TECHNOLOGY COUNTRY REPORT 2022_TAIWAN

Date : 15th NOVEMBER 2022

Summarized some Common Issues in the Technology Country Report

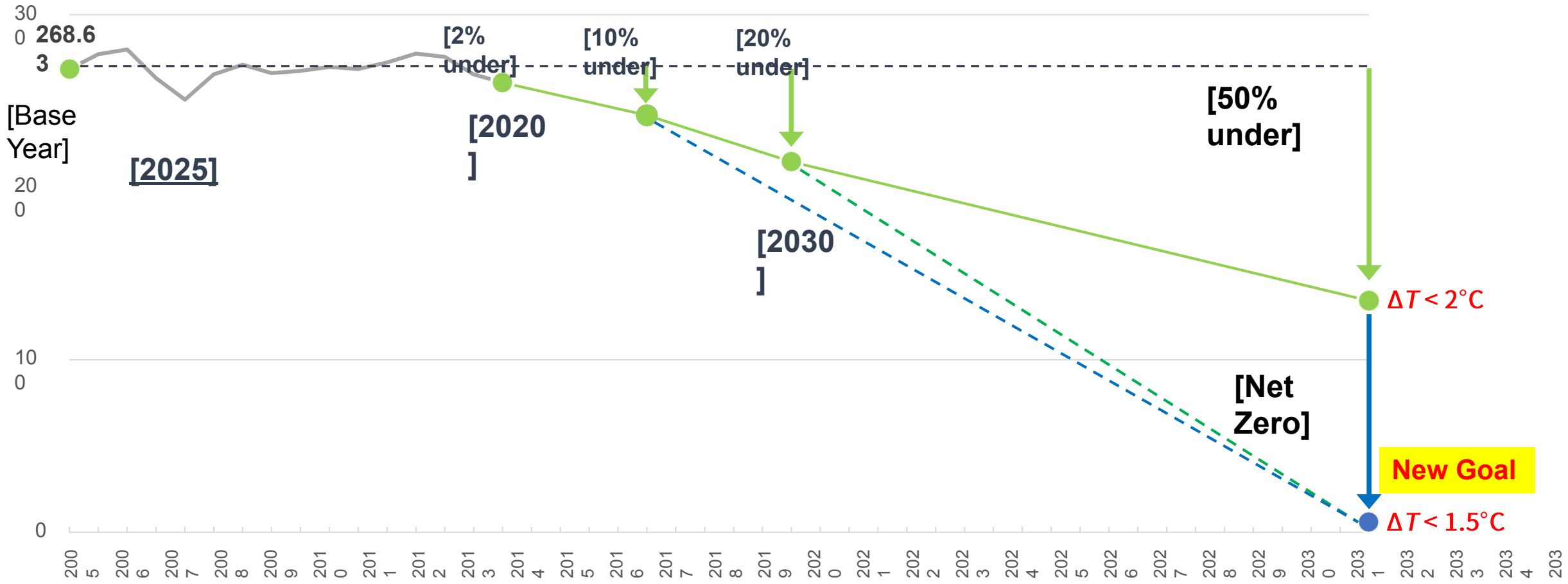
- Development of high value-added and high-performance products
- Realization of smart factory through digitalization and the application of Al
- Development of green process/product
- Cost down and quality improvement

Taiwan's Pathway to Net-Zero Emissions in 2050

March 30, 2022

Long-term Path for National GHG Emissions Reduction

Amendments to the GHG Act: setting target for net-zero emissions by 2050



		Total steel production in 2021	Describe briefly the product range and quantities covered	Planned top 3 projects (on benefit or value) for the coming years	Important plant or equipment start-up commissioning, or de-commissioning
BOF	CSC	9.098 million tons.	Plate： 924 kt Wire & rod： 1,984 kt Hot-rolled： 2,398 kt Cold-rolled： 1,825 kt Electrical Steels： 722 kt EG： 178 kt GI： 723 kt Bloom, Slab, Billet： 344 kt Total： 9,098 kt	1.Coke oven revamping. 2.Boiler turbine generator replacement plan. 3.Development and marketing of Advanced Premium Steels (APS).	
BOF/EAF	Dragon Steel	5.0 million tons		1. Together with DSC' s technologies in arc furnace and basic oxygen furnace. 2. Continue to promote the high value of our products. 3. Along with Circular Economy, Green process/product and group policies, to exert overall group operation synergy.	1. Blast furnaces can be provided for general structural steel with the specifications of the largest hot-rolled thickness and width. 2. Electric arc furnace can be provided for H beams with the largest section in Taiwan.

