2014

TANTU

Annual Journal of the Alumni Association

COLLEGE OF TEXTILE TECHNOLOGY

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Editorial

The release of TANTU 2014 edition on the occasion of 2nd seminar on " Future of Indian Textile & Apparel Industry", organised by the north India section of alumni association of textile technocrats from Calcutta University, is an indication of growing commitment of the textile and apparel professionals in the industry functioning. With new government and new thrust on manufacturing sector, there is a renewed hope for the textile and apparel manufacturing sector which provides the second highest employment after agriculture.

The seminar on "Future of Indian Textile & Apparel Industry" will see two very interesting panel discussion. The first discussion on Future of Apparel Manufacturing in National Capital Region will see manufacturing stalwarts from NCR is discussing the problems, issues and strategy for growth. The second panel discussion on Increasing Importance of India as Sourcing Hub will re-emphasize the value addition that the intermediaries do and the blurring line of separation between export and domestic manufacturing.

This TANTU magazine contains very interesting mix of articles. While article and presentation on Chemical Discharge Management stretches the responsibility of manufacturer further, the article on rope and the presentation by Pulcra chemicals will emphasize the growing importance of technical textiles sector. The importance of manpower prompted write up on appropriateness of TRAs, the issue of discipline and how to take care of your employees in simple terms.

On behalf of TANTU, I would like to extend my heartfelt thanks to all those who financially and otherwise supported in our efforts to bring together like minded professionals, nurture young minds and keeping this industry alive. Last but not the least the inspiration and support of our spouses and children notwithstanding the agony and tolerance for all the late comings and meetings.

DR. PRABIR JANA
Editor-in-Chief

Chemical Discharge Management

BY SUVODEEP MUKHERJEE, SR. MANAGER, BUREAU VERITAS

1 Preface:

For decades, companies have been using environment as a ground for hazardous and dangerous chemicals emitted by the industry, in spite of the government regulations. This unhindered and uncontrolled practice has resulted in a build-up of harmful chemicals throughout the whole environment, specially our waterways. This ever worsening condition is not only affecting the local communities residing near the manufacturing facilities but also the consumers around the world who are implicated in this toxic cycle. Some of the typical attempts at tackling this problem have been through setting up and tightening of the legal limits of the amount of the hazardous chemicals which can be discharged in the environment. Some of the corporates have also included these limits in their CSR (Corporate Social Responsibility) activities.

Since 1990s, many of the apparel and footwear companies have been working closely with the European and United States regulatory agencies to restrict harmful substances in consumer products. Supporting this cause, industry organisations like AFIRM have focused on harmonising product standards and thereafter communicating these standards throughout the supply chain. Though these efforts have achieved great success, it is now absolutely essential for the industry to consider impacts throughout the entire global supply chain and not just be restricted to controlling hazardous chemicals in products for consumer safety.

The 'legalised pollution' is a compromise that acts as a benefit for the irresponsible organizations and hasn't done much to prevent the continued emission of toxic chemicals in the environment. With the ever increasing scale of apparel and footwear industry, and the typical manufacturing practices being followed, the use of hazardous chemicals is still prevalent. Hazardous chemicals continue to be used for the manufacture of apparels by a lot of well-known brands. The effluent released by the supply chain manufacturers, the products as well as the environment is detected of these harmful chemicals despite the regulations and corporate social responsibility programmes being implemented from decades. Legal limits on the use and discharge of these hazardous chemicals have allowed releases from a multitude of sources to build up in the environment and accumulate over the years. For persistent, hazardous chemicals, there is no 'safe' level.

2. Greenpeace:

Greenpeace is a globally renowned NGO which works on issues such as

protection and preservation of environment and thereby promote peace. In July 2011, Greenpeace launched a campaign called the "Detox" campaign to address the problem of apparel brands polluting the environment through their toxic releases. A total of 17 companies have joined hands in this initiative so far. These companies have been grouped into three categories: the Leaders (who are actively leading the industry towards a toxic-free future), the Greenwashers (who are failing to walk the talk) and the Laggards (who have not yet taken any action) depending upon the level of commitment they have towards making the world a better place to live in.

Followed by the Greenpeace "Detox" campaign a group of leading apparel and footwear brands joined hands with a commitment to make the entire supply chain free from any toxic releases by the year 2020. This campaign was named Zero Discharge of Hazardous Chemicals (ZDHC). This group was committed to bring about a positive change and incorporate higher environmental and business standards in the product life cycle of the footwear and apparel industry. At present the coalition includes many renowned names such asAdidas Group, Benetton, C&A,Canepa Tessiture Serica, Esprit, G-Star Raw, H&M, Inditex, Jack Wolfskin, Levi Strauss &Co., Li Ning, M&S,New Balance Athletic Shoe Inc., NIKE Inc., and PUMA SE, Victoria's Secret, Mango, Uniglo, Valentino and Zara

3 ZDHC 2020 goals and principles:

There are three fundamental principles on which the ZDHC by 2020 goals are aligned.

1. Prevention and Precaution: Taking preventive action so that hazardous chemicals can be avoided in the supply chain in the face of scientific uncertainty.
2. Right to Know: It is the responsibility of all organizations to act with transparency because the communities living by the discharge pipes as well as the end consumers have a right to know about the harmful chemicals that are released in the water bodies.

4 Why it shall concern apparel supply chain:

The Indian apparel industry is a growing industry and has a great potential in the future. India has abundant raw material and the demand for exports to boost fibre production is increasing. The total of India's fibre production is expected to increase to 9.886 billion kilograms by FY17 as compared to 6.585 billion kilograms in FY11. Also the demand for apparel is likely to grow at a CAGR of 11.1% from USD 65 billion in FY11 to USD 122 billion in 2017. Even the focus of the government is increasing and favourable policies to support the industry is expected in the future. Therefore, there is a huge potential for growth in the industry and thus the manufacturers, especially those involved in exporting of apparels should focus more towards these areas of environmental sustainability, which is the need of the hour.

Just having focus on production and quality is not sufficient in today's competitive world. In order to achieve growth in the long term and diversify their portfolio of advantages, Indian apparel industry has to focus on building sustainable business models. The buyers are becoming more and more stringent about these rules and regulations related to environment sustainability and it is no longer limited just as a part of Corporate social responsibility activities for organization, but has become a necessity for them. Different buyers present in different geographic locations have their own set of requirements according to their country's norms and policies which the manufacturers and exporters have to cater to if they want to do business with these buyers or countries. Also with the increasing requirements from the buyers, the list of chemicals being banned under hazardous chemicals is increasing day by day. Even the Indian government

is becoming stricter about environment policies. Over 700 dyeing and bleaching units were shut down in Tirupur on the orders of Madras High Court in January, 2011.

Apart from the compliances and external forces which compel the companies to adopt more environment-friendly approach, it is the ethical and social responsibility of every industry to conserve water. The level of drinking water is depleting very fast and if the same continues, that day will not be very far when there is not enough water available to meet our needs. Not just this, but it is also a good idea to be prepared for future. Some organizations may feel that these issues do not concern them at the moment, however, it is always good to be the early adopters rather than doing a catching-up job when it is already too late. Many of the leaders in the industry like Shahi, Arvind Ltd, Pratibha ,Alok Industries etc have already been working intensively on waste water management since the past two years. It not only gives them an edge over the other competitors in the market, but is also a good marketing proposition for the companies to gain more business and build up a positive brand image for themselves. Also, in spite of the fact that the companies have to make some initial investment into building up of an environmentally sustainable system such as Effluent Treatment Plant (ETP) etc, however, in the long run they would save on cost and will yield cost benefits. Finally, even the customers are becoming more environment conscious these days and the demand for environment – friendly products are increasing.

MSME-Credit Rating & its Importance

BY CHANDAN SAHA, JOINT ADVISER, PLANNING COMMISSION

Introduction

The institution of credit rating as a mechanism for addressing the considerable degree of information asymmetry in the financial markets has travelled a long way from the times of the US rail road companies in the mid-19th century. The need for an independent rating agency capable of assessing creditworthiness of borrowers was felt when corporate started mobilizing resources directly from savers instead of accessing it through banks which hitherto assumed the credit risk in such cases. The history of systematic credit rating, however, is a century old beginning with rating of US railroad bonds by John Moody in 1909. During this one century of growth and adaptation, CRAs progressed from rating simple debt products to rating complex derivatives to national economies and altered their business models to cover a range of activities/products.

In India, credit ratings started with the setting up of The Credit Rating Information Services of India (now CRISIL Limited) in 1987. CRISIL was promoted by premier financial institutions like ICICI, HDFC, UTI, SBI, LIC and Asian Development Bank. Now CRISIL is an S&P company with a majority shareholding. Apart from CRISIL other rating agencies have been registered by SEBI in India. These are ICRA, promoted by IFCI and now controlled by Moody's, CARE promoted by IDBI, Fitch India a 100% subsidiary of Fitch (now India Rating & Research), SMERA and a new born Brickworks. In India, CRAs, who rate capital market instruments, are governed by Securities and Exchange Board of India (Credit Rating Agencies) Regulations, 1999. The regulation provides detailed requirements that a rating agency needs to fulfil to be registered with SEBI.

List of Empanelled CRA functioning for MSME Rating in India:

S. No.	Name of the CRA	Year of commencement of Operations
1	CRISIL	1988
2	ICRA	1991
3	CARE	1993
4	Fitch India (Now India Rating & Research)	1996
5	Brickworks	2008
6	SMERA	2005
7	ONICRA	2005

Credit rating agencies play an important role in assessing risk and its location and distribution in the financial system. By facilitating investment decisions, they can help investors in achieving a balance in the risk return profile and at the same time assist firms in accessing capital at low cost. CRAs can thus potentially help to allocate capital efficiently across all sectors of the economy by pricing risk appropriately.

The credit rating agencies of India provide credit ratings to the companies that are involved in offering debt obligations like bonds, debentures and many more to the investors. These products are traded on the secondary securities market and are provided by several companies, as well as the national government. The credit rating agencies of India provide a clear picture of the creditworthiness of a particular financial institution. The creditworthiness of a particular financial institution describes the financial ability of that company of paying back a loan and providing good interest rates for the loans.

