

NML news



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R & D ACTIVITIES

EDIBLE OIL FROM RICE BRAN (Oilseed Mission Oriented Project)

Our total demand of edible oil is around 4.5 million tonnes against indigenous production of 3 million tonnes. As a result the country has to import edible oil to the tune of 1000 crore rupees in recent years. In this context, it is important to know that Rice-bran (with 1.5 percent oil content) can yield 6.5 lakh tonnes of edible oil per year.

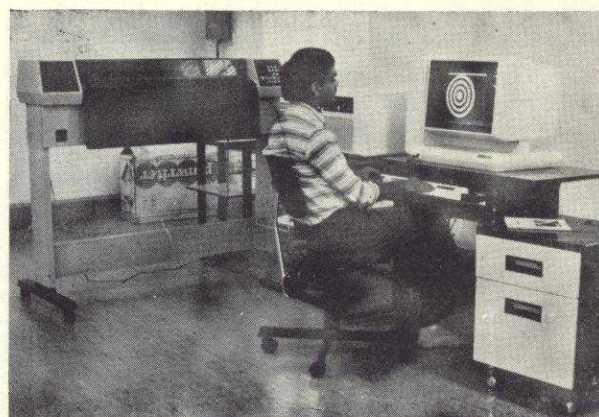
Oil is produced from rice bran using solvent extraction method. This oil is of industrial grade that cannot be used for edible purpose because of the presence of high free fatty acid produced by an enzyme called Lipase. Recently Central Food Technological Research Institute, Mysore has developed a low cost chemical stabilisation process using an acid for checking the activity of Lipase. However, before embarking on the commercial utilisation of this route, it was decided to study the corrosive effect of the chemically stabilised rice bran on the process equipments at different stages and also to develop suitable protective measures. NML has been entrusted with this responsibility with supporting financial inputs to the tune of Rs. 9.24 lakhs. Scientists of the Corrosion Division have already made satisfactory progress in the project, which is scheduled to be completed by August, 1988.

NEW EQUIPMNTS

COMPUTER INSTALLATION

NML has installed a computer system for use in R&D as well as general management activities. The main computer comprises of two nodes of Zenith ENCORE Supermini Computers with 4 mb and 2 mb core memory supported by 160 and 80 mb back-up storage respectively.

The installation also includes an Apollo DN 300 graphics workstation of 1 mb memory and HP-7585 AO size drafting plotter for engineering drawings.



Apollo DN-300 Computer with HP-7585 Graphics Plotter.

Additionally a number of personal computers (PCs) are placed at the disposal of various sections such as Library, Information & Documentation, Accounts and Administration for efficient handling of information and management activities. These systems support specialised scientific and commercial softwares such as LOTUS 1-2-3, SUPERCALC, dBase III, UNIFY, ULTRACALC, Wordstar, Autocad and GMR.

These systems have the ability of handling large commercial and scientific databases and can assist scientists in developing their own specialised software in a variety of disciplines such stress analysis, transport phenomenon, modelling & optimisation etc.

PARC - MODEL 332

The Model 332 is a computer (Apple-II) based versatile corrosion measurement unit with a Potentiostat (Model 273), which performs all steps in the



PARC — MODEL 332 Potentiostat with Computer

corrosion experiment automatically, including electrochemical conditioning as well as monitoring drift in the open circuit potential to delay the start of the experiment until the system is at equilibrium. The following experiments can be performed :

Potentiodynamic Polarization, Tafel Plots, Polarization Resistance, Cyclic Polarization (Pitting Scans) Potentiokinetic Reactivation, Potentiostatic, Galvanostatic, Galvanic Corrosion, E_{corr} (Open circuit potential) vs. Time Plot.

ACOUSTIC EMISSION ANALYSER :

Acoustic Emission has emerged over the past few decades as an incisive tool of dynamic Non - Destructive Technique (NDT) based on the physical principle that energy is released spontaneously from a system, generating elastic waves when phenomena such as crack propagation, deformation (plastic and elastic) etc. take place.

The DUNEGAN System 8000 is a computer-based fully integrated acoustic emission data acquisition, analysis and storage system designed for use in research laboratories, production testing and field testing.

TECHNICAL LECTURES

Prof. A. K. Mohanty—Head Department of Mech. Engineering, IIT—Kharagpur delivered a lecture on, (i) Heat transfer studies relating to turbine blades, (ii) Cooling system for wire rods, on 20th August, 1987.

