KINGFA KINGFA SCIENCE & TECHNOLOGY (INDIA) LIMITED

2021 - 2022
ANNUAL REPORT

KINGFA SCIENCE & TECHNOLOGY (INDIA) LIMITED
(formerly Hydro S & S Industries Limited)
CIN : L25209TN1983PLC010438
Regd. Office : Dhun Building, III Floor, 827, Anna Salai,
Chennai – 600 002. Tamilnadu, India.
Phone : +91 - 44 - 28521736   Fax : +91 - 44 - 28520420
Works : Puducherry, Pune & Manesar

Board of Directors

Mr. Bo Jingen, *Managing Director*

Mr. Wu Xiaohui, *Non-Executive Non-Independent Director*
                    (Whole-time Director upto 12.08.2021)

Mr. N.Subramanian, *Independent Director*

Mr. Dilip Dinkar Kulkarni, *Independent Director*

Ms. Nilima Ramrao Shinde, *Independent Director*

Mr. D.Balaji, *Executive Director*

Chief Financial Officer

Mr. Xie Dongming

Company Secretary

Mr. Nirnoy Sur

Registered Office

Dhun Building, III Floor,

827, Anna Salai, Chennai - 600 002

Telephone : + 91 - 44 - 28521736

Fax   : + 91 - 44 - 28520420

E-Mail   : cs@kingfaindia.com

Website : www.kingfaindia.com

CIN   : L25209TN1983PLC010438

Works

Plot No : F 5/5, Chakan Industrial Area, Phase-2, MIDC,
          Village - Vasuli – Shinde, Tal Khed, Pune – 410 501

RS No. 38/1, Sedarapet Industrial Area, Sedarapet, Puducherry - 605 111

Plot No - 406, Sector - 8, IMT Manesar, Gurgaon - 122 050, Haryana

Statutory Auditors

M/s. P G Bhagwat LLP

Chartered Accountants,

Suite 102, 'Orchard'

Dr. Pai Marg, Baner, Pune - 411 045

Phone : +91 - 020 - 27290771, 27291772 / 3

E-Mail : pgb@pgbhagwatca.com

Cost Auditor

Mr. K. Suryanarayanan

Cost Accountant

Flat A, Brindhavan Apartments,

No.1, Poes Road, 4th Street,

Teynampet, Chennai - 600 018.

Phone : +91 - 44 - 24328836

E-Mail : cwasuri@gmail.com

Secretarial Auditor

Ms. Shaswati Vaishnav

Practicing Company Secretary

Vaishnav Associates

B 308, Madhukunj Apartments,

8th Lane, Koregaon Park,

Opp. Mad House Grill, Pune - 411 001.

Phone : +91 - 8983453453

E-Mail : shaswati.vaishnav@gmail.com

Bankers

The Hongkong and Shanghai Banking Corporation Limited

State Bank of India

Industrial and Commercial Bank of China Limited

ICICI Bank Limited

Registrar & Share Transfer Agent

M/s. Integrated Registry Management Services Private Limited

2nd Floor, Kences Towers,

No.1, Ramakrishna Street,

North Usman Road,

T. Nagar, Chennai - 600 017.

Telephone : +91 - 44 - 28140801 - 03

Fax   : +91 - 44 - 28142479

E-Mail   : yuvraj@integratedindia.in

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FIVE - YEAR FINANCIAL DATA

(₹ in Millions)