		Any New Products implemented?	Any New Patents implemented?	Any New Processes implemented?	What were the 3 key areas of R&D focus?
BOF	CSC	New Products 1.Plate: EN10025-6 S890QL. 2.Plate: SBHS400, ASTM A387 Gr.22 CL1 & CL2. 3.Bar/Rod: SCr420H carburizing steel, BZ8625XF for lifting device, EAF 1144, and ER80S-Ni1M. 4.Bar/Rod: AWS 5.17 EM14K, easy-softening SCM435 wires, various product with seam-free grade. 5.Hot rolled: Cust SAPH400, Cust S55C, S55C PAS, SPH590FC-OD, CH300Y U4, CSC 15B36(34MnB5), FBH440Y 580T. 6.Hot rolled: VDA HR660Y 780T, JSH 590B, SAE 1074, SK95, SAE 6150. 7.Cold rolled: CSC CS330Y, JSC390W with boron added, SAE 1035 with low cost, JSC1180Y. 8.Cold rolled: CSC CR1300T ultra-high strength steel for automotive. 9.Galvanized Steel: New chromium-free lubricant coating for GA product. 10.Electrical Steel: 50CS400P, 20CS1500P for motors which require high magnetic flux density.	1.Electrical Steel: Self-bonding coated electrical steel sheet, laminated core, and method for producing the same. 2.A new softening process for wires with extraordinary hardenability.	1.Plate: Development of as-roll cooling process to improve the flatness of Medium-Carbon Steel. 2.Bar/Rod: Improve the chemical segregation of continuous casting bloom and control rolling technique to develope low strength Cr-Mo alloy steel. 3.Hot Rolled: Development of widen hot stamping steel 15B22 products. 4.Cold Rolled: Method of manufacturing light-bright surface for improving defects occurred in furnace. 5.Electrogalvanized Steel: New method of manufacturing steel with phosphate treatment for painting usage.	1.Development and application of self-bonding coating for electrical steel. 2.Development of Advanced Premium Steels 3.Development of thin-gauged high strength electrical steels
BOF/EAF	Dragon Steel	Coordinating with CSC Group and customer's needs, active developing of new products and promoting product grades, enhancing market differentiation and competitiveness.			1. Development of high value-added steel products 2. Enhancing market differentiation and competitiveness 3. Innovating intelligent production and marketing

		The most interesting technical process or product issues/concerns resolved over the last year?	Do you have any manufacturing improvement team set up for your organization? If Yes, please explain.	Energy savings What are your energy savings developments? (IRONMAKING)	Energy savings What are your energy savings developments? (STEELMAKING)	Energy savings What are your energy savings developments? (ROLLING MILL)
BOF	CSC	Co-development of energy-saving heat treatment with customers to reduce manufacturing cost and carbon emission.	We have lots of cases by 6σ method to improve quality and reduce cost, for example: 1.Steelmaking: Improvement of surface quality for high strength hot-rolled coils for automobiles. 2.Plate: Improvement of mechanical properties of SN490B via optimizing Steelmaking process and chemical composition design. 3.Bar/Rod: Improvement of precitipates control and anti-grain coarsening ability of SCr420H carburizing steel. 4.Hot rolled: Improvement of gouge defect for hot-rolled products.	Item： Partial revamping of Hot Stove Waste Gas Heat Recovery System Cost： (USD)2,150,000 Energy Saving(GKcal/year)： 75.1 Technology used： Heat pipe heat exchanger	Item： Ladle preheating station with oxy-fuel combustion Cost： (USD)414,000 Energy Saving (GKcal/year)： 8.56 Technology used： Oxy-fuel combustion	Item： The AI-based controller for temperature control of reheating furnaces Cost： (USD)34,000 Energy Saving (GKcal/year)： 38.9 Technology usedArtificial intelligence
BOF/EAF	Dragon Steel	1. Improvement of energy saving and environmental protection. 2. Transformation to green manufacture process and eco-friendly steel	CREATIVE DEVELOPMENT ACTIVITIES (CDA) to improve manufacturing process. In 2021, We will communicate with CSC for many team improvement activities.			

