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ELEMENT

Your Guide to Foundries in Pakistan

IFCE-2018 EDITION

PAKISTAN FOUNDRY ASSOCIATION
PFA for Development of Foundry Industry

Industrializing Pakistan دنیا ہماری منڈی

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PRESIDENT MESSAGE

As we move towards preparing our local foundries for export markets, Pakistan Foundry Association's (PFA) 7th International Foundry Congress & Exhibition (IFCE) held on 13th-15th November, 2018 at Pearl Continental Hotel, Lahore-Pakistan, played an important role in highlighting new technologies in foundry industry.

We are grateful to Mr. Abdul Razzak Dawood, Advisor to PM on Commerce, textile & Industry and Mr. Shafqat Mehmood, Federal Minister of Education and Skills Development for gracing the occasion with their participation. It was honor for PFA to enjoy the presence of important officials from Federal and Punjab Governments.

PFA requested the honorable ministers that Imports of castings in various sectors should be reviewed by government and unnecessary import of casting should be stopped. The government should look at this industry as a driving force for the growth of economy in Pakistan. I was greatly encouraged to see executive committee members and members of PFA, academia, foundrymen, foreign delegates from Europe, China, India, UK, Turkey and Germany etc., national & International industrial representatives and young engineers participating in IFCE-2018 and contributing to the technical growth of this sector.

The technical sessions at the event was attended by the local foundries and were guided to adopt new technologies to improve casting production. 25 Technical papers were presented by national and International foundry consultants and speakers. Beside other activities, my personal delight was to witness academia- industry interaction at IFCE-2018. Special submissions were made to honorable minister, Mr. Shafqat Mehmood, for upgrading the metallurgy curriculum in technical universities of Pakistan, with the help of industry, so that the engineers could work with new technologies in small and medium enterprises.

Once again, I thank all delegates who traveled from different countries to participate in IFCE-2018, and enjoyed the historical city of Lahore during their stay.

Sikandar Mustafa Khan
President-PFA

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CENSUS OF WORLD CASTING PRODUCTION

Global Casting Production Expands

Worldwide casting production grew by 5.3% during a busy 2017.

A MODERN CASTING STAFF REPORT

In 2017, global production increased to more than 109.8 million metric tons, an increase of 5.3% when compared to the previous year, according to this year's Modern Casting Census of World Casting Production. The nearly 110 million metric tons of metal castings produced in 2017 represent an increase of 5.5 million tons. This rate of growth comes after two years of less than a half percent growth. Of the 33 countries that pro-Worldwide casting production grew by 5.3% during a busy 2017. a modern casting staff report vided data for the past two years, 25 reported an expansion in annual volumes when comparing 2017 to 2016. Poland increased its production by 22.1%, with gains across the board in terms of alloys. Among the top-10 countries in total output, Russia had the highest growth in 2017 with an increase of 8.3% in production.

China increased its total production by two million metric tons to a total of 49.4 million. Meanwhile, the U.S. saw its tonnage increase by 4%, and the gray-iron heavy India saw an increase of 6.2%. Total production of iron increased, with gray iron growing 6% and ductile iron expanding by 3.8%. Steel output grew by 6%, while aluminum production jumped by 6.7%. The data reported in the Census of World Casting Production is supplied by each nation's metalcasting association or similar representatives., as well as the World Foundry Organization and CAEF-The European Foundry Association.

2017 Casting Production (metric tons)

Country	Gray Iron	Ductile Iron	Malleable Iron	Steel	Copper Base	Aluminum	Magnesium	Zinc	Other Nonferrous	Total
Austria	42,900	102,900	A	10,800	-	148,287	-	-	-	304,887
Belarus	-	-	-	-	-	-	-	-	-	258,900
Belgium	26,900	8,400	A	7,300	-	799	-	-	-	43,399
Bosnia & Herzegovina*	17,500	9,100	-	1,350	-	10,500	-	-	-	38,450
Brazil	1,261,107	517,222	-	186,616	20,811	223,359	5,458	1,154	-	2,215,727
Bulgaria	30,300	9,200	A	10,400	292	5,540	-	42	-	55,774
Canada	330,841**	-	-	90,091**	14,237**	211,374[B]	-	-	-	646,543
China	21,150,000	13,750,000	600,000	5,550,000	800,000	7,300,000[C]	-	-	250,000	49,400,000
Croatia*	31,100	11,800	-	50	221	25,174	-	25	15	68,385
Czech Republic	176,000	55,000	A	64,000	20,000	101,000	-	1,000	-	417,000
Denmark	27,500	56,100	A	-	1,292	3,014	-	-	100	88,006
Egypt	175,000	-	-	10,000	8,000	7,000	-	-	-	200,000
Finland	19,500	36,300	A	6,200	3,247	2,548	-	101	-	67,896
France	574,100	696,300	A	60,400	17,877	346,899	-	24,719	2,501	1,722,796
Germany	2,421,400	1,587,700	A	175,800	79,192	1,137,096	18,190	62,188	4	5,481,570
Hungary	24,600	54,500	A	3,100	1,799	124,229	327	1,717	-	210,272
India	8,442,300	1,227,200	50,000	1,030,200		1,305,400	-	-	-	12,055,100
Italy	755,800	425,100	A	54,100	71,007	856,381	8,001	72,007	700	2,243,096
Japan	2,281,000	1,403,612	42,000	161,900	75,401	1,489,700[D]	-	-	-	5,453,613
Korea (Republic of)	1,019,800	686,500	2,000	159,800	25,700	629,400	-	-	13,000	2,536,200
Mexico	892,188	526,897	-	373,965	217,200	817,911	-	81,300	-	2,909,461
Norway	8,300	21,100	A	-	-	8,883	-	-	-	38,283
Pakistan	163,000	24,730	-	45,550	15,540	17,600	-	-	-	266,420
Poland	480,000	160,000	A	50,000	6,100	330,000	-	7,500	2,900	1,036,500
Portugal	41,500	97,200	A	5,900	16,800	35,000	-	2,250	-	198,650
Romania	20,000	3,500	-	7,000	4,500	70,000	7,000	500	250	112,750
Russia	2,637,500[E]	-	-	862,500	-	725,000[F]	-	-	-	4,225,000
Serbia	26,300	3,100	-	18,150	3,100	10,120	1	30	-	60,801
Slovenia	75,100	38,600	A	30,200	842	51,209	-	-	-	195,951
South Africa	140,000	157,000	-	93,500	14,000	38,000	-	500	-	443,000
Spain	365,700	698,100	A	64,900	15,096	141,810	-	8,941	850	1,295,397
Sweden	159,400	55,600	A	21,750	8,312	46,138	1,138	9,274	-	301,612
Switzerland	36,500	22,800	A	1,100	2,021	13,373	-	1,209	-	77,003
Taiwan	605,081	208,293	-	66,193	30,826	368,286	-	-	-	1,278,679
Turkey	720,000	825,000	A	170,000	25,000	380,000	-	35,000	-	2,155,000
Ukraine**	400,000	120,000	30,000	580,000	60,000	280,000	15,000	25,000	50,000	1,560,000
U.K.	138,000	196,000	A	44,700	8,500	136,200	2,640	7,350	-	533,390
U.S. Metric	3,327,027	2,633,294	40,034	1,264,026	209,369	1,679,072	138,890	325,062	51,292	9,668,066
WORLD TOTAL	49,043,244	26,428,148	764,034	11,281,541	1,776,282	19,076,302	196,645	666,869	371,612	109,863,577