The credit rating agencies of India measure the creditworthiness of debt obligation providers through certain processes. These ratings are provided after considering the financial history of the companies and so on. On the other hand, the value of assets of the companies and present financial liabilities are also considered for the purpose. These ratings provided by the credit rating agencies of India are very helpful for the investors because they can get a clear idea of the expected returns and risk factor involved in the process. At present, these credit ratings are used for several other purposes like determining the insurance premiums and many more.

Msme Ratings & Its Importance

Over the years, Credit Rating has become an integral part of the framework for credit and investment decisions relating to larger enterprises. Today, as the banking sector increasingly focuses on lending and providing other financial services to the small and medium enterprises (SME) sector, ratings can play the same pivotal role as they do for larger enterprises. Ratings can make SMEs' access to financial services more efficient by providing benchmarks and improving transparency. Independent agency ratings for SMEs, based on high standards of analytical rigour, can provide greater confidence to lenders, and consequently broaden the range of financial resources available to SMEs.

The rapid growth of the SME sector creates exciting lending opportunities for banks and financial institutions. A credit rating takes a significant chunk of the perceived uncertainty out of their lending decisions and reduces time and transaction costs in the system. The Indian rating industry has established its credibility in providing in-depth and unbiased analysis; ratings are therefore highly respected by lenders. SMEs can leverage their ratings for negotiating better borrowing rates and strengthening their relationships with bankers. Ratings can also facilitate faster processing of credit facilities, as rating reports provide most of the information banks need for approving loans. Further, SMEs can use ratings to enhance their credibility with other counterparties too, such as technology providers, suppliers, and customers.

Keeping the above in view, Ministry of MSME Govt. of India has formulated a scheme namely, 'Performance and Credit Rating Scheme' which is implemented by National Small Industries Corporation (NSIC). Financial support is provided to the MSMEs in the form of subsidy to undergo rating by an empanelled Credit Rating agency. The salient features of the scheme are given as follows:-

1. A combination of credit and performance factors including operations, finance, business and management risk
2. Uniform Rating Scale for all empanelled rating agencies
3. MSEs have the liberty to choose among the empanelled Rating Agencies
4. Turn-Over based fee structure
5. Partial Reimbursement of Rating Fee through NSIC

The scheme is being operated through accredited rating agencies i.e. CARE, CRISIL, India Rating (Formerly known as FITCH), ICRA, ONICRA,

SMERA and Brickwork Rating etc. The fee to be paid by the MSEs for the rating, is subsidized by the Government to the extent of 75% of the rating fee up to a maximum of Rs.40,000/-. It is reported that the rating has been accepted by the banks and this has facilitated MSMEs to have an access to credit.

Relevancy to Textile & Clothing Sector

Traditionally Indian Textile industries are established in large sector. However it has got a break in early 80s when weaving sector has come up in decentralised sector in certain areas around the large textile industries. Clothing industry was traditionally established in the small scale sector due to reservation policy. However, it has been confined in Micro & small scale sector despite the reservation policy was withdrawn and investment limit in plant & machinery has been enhanced as the entrepreneurs find it convenient so. It is a labour intensive and it is easy to maintain discipline in the manufacturing sector under one roof.

At present a large no. of MSME Textile enterprises are in operation keeping them in the loop of supply chain management or as an integral part of export house/ exporter for value addition. However, these enterprises occasionally get out of track due to inadequate credit available with them to keep its operation in full swing. These enterprises are finding a difficult path to have an access to credit from public sector banks and financial institution as there is a perceived risk, which may not be always appropriate. Credit Rating can be a good proposition to these enterprises to get them roll on in the business. Credit Rating not only facilitates to have access to credit but it also facilitates the enterprise to reshape its finance in a systematic manner thus to strengthen the business profile. This can be used as a tool to scale up business in diverse ways in long run.

This is a new field in the profession and growing very faster rate. Textile Technologist with finance background may find opportunity to have employment in future.

Source

1. Report of High Level Coordination Committee on Financial Matters, Capital Market Division, Ministry of Finance,
2. CRISIL News,
3. Ministry of MSME Annual Report12-13,
4. Literature on 'Performance & Credit Rating Scheme'.
5. other study reports.

Why You Need To Take Care of Your Employees?

BY J.D. GIRI, DIRECTOR, SHAHI EXPORT HOUSE

Look at the Director's report with any balance sheet and you will invariably find a para devoted to employees. It proclaims "our employees are our assets". Many times it is felt that this para appears as a customary requirement, However going beyond it, one really finds how true it is that our employees are the company's biggest assets! Success of any business is entirely dependent on its employees. They can make or break a company for which they are working.

We have also heard that in every business "the customer comes first". It is equally true that the purpose of business is there to serve its customers. However there is growing realization about role played by employees and it is now getting changed to "employees first", meaning thereby employees have precedence over customers. This is not to undermine importance and prime position of customers. However, an unsatisfied and unhappy employee will not be able to satisfy customers who remain the main focus of business activity. Every customer is not handled by the CEO of a company. The CEO has to rely on his employees to interact with the customers and for sustenance and growth of the business. Customer is at the core of business strategy, but who is going to make it happen? It is the employees who actually translate business vision and mission into reality.

Employees who are taken care of by the company will eventually take proper care of customers. And business grows and success flows in.

Once I met a Captain of a Cargo Ship and I remember his words which are very relevant to success and survival in any activity He said "my ship says to me that you take care of me and I take care of you" The Captain further added that since he keeps this in his mind, he had never met with an accident in his shipping carrier of 30 years. Smooth sailing entails that Captain has to take care of ship's maintenance needs, fuel, take measures to keep her on even keel and steer her clear of low draft and rocks. This ensures safety of all crew, cargo and the carrier itself. The same holds good for employees! If you have taken care of employees, you have taken care of everything that business requires.

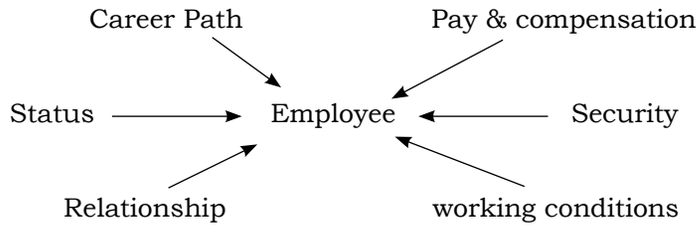
In army, it is engrained in officer's mind that they learn it very quickly:

'Take care of your people and they will take care of you.' Because of this teaching ,an army man does not hesitate to take any risk to save his officers and colleagues. This is true bonding coming out of care from heart and pays rich dividends to all. Emotional attachment and bonding is at the core and if you strike it, you have won that person forever, no matter what the circumstances are!

There are many ways to take care of the employees who will bring loyalty, commitment and full engagement. The basic fact is to gain the trust of employees by our genuine acts of transparency and fairness. If the CEO loses trust

of employees , the company will face insurmountable difficulties which will not be in the interest of the business. It Is necessary to empower employees by giving them necessary freedom and authority to take decisions. Respect and Care are two magic words which bind employees with company and success is assured. Pay is important. Benefits are important. But pay and benefits are expected. What makes employees go extra mile is their feeling of belongingness to a team, working with people who care for them as member of family. The company is like extended family and as we treat members of our family, the same treatment needs to be given to the members of extended family. Of all the factors of production, manpower factor is extremely important and very sensitive one. Employees cannot be treated as disposable items like needles and bobbins. They are the movers of machines , turning inputs into fine products. They are the ones who represent the company. People know the company by interacting with its employees. Happy employees attract the best talent and business. It is to be realized that they are the essential part of our journey and if we intend to make our journey successful, we need to take care of our employees. It is a rewarding experience !

Business success depends on our attitude towards employees. If you try to exploit employees, without caring



for their needs, you may succeed in the short run. The success will be short-lived. If you want to have long term reward, rather than exploiting, we should empower our employees and success is assured. On empowerment , employees will feel valued, part of the business. They will feel more confident to deal with the difficult situations. As it is, employee may be passing through stressful life on account of various reasons . If we care for his or her feelings and provide a positive environment at work place, the employees may feel wanted and happy and respected. Happier employees will reduce attrition and absenteeism. Today companies are suffering, particularly, garment industry, due to attrition and absenteeism. If we take proper care of our employees, it will help in bringing down attrition substantially. It is said that employees do not leave companies, but they leave their bosses. It is very true. A Company may be a good company .However, if immediate bosses do not care for their people, they will desert them and company will suffer.

When an employee joins any company, he has certain minimum expectations in his mind. These can be explained in the above chart:

If these basic needs are taken care, and if proper respect and empowerment is given to employees, they will prove to be invaluable assets to the company which will give perennial returns to business.

- I recall a Chinese proverb which says:
- If you are planning for a year, sow wheat or rice
- If you are planning for a decade, plant tress
- If you are planning for your lifetime, invest in people
- If you are planning for prosperity for 100 years and beyond, grow people !

Sense of ownership from an employee is important for success of a business and that only comes when the employer treats the employee as an important part of their business. Employee loyalty begins with employer loyalty. Your employees should know that if they do the job they were hired to do with a reasonable amount of competence and efficiency, you will support them.

This highlights the importance of human capital in business so that we can reap fruits of prosperity for centuries to come. Slogan of successful venture is “ I take care of you and you take care of me “

Disciplined Workforce or Something Else?

