

Masters of metal develop unique foil product

Taiyuan Iron and Steel Group in Shanxi now producing sophisticated materials with a multitude of applications after years of tireless effort



By YUAN SHENGGAO

Contrary to people's impressions of metal being strong and hard, steel can be made as soft as paper if it is thin enough.

This is what the superthin stainless steel foil produced by Taiyuan Iron and Steel Group, a State-owned enterprise in North China's Shanxi province, is capable of.

With a thickness of less than 0.02 millimeters, or one-third of the diameter of a human hair, the product can be easily torn apart by hand. As a result, it is called "hand-torn steel" by the company's workers.

According to Wang Tianxiang, manager for the production of precise steel foil products at Taiyuan Iron and Steel, the company is among the few in the world that can produce steel foil with such delicacy.

"The product is not made so thin and soft for the purpose of satisfying people's imaginations or for an entrance into the Guinness World Records," Wang said. "It is produced

for applications in specific industries."

"Generally speaking, the product is meant to take the place of aluminum foil in similar industrial applications, like the fields of aerospace, electronics, petrochemicals and automobiles.

"Compared with aluminum foil, the hand-torn steel performs better in erosion, moisture and heat resistance," Wang said.

According to the executive, only sheet steel thinner than 0.05 mm can be called steel foil.

"Most of the steel foil products made in China are more than 0.038 mm in thickness. We are among the few companies in the world capable of producing soft steel foil of 0.02 mm or thinner," Wang said.

Before Taiyuan Iron and Steel began to produce the product, the Chinese market of superthin stainless steel foil was dominated by overseas producers and suppliers.

About six years ago, broadsheet stainless steel foil with thickness of less than 0.02 millimeters was sold in China at several hundred yuan per gram depending on its actual thickness. In comparison, the price of gold was less than 300 yuan (\$45).

Taiyuan Iron and Steel began research and development into broadsheet superthin stainless steel

foil in 2016, in the hope to bring its own substitute to the domestic market and reduce reliance on overseas supplies.

Liao Xi, head of the R&D team for the product, said crucial technological breakthroughs were made thanks to the efforts of researchers, engineers and workers.

"After exactly 711 experiments and trials since 2016 when our R&D team began working on the product, we successfully developed the product in 2018," Liao said.

"In the manufacturing process, 24 pressings are required for the 0.02-mm-thick and 600-mm-wide sheet steel," he added.

Liao said there are quite a few manufacturers in the world who can produce steel products with such a thickness. However, Taiyuan Iron and Steel is the only one that can produce the steel foil fitting the specifications of 0.02 mm in thickness and 600 mm in width.

He said the company has continued to make breakthroughs in the years that followed. "Our latest product is a variety with a thickness of 0.015 mm, which was developed in August 2020," Liao said.

The engineer explained that, compared with 0.02-mm variety, the new product can help the company tap into a range of new applications.



A worker watches over machines producing superthin stainless steel foil at a Taiyuan Iron and Steel plant. WANG PEI / FOR CHINA DAILY

"The superthin steel material, for instance, can be used for the production of mobile phone battery cases," Liao said. "This can lead to a reduction of battery thickness and mobile phone thickness as a result, as well as a 17 percent increase in

battery capacity."

He also listed other fields of application, such as aerospace, astronautics, precise electronics and new energy.

Wang said the company is now able to produce a variety of sheet

steel and foil products, with thicknesses ranging from 0.015-0.5 mm and in widths of 3-650 mm.

"The technical breakthroughs (in developing superthin products) have made it possible for our company to be competitive with more higher-value-added products," Wang said.

He noted that high-value-added products now account for 85 percent of the company's total output.

"The ratio is expected to increase in the years to come with the sales of superthin stainless steel foil booming," Wang said. "Our 2021 sales volume of products thinner than 0.05 mm registered a 200 percent increase over the previous year."

According to Liao, Taiyuan Iron and Steel's R&D team is also trying to develop materials other than steel.

"We recently presented a self-heating composite material for the aerospace industry," Liao said. "Used for covering aircraft wings, the material can help to de-ice planes and reduce risks."