* 2016 Results ** 2015 Results A Includes Malleable Iron B Source: Aluminum Association C Includes Magnesium D Includes all diecasting E All iron F All nonferrous

Metalcasting Plants by Nation & Trends

Country	Iron	Steel	Nonferrous	2017 Total
Austria	20	3	33	56
Belarus	-	-	-	135
Belgium	-	-	6	6
Bosnia & Herzegovina*	5	2	4	11
Brazil	452	153	565	1,170
Bulgaria	-	-	18	18
Canada**	-	-	-	175
China*	14,000	4,000	8,000	26,000
*Croatia	26	5	-	31
Czech Republic	-	-	37	37
Denmark	8	-	7	15
Finland	11	7	14	32
France	-	-	-	380
Germany	192	45	337	574
Hungary	27	7	86	120
India	-	-	-	4,600
Italy	139	37	862	1,038
Japan**	-	-	-	1,612
Korea	550	-	100	650
Mexico	-	-	-	800
Norway	5	-	6	11
Pakistan	1,595	60	185	1,840
Poland	180	35	240	455
Portugal	23	8	57	88
Romania	-	-	-	100
Russia*	-	-	-	1,140
Serbia*	11	8	17	36
Slovenia	-	-	45	45
South Africa	38	43	86	167
Spain	46	29	52	127
Sweden	26	12	61	99
Switzerland	15	2	39	56
Taiwan	-	-	-	-
Turkey	441	105	386	932
Ukraine	-	-	-	-
U.K.*	270	280	290	840
U.S.	617	341	977	1,935
TOTAL	**18,697**	**5,182**	**12,510**	**45,331**

*2016 data **2015 data

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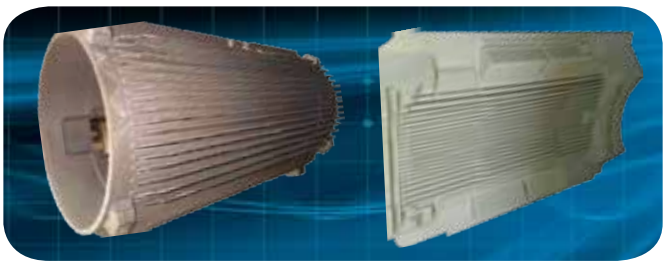

Providing Customized Solutions

Forace Group is a name synonymous with reliability. As the largest producer of Foundry Consumables in India, we offer a wide range of solutions to our ever increasing clients across the globe. Backed by robust infrastructure, a state-of-the-art fully automated manufacturing unit, R & D and Quality control centres, Forace Polymers delivers customized solutions for Binders, Coatings, Foundry Consumables, Phenolic-Liquid and Powder Resins.

Binders

Shell resin system (solid / liquid / regular / NF)
Two part no bake ester set system (steel, SG, NF)
Phenolic urethane self setting system (steel, Iron, NF)
Phenolic urethane gassing cold box
Hot box system for ferrous & non ferrous
Furan no bake (steel, SG, CI, NF)
CO_2 cured phenolic
Inorganic no bake system

Coatings

Zircon spirit/water based
Graphite spirit/water based
Alumino-silicate mix refractory spirit/water based
Magnesite spirit based
Graphite water base for metallic trough
Bismuth base coating
Coating for lost foam process
Tellurium base coating
Sulphur blocking coating

Other Foundry Consumables

Thinners
Pattern cleaning agents
Release agents
- Release agent for green sand mould
- Release agent for alkaline phenolic no bake system
- Release agent for cold box
- Parting agent for shell (water / solvent based)
- Aluminium based release for no bake system

Core joining paste
- Hot to hot
- Cold to cold
- Cold to cold (ultra fast)

Collapsible agent for silicate
Mould sealing rope
Sealing compound for mould and core
Silicon carbide, zirconia foam filters
Ceramic sand
Chromite sand
Slag coagulant (perlite ore)
Sand Additives (Sphereox) of Chesapeake Specialty Products, USA
Furnace & refractory cleansing fluxes of ASI International, USA
- Redux EF40L briquettes
- Redux EF40 bricks

Additive for thermal reclamation of alkaline phenolic no bake resin
Anti Veining solution from John Winter & Co., UK

Non Ferr ous Foundry Consumables

Forace die coatings
- Graphite based die coatings
- Silicate based die coatings
- Aluminium based die coatings
- High pressure die coatings
- Zircon water base dressing
- Graphite based lubricant (plunger lubricant)

Forace degasser
- Forace degasser N2 (nitrogen based)
- Forace degasser CF (chlorine free)

Forace grain refiner (powder & tablet)
Forace cover fluxes
Forace modifier
Forace mastic
Forbral
Forbruss
Ceramic alumina foam filter
Master alloys
Others for refractory industry

Shell Resin Coated Sand

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For ages Lahore has been a brilliant symbol of a gracious way of life. It had been the abode of great people, both in the spiritual as well as worldly realms. It has the imposing reflections of its Muslim builder's having ambitions and cosmopolitan tastes. The complex variety of Lahore which has grown form the wilderness, when Changez Khan orders destroyed its suburbs, to the 20th century developments, is distinctive character of the city in various places and provides testimony to its cultural heritage.

Shahi Qila

Greater Iqbal Park

Lahore Museum

Lahore having been the seat of many imperial dynasties possesses interesting historical reminiscences. There is a fascinating and colorful panorama of extraordinary Mosques, Mausoleums, Fort and Gardens. The grandeur of Lahore cannot be solely attributed to its buildings, gardens, monuments and other historical places. Rather it is its atmosphere and ambience, its moods of joy and sorrow, fairs and funs, pains and pleasures, and above all the colorful life of its people which actually render impetus to the spirit and sole of Lahore.

The architectural heritage of Lahore needs no description. The architectural works of Lahore, sensuous in their exploitation of colors, textures, materials, intellectual in vigorous application of intricate formal patrons and spiritual in essence at once seduce the art lovers.

Pakistan Foundry Association organized 7th International Foundry Congress & Exhibition (IFCE-2018) on 13-15th November, 2018 at PC Hotel, Lahore-Pakistan. It was organized to provide an opportunity to interact with the international casting machinery manufacturers to upgrade of technology and develop business relations to enhance export. The IFCE-2018 provided an opportunity to investors, machinery manufacturers, foundry material suppliers and service providers to showcase their products and services to their counterparts and potential customers to make alliance.