BY PRABIR JANA, PROFESSOR, NIFT, NEW DELHI

"If you need to perfect your assembly manufacturing get rid off the human element from it"

- Henry Ford

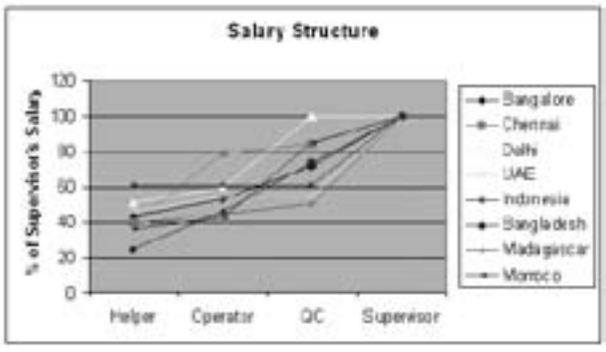
No other comment other than above from Henry Ford could have been more apt for production manager in an apparel manufacturing unit in India. For a long time success in assembly line production seems to be eluding garment manufacturers in National Capital Region (NCR). During early nineties there were very few garment exporters in NCR, who had their own manufacturing facilities. During mid nineties some big units were set up with lots of skepticism. It was a different ballgame altogether from fabricator based "make through" system of manufacturing to in-house "assembly manufacturing". Finding it difficult to manage organisations even hired south Indian production managers. But the south Indian production managers had found the north Indian labour force too aggressive to handle. Gradually the realization seeped in was "assembly line manufacturing might be good for Buyer retention but not feasible in North India". Lot of hard work, brainstorming and seminar/workshop were organized to make assembly manufacturing profitable and sustainable. By the beginning of new millennium the die-hard assembly enthusiasts in NCR seems to have found the golden formulae for success in assembly line; women workforce, Srilankan supervisor and manager. Even that success story was short lived, as Srilankan supervisors quickly climbed the ladder of success to become CEOs, the dearth of technical hand in manufacturing force once again became prominent. Lot of garment manufacturing facilities struggled and either closed down or found out the improvised alternative; running the show with contract workers. Today there are factories in NCR that are either running with women workers on company payroll (very few in number) or running with contract labours (majority in number). If we keep aside the NCR story, the factories down south are content with women workers and women supervisors without any major challenges.

If we look at other Asian countries successful in apparel manufacturing like Srilanka, they have better HR practices in place and better training system in technical and supervisory level. Even average education level of Srilankan workers is better than their Indian counterparts. The Indonesian, Cambodian, Vietnamese and Chinese factories are successful because of their disciplined workforce, to put it in the words of one of the Indian ex-pat working in Indonesia

"In Indonesia workers give you work voluntarily and in India you need to extract work from workers. Once explained the workers in majority of south Asian countries repeat the work diligently, willingly and without asking to many questions; here in India workers trying to raise too many questions to break the rhythm of work".

The question arises why there is so much difference of workforce application within same domain? Success of assembly line depends on what all attributes of operator? Only disciplined workforce or something else? An old study on co-relation of salary of workers on stability of assembly line manufacturing system in different countries exposes some interesting facts.

Assuming supervisors salary as base 100, salary of quality controller, operator and helper are shown as percentage. It is interesting to see that operator's salary ranges from 40% to 80%. I, personally have a strong feeling that in places (any country or province) where range of salary is considerably different between levels, there assembly line working will not be very successful. For example if an experienced operator earns almost equal (or more) than a supervisor then he may not wish to be a supervisor ever. Otherwise an operator always dreams to be promoted (look for avenues) to be a supervisor without an urge to become an experienced (skilled) operator. Ambition or urge to move up in ladder creates instability in the system. The similar logic is applicable for other levels too. Division of labour is one of the key elements here, like sewing operators, helpers, supervisors, quality controllers, line managers everyone has different important roles to play. No role is less important to another. The million-dollar question now arises, how much should be the salary differentiation between them?



Source: Prabir Jana 2002

Assembly line manufacturing system demands workers to work with their hands and not brains. Perfecting assembly operation entails mechanising individual operation thus treating operators robot-like. Does this mean smarter workers (who thinks) would be a disadvantage for assembly line manufacturing? Not really, if IQ is some kind of indication of brainpower of nations, China, who is extremely successful as assembly line manufacturing (of not only garments but other products too) have an IQ of 100, where India average is 82 only and Srilanka at 78.

Another important factor of success of labour oriented assembly line manufacturing is finger dexterity of workers. It was established that female workers have nimble fingers and have definite advantages over male counterparts in handling small parts in semiconductor industry. Thus designed the peg board test for recruitment screening of sewing operators in garment industry. Even if that explains the industry bias towards 'female workers make better workforce', the contrary remains that most highly rated (most efficient) sewing operators often male.

After my recent trip to China I am convinced that discipline has some role to play in making assembly manufacturing a success. May be a challenge to behavioural scientists to prove or disprove the theory, the academician and industry will continue to be in search of that elusive recipe of success of assembly line manufacturing, amidst the government's offering of long-pending labour reform we all hope that Indian manufacturing will excel some day and bring cheers to the nation.

Rope and its General Properties

BY PRITHWIRAJ MAL, ASSISTANT PROFESSOR, NIFT, HYDERABAD

Introduction

Through the centuries ropes, cords and twines have been used for many purposes like in shipping, farming, primitive bridges, climbing, mooring lines and even as art forms. Before, rope was made of natural fibres mainly with hemp – a natural fibre that is similar to cotton. But with modern advancement and with the innovations of high performance synthetic fibres, the fibre ropes are challenging the steel or metallic ropes. Very strong fibre ropes are widely in use for mounting climbing, cliff hanging, mooring lines and many other applications for its unique property of resisting a very large axial load on comparison to bending and torsional load.

Rope and its constituents (1)

A rope is made up of several strands twisted, plaited or braided together to form a coherent structure. The strands are made of yarns which consist of fibres or filaments. The constituent is shown in fig below:

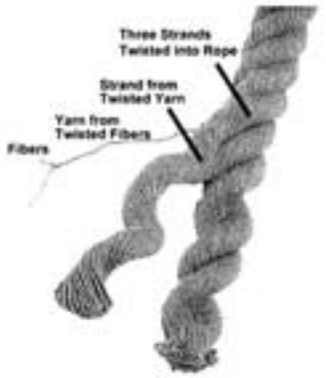


Fig. 1 Rope constituents

Fibre	Fineness (dtex)	Extension %	Tenacity cN/tex
Cotton	1.5	8	3.6
Flax	2.2	1.6	5.9
Jute	15 - 27	1.5	3.0
Abacca	139 - 273	2.8	5.8
Coir	180 - 540	42	1.2
Polyethylene	>5	20	3
Polypropylene	>5	20	3
Polyester	>6	15	8
Nylon	>6	20	8.5
Kevlar (aramid)	<2	<5	20

Table 1. Properties of some fibres used in ropes

Fibres for rope

Both natural and synthetic fibres are used for rope construction. Synthetic fibres can be used either in staple or filament form. The mostly common fibres used in the last century are hemp, coir, abacca, nylon, polypropylene and polyester. Other than the mentioned fibres high modulus fibres has become very popular for rope making. The high performance fibres generally used for rope making are kevlar, twaron, technora (aramid fibres), high modulus polyethylene.

Types of ropes (1,2,3,4)

There are basically four types of ropes. Each of these has a different balance of properties. It is very important to select the right construction and right composition depending upon

the mode of application.

a) Parallel lay
b) Stranded
c) Laid
d) Plaited
e) Braided

Parallel lay constructions are actually made using parallel filaments or parallel strands and an extruded plastic jacket usually polyethylene or nylon. These types of construction have high strength conversion and highest modulus and mostly have its application in mooring lines.

Fig. 2 Parallel lay

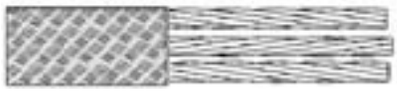


Fig 3. Parallel strands (braided or laid) with a braided jacket

In stranded construction, the twisted strands are arranged in one or more concentric rings around a central core strand. The core strand may not be designed to carry load. Most stranded constructions are supplied with a braided polyester or nylon jacket. Extrusions and polyurethane coatings can also being used. These types of construction have high strength conversion, high modulus and are readily splicable. These also have best performance in cycling over sheaves. These types of construction have its maximum application in moorings and dynamic application such as lifting.

Fig 4. Stranded construction

Laid rope is also known as twisted rope. Laid constructions are extremely old and were originally made by hand from natural fibres. This gives them structural integrity and they do not need external jackets to hold them together. The most common laid construction is 3 and 4 strand. Traditionally, a three strand laid rope is called a plain- or hauser laid, a four strand rope is called shroud laid, and a larger rope formed by counter twisting three or more multi-twisting rope is called cable laid. One property of laid rope is partial untwisting when used. This can cause spinning of suspended loads, or stretching, kinking or hockling of the rope itself. An additional drawback of twisted construction is that every fibre is exposed to abrasion numerous times along the length of the rope. Twisted ropes have a preferred direction for coiling. Normal right-laid rope should be coiled clockwise, to prevent kinking. Coiling this way imparts a twist to the rope. Rope of this type must be bound at its ends by some means to prevent untwisting.

Fig. 5 Laid construction

Plaited ropes or square braids are produced on a plaiting machine containing even number of reels (generally eight), each containing one strand. A high degree of twist is generally used in the production of individual strands which are very similar to the strands of laid ropes. As previously mentioned the high modulus fibres are unsuitable for high twist construction and are not common in plaited ropes. Plaited constructions have moderate strength conversion and moderate modulus. These constructions could be readily splicable and have excellent structural integrity and are used largely in ship mooring and general engineering.

Fig. 6 Plaited construction

Braids can either be solid or circular. Single braids are hollow. The braids consist of an equal number of interwoven clockwise and anti-clockwise strands. The braid pattern is normally over 1 under 1 or under 2 over 2. The individual strands are generally made up of 1 or more parallel twisted textile or rope yarns. Double braid or braid on braid consists of an outer braid over an inner braid. These are more compact than single braids and are the only realistic braided alternative in large ropes. The comments made about high levels twist in laid and plaited ropes apply

equally to braided ropes and consequently these are not practical alternatives for high modulus fibres unless the helix angles are kept extremely low. These constructions have moderate strength conversion, moderate modulus and are readily splicable. These are also used for ship moorings and general engineering.