For the Year	2021-22	2020-21	2019-20	2018-19	2017-18
Sales: Domestic	10,191.021	6,011.610	7,361.740	6,980.709	6,175.342
Exports	286.109	260.744	53.263	34.536	2.996
Operating Profit (PBIDT)	591.627	258.048	456.695	393.039	468.505
Finance Cost	48.537	31.624	33.693	20.724	20.402
Depreciation & Amortisation Expenses	129.650	107.917	89.562	80.080	62.230
Tax expenses - Current	114.900	46.278	102.590	109.000	117.000
- Deferred	(7.794)	19.011	(15.315)	(7.315)	22.469
Profit/(Loss) After Tax	306.334	53.218	246.165	190.551	246.404
As at the end of the year					
Share Capital	121.105	121.105	121.105	121.105	121.105
Reserves & Surplus	3,724.772	3,418.651	3,364.790	3,123.820	2,931.827
Loan Funds	169.200	244.200	182.046	166.461	156.556
Gross Block	1,969.546	1,865.937	1,541.865	1,236.509	1,181.955
Net Current Assets	1,413.659	1,276.706	1,345.209	1,661.312	2,291.091
Measures of Investment					
Return on Capital Employed (%)	10.77%	3.97%	10.01%	9.06%	12.74%
Return on Equity (%)	8.30%	1.50%	7.06%	5.87%	8.07%
Earnings per Share (Rs.)	25.29	4.39	20.33	15.73	20.51
Dividend Cover (Times)	-	-	-	-	-
Dividend (%)	-	-	-	-	-
Book Value of an equity share	317.567	292.289	287.842	257.944	252.090
Of Performance					
- Profitability (%)					
Profit/(Loss) before Tax (%)	3.95%	1.89%	4.50%	4.17%	6.41%
Profit/(Loss) after Tax (%)	2.92%	0.85%	3.32%	2.72%	4.10%
- Capital Turnover (times)	2.61	1.66	2.02	2.03	1.90
- Stock Turnover (times)	4.27	4.39	6.67	5.46	5.41
- Working Capital Turnover (times)	7.41	4.91	5.51	4.22	2.70
Of Financial Status					
- Debt-Equity Ratio (times)	0.12	0.07	0.05	0.05	0.05
- Current Ratio	1.30	1.47	1.65	1.81	2.43
- Fixed Assets to Shareholders' Funds (times)	0.33	0.36	0.31	0.55	0.32

PERFORMANCE METRICS

Revenue

₹ in Lakhs

120,000.00		
100,000.00		
80,000.00		
60,000.00		
40,000.00		
20,000.00		
-		

74,150.03 — 2019-20
62,723.54 — 2020-21
104,771.30 — **2021-22**

PAT

₹ in Lakhs

3000.00		
2500.00		
2000.00		
1500.00		
1000.00		
500.00		
-		

2,461.65 — 2019-20
532.18 — 2020-21
3,063.34 — **2021-22**

Debt-Equity Ratio (Times)

0.12		
0.10		
0.08		
0.06		
0.04		
0.02		
-		

0.05 — 2019-20
0.07 — 2020-21
0.12 — **2021-22**

Return on Capital Employed (%)