Pakistan Foundry Association organized a sumptuous welcome dinner for foreign guests to have a get together with PFA members and executives on 13th November, 2018 for formal inauguration of IFCE-2018. Mr. Sikandar Mustafa Khan-President-PFA welcome the chief guest Mr. Razzak Dawood, Advisor to PM on Commerce, textile, and industry and Mr. Shafqat Mehmood, Federal Minister of Education and Skills Development. He also acknowledged the presence of all members of PFA, Vice Chancellors from various Universities, technical teams from leading industrial sectors and foreign delegates, Speakers, Foundry Consultants, Exhibitors and foundry friends.

Earlier, Mr. S. M Khan squaded Mr. A. Razzak Dawood to open the exhibition and visited stalls from multi-national and local manufacturers. He was joyed to see the technology development in Pakistan and foreign companies showcasing their products. He took keen interest in the display of Millat Tractors Limited, Bolan Castings Limited, Qadri Group Companies, Chenab Engineering Works & Foundries (Pvt) Ltd, KSB Pumps Company Ltd., EXCEL Engineering (Pvt.) Ltd., MOSH Pakistan, ELECTRO HEAT (PVT) LTD., AMMARIAN Industry, Karachi Shipyard & Engineering Works Limited, Spectra Corporation, Rastgar & Co, PAKTHERM (PVT) LTD, Digital Data Systems, Qadir Engineering, Matchless Engineering (Pvt.) Ltd, Model Steel, Mecas Foundry, Shahsons Pakistan (Pvt) Ltd, Chicago Metals Pvt. Ltd, Zaid Products (Pvt) Ltd, Ahmed Corporation, Gohar Enterprises (Private) Ltd, Infinity, KAMRAJ ENTERPRISES (PVT) LTD, Ideal foundry, Pakistan Sands(Regd), Ravi Autos (Pvt.) Ltd. UET, Lahore and Minrox Private Limited and many more

He said the important people from the government of Pakistan are present with us today and it is an exclusive honor for Pakistan Foundry Association to enjoying. The purpose of PFA is to develop the foundry industry of Pakistan by providing support in skills development and cooperating with each other in up grading the technologies.

Foundry is the basic Engineering industry of Pakistan and worldwide. Almost all industry is dependent on foundry Industry. He highlighted that Pakistan needs to initiate cluster growth in this industry to increase engineering exports and take our global share of castings and engineering items. Imports of

castings in various sectors to be reviewed by government for the growth of local industry. He said we are trying our best to coordinate with the government to remove the difficulties and problems we are facing in foundry practices. It is my pleasure and encouraged to listen Mr. Razzak Dawood, Advisor to PM on Commerce, textile, and industry, in the meeting with engineering development board which has been restored by him for which he is positive and will extend full support to the industry in Pakistan. I think it is the time for government to look on the industry as a driving force for the development economy in Pakistan. I feel it is important that we should all get heads together to try and see how we can increase and improve exports. I understand there is a tremendous potential in the foundry industry to provide inputs to Pakistan industry but it has also the great potential to export from Pakistan. We are focusing and trying to make our industry as competitive as possible.

PFA have focused on providing inputs to our foundries through the educational institutions like Foundry Service Center at UET Lahore. I thank Prof Dr. Fazal Ahmad Khalid, SI Vice Chancellor Punjab Tianjin University of Engineering & Technology for his cooperation and support extended by him for the operation of Foundry Service Center. We now have full-fledged Foundry service center where we can bring in workers as well as executives and managers to learn more about the foundry technology I think it is important for us to get advantage from this center and keep it running.

He has requested Mr. Shafqat Mehmood, Federal Minister of Education and Skills Development, federal secretaries from various departments, to develop an interaction between PFA and other technical universities. He said foundry technology can be learned in the Foundry Industry subject to have some basic knowledge, information and basic education, then you can do much better in the foundry. It is important to compete with the International world if we have skills and well placed practice. So I request for more and more interaction with the educational institutions. Infinity school of engineering is another technical institute which is really holding hands of PFA members and other organizations to impart technical education. I think these are initiatives which PFA has taken and will continue to develop more and more educational institutions in Pakistan. To conclude I would like to thank you for being with us today and I would also like to thank the delegates specially traveled from different countries i.e.. Turkey, India, China, UK, Germany and many more to be with us today. I am sure all delegates from abroad will have a good time in Pakistan and specially don't forget to visit historic city of Lahore during your stay. I thank you once again for joining us in this event.

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Mr. Masud Akhtar, Vice President-PFA presented the profile of PFA during IFCE-2018. Pakistan Foundry Association was established in 2003 and it offers a platform for foundries in Pakistan for technological up-gradation as well as skills development preferably focus is small & medium foundries. There is a great potential offered by local foundries as well as their strengths which need certain recommendations those I will bring to the attentions of our chief guests where we need some support.

Our objectives are to develop experts in the field of foundry so that they can support foundry industry operating in Pakistan. We are also focused on establishing the training institutes to produce trained manpower to run these foundries skilful, especially when we see technological up-gradation which are very essential to maintain productivity and quality in the privilege circumstances. Another objective is to build bridges between various organizations and to support PFA members & others so that they can access to the international events as well as international forums.

We have about 1530 foundries operating in and out of these foundries their production capacity is 400000 tons and the current production is 250000 Tons. Bulk of production is basically castings in MS steel, Gray Iron, Ductile iron and non-ferrous etc. The business segments in which we are active is primarily working for automotive as well as tractors castings, heavy castings for

heavy machinery followed by producing consumable parts for industry i.e. Cement, textiles and others like chemical as well. Pakistan is set to grow as a producer and exporter of castings, expecting high growth in the auto sector, tractor industry, agriculture machinery and truck, bus sector.
Bulk of the business is in this particular sector followed by PUMPS, VALVES and electric motors and then we also do, some of our members doing very effectively castings, Some of our strengths that I would like to share with you, our local foundries are now well placed to tap local as well as international business. Certain foundries have already upgraded their technology and working at International standard. Our low labor cost is an advantage for competitive business in international market. Moreover, setting up new foundries comparatively at the lower cost with faster completion time have increased our capacity to manufacture many equipment in our country to support expansion our foundry industry in Pakistan.
The export of Engineering products from Pakistan is 81.42 Million US $, it includes foundry sector also. We don't have the separate figures for the casting that we are exporting but we do have the figures of engineering goods and export of engineering goods is touching almost about a billion dollars per year.

7th International foundry Congress & Exhibition is a mega event which provide an opportunity to investors, machinery manufacturers, foundry material suppliers and service providers to showcase their products and services to their counterparts and potential customers to make alliance. IFCE is organized every alternate years. We would like to thank our partners who have been supporting PFA effectively.