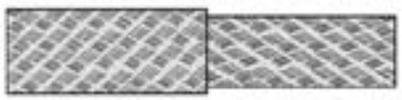


Fig. 7 Braided constructions

General Properties of Rope Strength

Tensile strength is the most desirable properties of the rope and depends on raw material, construction and test environment. Raw material is the primary factor of the strength and depends upon the strength of the constituent fibres. Both natural and synthetic fibres are used for rope construction but synthetic fibres are the strongest as compared to the natural fibres. The high strength and high modulus fibres have a little difference between them as per as their primary properties are concerned but the secondary properties reveal the marked difference between the fibres and these properties should be taken into account to select the fibre for a particular application.

Rope construction plays a very major role to decide the property of a rope. For any application optimized selection of both the fibre and the rope construction is essential.

Effect of heat and wetting are the two major factors that need to be considered carefully. Heat has an influential effect on the strength of rope and since ropes are need to work so many situations in a heated condition, selection of the constituent should be selected as per as the mode of application and environment where the rope has to be used. Swelling of ropes by wetting too reduces the strength of the rope. Therefore, proper selection of materials has to be done to maximize the performance at certain environmental condition during its application.

Fibres	Abrasion	Thermal	Creep	Kinking
Aramid	Poor	High	F.low	Susceptible
HMPE	Very good	Low	High	Resistant
Polyester	Good	Medium	L.Medium	Resistant
Nylon	Good	Low	H.Medium	Resistant
Steel	Very good	High	Very Low	Very Resistant

Table 2. The secondary properties of fibres and steel

Construction	Tension - tension	Cycling over sheaves	Strength to diameter	Toughness
Parallel strand ropes	Very Good	Moderate	High	Moderate
Parallel yarn ropes	Very Good	Mediocore	Excellent	Poor
8 / 12 plait braid	Good	Poor	Medium	Excellent
Braid on braid	Good	Poor	Medium	Very High

Table 3. Effect of construction on different properties of rope

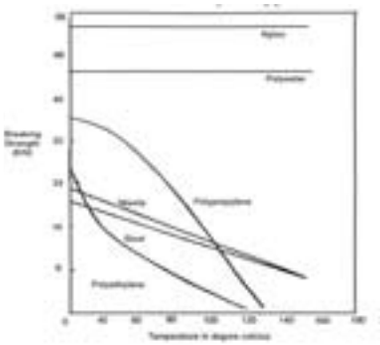


Fig. 8 Effect of Temperature on Rope Strength

Knot strength (5)

Sharp bends in knot results concentration of stress leads to failure to the rope structure. Therefore, knots with more gradual bends, causing less strain concentration, such as “figure 9” must be used, where a maximum strength loss of 30% occurs.

Fig 9. The “Figure 9” Knot

Extension and Elasticity (6)

Rope extension and elasticity are the major factors in terms of the peak loads and mooring excursions. The

total elongation comprised of the elastic, visco-elastic and permanent. The ultimate elongation of rope depends very much on fibre breaking elongation.

Twisting, Kinking and Huckling (7)

Kinking and huckling of rope are most undesirable. Whenever 3-strand is twisted against the regular lay of rope, kinks form as the rope begins to unlay. As the rope unlays further, kinks turn into huckles, which causes permanent damage to the rope. The huckle however cannot be removed by pulling along the length of the rope.

Fig. 10. "3 – strand" twisted strand can hockle

Flexing endurance (2)

When rope moves over a curved surface it gets flexed. Due to flexing the inner part of the rope will contract and simultaneously the outer part will get extended. Due to simultaneous contraction and extension at the same place the fibres gets locally flexed, compressed and abraded. Flexing endurance becomes an important property in such application where the rope gets repeatedly flexed. In case of twisted rope, flexing endurance improves with twist and an SSZ construction has better flexing properties than ZSZ construction. Between braided and twisted structure, the twisted structure is superior to the equivalent braided structure of the same size and the material. Flexing endurance can also be improved by impregnating the rope strand with lubricant as it reduces inter-strand and yarn friction.

Tensile fatigue behavior of ropes (8)

The lifetime of a rope in many applications is in between 15 – 20 years, therefore it is expected that the rope lasts their expected lifetime. Any kind of early failure is undesirable. A rope is subjected to variety of forces and mostly of them are dynamic i.e. cyclic in nature. Therefore it is always safe to consider the cyclic tensile loading in addition to static loading. Knowledge of tensile fatigue of rope is very important for certain applications like climbing, cliffhanging of mooring line ropes etc. tensile fatigue behavior is often represented by an S/N curve reflecting the number of cycles N at a maximum tensile stress S.

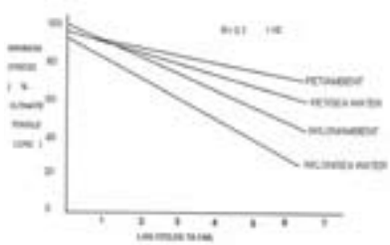


Fig 11 "S/N" curves for nylon and polyester in dry and wet state

The factors affecting the tensile fatigue behavior of ropes are the structure of the polymers, moisture / water, pH and heat. Hearle and Wong found that polypropylene fibres have got higher resistance to fatigue than nylon 6,6 and PET fibres. This is solely due to the structure of the molecular chains. The backbone of the polypropylene molecules consists of zigzag chain of carbon atoms with the methyl groups that stand out from the sides of the chain. These methyl groups follow a helical path as one move along the chain and this ordered structure forms an iso-tactic structure. In a synod-tactic or atactic polymer, this helical structure is not formed and an irregular structure results. Hearle and Wong found that being linear and hence could be packed closely, the iso-tactic polymers structure of polypropylene could interlock among them and therefore are the source of high resistance to fatigue. The interlocking of iso-tactic polypropylene is much more efficient than polyester where the bulky shaped benzene ring in its molecular chain do act as anchor points. In case of nylon fibre the hydrogen-bonded structure might seem not capable of resisting the repetitive straining as the vander wall force of attraction in case of polypropylene. Another structural asset is the amount of stress to which the different molecular chains are subjected. The various chain are under different pressure and hence responsible for a stress distribution. The repeated loading and

unloading of the propylene fibres might help for the chains to settle down into a state in which the stresses in all the chains are equal. The oscillating stresses will then have to break the bulk of the chains simultaneously before the failure can occur. That's why the polypropylene fibres do show the higher fatigue strength.

The fibres, which absorb moisture, do swell and shrink in length. This causes angle of twist to increase. This is expected to reduce the strength when wet since the constituent yarns get locked into the structure without getting an opportunity to align them along the direction of application of load. Hence, they contribute less towards sharing of load. Hearle and Wong in their paper discussed that the CO-NH group attracts absorbed water molecules in nylon fibre. The absorbed water molecules can force apart the long chain molecules, which reduces the intermolecular cohesive force. Adjacent molecules slide past each other and loss of fibre strength occurs.

Hearle and Wong in their paper discussed that in acidic pH (sea water) the H+ ions of the acid are able to attack the CO-NH group make it positively charged. The similarly charged molecules do repel and cohesive force is reduced. This accounts for a loss in strength in the polyamide fibre. A further high concentration of acid leads to the scission of the peptide linkages in the polyamide fibres. Polypropylene fibres, due to their good resistance of acid don't degrade and loose strength as compared to the polyamides.

Regarding the effect of heat on rope, heat has an influential effect on the strength of rope and causes imbrittlement and softening of the polymer which lead to the failure. During the loading cycle process a hysteresis loop is generated. When the force is reduced most of the energy is returned to the system while the rope absorbs the reminder and cause heating. If the force is very large and the loading frequency is very fast, fusion of rope can take place.

Conclusion

Both natural fibres and synthetic fibres can be used for the construction of in different ways as parallel lay, wire construction, plaited, braided etc. the ultimate property of the rope depends upon the constituent fibre and the construction. No specific fibre or structure can be used for the construction of rope as a unique as for different application different properties of the rope is necessary and accordingly the parameters are to be fixed up for maximum performance with minimum cost.

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Human Resources Related Problems in Indian Textile Research Associations

BY ABHIJIT MAJUMDAR, ASSOCIATE PROFESSOR, NIFT, NEW DELHI

1 Introduction

Textile Industry occupies a unique position in the economy of the country. Over the years, this industry has contributed significantly to our national output, employment and exports. The sector contributes about 14 % to industrial production, 4 % to the gross domestic product (GDP) and provides direct employment to over 35 million people. The Industry not only supports the varied domestic requirements for textiles and clothing but also to plays a significant role in international markets in textiles.

In the rapid changing scenario of trade liberalization, the industry needs more effective innovations, planning, responsiveness and flexibility to face the competition in international markets. Hence there is a need of continuous research and development to keep pace with the rising demands of innovative and value added products in the global textile market. To fulfill the requirements of the textile industry in terms of innovative products and new technologies, the Ministry of Textiles, Govt. of India, had set up eight textile research associations (TRAs) in different parts of the country. As the human resource is the most important aspect of research and development organizations, it will be worthwhile to investigate the present status of human resources in Indian TRAs. The problem of TRAs in recruiting and retaining high quality manpower will be analyzed by data collection through surveys. Then the potential reasons behind the problem will be listed and corrective measures to overcome the problem will be proposed.

2 Textile Research Associations in India-An Overview

The textile research associations, located in different parts of the country were established with the objectives to carry out scientific research in the field of textile as well as to promote and foster scientific research studies for the extension of knowledge related to textile industry. Most of the TRAs are linked to the Ministry of Textile and they provide following services to centralized as well as decentralized sector.

