

 This week:

Can current electric supply support hydrogen steelmaking?

Skyrocketing energy costs are becoming one of the main issues affecting steelmakers globally. In Europe, the issue has been at the centre of most pricing discussions during the last two months, but now the German steelmakers federation WV Stahl also noted that this issue can hamper significantly the prospects for carbon-free steelmaking based on hydrogen.

For an annual output of 42 million tonnes, German mills use approximately 25 terawatt hours (TWh) of electricity. Around two-thirds of steel output comes via the blast furnace/oxygen converter route, which consumes some 400 kilowatt hours (KWh) per tonne of steel produced. The electric arc furnace route has a higher power consumption, at 530 KWh per tonne, according to a dossier issued by the German economy ministry.

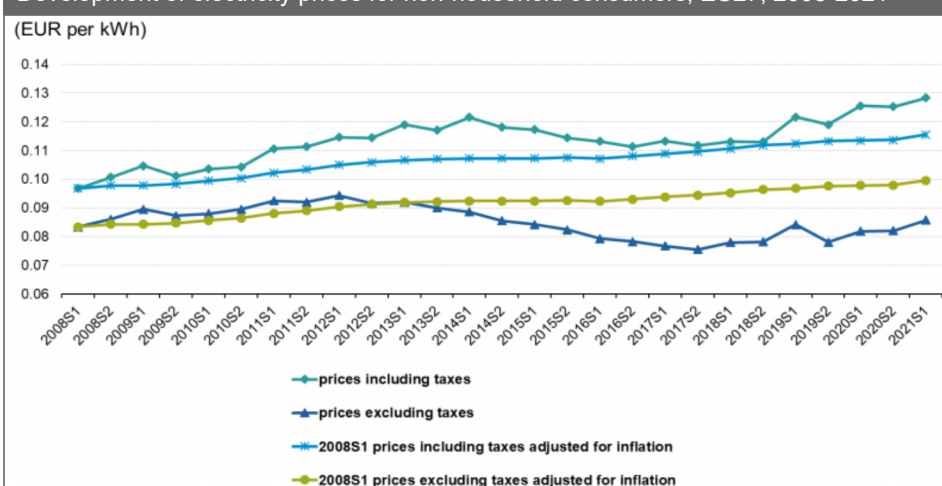
The current plans and pledges of the country's steel industry envisage that steelmaking, along with the production of electricity needed in the process, will be based entirely on hydrogen by mid-century. But this aim requires a power consumption of 130 TWh – more than five times the amount used at present.

The lion's share of this volume, 112 TWh/year, will be needed for electrolysis for the generation of 2.2mt of green hydrogen, mostly used in direct iron reduction. Under this scenario, the scrap-based EAF route is the lesser consumer of electricity, and will take only around 15 TWh, assuming that in future the route still accounts for one third of national output.

This year has seen a massive increase of electricity prices in various European countries. Compared to October 2020, the price per KWh went up from some €0.04 to more than €0.13, and is expected to climb further.

For the calculation of steel production costs, this increase registers in Europe translated in a year-on-year increase from €16 to €52 (\$18-58) per tonne on the oxygen route, and from €21 to €69 on the EAF route. It must be noted that oxygen-route integrated mills, by way of co-generation and combined cycles, generate a large share of their power demand themselves, while most EAF mills do not have this synergy.

Development of electricity prices for non-household consumers, EU27, 2008-2021



Source: Eurostat (online data codes: nrg_pc_205)

eurostat

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What's happening in the CIS slabs market?

KORE INDEX

| Index | 58% | 62% | 65% |
|----------------|--------------|--------------|---------------|
| W-o-w % Change | 8.49% | 10.01% | 8.43% |
| 26 Nov | 69.81 | 99.57 | 114.96 |
| 25 Nov | 71.50 | 101.24 | 116.61 |
| 24 Nov | 71.58 | 101.85 | 117.18 |
| 23 Nov | 67.94 | 96.89 | 111.84 |
| 22 Nov | 64.67 | 92.11 | 107.33 |
| Average | 69.10 | 98.33 | 113.58 |
| 19 Nov | 64.58 | 91.07 | 106.38 |
| 18 Nov | 64.57 | 90.00 | 105.35 |
| 17 Nov | 64.61 | 90.39 | 105.72 |
| 16 Nov | 62.91 | 88.63 | 103.99 |
| 15 Nov | 61.82 | 86.79 | 102.29 |
| Average | 63.69 | 89.38 | 104.75 |