0.12		
0.10		
0.08		
0.06		
0.04		
0.02		
-		

0.10 — 2019-20
0.04 — 2020-21
0.11 — **2021-22**
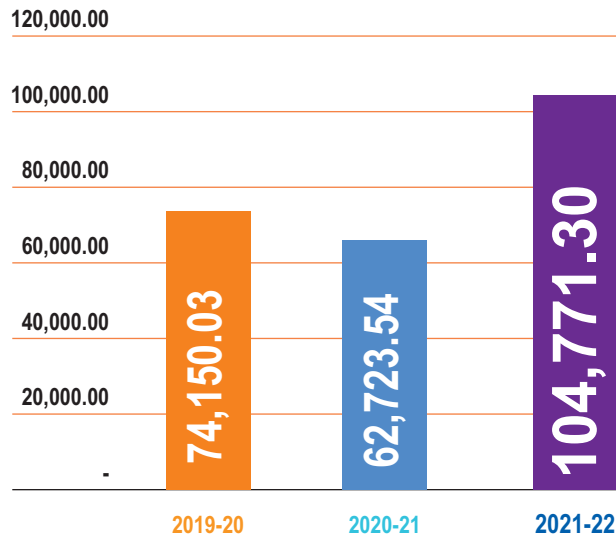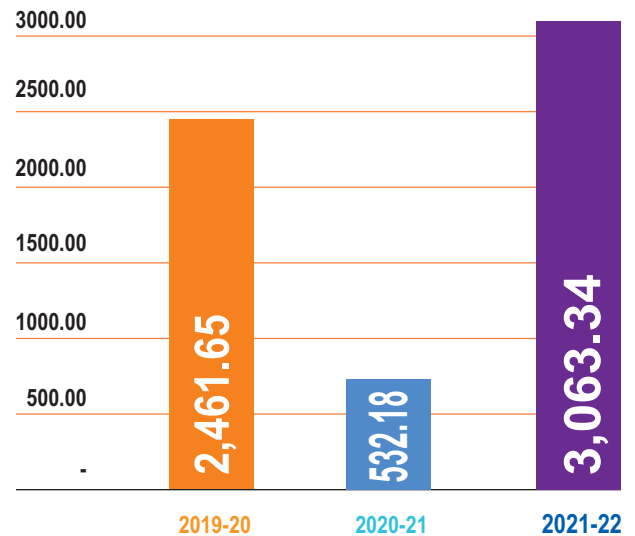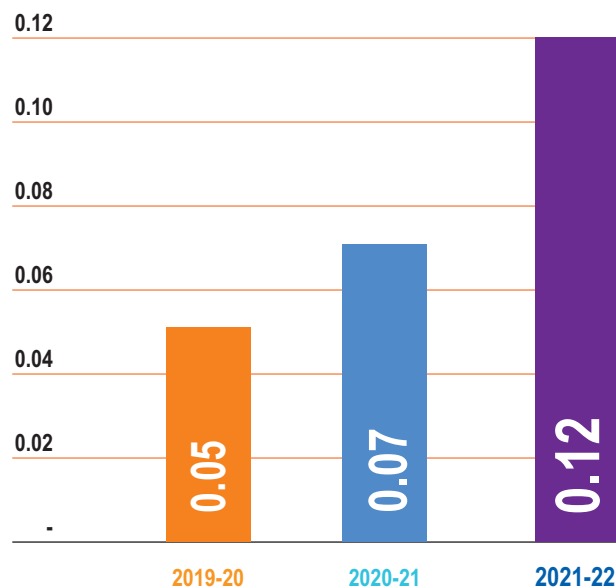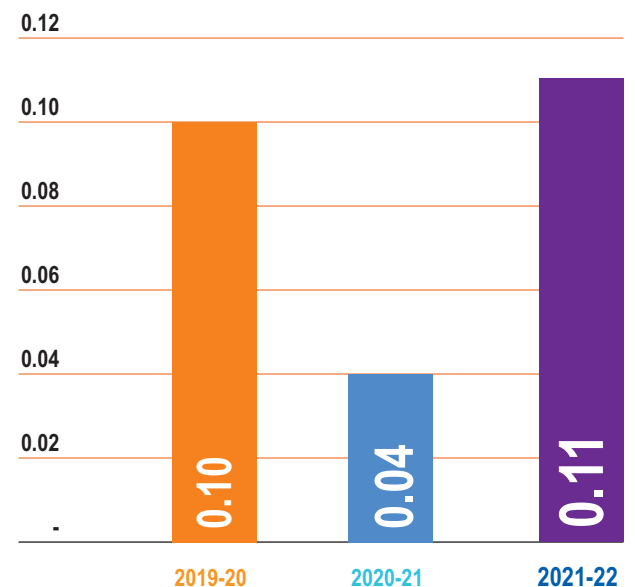
How the R&D lab at Kingfa (India) is helping to fulfil customer needs

The capability of a compounder is not just limited to formulating a product to meet customer's needs. The compounder should have the ability to analyze various other products, input materials and myriad other chemicals that can make the difference to the formulated product. The success of the compounder is decided by how efficient you choose additives and how correctly you decide on the formulation/ingredient percentage. The compounder armed with multitude of analytical and test instruments will be able to do a good job in this. Kingfa, as you know, as the leading manufacturer of modified plastics is armed with the state of the art instruments to maximise the efficacy of the formulations. This article throws light on the analytical capability of Kingfa India.

Kingfa (India) has variety of instruments to check the properties of polymeric materials and its composition by using various analytical techniques that are available in it's R&D labs. A short description of these techniques has been mentioned here.

