

POLISH CRUDE STEEL PRODUCTION IN PANDEMIC YEAR OF 2020 COMPARED TO PREVIOUS FIVE YEARS

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The article presents the situation in the Polish steel sector in 2020. The year 2020 was called the “pandemic year” due to the economic and social impact of the COVID-19 pandemic. The scope of the analysis included: crude steel production total and by processes in Poland in months of 2020. The data on crude steel production was compared with data from previous five years from 2015 to 2019. The analysis performed provides detailed information on increases or decreases in the amount of crude steel produced in Poland in individual months. The paper is based on data from the Polish Steel Association in Katowice.

Keywords: crude steel production, COVID-19, crisis, comparison, Poland

INTRODUCTION

In January 2020 China confirmed reports that a novel coronavirus (COVID-19), originating in the central city of Wuhan, posed a serious threat to human health [1]. The government announced several measures to contain the spread of the virus, including travel restrictions and bans on good shipments, while the World Health Organisation declared a global health emergency [2]. Finally, the public health crisis has had an impact on businesses and markets globally. The impact of this crisis on industries was inevitable. The negative economic impact quickly spilled over from one country to others. In 2020, the activity of societies and economies around the world was severely restricted in order to curb morbidity. The negative effects of the restrictions are industrial losses [3]. Pandemic (lockdown) also interrupted supply chains [4]. Falling demand for steel has held back steel production growth in many countries. Global crude steel production reached 1 864 million tonnes (Mt) for the year 2020, down by 0,9 % compared to 2019 [5]. The EU produced 139 Mt of crude steel in 2020, a decrease of 11,8% compared to 2019. Germany produced 36 Mt of crude steel in 2020, down 10,0 % on 2019. In Poland in the year under review, steel production decreased by 1 million tonnes (Mt) compared to the previous year [6]. This article analyses steel production by month in Poland in 2020. Data from 2020 was compared with data from previous years, the period from 2015 to 2019. The comparisons have a monthly structure.

CRUDE STEEL PRODUCTION IN POLAND IN 2020 COMPARED TO PREVIOUS FIVE YEARS

The data used for the analysis are summarised in Table 1. Used data are prepared by Polish Steel Association.

Table 1 **Crude steel production in Poland in 2020 compared to previous five years**

Year	2020	2019	2018	2017	2016	2015
Month	thousand tonne (mt)					
Jan.	720	844	909	852	717	817
Feb.	720	765	858	796	803	767
Mar.	658	912	907	855	795	818
Apr.	671	805	827	891	748	780
May	637	806	881	881	661	895
Jun.	638	695	840	853	691	834
Jul.	700	812	809	912	649	764
Aug.	505	695	753	846	771	703
Sep.	599	613	824	865	754	784
Oct.	692	756	830	871	805	761
Nov.	647	644	850	821	786	624
Dec.	664	609	878	888	835	652
Average	654	746	847	861	751	767

In 2020, the lowest steel production in Poland was in August (505 thousand tonnes). Compared to the monthly average production (654 thousand tonnes), this was a decrease of 149 thousand tonnes. High production was recorded in January and February 2020, that is before the pandemic (in Poland, the first patient to contract COVID-19 was in March 2020). From March 2020 there was a total lockdown in Poland. Optimistic scenarios, with steel production above 9 million tonnes, for the steel sector in Poland have been changed to pessimistic ones [7]. Comparing 2020 crude steel production in Poland (COVID-19 crisis) to production in the global

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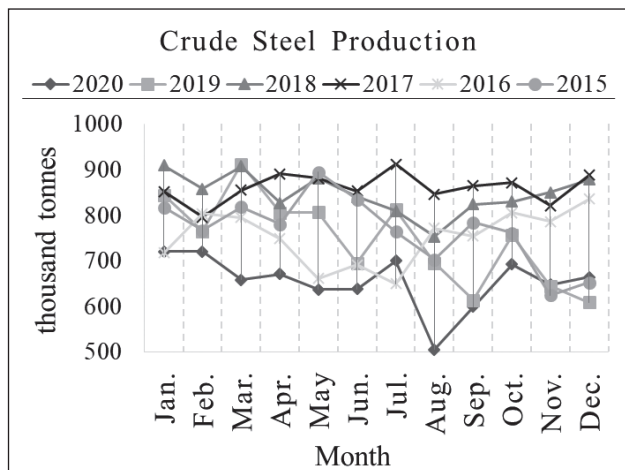


Figure 1 Trends for crude steel production in Poland in 2020 compared to previous five years

financial crisis, production in 2020 was higher than production in 2009 [8]. In 2020, Poland produced 7,9 million tonnes of crude steel, and in 2009, steelworks produced 7,1 million tonnes of crude steel.

