

High grade steel production technologies made Tokyo Sky Tree possible

April 5 2012



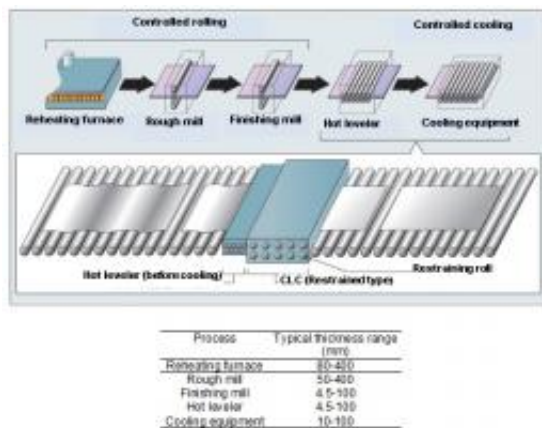
The world tallest (634 m) sightseeing and TV broad casting tower - Tokyo Sky Tree uses a massive amount of most advanced TMCP steels. Credit: STAM

Although steel production dates back about 4000 years, exploration of steel's potential abilities is still advancing. With an output of about 45%, China dominates when it comes to basic steel production. Japan however is shifting towards so called 'high-grade steels'. Take for example, the water-cooled thermomechanical control process (TMCP) steels. Relative to traditional water-cooled steel plate processes, TMCP steels offer simultaneous improvements of strength and toughness, while allowing control of the steel's microstructure.

Nishikawa and Ichikawa, researchers from Japan's largest [steel](#) production company, describe recent developments in TMCP Technology in the latest issue of *Science and Technology of Advanced*

Materials Vol. 13 (2012) Issue 2, Page 023001
 [\(dx.doi.org/10.1088/1468-6996/13/2/023001\)](http://dx.doi.org/10.1088/1468-6996/13/2/023001)).

Manipulation of steel plates and early TMCP technologies originated in Japan. TMCP offers many advantages not least because it produces steel that is easier to work with. Compared to other metals, TMCP steel is much easier to weld, for example. Nishikawa and Ichikawa also assess developments of equipment and production technologies for TMCP, and theoretical modeling. The latest applications of TMCP steel are seen in various industries such as shipbuilding, offshore structures, building construction, bridges, pipelines, penstocks and cryogenic tanks. The world tallest (634 m) sightseeing and TV broad casting tower, the Tokyo Sky Tree, was constructed in large part using TMCP steels.



Schematic of TMCP facility in plate production line. Credit: STAM

TMCP technology is also likely to provide solutions for resource savings which is critical in a world trying to reduce its carbon emissions.

More information: Kiyoshi Nishioka and Kazutoshi Ichikawa,

“Progress in thermomechanical control process of steel plates and their commercialization”, *Science and Technology of Advanced Materials* 13 (2012) 023001, [doi:10.1088/1468-6996/13/2/023001](https://doi.org/10.1088/1468-6996/13/2/023001)

Provided by National Institute for Materials Science

Citation: High grade steel production technologies made Tokyo Sky Tree possible (2012, April 5) retrieved 4 May 2024 from

<https://phys.org/news/2012-04-high-grade-steel-production-technologies.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.