Now, I would like to present certain recommendations for the future growth of the foundry. I feel that government is currently privatizing a lot, specially focusing on export of engineering goods. We feel that foundry sector have paly an effective role to enhance the export of engineering goods and if we could include in the priority sectors. Probably it would certainly help a lot for the foundry sectors. Then we would like to request you special incentives for foundries operating in small and medium enterprise especially in terms of technology up-gradation. Those who have the resources they have develop their foundries in technology. So some sort of support for technology up gradation will certainly help to grow up foundries and basically tape international market. We have identified that defence sector can play a very effective role in supporting small and medium enterprises. They can play the same role as auto industry did for PAPAM, similarly some handholding is provided from any other sector it will really benefit the foundry sector a lot. We would also like to recommend if engineering development board could collaborate with Pakistan foundry Association and share the list of imported castings. We feel lot of castings which have been imported can be manufactured in house. So we have the recommendations which I have already share with Engineering Development Board. Another problem we and small & medium foundries are currently facing from last 2-3 years that during winters due to environmental concerns a lot of these foundries are shut down. We have been receiving lot of complains from the friends of other sectors. Our suggestion is if we can give 2-3 years to theses for up gradation their facilities rather than taking snap action every year and closing them down, certainly help them a lot. Another recommendation which Mr. Sikandar Mustafa Khan has already touched upon is that our materials subject is being talked very widely in our engineering universities in Pakistan. We feel that some of the curriculum needs to be updated so that it is in the line with latest foundry technology.

So this will help to basically prepare skills people for the existing foundry industry in Pakistan.

A very good Skills development initiative is taken by PFA with the collaboration of SMEDA and UET, so we have a Foundry Service Center which we feel needs to be basically more effective and result oriented through better collaboration with private sectors and public sector. One of the example of skills development is Infinity School of Engineering School. This is a non-Profit institute for skills development operating in collaboration with Ravi Spherocast as well as PFA. The students trained in the institute are valuable for industry and playing a very vital role there. They are producing trained army for engineering sectors. Thank you very much.

He started his speech with the name of almighty Allah. He thanked to Mr. Sikandar Mustafa Khan, Mr. Masud Akhtar for inviting him on this event. It is indeed a great pleasure for me to be among the engineering family and it is nice to be here and feel absolutely comfortable. I am not talking to you as a government official rather I am a one of you and up there to represent you. I came to foundry association get together before and today I am here again. I saw the exhibition and I am so happy to see, slowly but surely we are now going up and getting wider range of products they way casting is getting there, it is indeed a great pleasure for me .Actually it is a fundamental industry fully engineering getting better and more competitive it is goods for all of us and I really feel it. Pakistan Foundry Association is the only which is following the rules of these type association working in the west.

Slowly but surely, getting more and more people there, having lectures, showcase their products and so things are moving up by supporting each other and particularly small industries and I acknowledge it is an absolutely fabulous. So I have been in the government eighty odd days and I do get some criticism what we have done for engineering sector and I accept it is true. I haven't made any major moves right now except one which I come to for our engineering industry. I explain to you the biggest problem we faced in the country today is our balance of payment and the other big problem we are facing is the yawning trade gap and the trade gap now between our import and export has jumped to collusive 37 billion dollar which is a huge amount of gap. We have fiscal, current account deficit, yawing trade etc. So myself and finance minister are trying to boost the level of our export. So right now first and foremost thing is to get market access for our five export industry which are already in the front like leather, sports and textile industry etc. So in the supplementary budget came we broke down the duties for those industries. Now question arise how will make these five export sectors more competitive international. So it is decided that for these five sectors gas price should be internationally competitive. Now it will be 6.5 dollar per mmcf which is the international price. Similarly, for electricity sector we will reduce the price for them 7.5 cents now they to be internationally competitive.

The third area we are really focusing is to prepare our self for going to China and that took lot of time because some fundamentals

issues are also discussed how we will expand CPEC and move forward on the opportunity we have. It took the fair amount of time. I honestly feel this we are now getting ready and InshaAllah I am seeing the early signs as our export is going up. People have asked me what is your target of this year and I didn't give the figure as I am waiting for the trip from China. Finally it works out but I can give you one thing our highest export we ever did is 25 billion dollars and we will surpass our past record and will go beyond the 25 billion dollars. Has the government is friendly in the past 10 years with the industry? I don't think so and you know in your too and I in my heart. On April 2017 me and Mr. Sikandar Mustafa Khan went to Islamabad to meet the Prime Minister Mr. Khakaan Abaasi and we showed him the slides that there are deindustrialization going on in the country. We give them reasons and show them what's going on. Now the responsibility on me to correct it and we are trying to correct it. The first thing we did for export industry and reduced the regulatory duties and making them competitive.

I did lot of analysis in Islamabad and became absolutely clear whenever we increase the duties up our exports are fallen and whenever we broke the duties our export will go up. So these types of problem we are facings and we are working on it and Inshallah we will resolve theses. Please remember every time when the new government comes, there will be new hopes, dreams and expectations and new inspirations. I truly wants to make true all expectations of the peoples. I just give you the example of cement industry. It was doing very well and having 55 million tons capacity and export was 5 million Tons and guess what no subsidy and we today have four industries we are now getting into, export and there is no subsidy, I am talking about big ones, Cement, Rice, Sugar. When I went to the cement people this morning and I had a meeting with them, I asked them what I can do for you to help you. You know what they said" Just one thing just leave us alone and don't bother us" is not a fabulous sign and I said yes I salute you and don't bother you just keep going on and you are a very responsible

industry and you will do well in future too. But the one thing I had done for the engineering business is to revive the Engineering Development Board which was closed down by the old cabinet. When I talk about the Engineering Development Board I have to pay respect to Dr. Akram Sheikh. He said you are our mentor and you have played a leading role for the Engineering Development Board. We look forward in future for massive success.

Pakistan Foundry Association organized 7th International Foundry Congress & Exhibition (IFCE-2018) on 13th, 14th & 15th November, 2018 at PC Hotel, Lahore-Pakistan. Mr. Shafqat Mehmood, Federal Minister of Education and Skills Development was the chief guest in IFCE-2018. He started the speech with the name of almighty Allah. He thanked to Mr. Sikandar Mustafa Khan, Mr. Masud Akhtar, Mr. Razzak Dawood, ladies & gentlemen for inviting him in this event. It is a great pleasure for me to be among so many friends and professional colleagues to whom I know since long time. I believe they have contributed so much not only for the industry

but also for the development of Pakistan. I genuinely feel that in these circumstances and the difficult times of our economy, people are investing, taking risk, move forward. They are the people we appreciate the efforts that that made all of you.

The role of the government is to create the right enabling environment for our industry. It's not the role of the government to run the industry by itself. Unfortunately, over the last seventy one (71) years we have various experimentations and we have tried to create suitable environment to run it by our self but sometimes results were not good. Right environments have many facet and aspects. It's a role of the government to create right infrastructure for the industry so they can establish their self in the right way. it's also important for the government to create rule of law. It is extremely important because if the contract that has been signed are not able to enforced them and is not enforce to deliver during a certain period of time. If it takes years and years to be enforce a contract that will not help state and commerce. So it's the role of the government to ensure rule of law, a system of justice which is quick and the results will be achieved sooner. It's also important for the government to create an environment and to provide right kind of education to its people.

After seventy one (71) years we can say we could have done much better for industry and commerce. I will not say it in negative way but I should say our literacy level is not what it should have been. The quality level of education is not what our children are getting from schools which is much below the standard. So my ministry is focusing on some of these challenges which I have just mentioned. But it's extremely important that state should create right skills environment as there is no point to have education which can't translate into skills, in which you are not familiar with technology at all. So that is the state of our education, we are giving education but not the skills. It is a hard fact that our students are highly educated but can't get an employment which is seriously wrong with our education structure.