		Product development What are your developments in new or changes in existing products?	Process development What process developments or changes are driven by customer requirement or changes in their needs? (STEELMAKING)	Product design process Is it optimised for yield, energy, and/or minimum lead time from order to delivery at your customer's door? (STEELMAKING)	Research Topics What research projects (process or product improvement) did your organization conduct? (STEELMAKING)
BOF	CSC	1.Development of welding wire for high-strength oil pipes 2.Development of high strength hot-rolled automotive steel with high hole-expansibility ratio and BH value 3.Development of high carbon steels with low hardness and high carbide spheroidization level. 4.Development of low decarbonized zone of surface for Mn-B steels 5.Development of high strength with ultra-high strength, or high hole-expansibility, or high elongation cold-rolled/ 6.galvanized automobile steels 7.Development of thin-gauged electrical steels with high permeability or high magnetic flux density. 8.Thin inorganic chromium-free coating technique for galvanized steel coils.	1.Plate: Enhanced the degassing efficiency of RH to improve the internal quality of the TMCP steel plate 2.Bar/Rod: Development of the continuous casting process for 1215MS high sulfur free cutting steel to improve the bloom surface quality. 3.Development of a narrow range control technology of Ti content to meet the requirement of high grade cold rolled steel. 4.Optimization of soft reduction to improve inner quality of bloom to meet our custom's specific requirements.	1.Bar/Rod: Increased the casting rate of super-clean steels for bar/rod 2.Bar/Rod: Increased the bloom yield for the automotive security products	1.An artificial intelligence model is developed to suggest similar steel grades when the alloy composition of steelmaking exceeds the specifications of the target steel grade to ensure the structure and properties of the steel still meet the requirement of the customer. 2.The scrap ratio in BOF process is targeted to be above 20% to reduce the usage of hot metal for lowing CO2 emission. 3.Development of chamfered mold technology in continuous casting process to improve slab corner cracks and edge seams of HR bands
BOF/EAF	Dragon Steel	We develop high performance steel products with high strength, toughness and weldability, to provide the steel construction application of higher buildings and more aseismatic structures in Taiwan. We also develop checkered H-section with bevel edge to save the process and cost of steel deck manufacturing.			1.We made the project for developing low nitrogen and low phosphorus process for EAF process 2.We made the project for using AI to predict energy consuming in EAF process

		Research Topics What research projects (process or product improvement) did your organization conduct? (IRONMAKING)	Process development What process developments or changes are driven by customer requirement or changes in their needs? (ROLLING MILL)	Product design process Is it optimised for yield, energy, and/or minimum lead time from order to delivery at your customer's door? (ROLLING MILL)	Research Topics What research projects (process or product improvement) did your organization conduct? (ROLLING MILL)
BOF	CSC	1.Development of CaCO3/Fe2O3 scale removal by a novel technique for BAC cooler of blast furnace. 2.Research of the de-SOx and de-NOx technologies for coking flue-gas. 3.Development of energy-efficient operation strategy for boiler and turbine in power plant. Iron Ore Sintering: 1.Continuous scanning technology for detecting surface curves of charging raw sinter mixture inside the hopper in sinter plant. 2.Controlling technology to stabilize sinter basicity via adjusting SiO2 content and CaO/SiO2 ratio of raw sinter mixture. Blast Furnace: 1.Reconstruction of 2D temperature contour of BF top gas by acoustic measuring system. 2.DEM application for investigation of the segregation behavior of burden particles in the top hoppers of BF.	1.Bar/Rod: Improvement of bar surface quality for motorcycle gear by optimising rolling process. 2.Hot rolled: Improvement and investigation of edge seam defect of low carbon steel for the application of Black Plate substrate for can manufacturers. 3.Development of CSC CS330Y used for painting and structural usage. 4.Development of automotive steel for water-based paint process. 5.Optimization of rolling parameters to fit energy-saving annealing patterns. 6.Optimizing rolling process of anti-coarsening steel for carburizing. 7.Development of roll calibre wear measurement for surface quality improvement of bar and rod.	1.Plate: Improve the cooling uniformity for TMCP plates by optimising Head/Tail shielding length and water flow to increase the yield. 2.Bar/Rod: Improvement of bloom surface quality allows cancelling the scarfing process to increase the yield. 3.Cold Rolled: Cancel pre-heating and optimize process flow for high carbon steel Acceleration of annealing and coating procedure for Electrical Steel.	Hot Rolling: Development of high-accuracy profile/flatness control system for applying direct hot-charged rolling (DHCR) process.
BOF/EAF	Dragon Steel				1.We made the project for developing the rolling impact and tension control for section mill. 2.We made the project for improving the accuracy of online measuring machine for section mill.