From July 2020, the lockdown in Poland is partial (restrictions adjusted to increase or decrease in incidence). The average monthly steel production in 2020 was the lowest compared to the average monthly production in the period from 2015 to 2019. The highest average steel production was in 2017 (861 thousand tonnes per month). Annual production for the period under review was as follows: 2020: 7,9 million tonnes; 2019: 9 million tonnes; 2018:10,2 million tonnes; 2017: 10,3 million tonnes, 2016: 9 million tonnes and 2015: 9,2 million tonnes. The steel production plane for the analysed period is shown in Figure 1. Analysis of the steel production plane shows a significant increase in production by month from 2017 to 2018. The highest monthly production was in January 2018 (909 thousand tonnes) and the lowest in August 2020 (505 thousand tonnes). The most common high production range was between 800 thousand tonnes and 850 thousand tonnes. Obtained number for intervals: 1 for 500-550, 1 for 550-600, 8 for 600-650, 9 for 650-700, 6 for 700-750, 13 for 750-800, 18 for 800-850, 12 for 850-900 and 4 for 900-950. Steel production trends are shown in Figure 1. Trends show a large difference between 2020 (the lowest production) and 2017 (the highest production), between June 2020 and June 2017.

CRUDE STEEL PRODUCTION IN POLAND BY PROCESSES IN 2020 COMPARED TO PREVIOUS FIVE YEARS

Steel production by processes in 2020 was shown in Figure 2.

In the months of February, May, June, August and September, more steel was produced in Poland using Electric Arc Furnace (EAF) than Basic Oxygen Furnace (BOF) technology. In the remaining seven months the

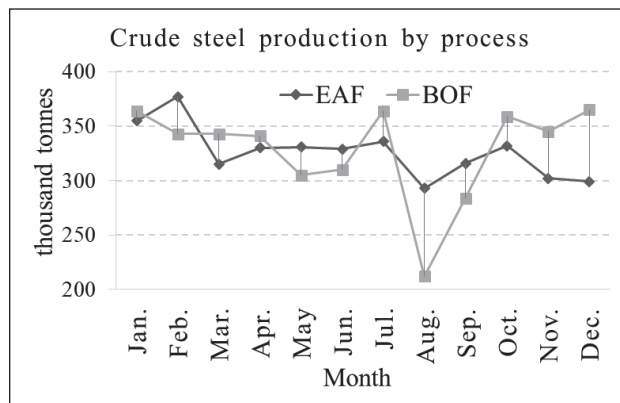


Figure 2 Trends for EAF and BOF processes in Poland in 2020

situation was the opposite. In August 2020, Poland saw the largest drop in steel production using blast furnace technology (production was 212 thousand tonnes). In 2020, the steel mill and blast furnace at the Krakow steelworks in Poland were shut down, which translated into a decrease in production capacity in the BF/BOF process. Data on steel production by processes were compared with analogous data from the previous five years. The maximum monthly production of steel by EAF, during the analysed period, was 424 thousand tonnes in November 2018 and the minimum was 231 thousand tonnes in December 2015. Figure 3 shows obtained trends for EAF process. The dominant range of EAF steel production was 350 and 400 thousand tonnes (it was 26 times during the analysed period). Obtained numbers for particular intervals: 2 for 200-250, 9 for 250-300, 24 for 300-350, 26 for 350-400, 11 for 400-450. Based on the trends of EAF steel production in Poland, the biggest difference was noted between Decembers 2015 and 2018 and Novembers 2015 and 2018.

Figure 4 shows trends for BOF process. The maximum monthly steel production by BOF, during the analysed period, was 517 thousand tonnes in March 2018, and the minimum was thousand tonnes in 212 in August 2020. The dominant range was: 450 thousand tonnes and 500 thousand tonnes of produced steel by the BOF

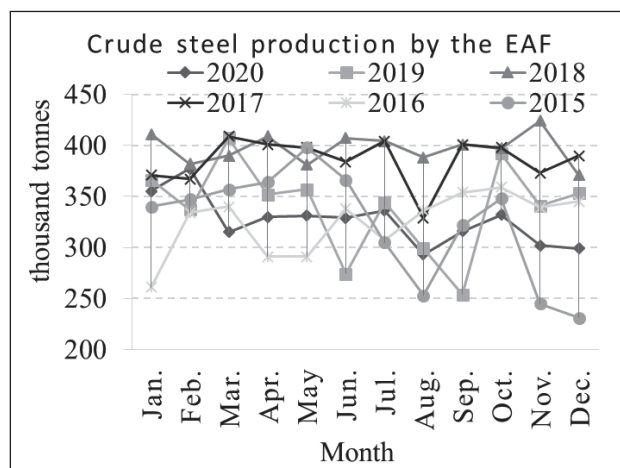


Figure 3 Trends for EAF process in Poland in the period from 2015 to 2020

Table 2 Share of steel production in thousand tonnes by processes in total crude steel production in Poland (monthly)

a) in: 2020, 2019, 2018

	2020		2019		2018	
	EAF	BOF	EAF	BOF	EAF	BOF
Jan.	49	51	43	57	45	55
Feb.	52	48	44	56	45	55
Mar.	48	52	45	55	43	57
Apr.	49	51	44	56	49	51
May	52	48	44	56	43	57
Jun.	52	48	39	61	48	52
Jul.	48	52	42	58	50	50
Aug.	58	42	43	57	52	48
Sep.	53	47	41	59	49	51
Oct.	48	52	52	48	48	52
Nov.	47	53	53	47	50	50
Dec.	45	55	58	42	42	58

b) in: 2017, 2016, 2015

	2017		2016		2015	
	EAF	BOF	EAF	BOF	EAF	BOF
Jan.	44	56	36	64	42	58
Feb.	46	54	42	58	45	55
Mar.	48	52	43	57	44	56
Apr.	45	55	39	61	47	53
May	45	55	44	56	44	56
Jun.	45	55	49	51	44	56
Jul.	44	56	47	53	40	60
Aug.	39	61	44	56	36	64
Sep.	46	54	47	53	41	59
Oct.	46	54	45	55	46	54
Nov.	45	55	43	57	39	61
Dec.	44	56	41	59	35	65