PUBLICATIONS

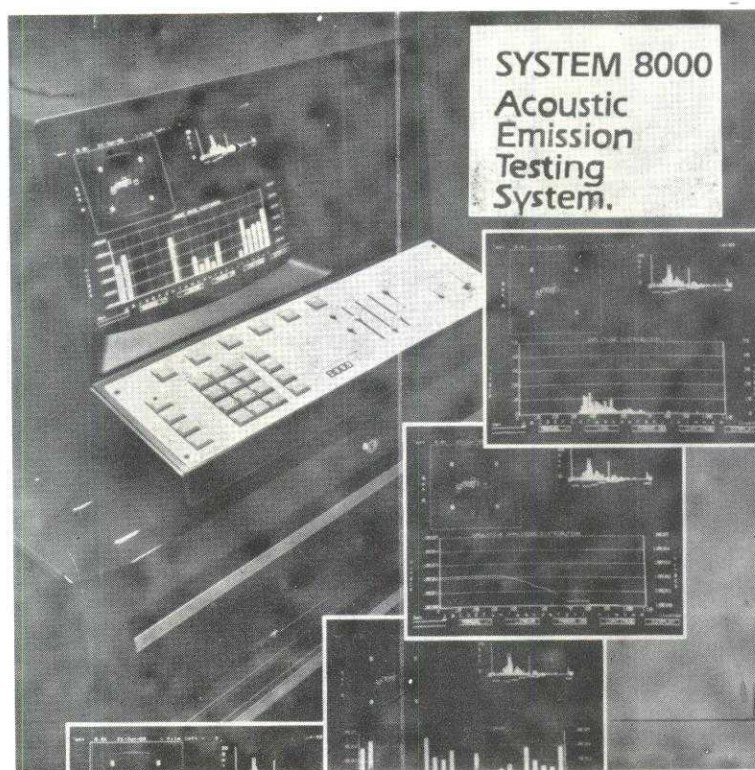
1. 'Problems and prospects of mini and alloy steel industries in India' —Prof. S. Banerjee. Metal News 1987, 9(2), 1-3.

2. 'Formulation of silicon carbide composition'—A. K. Bose. Proceedings of the National Seminar on 'Refractory Industry in India' held at Trivandrum during September 2-3, 1987, 57-64.
3. 'Behaviour of Al-Mg alloys at high temperature' —Aruna Bahadur. Journal Material Science 1987, 22(6), 1944.

SPONSORED INVESTIGATIONS COMPLETED

The following sponsored investigations have been completed during Jan-July, 1987 :

- i) Estimation of alpha quartz and total silica in coal/ash samples - M/s I. P. Station, Delhi Electricity Supply Undertaking, M. P. State Electricity Board.
- ii) Failure of boiler nozzle —M/s Assam State Electricity Board, Chandrapur, Assam.
- iii) Metallurgical evaluation of stainless steel wire rope — M/s Bharat Wire Rope Manufacturing Company, Bombay.



Acoustic Emission Analyser

- iv) Investigation on failure of boiler plate and furnace plate — M/s Bharat Coking Coal Ltd., Dhanbad.

- v) Failure investigation of CI Grills, Economiser Tubes and Superheater tube of Babcock Boiler—M/s Central Bihar Area Electricity Board, Patna.
- vi) Remaining life evaluation of CRU heater tube—M/s IOC Gujarat Refinery, Vadodara.
- vii) RDI & RI tests of sinter and iron ore samples—Steel Authority of India Ltd., Durgapur.
- viii) Metallurgical examination of main stream pipeline of boiler No. 1 —M/s Neyveli Lignite Corporation.
- ix) Estimation of residual life—M/s Neyveli Lignite Corporation.
- x) Sintering of sand samples—M/s CIMM Company Ltd., Gwalior.
- xi) 0.2 pct proof stress test at 453°C for four samples —M/s Indian Seamless Metal Tube Ltd., Ahmednagar.
- xii) Exploratory studies for lowering the iron and fluorine content in a Lepidolite sample — M/s Hindustan Products Ltd., Calcutta.
- xiii) Evaluation of indigenously produced high temp. creep resistant tubing grades of steel vis-a-vis the imported grades—M/s Bharat Heavy Electricals Limited, Hyderabad.
- xiv) Stress rupture tests of samples—M/s Sivananda Steel, Madras.
- xv) Life test of sample as per IS:3725, 1966 — M/s Kanthal India Limited, Varanasi.
- xvi) Investigation on low service life of Swaging Mandrel — TELCO, Jamshedpur.
- xvii) Metallurgical investigation of steel balls— M/s Kathara Washery, Central Coal Fields.
- xviii) Metallurgical examination of SG iron mill — M/s Pratap Steel Rolling Mills Ltd.
- xix) Flotation studies on oxidised copper ore — M/s HC Limited.
- xx) Failure investigation of the axle of Rajdhani Express—R. D. S. O., Lucknow.

VISITORS

1. Mr. T. R. Mediratta. Director (Technical), M.P. Carbon (Pvt) Ltd., Raipur on 12-13 August, 1987. Had discussions on sponsoring of a project on

the development of carbon bonded graphite crucibles with resin as a bond in place of conventional tar and pitch.