We are focusing to create that type of education structure which can provide knowledge and skills both. Because my ministry is not only for education but it is also a professional training as well and therefore I am directly responsible to ensure the skills level of education which we have to move ahead and we are moving together with all our provinces as well for common system. The kind of model for the right framework a public private partnership. We don't run the institutions by our self but we can provide and create the right framework which allows public private partnerships like for example the institute in UET and also the infinity. This type of education we have convey to our people which having the skills to develop the training school and the government can support and encourage these institutions by funding etc. Our role as a federal level is to ensure the proper standards and proper certification which has to be recognized national and international level. I have seen the German School System where they start skills training from schooling and they are exposed to various skills. There are various Chamber of Commerce & Industry who are in touch with us. It is incidentally people are in touch with our ministry and we are looking for suitable time to expose our plans with the people and chamber of commerce and industry. A Lot of trades and we have worked 120 trades so-far but we need to work on a 100 trades and we have to create right amount of the levels of skills for people who can go on various trades.

We are also trying to establish national skills and Technology University, the idea is to make sure that graduates have to be trained as master trainers who will help to skills institutions. So we are working on that also.

So we are fully congruence of the problems industry is facing shortage of skills level from our education System. We are making the right time of team which can interact with industry in a right way. We look forward in future for massive success.

Acknowledgements

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Exhibitors of IFCE-2018

Saint Gobain India, Cukurova Kimya Endustrisi – Turkey, Magma Bilişim ve Teknoloji Hizmetleri Ltd.Şti., Refractory materials ind. & trade ltd. co., Messe Duesseldorf GmbH, Forace polymers pvt. Ltd, Electrotherm (India) Ltd., Jiangsu Xingrui Piping Co.,Ltd, Wuxi Ronniewell Machinery and China Foundry Association. Millat Tractors Limited, Bolan Castings Limited, Qadri Group Companies, Chenab Engineering Works & Foundries (Pvt) Ltd, KSB Pumps Company Ltd., Excel Engineering (Pvt.) Ltd., Mosh Pakistan, Electro Heat (Pvt) Ltd., Ammarian Industry, Karachi Shipyard & Engineering Works Limited, Spectra Corporation, Rastgar & Co, Paktherm (Pvt) Ltd, Digital Data Systems, Qadir Engineering, Matchless Engineering (Pvt.) Ltd, Model Steel, Mecas Foundry, Shahsons Pakistan (Pvt) Ltd, Chicago Metals Pvt. Ltd, Zaid Products (Pvt) Ltd, Ahmed Corporation, Gohar Enterprises (Private) Ltd, Infinity, Kamraj Enterprises (Pvt) Ltd, Ideal foundry, Pakistan Sands(Regd), Ravi Autos (Pvt.) Ltd. UET, Lahore and Minrox Private Limited.


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Musical Evening of IFCE-2018

Ali Abbas and Fadia Shaboroz has entertained the audience with the high level performance and received a lot of applause.

Technical Sessions of IFCE-2018

Pakistan Foundry Association is supporting foundries to adopt new technologies and to prepare them to improve casting production. In this regard 25 technical papers was presented during IFCE-2018 of one to two hours each session over two days. Almost all sessions were successfully organized on the important subjects of casting. It was an interesting initiative for those who wanted to bring changes in their industry.

Mr. Staf HENDERIECKX, Germany

- Identification of Castings Defects & Their Remedies for Cast iron & S.G Iron Castings
- Cupola Operation Practices With Affectivity Of Pollution Control Systems
- S.G Iron Inoculation Phenomena
- Process Controlling Techniques For Consistent Quality in Castings
- Importance of Heat Treatment For Castings Heat Treatment Methods For Various Materials.

Dr. Akram Sheikh

The Growth Requirements Of Pakistani Foundries In Light of "CPEC"

Mr. F. Murat AKCIN, Turkey

- Role of Simulation In Beneftiing Pakistani Foundries
- Improvement in Casting Yield Through Simulation Technology

Mr. Haydar Kahraman Turkey

- Improve Quality And Save Time With Mould Making In Alphaset Resin
- Affectivity of Feeder Sleeves For Improving The Yield In Castings.

Mr. Ghazanfar Ullah Khan

- Modern Foundry Management Using Suitable KIP'S.

Mr. Chris Wilding, USA

- Latest Technologies Used In No Bake Sand Mixing.

Mr. Mustafa Ozbilgic, Turkey

- Achieving Extended Life Through The Use Of Neutral Lining Materials For Induction Furnaces (Narrating Local Foundry Experience)

Mr. Virinder Khosla, India

- Neutral Ramming Mass For induction Furnace Lining

Muhammad Saqib Amin

- Importance of Mold Coatings & Their Application Methods

Mr. Arfaeen Iqbal

- Accurate Development of Drawings From Sample Using Digital Technology.

Mr. Nizamettin Ozdemir, Turkey

- Essential Elements In Development Of Castings For Cement Sector In Pakistan.
- Reduction In Manufacturing Cost And Improvement In Quality Through Semi-Mechanized Foundry Techniques.

Mr. Krupashanker, India

- New, Unique & Popular Binder System- Esternet Phenolic

Dr. Swaren Bedarkar, India

- Efficient Melting in Foundries

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Prospects of Pakistani Foundries in Light of "CPEC"

Courtesy: Dr. Muhammad Akram Shiekh, Advisor Nust
Summary: Abdul Rashid, Secretary-PFA

Dr. Muhammad Akram Shiekh, Advisor NUST- Islamabad an expert on China Pakistan Economic Corridor (CPEC) was invited to brief about "Prospects of Pakistani Foundries in Light of CPEC", flagship of Chinese road and belt project, is an engine of economic progress and development for Pakistan. Chinese give great importance to Pakistan's economic stability and time tested all weather friendship would further grow irrespective of the political parties at the helms of affairs.

The CPEC is intended to promote connectivity across Pakistan with a network of highways, railways, and pipelines accompanied by energy, industrial, and other infrastructure development projects to address critical energy shortages needed to boost Pakistan's economic growth. Eventually, the CPEC will also facilitate trade along an overland route that connects China to the Indian Ocean, linking the Chinese city of Kashgar to the Pakistani port of Gwadar. Pakistan's ruling civilian government recognizes that by delivering a range of "early harvest" projects for a prosperous and a just State which "Cares" and gives "Self Respect" and "Quality Life" to all its Citizens i.e. a "True Modern Welfare State. From a security perspective, Pakistan's military leaders believe that if Chinese investments can turn around the nation's sagging economic fortunes, they will also strengthen the state against challengers, both foreign (India) and domestic (anti-state insurgents).

Plans and Realities: In Pakistan, CPEC projects are being managed primarily by the Ministry of Planning, Reform, and Development in partnership with China's NDRC. The two sides have established a Joint Cooperation Committee with working groups focused on four main areas: the Gwadar Port, transport infrastructure, energy, and industrial cooperation.