(i) Technological, management and policy research
(ii) Implementation of research findings and technology transfer
(iii) Consultancy at unit, inter-firm and government levels
(iv) Inter-firm comparisons for establishing norms of good performance
(v) Technical, managerial and 'in-company' training programme

No.	Name of the Research Institute	Location	Controlling body
1	Ahmadabad Textile Industry's Research Association (ATIRA)	Ahmedabad	Ministry of Textiles
2	Bombay Textile Research Association (BTRA)	Mumbai	
3	Northern India Textile Research Association (NITRA)	Ghaziabad	
4	South India Textile Research Association (SITRA)	Coimbatore	
5	The Synthetic and Art Silk Mills' Research Association (SASMIRA)	Mumbai	
6	Man-made Textile Research Association (MANTRA)	Surat	
7	Indian Jute Industry's Research Association (IJIRA)	Kolkata	
8	Wool Research Association (WRA)	Thane	
9	National Institute for Research on Jute and Allied Fibre Tech (NIRJAFT)	Kolkata	Ministry of Agriculture
10	Central Institute for Research on Cotton Tech (CIRCOT)	Mumbai	

Table 1: Major Textile Research Associations in India

(vi) Technical and information services of various kinds

2.1 Characteristics of the Textile Research Associations

The textile research associations in India were established with a view to cater to the needs of the various sub-sectors (cotton, synthetic, wool and jute) of the textile sector. The corresponding textile industries located in the vicinity of these RAs were offered services in the form of consultation, testing and training by the RAs.

Grouping based on the different sub-sectors of the textile industry

A. Cotton/ Man-Made Fibre Textiles Industry

i) ATIRA, established in 1947
ii) SITRA, established in 1951
iii) BTRA, established in 1960
iv) NITRA, established in 1976

B. Man-made Fibre/ Filament Yarn Industry

i) SASMIRA, established in 1950
ii) MANTRA, established in 1977

C. Wool and Woolen Textiles Industry

i) WRA, established in 1963

D. Jute Industry

i) IJIRA

2.2 Shortcomings of Textile Research Associations

Manpower

- Inadequate manpower
- Recruitment and retention competent scientists
- No dedicated group for R&D projects

Infrastructure

- Lack of R&D facility with the latest technologies like Nano, Bio, Plasma, Coatings, etc.
- Obsolete and old equipments and machinery
- Lack of testing and characterization facilities

Funds

- Dwindling support from the Ministry and Government
- Lack of partnership with the industry
- Shortage of funds to carry out international level R&D projects

2.3 Scientific Manpower

Table 2 presents the status of scientific manpower in the TRAs in 2010.

Table 2: Scientific manpower in TRAs

Name of the TRA	Scientists (No.)		
	Total	PhD	Research Experience > 10 yrs
ATIRA	28	3	15
BTRA	33	1	*
NITRA	29	6	23
SITRA	23	3	13
SASMIRA	7	2	5
MANTRA	22	4	0
WRA	28	*	*
NIRJAFT	23	19	*
CIRCOT	26	14	*

**information was not provided*

Table 3: Research projects during 2004-2009

Name of the TRA	Research Projects		
	Number of sponsored Projects	Earnings/ scientist (lakh Rs.)	Average value (lakh Rs.)/ project
ATIRA	73	*	*
BTRA	9	4	3
NITRA	11	11	5
SITRA	13	11	2
SASMIRA	12	26	15
MANTRA	15	12	17
WRA	11	15	25

**information was not provided*

Inferences:

(i) There are 219 scientists in 9 major TRAs covered in this study. Considering the vastness of Indian textile industry this number is too small. Out of these only 52 hold a doctoral degree.

(ii) On an average, there are 24 scientists in each TRA, out of which 6 scientists hold a doctoral degree. The percentage of scientists with doctoral degrees is only 25%. This signifies that the TRAs are not able to attract qualified people in the organization.

(iii) BTRA has the maximum number of scientists, but has only one scientist with PhD.

(iv) TRAs under the ministry of Agriculture (NIRJAFT and CIRCOT) have 80% and 50% scientists with PhD, respectively.

(v) 80% of scientists of NITRA have more than 10 years of research experience. However, some TRAs have very low percentage of scientists with 10 years of research experience.

2.4 Research Projects Done during 2004-2009

Table 3 presents the status of research projects completed by the TRAs during 2004-2009.

Inferences

i) Most of the TRAs fail to undertake research projects in large numbers. The reason may be attributed to the paucity of qualified research scientists.

ii) Earning from research projects is lower than 15lakhs/scientists except for SASMIRA.

iii) Earning from research project is lower than Rs 5 lakhs/project for BTRA, NITRA and SITRA.

iv) Lack of interdisciplinary research team comprising qualified and experienced scientists probably cripples the TRAs and therefore they are not able to focus on high impact projects.

3 Questionnaire Survey

3.1 Classification of respondents

A questionnaire was designed to understand the perception of the internal and external stakeholders of TRAs about various issues. The perception about manpower quality in TRAs, job attraction in TRAs, major sources of problems in TRAs etc. were tried to capture. Judgmental sampling method was used to select 22 respondents who are having proven expertise in the textile field. Figure 1 shows the classification of respondents. Most of the respondents were external stakeholders

barring only 18% who were internal stakeholders. There are overlapping between the two or more classes of respondents (most of the Ph.Ds are in academic profession). Therefore, the sum of four classes is more than 100%.

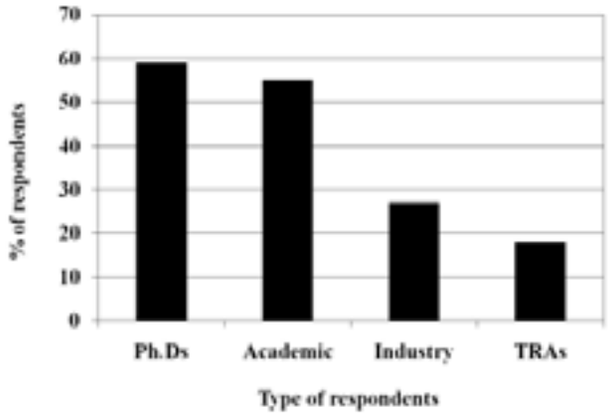

Figure 1: Classification of respondents in questionnaire survey

3.2 TRA's Manpower Level

Figure 2 depicts the TRA's manpower level with respect to that of overall textile industry. Only 9% respondents felt that top 10% of textile professionals are joining TRAs. More than 35% respondents felt that TRA's are having below average textile professionals.

3.3. Attraction of TRA's Job

Respondents were given six career options such as scientists in TRAs, teaching at IIT, teaching at Government institutes, teaching at private institutes, technical job in textile sector and non-textile jobs. Figure 3 shows the attraction of TRA's job among textile professionals. Only 9% respondents felt that TRA's job would be their first career option. Another 9% respondents felt that TRA's job will be their second career option. More than 55% respondents gave low priority to TRA's job. This signifies that the attraction of TRA's job is very low among the textile professionals. This actually leads to the problem in recruitment phase as the H.R. department fails to generate good number of potential applicants.

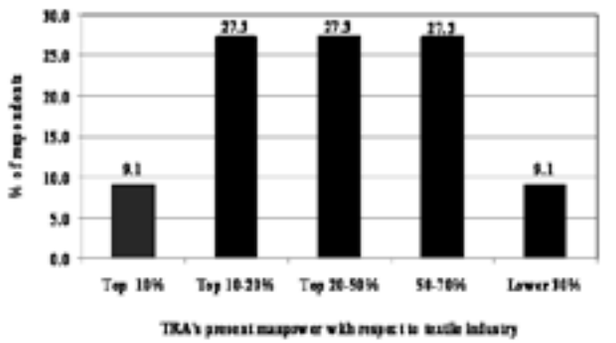

Figure 2: The current manpower level in TRA's

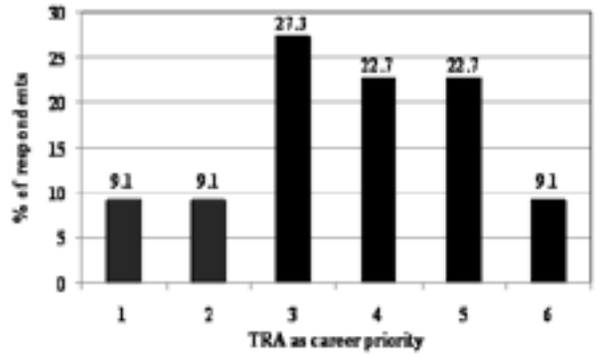

Figure 3: Attraction of TRA's job

3.4 Analyzing the Reasons behind the Manpower Problem

The verbal rating given by the respondents were converted to numerical scores using the following scale.

Insignificant: 1 Low: 3 Moderate: 5

High: 7 Very High: 9

Figure 4 depicts the scores of various reasons, obtained through questionnaire survey, behind the manpower problem in TRAs.

The three major reasons behind the manpower problems of TRAs were as follows:

- Lack of benefits (salary, incentives) and career prospects.
- Lack of Government support.
- Lack of challenges in job

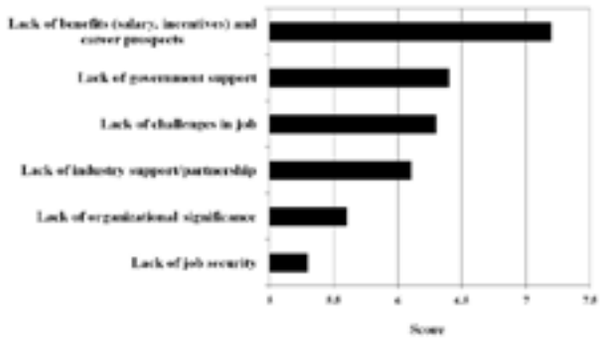

Figure 4: Reasons behind the manpower problem

3.5 Steps Required to Improve the Manpower Situation in TRA's

Figure 5 depicts the steps required to improved the skilled manpower situation in TRA's.