		Total steel production in 2021	Describe briefly the product range and quantities covered	Planned top 3 projects (on benefit or value) for the coming years	Important plant or equipment start-up commissioning, or de-commissioning
EAF	FengHsin Steel Co.,Ltd.	1.78 million tons	1. Round bar : 0.56 million tons 2. Section bar : 0.51 million tons 3. Rebar : 0.75 million tons	1. Increase wire inspection line plant 2. ECO Arc Furnace light is planning and transformation 3. Wire plant equipment upgrade	1. A new PSA oxygen plant is finish and ready operation to replace old one(2021). 2. MT billet check equipment increase AI analysis auxiliary system
EAF	Tung Ho Steel Enterprise Corp.	2.43 million tons	1. Billet production : 2.43 million tons 2. Rebar : 1.35 million tons 3. Section : 0.74 million tons 4. Plate: 0.13 million tons ..	1. Renewable energy projects - 20MW solar energy & 24.8 MW wind energy & 100MW energy storage equipment 2. Retrofit project of scrap preheating EAF at Miaoli Works 3. Energy saving and CO2 reduction projects.	
EAF	WEI CHIH	710,028 tons	1.Round bar : 82,000 tons 2.Bar in Coil : 33,000 tons 3.Domestic rebar : 300,000 tons 4.Export Rebar : 96,000 tons	1.New transformer for EAF to improve production efficiency. 2.Improve the quality of special steel grade. 3. Ladle Reheating and Reheating Furnace replace oil to natural gas	1. Improve the production efficiency of special steel grade 2. Saving time of Rolling Mill for roller change 3. Round Bar Ovality improvement
EAF	Gloria Material Technology Corp.	80,000 tons	1. Super Alloy : 4% 2. High Cleaning Steel : 16% 3. Stainless Steel : 35% 4. Alloy Tool Steel : 41%		50T New EAF in construction, it will be hot commissioning in 2023.
EAF	Walsin Lihwa Corporation	773,156 tons	Stainless steel long products: 465,909 tons Stainless steel flat products: 293,378 tons Seamless Pipe and Tube: 13,869 tons	1. Development of high value-added and high-performance products 2. Promotion of the intelligent and smart manufacturing projects. 3. Planning and promotion of the green production process for energy saving, water saving, waste reduction, carbon emission reduction and resource saving.	1. Construction of the intermediate frequency furnace has been completed to expand the yield in steelmaking process 2. Construction of the stress relief annealing furnace has been completed for reducing energy consumption. 3. Construction of the biological treating tank has been completed for waste water treatment and recycling equipment in pickling process.