China's vision:

It is to further enhance the Western Region Development Strategy, promote Xinjiang's

economic and social development, speed up the “Belt and Road” Initiative, give greater play to China’s advantages of capital, technology and project operating capacity, and form new open economic sys-tem.

Pakistan’s vision:

It is to form new driving force for economic growth, break away from the situation of low growth and high inflation, remove key bottlenecks in infrastructure, shape new industry clusters, balance regional economic growth and narrow the development gap, improve people’s benefit level and enhance domestic stability. A total number of 500,000 to 800,000 new jobs will be created.

The Plan spans from the year 2015 to 2030. The short-term programs to be completed by 2020 will be phased in the next five years; the mid-term programs to be completed by 2025 will be carefully planned in the next ten years; the long-term project will be completed by 2030 and later.

Corridor construction should fuel economic growth of Pakistan and is expected to speed it up by 1.5 % points on the original basis from 2016 to 2020, and another 1 % point from 2020 to 2030. From 2016 to 2020, the growth rate of China-Pakistan trade will reach 24% and that of bilateral direct investment being 25%; from 2020 to 2030, the speed of trade growth should be 16% and that of bilateral direct investment will be 20%. Industrial added value should exceed by 1.5 % points.

The core area includes Kashgar, Tumshuq, Atushi and Akto of Kizilsu Kirghiz of Xinjiang, and Corps Tumshuq; most of Islamabad’s Capital Territory, Punjab, and Sindh, and some areas of Gilgit-Baltistan, Khyber-Pakhtunkhwa, and Balochistan. The radiation area includes areas other than the core areas within the spatial scope of the China-Pakistan Economic Corridor. Important node cities along the Corridor include Kashgar, Atushi, Tumshuq, Shule, Shufu, Akto, Taxkorgan, Gilgit, Peshawar, Islamabad, Lahore, Multan, Quetta, Sukkur, Hyderabad, Karachi and Gwadar.

The length of newly built or upgraded roads and railways should reach 3,871 km and 1,529 km respectively. Power generated by newly built sources will reach 19.785 million kW, and length of optical fiber cable will reach 2,084 km.

Areas along the Indus River within Pakistan are relative economically developed regions, but have limited resource carrying capacity due to high population density. The western part of Pakistan is underdeveloped with poor natural conditions.

Pakistani economic recovery and development foundation is weak. There are major bottlenecks restricting economic and social development. Energy shortage, obsolete infrastructure, low efficiency of administration, unbalanced regional economic and social development, high risks of exchange rate and capital control, all pose potential challenges to corridor construction. Public debt has been an insurmountable obstacle on the economic and social development road of Pakistan. In the current context, the debt problem in Pakistan is increasingly obvious. The government of Pakistan should consider taking measures to reduce the proportion of the floating debt in the gross amount and make the debt structure more reasonable.

Development of Gwadar Port (NDRC & CDB Report)

The Development of Gwadar Port as a Key Area:

- Gwadar is endowed with excellent conditions based on its location and deep water port development.

- The focus will be on the development of oil refining, chemicals, non-ferrous metals, logistics, ports, services and transportation. This is a way to promote the economic development in southern and western Baluchistan, and expand job opportunities.”

- Its development orientation can be defined as: "a fashionable and leisurely

international port destination."

- Gwadar will be the leading port for tourism in Pakistan.

- Gwadar will eventually be developed into the core of Pakistani coastal tourism and a highlight of international coastal tourism."

Cpec / Ntc: Vision For The Trade & Transport Sector

Improve competitiveness of Pakistani trade internationally

- As part of the Vision 2030 exercise, examine the intensity and nature of present & future competition and the strategies & policies required for enhancing Pakistan's share of world trade from the current 0.2% to say 1.0%

- Increase Pakistan's exports from USD 17 billion in 2006 to about USD 45+ billion by 2013 and around USD 250 to 300 billion by 2030 (Falling way behind)

- Establish an efficient and well integrated transport system that will facilitate the development of a competitive economy and poverty reduction, while ensuring safety and mobility.

Enhance regional connectivity

- Trade links / energy, transport and industrial corridors with China, Central Asian Republics, Afghanistan, Iran and India.

Trade Facilitation

- Modernize / streamline trade & transport logistics practices

- Develop trade facilitation strategy

- Expedite implementation of Customs Administrative Reforms (CARE)

- Develop Freight Forwarding, Insurance, Banking to support trade logistics

- Strengthen National Trade & Transport Facilitation Committee

- Revamp / modernize other trade organizations (such as FPCCI)

- Publicize Trade Facilitation – WTO, SAFTA, ECO

What Does The Vision 2030 Statement Imply?

- Level of savings to GDP increased from 16 to 25% and investment to GDP from 20 to 25-30 %

- Share of manufacturing in GDP increased from 18 to 30%

- Trade to GDP ratio increased from 35 to 60% while maintaining appropriate balance of imports and exports

- Share of high-tech to total manufacturing value addition increased from 1 to 30%

- Share of high-tech increased from 0.6 to 10 % of total export

- Employment to all employable persons

CPEC Scope discussed with the Chinese 2005-08:

- The center piece of the Corridor was the development of Gwadar as a Deep Water Commercial Port and an Oil City with refining, petro-chemical and light to medium industries with links to China.

- Development of Special Economic and Industrial Zones throughout Pakistan. (Proposed incentives better than those in Chinese Economic Zones)

- Road and Rail Links from Gwadar and Karachi to Khunjrab and Kashgar. German Pre-feasibility study for Railway link of Havelian with Khunjrab was presented to President Hu Jintao in April, 2008.

- Widening and Up gradation of KKH to accommodate enhanced trade, transport, oil and gas pipelines and optical fiber link.

- Development of all aspects of the energy sector including Thar coal, oil and gas exploration, thermal power projects and LNG with maximum indigenization

- Strategic oil reserves; oil and gas pipelines from Gwadar to Kashgar.

- Water and hydro-power development, including series of large dams on River Indus.

- Planning and Construction of new cities along the Corridors to meet the ever increasing demand of urbanization as a logical consequence of increasing population, enhanced economic activity and trade.

- Development of China business centers in Islamabad involving construction and setting up of offices and residential accommodation for Chinese investors.

- Joint tourism development, amongst others, to capture at least 1% of envisaged 100 million Chinese tourists by 2020.

NUST Initiative in 2011 to Establish China- Pakistan Joint Think Tank for following Specific Areas of Cooperation:

- Energy-related projects (particularly large dams on river Indus).

- Use of Pakistan as an Energy Corridor to provide a secure alternate route to meet the increasing energy demand of China.

- Revamping existing low-efficiency power plants in Pakistan & fully exploiting indigenous resources.

- Large infrastructure projects (roads & rail-roads) linking China with the Central Asian Republics (CARs) & the Coastal Belt of Pakistan and the National Trade Corridor (NTC).

- Identify hurdles in implementation of various Agreements (e.g. the Five Year Development Plan), & propose solutions for fast-track implementation.

- Exploit the huge hydro power potential existing in the CARs by getting involved in regional hydro power development to meet growing energy demands.

- Studies related to increasing urbanization, effects of natural calamities & climate change in both countries.