The three major steps, as elicited from the response of questionnaire survey are as follows:

- Increase of research focus
- Pay scales as per the CSIR labs
- Increase of interaction with industry

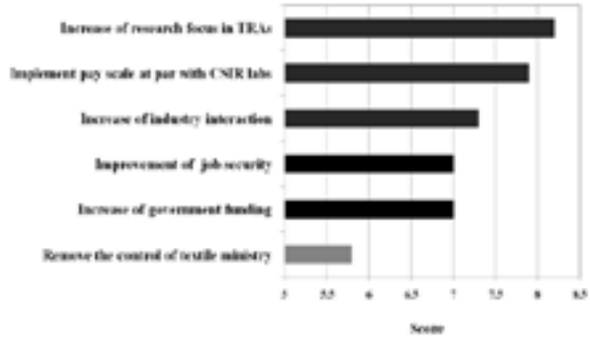

Figure 5: Steps required to improve the manpower situation in TRAs

COMMENTS OF A FORMER DIRECTOR OF TRA

- While there existed a good need for establishing applied research institutes for textiles in India in 1950s, the need started disappearing after 1985 or so, and has completely disappeared after 1991/2005. The main purpose served by the TRAs in India , started when higher education in textiles was not available and when the textile mills were run as a craft, was to bring in the science based methods into mill practice and to understand the functions of the various machines/processes much better, so as to control them better. As you may be aware, India is the ONLY open market economy in the world today where attempts are being made to make the TRAs survive.
- The textile industry, including the apparel sector and the technical textile sector, does not need research INSTITUTES anywhere in the world! This is because institutes work too slowly, too openly (confidentiality of sponsored research is very important) and too disconnectedly with the industry's true needs ---anywhere in the world. Applied research is certainly needed for progress, which is done invariably by the makers of machines and products because they need to survive and grow in the market place. No wonder 98% of the worlds technological progress is based on patents taken by industries/individuals.
- Central and state governments want to continue to fund research institutes in India because it looks prestigious politically, and the bureaucracy 'gains' through purchase of new equipment!

The consultation and training needs of the modern mill and apparel industry is much more sophisticated and can be served by TRAs, only if they manage to attract the right people who combine theory with practice ---even this need is most likely to be served more efficiently by private consulting organizations rather than by institutes. So, the only function left for the TRAs is testing without bias.

4 Conclusions

The problem of manpower in TRAs is having a close loop. The major reasons behind the manpower problem are lack of job related benefits, lack of government support and lack of challenges in job. Due to these reasons, TRAs fail to motivate properly qualified and skilled manpower in the recruitment process. Therefore, the chances of selecting false positives in the interview increase. The false positives fail to deliver in actual job and as a result TRA's fail to get high impact or high valued projects. Thus the organizational significance of TRAs is deteriorated and the research prospects and incentives of the scientists are reduced.

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Obituary

S.K. Mangal

As time passes on
We miss you more
Forever in our thoughts and heart
May your soul rest in peace

"We salute you for your love, dedication and unmatched service for TANTU".
- TANTU members

Seminar on 'Future of Indian Textile & Apparel Industry'
India International Centre, New Delhi
21st September 2014

Registration **9:30 AM – 10:00 AM**

Inaugural Session **10:00 AM – 10:25 AM**

Welcome Speech by Dr. Rabishankar Chattopadhyay, President, TANTU
Launching of Annual Souvenir of TANTU by Sanjay Chawla, Director Sales, North India, Groz Beckert
Key note address by Harkirat Singh, Managing Director, Woodland Worldwide

Panel Discussion 1 **10:25 AM – 11:10 AM**

Topic: Future of Apparel Manufacturing in National Capital Region

Panelist:
- J. D. Giri, Director, Shahi Exports
- Vimarsh Razdan, Vice President, Orient Craft
- Anurag Jaichand, Woodland Worldwide
- Sanjay Anand, Director, Blackberrys

Session Chair: Deepak Mohindra, Editor-in-Chief, Stitch World Magazine

Tea Break **11:10 AM – 11:30 AM**

Presentation 1 **11:30 AM – 11:50 AM**

Topic: Chemical Discharge Risk Management in Apparel Industry
Presented by: Suvodeep Mukherjee, Sr. Manager, Bureau Veritas

Panel Discussion 2 **11:50 AM – 12:35 PM**

Topic: Increasing Importance of India as Sourcing Hub

Panelist:
- Hitesh Mittal, Divisional Merchandising Manager, GAP
- Nihar Kanti Das, Divisional Manager, Li & Fung
- Nafisur Rahman (Group Leader, Triburg Home Division)
- Alpana Razdan, Country Manager, Falabella

Session Chair: Arindam Saha, Associate Director, Wazir Advisors

Presentation 2 **12:35 PM – 12:55 PM**

Topic: Automize to optimize and Objectivity in Measurement and Evaluation
Presented by: Dakshesh Desai, Director, Premier Colorscan Instruments

Presentation 3 **12:55 PM – 13:40 PM**

Topic: How to Improve Your Concentration
Presented by: Dr. S. K. Chaudhuri, Patron Member, TANTU

Presentation 4 **13:40 PM – 13:55 PM**

Topic: Topsheet Finishes - Enhanced Properties in Nonwovens for Hygiene Application
Presented by: Sibaji Dasgupta, Pulcra Chemicals

Vote of Thanks by Dr. Prabir Jana, Vice President, TANTU **13:55 PM - 14:00 PM**

Networking Lunch **14:00 PM – 15:00 PM**

AMIDST NATURE..

BY SAMRAT MUKHOPADHYAY, ASSOCIATE PROFESSOR, IIT DELHI

A visit to Keoladeo National Park [previously known as Bharatpur Bird sanctuary] can be more rejuvenating than you can think. Though it is popular as a bird sanctuary, one would be amazed at the display of different kind of wildlife in the park. The park shelters over 350 species of birds !! The KNP is the migratory home of the endangered Siberian Cranes. Other migratory birds found here include the Brahmini duck, Pintail, Northern Shoveller, Greylag, Bar headed Geese, Common Pochard, White eyed Pochard, Coot and Tufted Duck. Its also listed as one of the five World Heritage Sites in India.

The choices to explore are many – cycle, rickshaw, a "tanga" [horse pulled cart] or eco friendly four-wheelers. Rickshaw, as I found is the best method to explore since the "rickshaw-wallahs" are excellent guides and

since they have been in the park for long and are well trained, spot the birds quite easily. There are also dedicated guides available at an hourly price. After entering the main gate there is a barren stretch of 1.5 km after which the real fun begins. At this juncture one can locate the ITDC Bharatpur Forest Lodge [which would generally be always booked unless planned

very well in advance] and the the Salim Ali Visitor Interpretation Centre which was also honoured as the Best Asian Wetland Centre Award 2010 by Wetland Links International.

The park reminds one of the power of silence.. Even small noise would result in birds flying away and perhaps slowly one realizes that its not part of nature's euphony. Its just to relish the pace of nature and be part of the existence. Several kinds of kingfishers can be spotted if one is watchful.

Other than the birds, one may be able to spot a python – a small one or his mother. Statistics are not important, but still to quote there are 22 species of reptiles, 8 species of amphibians, 57 species of fishes, 71 species of butterflies, over 30 species of dragonflies and more than 30 species of spiders. That's amazing isn't it?? The Wetlands of the Park are a part of the Indo Gangetic Plains and the Park itself displays utmost richness in bio-diversity.

There are about 372 plant species out of which 96 are Aquatic plants . Its almost an exposure to a complete natural system and to realize how well they co-exist. Remember to carry binoculars to see details of several rare birds and spot animals at a distance.

Reaching there is simple. One can take a train to Bharatpur from where an auto can be hired to the destination. Otherwise, Bharatpur is close to Fatehpur Sikhri. More ways are detailed in several websites.

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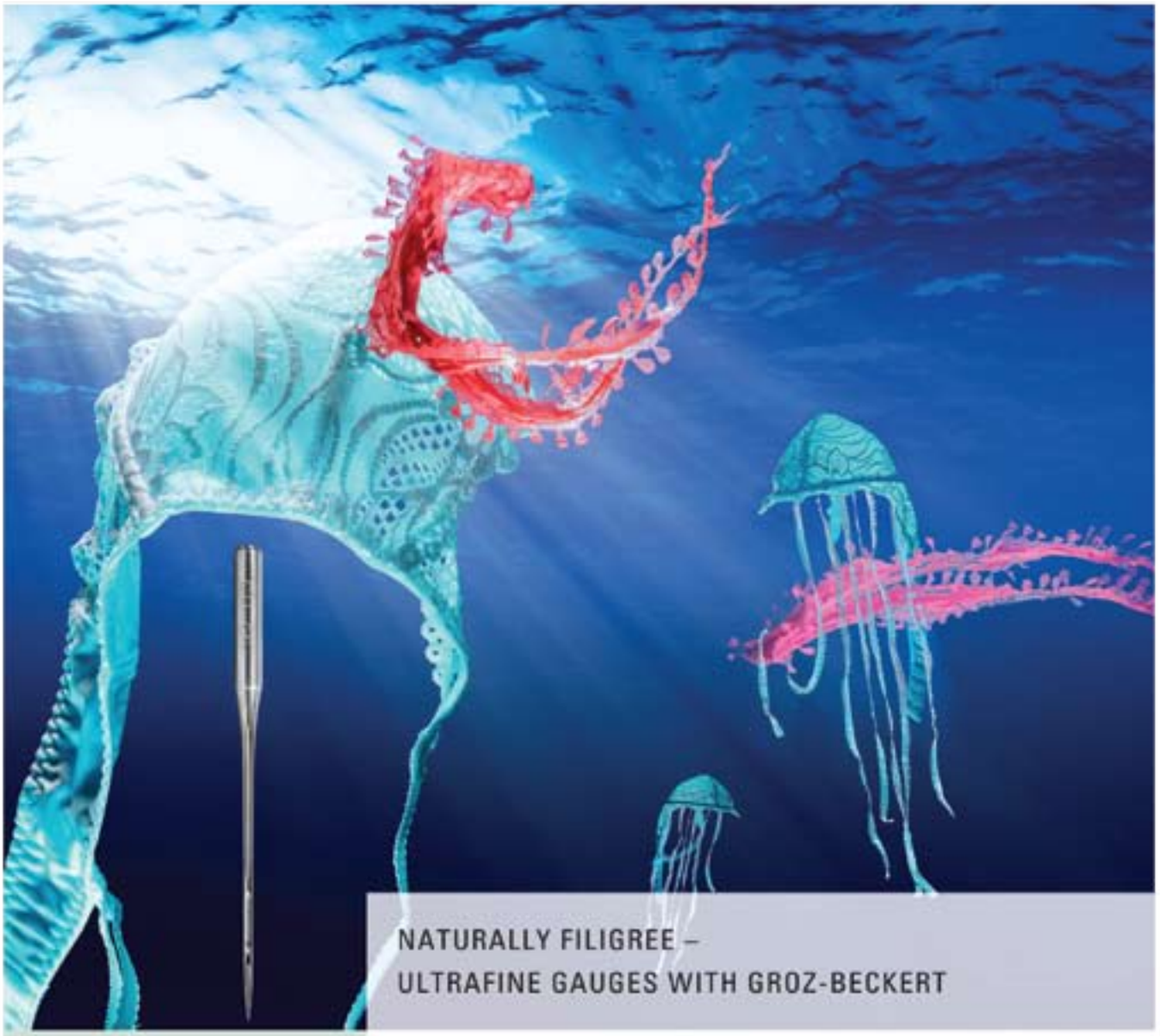