		Any New Products/Patents/New Process implemented?	What were the 3 key areas of R&D focus?	The most interesting technical process or product issues/concerns resolved over the last year?	Do you have any manufacturing improvement team set up for your organization? If Yes, please explain.
EAF	FengHsin Steel Co., Ltd.	1. High cleanliness process which could be used in both LF and VD, to produce materials for precision machinery. 2. High strength rebar, Yp more than 690 Mpa is success produce 3. Improve high carbon steel center segregation and hole	1. Reduce operaton unit cost 2. Development of car parts market(more high quality products) 3. Defect analysis capabilities	1. Ladle use more kinds stirring process to improve LF process efficiency and reduce inclusion impurity, then refractory unit consumption is better 2. Using recycle tire cutting add in the EAF to replace some coke, Mainly is studying carbon emissions issues	We have 2 technical teams for improvement, one for melting shop and refining process, the other for rolling mill as well.
EAF	Tung Ho Steel Enterprise Corp.	Development of stainless round bar rolled by universal section mill at Kaohsiung Works	1. Feasibility study on carbon capture of exhaust gas from RF and EAF ath Miaoli Works 2. Assessment study on hydrogen sources at Miaoli Works	1.Feasibility study on the intelligent combustion control system of reheating furnace 2. Feasibility study of on-line profile gauge system 3. Survey on using oxygen-enriched burners in LD and RF.	
EAF	WEI CHIH	New grade of SD400S/500S/600S for Korea Standard	1. To avoid the spark at the bottom electrode 2. Round Bar surface quality (Tolerance/Ovality) 3. Export rebar chemical composition adjustment	Improving the castability and increasing sequence at special steel grade Improving billet Hot Charging rate, reduce the fuel consumption.	
EAF	Gloria Material Technology Corp.		1. Metallurgical technology 2. Thermoforming technology 3. Heat treatment technology		Establish six sigma project management approach for manufacturing improvement and yield improvement
EAF	Walsin Lihwa Corporation	Development of steelmaking process which saves resources, electricity and energy. -Concept: With improvement of the steelmaking process and optimizing production schedules, the need for the quality of raw materials will be decreased. -Advantages: The addition of the precious and fresh raw materials and the power and energy consumption of steelmaking will be reduced.	1.Developing the high value-added stainless steel products 2.Developing the high-functional stainless steel products 3.Researching on the high temperature performance of stainless steel.	We have established a diagnosis system for scratch mark in the rolling process. The abnormal rate can be decreased by the instant alert.	Promote the establishment of several core competence projects, which apply scientific methods such as equipment and process sensor installation, big data analysis, machine learning,...etc., to shortening the time of solving the problems of production and quality.

		Energy savings What are your energy savings developments? (STEELMAKING)	Energy savings What are your energy savings developments? (ROLLING MILL)	Product development What are your developments in new or changes in existing products?
EAF	FengHsin Steel Co., Ltd.	1. New burner is changed to a movable angle in EAF, which has get a power reduction about 5kwh/ton. 2. Increase a oxygen pipe in EAF, which has get a power reduction about 5kwh/ton.	Rolling mill motor upgrade can improve electricity efficiency	1. High strength rebar, Yp more than 690 Mpa. 2. Improve high carbon steel center segregation and hole
EAF	Tung Ho Steel Enterprise Corp.	1. Scrap preheating EAF are under surveying, the reduction of power consumption is estimated to be about 100~120 kWh/t-BT. 2. WHR (Waste Heat Recovery) project is under surveying, such as the ORC system for RF.		1. Development of ultra high strength SD685 re-bar (D19~D36). 2.Development of stainless round bar rolled by universal section mill at Kaohsiung Works
EAF	WEI CHIH	Scrap classification and to remove impurities, it is can save 45~50KWH per ton of billet.	Improve the Hot Charging percentage from 60% up to 80%. This can save the heavy oil consumption from 17Lt/T to 14 Lt/T Change the fuel from heavy oil to LNG	1. New chemical composition of steel grade for Korea standard SD400S/500S/600S 2. Groove design/rolling parameter setting for Korea standard SD400S/500S/600S
EAF	Gloria Material Technology Corp	ORC System of Rotary Furnace Wasting gas recovering, Generator power and saving energy : 386,079 kw	1.Improve the compressor air system of Hsinying factory, saving energy 988,995 kW/year. 2.Improve the cooler System of QT Line, Saving energy 1264,546 kW/ Year.	
EAF	Walsin Lihwa Corporation	We have developed green steelmaking process technology through the optimizing slag treatment and the recycling process of residual molten steel. It can not only increase the production yield, but also reduce energy and power consumption.	We have keep on improving the rolling process. We have optimized the rolling temperature and related parameters in order to lower energy consumption.	We have developed the precipitation- hardened stainless steel with high strength and good heat resistance. It can be applied to lower vehicles fuel consumption for the improvement of energy efficiency.