- Cooperation in Defense Technologies.

- Additional areas identified in the Five-Year Development Program (Agriculture, Manufacturing, Minerals, ICT, Engineering Services, Technical Cooperation, Education).

- Academic or applied research projects to aid the overall mandate of the Think-Tank.

China-Pakistan Economic Corridor is a framework of regional connectivity. CPEC will not only benefit China and Pakistan but will have positive impact on Iran, Afghanistan, India, Central Asian Republic, and the region. The enhancement of geographical linkages having improved road, rail and air transportation system with frequent and free exchanges of growth and people to people contact, enhancing understanding through academic, cultural and regional knowledge and culture, activity of higher volume of flow of trade and businesses, producing and moving energy to have more optimal businesses and enhancement of co-operation by win-win model will result in well connected, integrated region of shared destiny, harmony and development.

China Pakistan Economic Corridor is journey towards economic regionalization in the globalized world. It founded peace, development, and win-win model for all of them. China Pakistan Economic Corridor is hope of better region of the future with peace, development and growth of economy.

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Analyzing of Cold Box Binder System and Determination of Its Effects on Cast Parts

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Key words: Cold Box, phenolic urethane resin, core making, casting trial

Abstract

Cores are used in casting process to form cavities, hole protrusions, recesses and casting products which are not possible to be shaped by the mold. In order to give strength and stiffness to the core, core sands and binders are used. There are several cold box systems in which different binders and gas catalyzers are used.

For efficient productions such as automotive industry, pipe production, cooling systems cold box process are used because they can produce complicated tools, they have stable moisture content, they do not need any preheating, they have high strength and high precision. Because of his productivity, cold box process is used in most of the casting industry.

For our research, of all cold box processes, we are going to use and analyze phenolic urethane cold box (PUCB) process. As we can understand from the name of this process, phenolic urethane cold box process is obtained by the reaction of two component with polyurethane.

The constituent of Part I is a phenol-formaldehyde resin and the constituent of Part 2 is isocyanate. A polyaddition of the part 1 component, the phenol-formaldehyde resin, and the part 2 component, the isocyanate, is initiated through basic catalysis, usually by means of gassing with a tertiary amine. The hardening reaction is very fast, which makes the PU cold box process attractive for the highly productive production of series components in particular.

Different ratio (50/50, 40/60, 60/40) of Part 1 and Part 2 with DMEA (dimethylamine) gas cold box system is compared. They were tested with 3-point bending and analyzed effect on casting conditions.

Introduction

Phenolic resins have many various applications. Especially for heavy duty conditions, bonding of particle and fiber structure, those resins are used commonly. The casting industry is also one of the application area. In foundry process, resins are used in core making and mold making process. Different properties are expected from resins for these two sections. For example, the immediate and long-term strength is very crucial for core making process [1].

Hot box and cold box systems are common process for core making. Thin wall and detailed cores are made with hot box, relatively thicker cores are made with cold box process [2,3].

Cold box system is consisted of three parts. One of them is a resin that is generally a phenolic urethane resin, the other part is a crosslinking agent. The last part is an activator that is generally an amine (Fig 1)[4].

Figure 1 Cold box curing system[4]

There are few researches about cold box systems. Some of them are given below.

In study of Liu F. and his friends in the year of 2017, were investigated the factors which affect performance of no-bake resin bonded sand (NBRBS) including furan resin, curing agent and boric acid content and kinds of collapsibility agents and base sand. In the results are shown that the optimization of the comprehensive performance of NBRBS is achieved when the furan resin addition is 1.6 wt% of base sand content and the curing agent addition is 50 wt% of furan resin content. [5]

In a work conducted by Stauder B. and his friends, were investigated the foundry sand core properties which are a key requirement for high precision casting process development. In this work is demonstrated the potential to evaluate mechanical and functional sand core properties using precisely acquired 3-point bending test load curve data applying standard bending test geometries. The organic binder systems which have been investigated were: coldbox, hotbox and warmbox. [6]

In a work conducted by Gonzalez R. and his friends in 2011, is presented the results of tests carried out on mixtures of sand and binders used in phenolic – urethane cold box cores. In this work were analyzed: two binders and silica sand with two grain size distributions. The cores were blown with blends of sand that had resins within the range of 0.8 to 1.15%. Some tests were carried out for obtaining the viscosity, polydispersity, molecular weight and refractive index of the resins. The aim of this study was to determine which resin fulfills the critical conditions to obtain sound aluminum castings. [7]

In our present work, we will keep stable the amount of sand and the Part 2 while in Part 1 we use a phenolic resin which belongs to Cukurova Kimya Endüstrisi A.Ş.(ÇKE) Afterwards, we use another resin which belongs to an A industry. Resin characterization tests were done., 3-point bending test. After, different ratios of Part 1 and Part 2 mix were compared and with standard core samples.

All samples were tested on casting trial with cast iron. A cube model was determinate for casting trial.

Experimental

Two cold box systems that is from ÇKE and A company. Density, viscosity, amount of solid content, amount of water content, amount of free-formaldehyde and refraction index of all resins was determined. And then standard 3-point test sample were prepared from three Part 1 and Part 2 ratio (50/50, 40/60 and 60/40) and same sand. Total risen ratio is %1.3. Sand properties are represented in Table 1. All sand testing sample were cured with DMEA gas in same duration.

Table 1. The sand parameters

AFS	pH	Moisture (%)	Dust (%)
50	6.06	0,2	0.05

For casting trial, 15x15x15 samples cubes were casted with EN-GJS-500 ductile iron alloy in resin bonding sand mold. Pouring temperature is 1450 and pouring time is 13 second. Three ratios samples were tested together in same mold (Fig 2). Standard bending test samples were used in casting as cores. Cores were placed in the center line of cubes.

Figure 2 Casting mold with cores

Result and Discussion

Cold box resin systems of both companies were tested and discussed for their physical and chemical properties. For equality and accurate results all tests were applied in same condition like 25 temperature, same air humidity and by using same source and quality sand. As known that, kind of sand is an effective parameter for Cold Box System.

First information about for both resin systems were achieved by standard test methods as shown in Table 2. These results show that both resin system is eligible for using in foundry. There were no improper properties like high free-formaldehyde content or increased viscosity that shows gelation of resin. Main difference in these resins is odor and second part solid contents. Solid content determination method was applied in 150oC and it is actually shows non-volatile content. ÇKE resin system has almond like smelling but A resin systems has petroleum solvent's odor and its known that petroleum products are more likely to evaporate. ÇKE Part 2 high solid contents could come from less volatile solvent or high PMDI content or both of these parameters.