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Global Overview

North America:

- US hot-rolled pricing continues to decline, by \$15/st
- US mills announce \$50/st price hike for plate
- Expectations in US scrap market diverge for December's trading

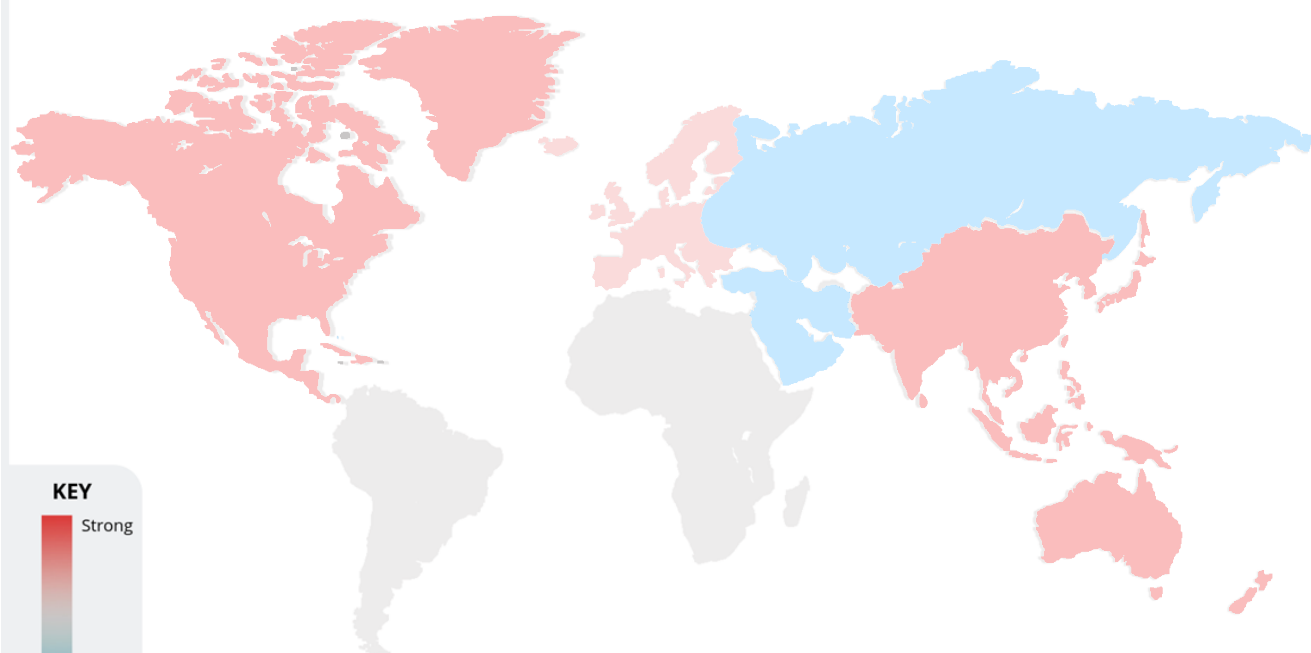
Europe:

- Rebar mills target higher prices
- HRC import offers not completely attractive
- Stainless market remains strong

Asia:

- Chinese prices show signs of recovery
- Iron ore somewhat up
- Japanese scrap demand export softens

KALLANISH STEEL WEEKLY GLOBAL SENTIMENT MAP



KEY



► [Click here to view this map online](#)

CIS:

- CIS billet prices drop as demand fades
- CIS slab market looking for direction

Middle East:

- Turkish scrap pressure grows on increased offer volume
- Turkish rebar mills continue to struggle with exports
- Emirates Steel rolls over rebar price

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Word of the week

Merchant Pig Iron



Most pig iron is produced in blast furnaces for subsequent steelmaking at integrated steelworks, and is transferred as molten iron from BF to nearby oxygen converters. But a much smaller tonnage is produced for sale as a steelmaking or foundry raw material. This merchant pig iron is mostly made in coke or charcoal fuelled BFs and sold as ingot. Pig iron is a supplement to ferrous scrap in the EAF, and may be used instead of, or in addition to direct reduced iron or hot briquetted iron in order to make higher grades of steel that may not be achievable using only scrap.

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