		Process development What process developments or changes are driven by customer requirement or changes in their needs? (STEELMAKING)	Product design process Is it optimised for yield, energy, and/or minimum lead time from order to delivery at your customer's door? (STEELMAKING)	Research Topics What research projects (process or product improvement) did your organization conduct? (STEELMAKING)
EAF	FengHsin Steel Co., Ltd.		High cleanliness process has been used in both LF and VD for car parts market.	1. Production cost reduction 2. Inclusion improve 3. Fracture analysis 4. Carbon emission management plan
EAF	Tung Ho Steel Enterprise Corp.		High toughness and cleanliness process has been used in LF.	CCUS (Carbon Capture Utilization and Storage) technology is under surveying.
EAF	WEI CHIH			Improve the billet quality of SBQ grade
EAF	Gloria Material Technology Corp			
EAF	Walsin Lihwa Corporation	We have developed ferritic stainless steel contains higher sulfur and higher molybdenum. It not only dramatically improve machinability, but also offer good corrosion resistance for customer's application.		For the requirement of extremely high surface quality for the consumer goods, we have proceed the project to decrease the inclusions. It will help us to realize how the slag and casting powder have influence on cleanness of the melt.

		Process development What process developments or changes are driven by customer requirement or changes in their needs? (ROLLING MILL)	Product design process Is it optimised for yield, energy, and/or minimum lead time from order to delivery at your customer's door? (ROLLING MILL)	Research Topics What research projects (process or product improvement) did your organization conduct? (ROLLING MILL)
EAF	FengHsin Steel Co.,Ltd.		Several IOT devices have been configured in 3 rolling mills.	1. Defect detection 2.Carbon emission management plan
EAF	Tung Ho Steel Enterprise Corp.	High toughness and low yield ratio process has been used in rolling process.		
EAF	WEI CHIH			Improve the round bar and bar in coil surface quality
EAF	Gloria Material Technology Corp			
EAF	Walsin Lihwa Corporation		We have improved the heat treatment process to reduce the energy consumption for high - strength and wear- resistance stainless steel.	For the high strength and wear resistance stainless steel, We have proceeded the research such as the effect of heat treatment for the mechanical properties and wear behavior.

		Total steel production in 2021	Describe briefly the product range and quantities covered	Planned top 3 projects (on benefit or value) for the coming years	Important plant or equipment start-up commissioning, or de-commissioning
without EAF	Chung Hung Steel	2.39 million tons	1. Hot rolled products: 2.01 million tons 2. Cold rolled products: 266,000 tons 3. Steel pipe products: 44,000 tons	1. Activities to improve the quality of high value-added products 2. Activities to reduce costs 3. Realization of smart factory through application of AI.	1. Develop cold rolled coil produced by the most suitable and most simplified process . Benefits: decrease the manufacturing cost of company and purchasing cost of customers, and increase benefits of both parties
without EAF	YIEH PHUI	1.1 million tons	1. Product production : 1.1 million tons 2. Galvanized : 0.85 million tons 3. Prepainted : 0.25 million tons	1. Activities to improve the quality of high value-added products and reduce costs 2. Development of Zinc-Magnesium coated steel to enhanced corrosion protection. 3. Efforts to reduce our emissions and Install solar power renewable electricity for carbon neutrality. 4. Industry 4.0 and smart factory automation to be driven by artificial intelligence, solve problems by collecting and analyzing big data in real-time. Altering our industrial production by new technologies	Improvement of automatic control of galvanizing line and prepainted line2. New cold rolling mill will start-up commissioning in Oct. 2022.
without EAF	SHENG YU STEEL CO., LTD	375,000 tons	Zinc coated steel coil： 147,000 tons 55% aluminium-zinc alloy-coated steel coil： 80,000 tons Pre-painted coil： 148,000 tons	Galvanizing Line Control System (PLC) revamping. (Due to the COVID-19, the original schedule of 2021 has been postponed to October 2022)	