- **Analysis of Thermal properties of the polymeric materials**

1. **Thermogravimetric analysis (TGA)** is a method of thermal analysis in which the mass of a sample is measured over time as the temperature changes. This measurement provides information about physical phenomena, such as phase transitions, absorption, adsorption and desorption; as well as chemical phenomena including chemisorptions, thermal decomposition, and solid-gas reactions (e.g., oxidation or reduction).

A thermogravimetric analyser continuously measures mass while the temperature of a sample is changed over time. Mass, temperature, and time are considered base measurements in thermogravimetric analysis while many additional measures may be derived from these three base measurements.

FIG.1: Thermogravimetric analysis or thermal gravimetric analysis (TGA)

The thermogravimetric data collected from a thermal reaction is compiled into a plot of mass or percentage of initial mass on the Y axis versus either temperature or time on the X axis. This plot, which is often smoothed, is referred to as a TGA curve. The first derivative of the TGA curve (the DTG curve) may be plotted to determine inflection points useful for in-depth interpretations as well as differential thermal analysis.

A TGA can be used for materials characterisation through analysis of characteristic decomposition patterns. It is an especially useful technique for the study of polymeric materials, including thermoplastics, thermosets, elastomers, composites, plastic films, fibres, coatings, paints, and fuels. TGA can be used to evaluate the thermal stability of a material. In a desired temperature range, if a species is thermally stable, there will be no observed mass change. Negligible mass loss corresponds to little or no slope in the TGA trace. TGA also gives the upper use temperature of a material. Beyond this temperature the material will begin to degrade.
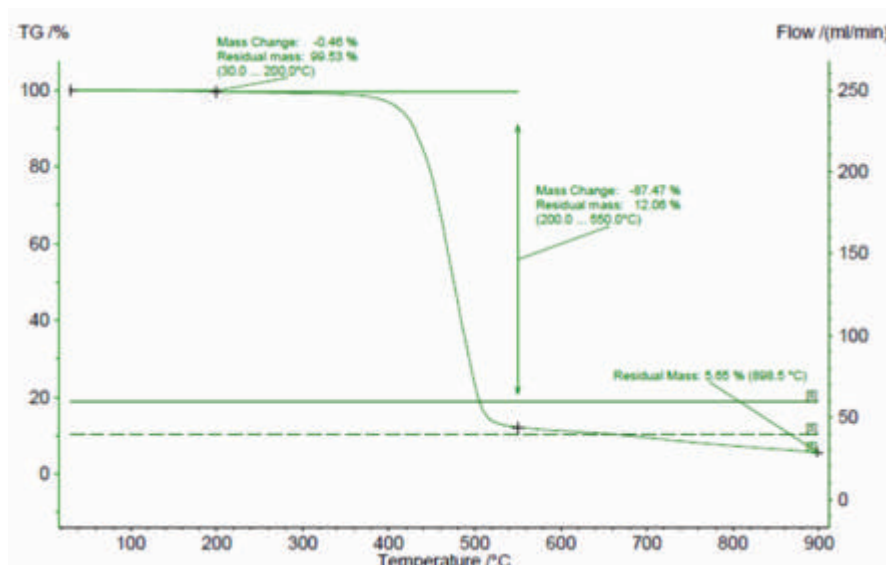
FIG 2: TGAcurve of PC

TGA is used in the analysis of polymers. Polymers usually melt before they decompose, thus TGA is mainly is used to investigate the thermal stability of polymers. Mostpolymers melt or degrade before 200 °C. However, there is a class of thermally stable polymers that are able to withstand temperatures of at least 300 °C in air and 500 °C in inert gases without structural changes or loss of strength, which can be analysed by TGA. Thermogravimetric Analysis (TGA) is also useful for decomposition behavior determination. Impurities in polymers can be determined by examining thermograms for anomalous peaks, and plasticisers can be detected at their characteristic boiling points. A graph has been presented here in figure 2 to show the decomposition process of polycarbonate.

