minimize air emissions. Exhaust gases are discharged via dust collection systems, which prevent solid particulates from entering the atmosphere. Liquid waste streams from the hot-strip mill and cold-rolling plant are recovered and recycled. Only very small amounts are discharged to the waste treatment plant. The quality of the discharged water meets the environmental regulations. We use Andritz's Pyromars technology for recycling acid from the annealing and pickling lines. The 96% recovery rate cuts our production costs and minimizes discharges. This factory is even equipped with sound protection enclosures to abate noise pollution.

例如,我们所有的加热工艺均是使用LPG清洁能源,用NO<sub>x</sub>烧嘴使空气排泄物降低到最少。风烟排放系统是一个灰尘收集系统,能阻止固体颗粒的外泄。热酸线和冷酸线的液体排放也是得到回收和再生产利用,相当少的一部分会被排放到水处理中心。所排放的水质达到环保要求。我们使用安德里茨公司的Pyromars技术用于回收退火酸洗线的废酸。96%的回收利用率大大降低我们的生产成本,使排放量降低到最少。这种产线设备甚至装备了能够吸收噪音的罩子。 ■