The team is collaborating with the country's leading electronic companies, like TCL CSOT and Beijing Oriental Electronics, in developing flexible displays based on its superthin stainless steel foil.

Guo Yanjie contributed to this story.

Life back in the fast lane thanks to officials' actions

By YUAN SHENGGAO

After a standstill of about a month due to the COVID-19 outbreak in April, life and business are finally back to normal in Shanxi province.

This was what Wang Lei, a resident in the provincial capital of Taiyuan, felt.

He had a busy day on May 27, eating breakfast at a restaurant near his home in the early morning, rushing to his office by bus, answering inquiries from clients, buying vegetables and fruits during his lunch break, and collecting several parcels of goods delivered by couriers when returning home.

"This is another ordinary day and this is the life I expect," Wang said.

The resumption of business and normal life in Taiyuan, as well as the rest of Shanxi, has been quick due to the government's efforts to help to spur consumption and supply.

Issuing coupons to encourage residents to spend more is one of the incentives offered by the local governments.

In the early morning of May 21, Sun Lifei, another Taiyuan resident, was informed by the official WeChat account of the Taiyuan government that shopping coupons would be issued online at 10 am.

She leapt to action and obtained 10 coupons for commodities and services in various categories. The largest value of a coupon was 800 yuan (\$120), which is good for buying home appliances at prices surpassing 4,000 yuan.

Sun said she had a plan to buy an air conditioner. So the next day she bought one with a tagged price of 4,000 yuan and spent only 3,200 yuan.

"Thanks to the government's incentive, I got a really good deal," Sun said.

There were incentives from almost all the city governments in Shanxi.

In Changzhi, for instance, the shopping coupons were valued at



Tourists race down a colorful slide in an amusement park in Heilonghe village in the county of Lingqiu after the pandemic is brought under control in Shanxi. LIU TONG / FOR CHINA DAILY



The government immediately came to help. As far as I know, its supportive measures include reducing taxes, offering subsidies for loans and issuing coupons to diners."

Li Kun, a manager at Shanxi Guild House

50 million yuan, while those in Linfen were valued at 300 million yuan.

For catering industry players, the resumption of the dine-in busi-

ness was the most significant support to their operations.

In Taiyuan, dine-in business was resumed in late April, if operators could meet the requirements of disinfection, temperature check and reasonable spacing.

On May 27, Li Kun, a manager at Shanxi Guild House, a restaurant chain in Taiyuan, said business of almost all outlets returned to the pre-pandemic level.

"While offering services to individual diners, we are hosting weddings and banquets for businesses," Li said.

The catering industry was one of the hardest-hit during this new round of the pandemic, with some business owners facing mounting pressure because of the lack of cash flow.

"The government immediately came to help," Li said. "As far as I know, its supportive measures

include reducing taxes and fees; offering subsidies for loans; and issuing coupons to diners."

The tourism sector, another industry under great pressure, has also recovered quickly.

Li Yanfeng, a resident in the northern Shanxi city of Datong, took his son to visit the Drum Tower Street, a local historical block, on Saturday.

"The street was filled with hawking cries, the snack stands were crowded with people, and there were a lot of folk performances near the Drum Tower," Li Yanfeng said.

According to Chen Shaoqing, deputy chief of the Datong culture and tourism bureau, the boom in tourism is a result of a government-sponsored tourism festival, which was held from June 3-5.

Guo Yanjie contributed to this story.

Insurance plan enhances residents' social security

By YUAN SHENGGAO

A resident surnamed Yan, in the Shanxi city of Lyuliang, began to be concerned with his life as an elder some 15 years away.

Yan, in his 40s, was proposed by civil affairs officials to join the local endowment insurance program.

He was informed that this is a government-sponsored program, with expenses covered by both the government and individuals.

"For my part, I need to pay 1,000 yuan (\$150) a year," Yan said. "After paying for 15 years, I will be eligible to get more than 4,000 yuan a year since the age of 60."

The program that Yan wanted to join is a scheme supplementing the existing basic pension system that has covered many of the urban and rural areas of Shanxi.

"With the basic pension and the supplementary endowment insurance, I would be no longer worried about my future life as an old man," Yan said.