(24 times in the period analysed). Obtained numbers for particular intervals: 1 for 200-250, 1 for 250-300, 9 for 300-350, 14 for 350-400, 18 for 400-450, 24 for 450-500, 5 for 500-550. Comparing the ranges for EAF steel to the ranges for BOF noted, higher ranges for BOF production than for EAF process steel production. Trends for BOF process noted the largest difference in production in August 2020 versus August 2017 (Figure 4).

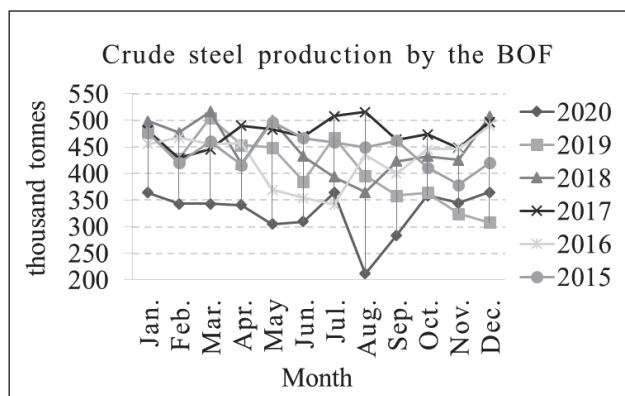


Figure 4 Trends BOF process in Poland in the period from 2015 to 2020

CRUDE STEEL PRODUCTION TOTAL AND BY PROCESSES IN 2020 COMPARED TO AVERAGE PRODUCTION IN PREVIOUS FIVE YEARS

In Table 3, the steel production in the pandemic year was compared with the average monthly production for the previous five years.

Table 3 Crude steel production in thousand tonnes in Poland in 2020 compared to average production (A*)

	2020	A*	2020	A	2020	A
	Total		EAF		BOF	
	Jan.	720	828	355	350	364
Feb.	720	798	377	353	343	444
Mar.	658	857	315	381	343	477
Apr.	671	810	330	363	341	447
May	637	825	331	365	305	460
Jun.	638	783	329	354	310	422
Jul.	700	789	336	353	364	434
Aug.	505	754	293	321	212	432
Sep.	599	768	316	346	284	422
Oct.	692	805	332	379	359	426
Nov.	647	745	302	344	345	405
Dec.	664	772	299	338	365	444

In 2020 in each month, total crude steel production was lower than average total crude steel production. EAF steel production was higher in January and February 2020 compared to average production in previous periods. From March to December 2020, the EAF outputs were lower vs. previous periods. BOF process was lower in 2020 compared to average steel production obtained in the BOF process. All trends are presented in Figure 5.

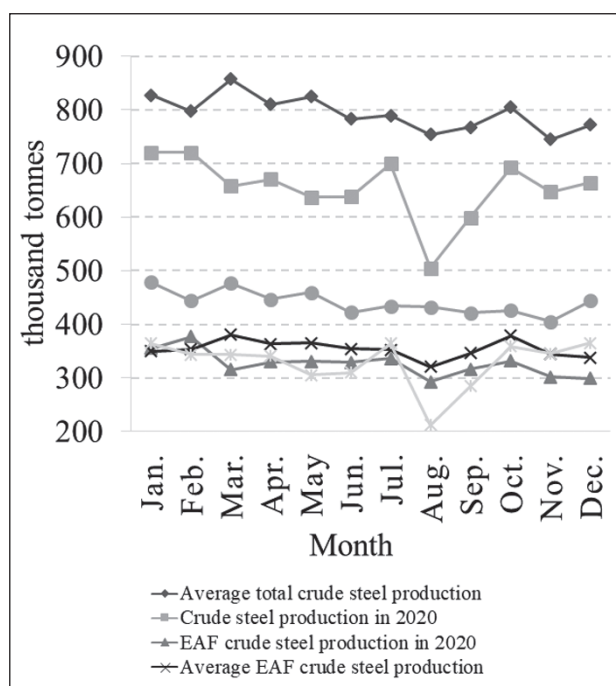


Figure 5 Trends in 2020 vs. previous five years

CONCLUSION

Based on the analysis, the following conclusion was drawn: • the Polish steel sector reduced steel production during the COVID (production was lower than average production in five previous years) • BOF steel production was lower too but EAF steel production was lower from March to December 2020 than average EAF production in previous five years.

Acknowledgements

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Note: B. Gajdzik is responsible for English language, Katowice, Poland