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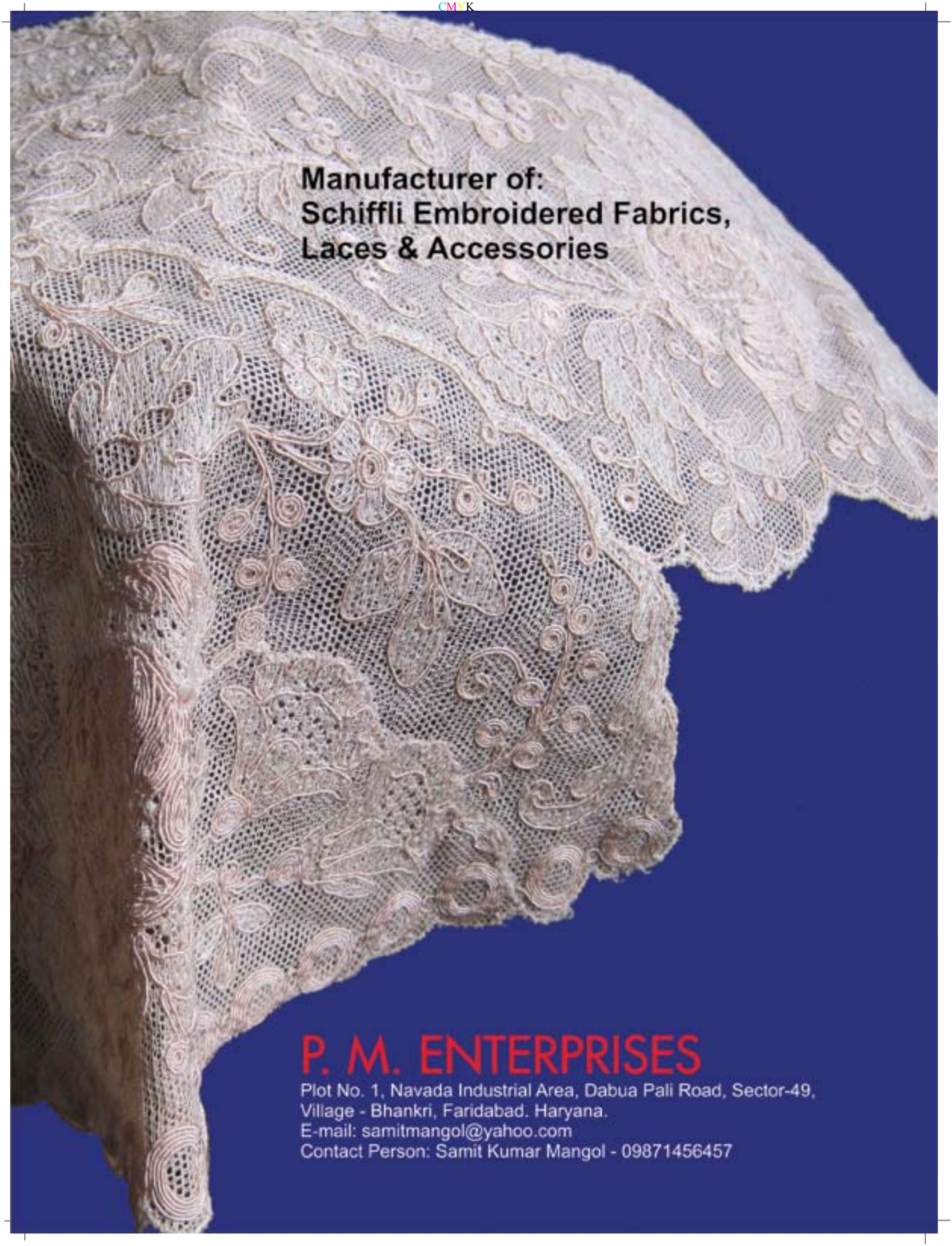
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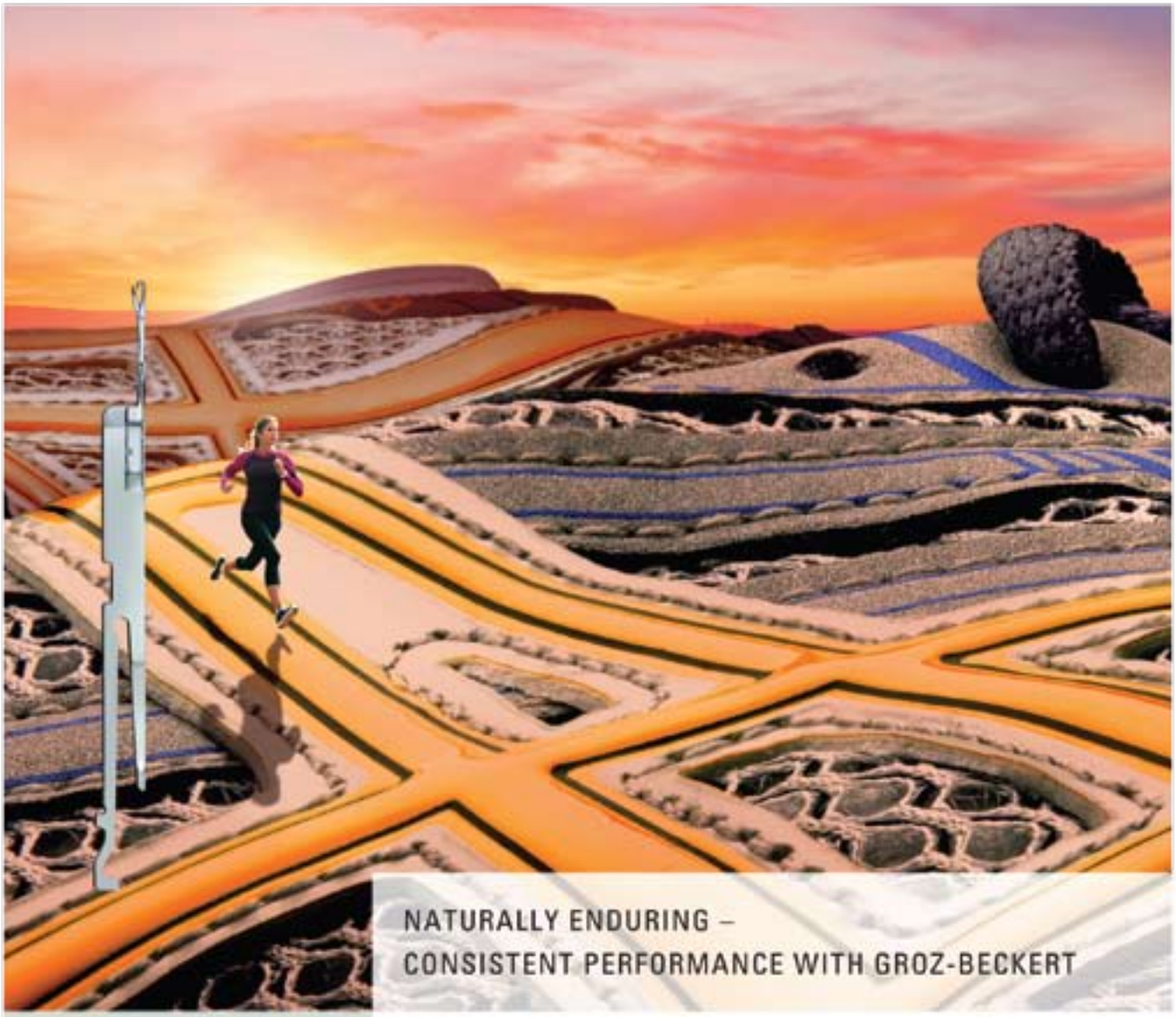

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Attendee participants - *with industry informed attendees the discussions flowed freely*

Speakers & Tantu Members - *(L to R) Debabrata Ghosh, Prashant Agarwal, Pallab Banerjee, Rabi Chattopadhyay, Chandan Saha, Dr. Sailen Chaudhury, Deepak Mohindra, Dr. Dilip Gianchandani, Kingshuk Pandit and Sanjib Sinha*

Engrossed in Discusstion - *(L to R) Deepak Mohindra, Praveen Gulati and Rajesh Bihani*

Impact of Real Time Shop Floor Control System in Improving Garment Production

BY PRASANTA SARKAR, FOUNDER, WWW.ONLINECLOTHINGSTUDY.COM

Low productivity and delays in production are common issues faced by garment industry. Most of these problems can be solved or at least can be reduced, if information related problems are available on time. Factories employ data recorders and engineers to capture production data and make reports. Unfortunately, when data collection is done and data is compiled into report many things are changed. Sometimes it becomes too late to take further action for betterment. Many times lots of data are collected but nobody bothers to analysis those collected data and share with top management. No way to escape from the problems. In such scenario, industry needs a robust shop floor control system and adequate data.