According to the Shanxi Department of Human Resources and Social Security, Shanxi's basic pension system has covered more than 21 million people in the province, or more than 95 percent of the people eligible for the system.

The pension system is only one aspect of Shanxi's social security undertakings, which also include the government-sponsored insur-

ance programs for unemployment and workplace injuries, as well as a wide-coverage medical care insurance scheme.

The department's statistics show that Shanxi's medical care insurance has covered more than 32 million people, or more than 95 percent of its total population.

The Shanxi provincial government released 33 policy measures in 2021 to strengthen the social security system for residents, which include expanding the coverage of the system and requiring officials to improve their related services and streamline administrative procedures.

As a result, offering one-stop services relating to social security is now a common practice in Shanxi. Residents used to have their applications for such services handled at various government departments, and now these can be disposed of in one administrative service center in many cities and counties.

The province is now shifting its focus to offering assistance to senior citizens and disabled residents. In addition to increasing the amount of subsidies for them, many local governments have planned to increase investments in building more elderly and disabled care facilities.

Han Linfang contributed to this story.



Residents make ornaments for Dragon Boat Festival at an elderly care center in Taiyuan on June 3. SI RUIRUI / FOR CHINA DAILY

Guiding Chinese people in search of their family roots



Fan Yanjun is among the most popular guides in Dahuaishu township. LI LIAN / FOR CHINA DAILY

By YUAN SHENGGAO

For tourists to a place of historical interest like Dahuaishu township in Hongtong county, Shanxi province, a well-informed tour guide is of great help.

Fan Yanjun, 26, is one such guide. When serving tourists at this worshipped destination, she can bring an impressive experience by introducing accurate history and vivid stories.

Dahuaishu, which means Big Locust Tree, is the place where many Chinese people inside and outside the country believe their ancestors emigrated from during the Ming Dynasty (1368-1644).

According to historical records, for

50 years in the early Ming Dynasty, there were 18 large population movements from Dahuaishu township to more than 500 counties across 18 provinces.

These emigrants moved further across the world in the six centuries that followed.

This historical background has made Dahuaishu one of the most popular destinations in China for tourists who want to seek their ancestral roots, according to Fan.

On one day in early summer, Fan showed visitors to the landmark big locust tree in front of the gate of the Dahuaishu Ancestors Memorial Garden. She explained the history of the ancestral hometown of many Chi-

nese people with a household folk song:

"Where were our ancestors from? It's the Big Locust Tree in Hongtong.

What is the name of our ancestral residence?

It's the Old Stork Nest under the Big Locust Tree."

She also told visitors that historical evidence can be found in many family genealogy books and tombstone inscriptions throughout the country.

When talking about the importance of Dahuaishu in the history of many Chinese families, Fan was challenged by a tourist surnamed Zhao.

While recognizing the Ming Dynasty immigration movements,

Zhao said it might be an exaggeration to say that Dahuaishu is the major ancestral root of many families.

"My family's ancestral root, for instance, is in Zhaocheng, another township in Hongtong county, and the history can be traced back to 2,500 years ago," Zhao said. He explained that Zhaocheng used to be the fief of the ancient Zhao family.

Fan said she agreed with Zhao's presumption, adding that "it's always a pleasant experience to interact with tourists and it's also a good chance to learn from them."

Fan is a native of Hongtong and has a strong attachment to the historical township of Dahuaishu.

"The place is full of history and full of stories," she said, adding that introducing tourist attractions with accurate history and vivid stories is

the basic requirement for a qualified tour guide.

"For this purpose, we need to learn constantly," Fan said. "We can learn from books. But it's an even better opportunity to learn from experts and tourists, who always have something inspiring to share with you."

Fan began to work as a tour guide in Dahuaishu in 2017. Since then, she has served more than 2,000 visits by tourist groups or individuals. Her colleagues said she is among the most popular tour guides in Dahuaishu because of her professionalism.

Over the past few years, Fan has traveled to many regions in China to promote the attractions of Dahuaishu. "I hope the history and culture of Dahuaishu can be known to more people," she said.

Wu Jia contributed to this story.