2. **Differential scanning calorimetry (DSC)** is a thermos-analytical technique in which the difference in the amount of heat required to increase the temperature of a sample and reference is measured as a function of temperature. Both the sample and reference are maintained at nearly the same temperature throughout the experiment.

FIG. 3: Differential scanning calorimetry (DSC)

DSC is used to observe more subtle physical changes, such as glass transitions in polymers. It is widely used in industrial settings as a quality control instrument due to its applicability in evaluating sample purity and for studying polymer curing. DSC is used widely for examining polymeric materials to determine their thermal transitions too. Important thermal transitions include the glass transition temperature (Tg), crystallization temperature (Tc), and melting temperature (Tm). The observed thermal transitions can be utilized to compare materials, although the transitions alone do not uniquely identify composition. The composition of unknown materials may be completed using complementary techniques such as IR

spectroscopy. Melting points and glass transition temperatures for most polymers are available from standard compilations, and the method can show polymer degradation by the lowering of the expected melting temperature. Tm depends on the molecular weight of the polymer and thermal history. A graph has been presented here in Figure 4 & 5 to show the characterization of material in terms of their difference of crystalline structure. In Figure 4 DSC of PC/ABS has been shown which have amorphous structure while in figure 5 DSC curve of PP material shows the crystalline structure.

The percent crystalline content of a polymer can be estimated from the crystallization/melting peaks of the DSC graph using reference heats of fusion found in the literature. DSC can also be used to study thermal degradation of polymers using an approach such as Oxidative Onset Temperature/Time (OOT). In addition, examination of minor events in first heat thermal analysis data can be useful as these apparently "anomalous peaks" can in fact also be representative of process or storage thermal history of the material or polymer physical aging. Comparison of first and second heat data collected at consistent heating rates can allow the analyst to learn about both polymer processing history and material properties.
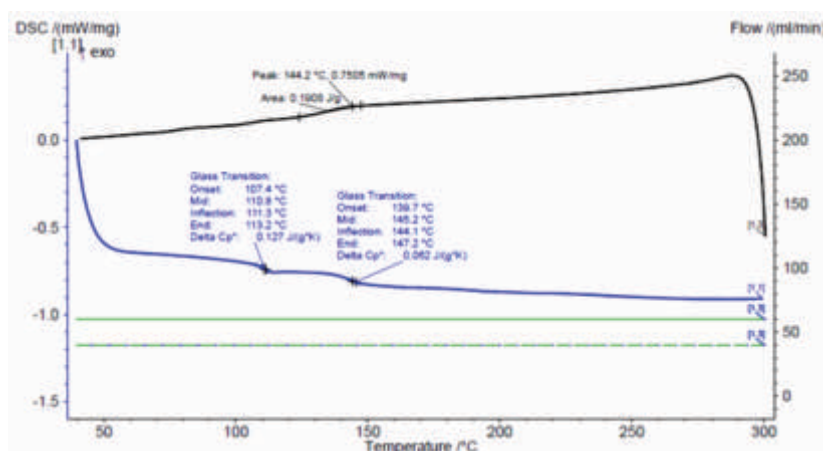

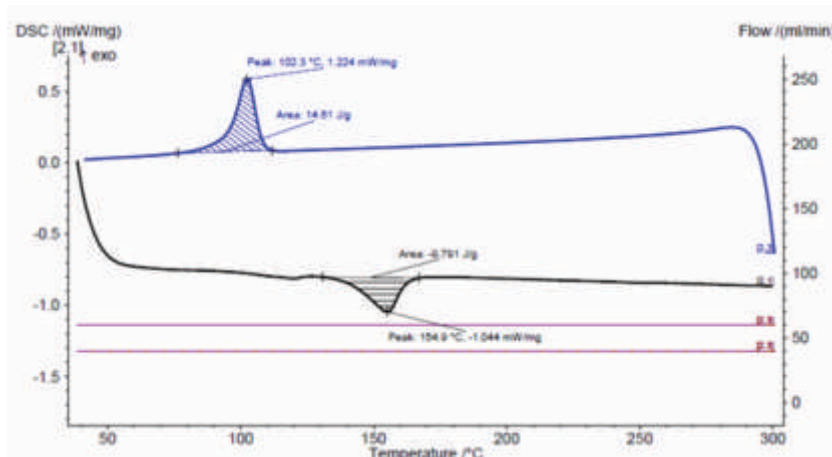**FIG 4: DSC curve of amorphous material (PC/ABS)**