		Any New Products/Patents/New Process implemented?	What were the 3 key areas of R&D focus?	Do you have any manufacturing improvement team set up for your organization? If Yes, please explain.	Energy savings What are your energy savings developments? (ROLLING MILL)
without EAF	Chung Hung Steel	API 5CT K55 for casing and tubing of low yield ratio.	1. Development of high value-added steel products. 2. Research the most suitable and most simplified process.		Improve the technology of slab temperature control in the reheating furnace to reduce fuel consumption.
without EAF	YIEH PHUI	1. Development of Zinc-Magnesium coated steel to enhanced corrosion protection for construction(PhuizerMax®). 2. High performance PVF (polyvinyl fluoride) pre-painted steel. 3. Yieh Phui has developed anti-microbial plus metallic coated steel sheets (PhuizerGreen® AMC Plus), anti-microbial plus color coated steel sheets (ColorGreen AMC Plus®) and antistatic & anti-microbial plus color coated steel sheets (ColorGreen AS & AMC Plus®) for hygienically rigorous places. 4. Innovate advanced pre-painted steel sheets (SolarKingTM) suitable for environments classified as C4 or above. It can provide long useful lifespan for solar panel brackets.	1. Development of high corrosion resistance steel products. 2. Development of eco-friendly premium steel products. 3. Development of anti-microbial plus coated steel products.	1. As an organization for manufacturing improvement, there is a Smart Factory Planning task force and Carbon Neutrality task force under president.	The technical department improves the furnace equipment of the galvanizing line and prepainted line. The combustion process adopts the self-developed control combustion technology to maintain the combustion performance and reduce fuel consumption and save electricity. -Cost:10 thousand(USD) -Benefit:118 thousand(USD) -Reduce carbon footprint:517,186 kg/CO2 Yieh Phui has developed the intelligent system to volatile solvent treatment mechanism in color coating line, it was adjust the load of extractor and incinerator between processing and preparation to save electric power and natural gas consumption. -Cost:2 thousand(USD) -Benefit:100 thousand(USD) -Reduce electric power: 75 thousand kWh per year -Reduce natural gas: 300 thousand Nm3 per year
without EAF	SHENG YU STEEL CO.,LTD	As per customer' s demand to development the new function coating, such Anti bacterial pre-painted steel and galvanized steel. PCM steel with both high gloss and high workability, applied to the shell of high-grade trash cans.	1. Development of high value-added steel products. 2. Development of eco-friendly pre-painted and metallic coated steel products. 3. Development of pre-painted stainless steel for home appliance application.		1. ROLLING MILL：Energy saving improvement of factory exhaust fan：Automatically stop exhaust fan when line stop to reduce running time. 2. Hot dip galvanized：Energy-saving improvement of plant lights： Revamping cooling tower by counter flow type and reduce the capacity of cooling fan.

		Product development What are your developments in new or changes in existing products?	Process development What process developments or changes are driven by customer requirement or changes in their needs? (ROLLING MILL)	Product design process Is it optimised for yield, energy, and/or minimum lead time from order to delivery at your customer's door? (ROLLING MILL)	Research Topics What research projects (process or product improvement) did your organization conduct? (ROLLING MILL)
without EAF	Chung Hung Steel	Develop API 5CT K55 for casing and tubing of low yield ratio in order to satisfy the customer requirement	Develop cold rolled coil produced by the most suitable and most simplified process in order to increase the benefit of customers and company.		Use AI to arrange the production planning and scheduling in the hot strip mill in order to increase the production efficiency.
without EAF	YIEH PHUI	We use big data to develop an AI model to set the optimal size of purchased raw materials, and to determine and manage the best solution for abnormal production improvement in the pickling process. This allows us to reduce unnecessary adjustments and produce low-cost, high-quality steel. Yieh Phui has been committed to providing the green products. We cooperate with hot rolled supplier to develop 20% recycled content materials and it could be kept the prime product quality via specified manufacturing parameter control. The recycled content product was be applied to LED monitor back cover application..	Successfully developed chrome-free surface pretreatment which is decomposed during degreasing process in the coil coating line. By replacing conventional oil treatment, the new pretreatment successfully breached the barrier of the European Safeguards, with a accumulated annual sale of more than 60,000 tons.	We use new " leading strip" facility to reduce cold rolled scraps and increase product yield	We use big data to develop artificial intelligence models to minimize trimming scrap and reduce costs.
without EAF	SHENG YU STEEL CO., LTD	Development of antibacterial roof backplane			

Thank you for your listening
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