Table 2 Standard test methods for phenolic resin

TEST NAME	METHOD
Amount of free (%)	ISO 11402
Viscosity (25°C) (Cp)	ISO 2555
Amount of solid content (150°C) (%)	ISO 8618
Amount of water content (%	TS ISO 760
Density (20°C) (g/ml)	DIN 51757

The effect of humidity has undeniable negative effects for cold box system. Isocyanate groups in part 2 can easily react with active hydrogen in reaction medium rather than react with polyols in part 1. These effects reduce the effectiveness of PMDI and strength of cores. Although the same core preparation and resting condition, strength of cores behaved differently, Table 3 and 4. This must be result of different formulations. As mentioned in pervious paragraph, there is difference between solvent of both cold box resin system. It was predicted that A industry resins have solvent derived from petroleum and the strength change over time and maximum strength after 24 hours give another evidence for this prediction. Volatile solvent vaporize quickly and the humid air can easily enter into the voids left behind and reduce the strength of the core. Those effects are increased by higher amount usage of part 2. PMDI and phenolic polyol resin using ratios show different results but for both products shows balanced ratio has more advantage than other ratios [8]. First strength of 50/50 cores were the highest and after 24 hours storage

Table 3 Strength of cores, depending on their storage time, produced with the resins belonging to ÇKE industry

Storage time (hour)	0	1	2	3	24
Strength for 50/50 ratio (N/cm^2)	310	376	396	398	448
Strength for 60/40 ratio(N/cm^2)	284	340	372	378	382
Strength for 40/60 ratio (N/cm^2)	142	388	410	392	476

Table 4 Strength of cores, depending on their storage time, produced with the resins belonging to A industry

Storage time (hour)	0	1	2	3	24
Strength for 50/50 ratio (N/cm^2)	254	398	402	412	418
Strength for 60/40 ratio (N/cm^2)	274	316	354	354	394
Strength for 40/60 ratio (N/cm^2)	166	308	372	350	414

In casting results, there is no breaking or deformation on core related to molten metal. All samples can resist force of during casting(Fig 3). Although, metal penetration is detected on the core. The molten metal penetrated to sharp edge of core. The metal surface near core is so rough(Fig 4).

Figure 3 Casting parts

Figure 4 Surface near core

Conclusions

For same sand and total resin ratio, Part 1 and Part 2 ratio affects the strength of the core. Also, storage time affects the strength. Part 2 properties increase or decrease total strength of the cores. Part 1 content and properties are too close together for these different companies. However approximately 20% changing upper from 300 N/cm2 can not be detected with cast trials.

References

[1] Gardziella A., Pilato L.A., Knop A., Phenolic Resins, 2000, Springer, Germany.

[2] American Foundry Society and Casting Industry Suppliers Association, (2007), Reporting of Binder Chemicals Used in Foundries Fourth Edition, United States of America

[3] P. Beeley, , Foundry Technology, 2001, Butterworth-Heinemann, United Kingdom.

[4] Foseco Ferrous Foundryman's Handbook (Eleventh Edition)

[5] Liu F., Yang L., Huang Y., Jiang P., Li G., Jiang W., Liu X., Fan Z., (2017), Performance of resin bonded sand for magnesium alloy casting

[6] Stauder B. J., Kerber H., Schumacher P. ,(2016), Foundry sand core property assessment by 3-point bending test evaluation

[7] Gonzalez R., Colas R., (2011), Characteristics of phenolic urethane cold box sand cores for aluminum casting, Autonomous university of nuevo Leon

[8] Bargaoui H., Azzouz F., Thibault D., Cailletaud G., (2017), Thermomechanical behavior of resin bonded foundry sand cores during casting

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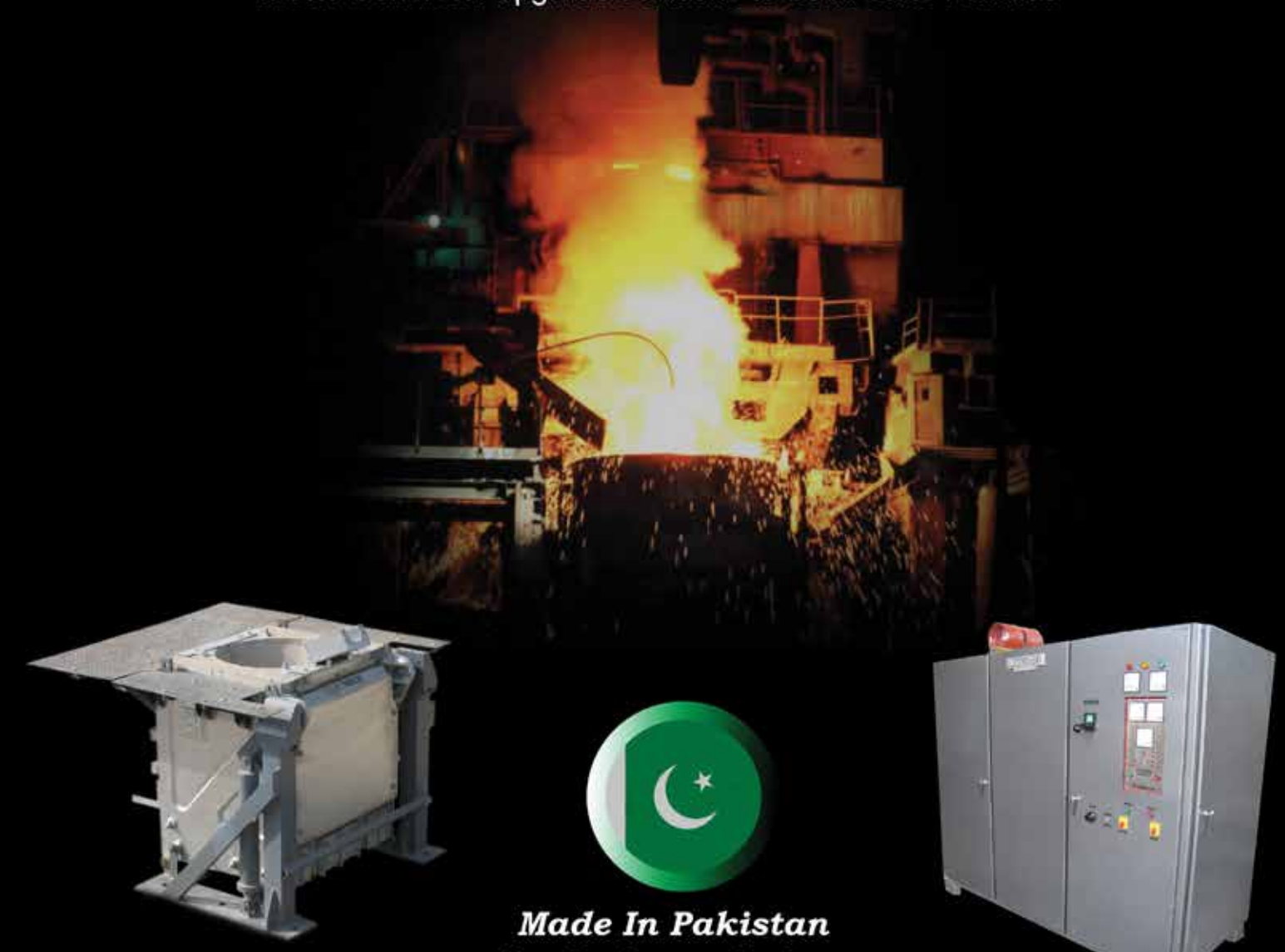

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