2. Mr. P. D. Mayee, Deputy Director, M/s Glass and Ceramics Small Industries Service Institute, Ahmedabad on 17th August, 1987. Had discussions on some aspects of modernisation of graphite crucible industries in India. Dr. K. K. Singh, Scientist, Refractories Division explained the work carried out at NML on graphite crucibles both clay and carbon bonded.
3. Mr. Pradeep Lohia, M/s Lohia Brothers, Assam on 5th August, 1987. Had discussions on the development of dense carbon aggregate and Soderberg paste at NML and release of the know-how on this process.
4. Mr. K. V. Raman — Project Engineer, Magno Mining Co. Hyderabad on 20 and 21st August and 3rd Sept. 1987. Had discussions on Electrolytic Manganese Dioxide Process.
- The following officials visited on 31st August, 1987 and had a joint meeting on transfer of technology on Electrolytic Manganese Dioxide process.
5. Mr. B. B. Choudhury—Chief Engineer, MOIL, Nagpur.
6. Dr. R. A. Rao—General Manager, NRDC, New Delhi.
7. Mr. A. Venugopal — Chief Design Engineer, MECON, Ranchi.
8. Mr. Amarjit Singh—Asst. Engineering Manager, MECON, Ranchi.

The following officials visited on 7-8 September 1987 and had discussions on the process know how of Zinc Oxide.

9. Mr. S. K. Joshi, M/s Slugs India Pvt. Ltd., Bombay.
10. Mr. Satish Agrawal — Technical Director, M/s Slugs India Pvt. Ltd., Bombay.
11. Dr. V. K. Bansal—Manager R&D, M/s Swastik Household and Industrial Products, Ambernath 421 505.

BON VOYAGE

Shri Kishorilal—Scientist E1 left for Hungary on 7th

September, 1987 for a period of 3 months under the bilateral Exchange Programme between the Government of India and Republic of Hungary. Shri Kishorilal will study on, 'Production of semi-products, climatic effects on aluminium semis properties etc.'.

Shri A. K. Mallick—Mechanical Engineer left for USSR on 1st September, 1987 under the Exchange Programme between Government of India and Government of USSR. He will have study tour of 'Metal Working Industry-III.'

PATENTS FILED

'A process for the production of compacted graphite iron' by R. R. Dash and O. N. Mohanty. (Patent No : 460/DEL/86 dt. 27.5.86).

DEPUTATIONS

1. Dr. M. K. Paria and Dr. Amber Ghosh—Scientists attended a course on 'Modern Ceramic Processing Techniques' conducted by Central Glass and Ceramic Research Institute, Calcutta, from 6-10 July, 1987.
2. Shri S. K. Malaviya — Scientist attended 2nd Executive Development Programme on the Steel Plant Refractories held at Indian School of Mines, Dhanbad from 17-22 Aug. 1987.

WE CONGRATULATE THEM ON THEIR PROMOTION. . .

Shri D. M. Rao — UDC to Assistant.
Shri M. R. S. Giri — LDC to UDC

S/Shri A. Gopalakrishnan, K.R.K. Rao, M. Vijayan and G. P. Roy—Jr. Stenographer to Senior Stenographer.

RETIREMENT

Shri B.N. Halder—Scientist E1 on 31st August, 1987. We wish him a happy and peaceful retired life.

SOCIO-CULTURAL FRONT

WELFARE COMMITTEE CONSTITUTED

A Welfare Committee of the laboratory has been constituted. It coordinates, streamlines, oversees and directs the welfare activities pertaining to all NML employees and their dependents. The committee comprises of :

Dr. S. K. Narang—Chairman and S/Shri Raghubir

Singh, P. L. Sengupta, A. K. Vaish, S. P. Tandon, Ch. Rajagopal Rao, as members. Administrative Officer and Sr. Finance & Accounts Officer as Ex-Officio members and Shri M. K. Das as Convener.

NML Staff club activities

The Club has started yoga & odissi dance classes for the children of NML staff for the past two months. Fourteen children of the yoga class and nine from the dance group put up impressive performances at the NML Auditorium as a part of the Independence Day celebrations. The yoga lessons are being imparted by Dr. A. K. Vaish, Scientist, himself an All-India referee on yoga, while the Odissi group is being trained up by Miss Gitanjali Mishra D/o Sri S. S. Mishra of the M. B. P. P. We are sure, more children will come forward to take advantage of these classes.

Organising programmes of tree plantation and their adoption (by the campus children) at Golmuri & Agrico flats areas has been a laudable step by the Club which we feel, will go a long way in ensuring a cleaner environment for our residents.

The Club broke new grounds when they organised for the first time a debate competition in Hindi & English on the evening of 3rd September in the Agrico Club House. A very contemporary theme, 'Are we free today socially, economically & politically inspite of our four decades of independence' was chosen. While the top three honours in the Hindi category went to Miss M. Sarita, Miss. M. Sunita & Master S. K. Pandey respectively, the two sisters Miss S. Sunita & Miss S. Anita took the first and second prizes in the English Section. The debate was punctuated by the participation of a senior group where Mr. Babulal & Mr. B. P. Mishra were the first and second prize winners. It is fervently hoped that a larger participation will be there in all such cultural activities that will certainly enrich the quality of our campus life.

We take pride in announcing that Master M. Satish son of Shri O. Madhavan received the first prize in the sketching competition 'Monsoon FAIOC 87' organised by the INCAB OFFICERS' Club during August 14-16, 1987.

Sport enthusiasts should take heart in the fact that the Club organised recently a floodlight Volleyball tournament in which five teams participated. Such activities need a great deal of co-operation from one and all and let us hope they will expand in weeks to come.