FIG 5: DSC curve of Crystalline material (PP)

- **Analysis of Structural properties of the polymeric materials**

1. Fourier Transform Infrared (FTIR) Spectroscopy is a technique used to obtain an infrared spectrum of absorption or emission of a solid, liquid, or gas. An FTIR spectrometer simultaneously collects high-resolution spectral data over a wide spectral range. This confers a significant advantage over a dispersive spectrometer, which measures intensity over a narrow range of wavelengths at a time.

FIG 6: Fourier Transform Infrared (FTIR) Spectroscopy

FTIR spectroscopy may characterize many chemical substances provided that they have structures interacting with light in the infrared region i.e. wavelengths between 400-4000 cm-1 (or 2,5-25 micrometers). Most polymers have a specific spectrum, like a "fingerprint" for the material. By FTIR spectroscopy an unknown sample may be determined by comparing the sample spectrum with a reference spectrum from a database. Sometimes it is difficult to interpret spectra from plastics since they often contain additives affecting the spectra. Therefore, we often combine FTIR-analyses with DSC (Differential Scanning Calorimetry) to measure the melting point, since polymers have specific melting points.

The FTIR spectroscopy instrument became one of the most utilized machines in the laboratories because different chemical molecules and substances can produce various spectral fingerprints. It mainly converts the output from the detector into a spectrum that can be interpreted and formulates patterned spectra with structural insights. A FTIR spectra of PC/ABS blend has been shown in Figure 7. When a certain product is found to have problems during the visual inspection, the origin of the problem is commonly determined using FTIR microanalysis. This is a common technique for the chemical composition analysis of smaller particles. Generally, FTIR spectroscopy instruments are cost-effective machines used for the following:

- Identifying and characterizing unknown materials, including films, powders, solids, and liquids.

- Identifying the presence of contamination on materials, including particles, powders, fibers, and liquids.

- Identifying additives after polymer matrix extraction.

- Determining decomposition, oxidation, and uncured monomers in most failure analysis investigations.

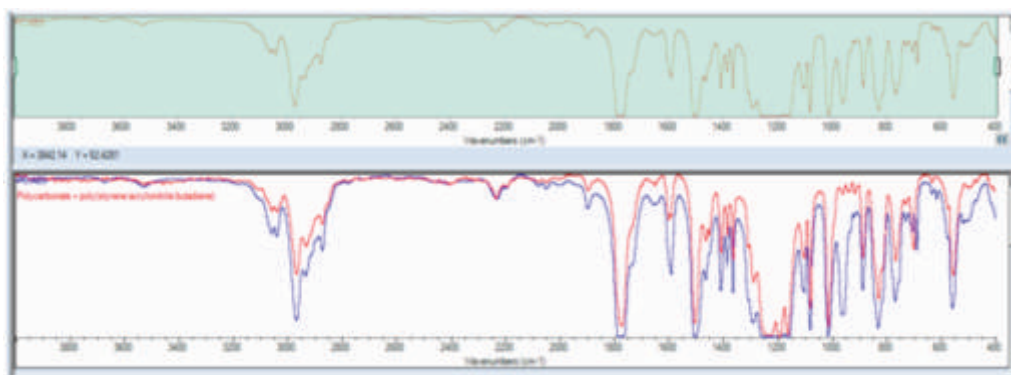- Gain kinetic information on the decay or growth of infrared absorptions.

FIG 7: FTIR of PC/ABS material and their comparison with the in-built library.

These are just some examples of the analytical instruments that Kingfa India makes use of in it's quest to offer the best performance of materials to customers in India. Any visitor to the Technology center labs at Kingfa India's plants at Chakan and Puducherry will be able to see the full gamut of such facilities and understand why Kingfa India is successful.

Customer Recognition

Customer Recognition