Real Time shop floor production tracing system can play very important role providing information and reports of various activities on real time basis. It also supplies accurate data. For example, if you like know in a line how many pieces are produce by each operator, the detailed report is there, just one click away.

Image courtesy: Leadtec Systems

What is Real Time System?

An IT enabled system that is able to provide necessary information to its users, as sooner as information is happened, is called real time system. Simply the system captures data from shop floor (workstations) and generates reports then on then by processing raw data in a computer (software). In real time system mostly RFID (Radio Frequency Identification) technology is used.

Why Real Time System?

Once you have captured data from shop floor, you can use those data in many ways to take action for improving process. Majority of small factories struggles for getting production status on time. There is no transparency in sharing information. You will find a big gap between actual production in floor and production figure in

status report. But you could not improve process without having correct data, and data on time. So the need is a Real time system.

Productivity improvement by Implementing Real Time System

You might be thinking, how one can improve production just by implementing Real Time System?

Look at various factors those are directly and indirectly helps operators to produce more pieces. Here are few important factors if you work on one of these, without fail you can bring improvement in production. Improvement rate can be increased by working on multiple factors together or one by one and fix existing problems. Majority of factories don't work on key areas, only because they don't have information or don't know how to use information. Real Time shop floor control system is the savior for factories by providing information, improving visibility and pointing where to hit.

Balancing of Sewing Line – Consider an assembly line, if your line is not balanced well, you will lose productive time of many operators. This system provides clear information of WIP in each workstation of a line. System can identify bottlenecks and shows where WIP is going to dry soon. Line supervisors can act quickly and focus on specific operators to balance line. Result is improved production.

Non-productive Time (Lost Time) – Capturing non-productive time in a line was never an easy task. So, majority of factories don't bother tracking non-productive time. Time lost once is gone forever. 'No Cutting', 'Hold for quality issue', and 'Machine breakdown' are few examples of lost time. Do you know how many hours in a week you are losing due to lost time? You couldn't even believe that lost time may be up to 25% of your total production time (based on my study). Real time system provides detailed lost time. You can improve your production by reducing lost time.

Quality Data Tacking – Existing practice of quality data capturing, quality report making, analyzing and reporting – takes longer time. When you get to know quality issues inside the line, style gets over. This system can provide you information of quality issues on real time and quality control person is informed. Quality can be improved when you take action. Production improves when operators improve right first time quality stitching.

Improved Reporting System – I guess you make hourly report, daily production reports, and WIP reports every day. With real time system, you don't need to spend time on capturing data and making report. What you need is just click on the customized menus for viewing necessary reports. System will show you reports as you request. For example,

- Operator status (list present operators, absent operators, and operator performance etc.)
- Line balancing chart (visual display of line balancing)
- Hourly Production Report (hourly output report of each operators)
- Style status (percentage of work completed, work remained and manpower required to complete remaining work)
- Line performance (in efficiency% and lost time)

With such reports, system helps to managers to monitor operators and other shop floor employees. Everything is transparent to them. Nobody can fake in production status.

Secondly, when you know line performance and individual operators with low performance, you can find ways to improve their performance level. Take the right action to improve low performers and get improved production.

One more example, for hourly production data, you don't need to collect production information from each operator and write on the display board. System keeps this report ready for you.

Operator Motivation – In Real Time system, operators can see their performance on the terminal as they work. For piece rate operators their earnings can be displayed on

the terminal so they put extra effort to make more money. It also improves employee morale. Result – improved production.

Performance Incentive scheme for sewing operator is another big motivating tool for sewing operators. You can implement performance based incentive system for operators to motivate them. Incentive scheme can be integrated with Real time system.

How System Works?

Let me explain the working procedure of a real time system briefly. The system is equipped with computer, software, RFID Tags, RFID Scanner, RFID Reader, and Operator console (aka Terminal). In this system, data is captured by scanning of RFID tags at terminals (workstation). Captured data is sent to central computer for processing, managing database and making reports.

Data preparation: Data preparation consists of task such as listing of operations for styles, assigning SAM to operations, creating operation bulletin, and listing of employees and supervisors.

Assigning operations: Each workstation will be provided with terminals. Operations to be done by operators in the workstation are assigned to terminals.

Singing on to Terminals: Operator sign on to their terminal when they start working.

Issuing card: Bundle tags are prepared and attached to bundles of garment parts. Operators get RFID tags with bundles. RFID tags move with bundles in the line.

Scanning tags: Bundle tags are scanned at workstation by operators when they start a bundle. Once operator scans the bundle tag, system captures data and processes data for various reports and queries. Information related to that particular bundle is displayed in operator terminals.

Generate Report: Various reports can be taken out from the system in pre-defined format. Report layout can be modified based on user's requirement.

Conclusion

You just read about the system and learned how a real time system can help factories improving production. You must note that a system itself could not bring a vast improvement in a factory. It only provides information. Human involvement is required with correct decision and action plan to bring improvement.

Factories with poor performance can improve productivity by other means also. But factories those are working at higher productivity level need to embrace this technology for excellence in performance. Real time systems can make an unorganized factory to organized one.


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47	Dwipesh Chandra Bagchi B.Sc. (Tech.), CE M (IIFT)	Spouse: Bhaswati Children: Kajori (1969)	1962 (S)		011-27104450	93502-68395			FLAT 2B, 81A SIKDAR BAGAN STREET; KOLKATA -700004	
48	Gautam Guha Thakurata, B.Sc. (Tech.)	Spouse: Nandita	1973 (B)	0141-2431722		99286-91719	gautam_gt2000@yahoo.com	DGM, Wires & Fabrics (S.A) Ltd Industrial Area, Jhotwara, Jaipur -302012	D 155 Ambabari, Jaipur 302012	

Sl No	Name	Spouse/ Children	Year of Passing	Telephone			Email	Office Address	Residence Address	Area of work
				Office	Res	Mobile				
49	Goutam BarB. Tech	Spouse: Shivani Children: Titas(2008), Arpan (2010)	2000 (S)			88263-77808	goutambar@ rediffmail.com	Fabric Manager, Radnik Exports,A-70, Sector - 64, NOIDA - 201301	Vill+P.O- Patunda, Panskura, Dist: East Midnapore, W.B.	Fabric Sourcing
50	GoutamKumar Dhang, B.Sc(Tech)	Spouse: Namita Children: Ankita (1994)	1990 (B)			93253-78320	gkdhang@rediffmail. com	Asst V.P.(Weaving), Gimatex Industries Pvt Ltd., Post-Hinganghat,Dist-Wardha, Maharashtra, PIN-442301		Weaving
51	Indra NathaBasu, B.Sc(Tech)	Spouse: Mala Children: Monami(1978), Tanya(1984)	1973 (B)		011-25075187	98102-96750	inbasu@savioindia.in	General Manager (Mktg), SAVIO INDIA LTD.	Flat No 37, Vidyasagar Appt. Plot 34, Sector 6, DWARKA, New Delhi-110075	Marketing of Textile Post Spinning Machneries. SAVIO
52	Jakir Hossain, B.Sc. (Tech)	Spouse: ParveenSultana	2000 (S)	0124-2348873		93138-07654	jakir47@rediffmail. com	Mohan Clothing Co Pvt Ltd, 76 Udyog Vihar, Gurgaon, Haryana-122017	Block-B, 1049A, 1 st Floor, Palam Vihar, Gurgaon, Haryana-122017	
53	Joy Saha, B. Sc. (Tech)	Spouse: AntaraChildren: Anushka	2003(S)		0124-4313600	99719-64986	joy_saha_80@yahoo. com	SGS India Pvt. Ltd.	4/83, Dum Dum SethBagan road, Kol-700030	ClothingScience
54	Jyoti Bhushan Mazumder	Spouse: Ira Children: Prasenjit (1966), Joydeep (1971)	1952 (B)							
55	K K Goswami, B.Sc. Tech, Phd Tech (CU)	Spouse: Sipra Children: Propa (1988), Parag (1996)	1974 (B)	05414-225504	05414-226775	98398-34157	dr_kk_goswami@ rediffmail.com	Director, Indian Institute of Carpet Technology, Chauri Road , Bhadohi221401, Fax 05414225509	Director's Bungalow, IICT Campus, Chauri Road, Bhadohi 221401	Teaching, Research, Training and Consultancy relatedto Carpet& Textiles (Including Home Textiles)
56	K.C. Chatterjee, BSc (Tech), M Tech		1976 (B)							
57	K.C. Tapadar, B.Sc. (Tech), PGD (Leeds), ATAC. Text, ATI, MIE	Spouse:Regina Children:Rupali, Dr. Damini, Dr. Priyanka	1963 (B)		0129-2431088/ 6579864		kc.tapadar@gmail. com	104, .Sector 21 A, Faridabad - 121001	Res. In Germany : Kirchstr 44, 65375Oestrich-Winkel, Germany , 06723-885980	
58	Kalyan Bhattacharya, B.Sc (Tech)		1995 (S)				kalyanb1972@ rediffmail.com	Sarla Fabrics, Ghaziabad, U.P.		

Sl No	Name	Spouse/ Children	Year of Passing	Telephone			Email	Office Address	Residence Address	Area of work
				Office	Res	Mobile				
59	Kalyan Kumar Debnath, B.Sc (Tech)	Spouse: Dipu Children: Purnopoma (1983), Ratul (1987)	1972 (B)	0172-2793112	011-22716548	98140-08096	kkd31@hotmail.com	Advisor, Indian Acrylics Ltd. SCO-49-50, Sector-26, Madhya Marg, Chandigarh-160019	House No. 6105, Duplex complex, Manimajra Chandigarh- 160101	
60	Kalyan Lahiri, B.Sc. (Tech), M. Tech	Spouse: Jayati Children: Kinshuk, Kaustav	1980 (S)	01675-257752-4	01675-254196	92169-42157	kklahiri@vardhman.com	G. M. (Tech), Arihant Spinning Mills Ltd, P.B. No.21, Industrial Area, Distt. Sangrur, Malerkotla, Punjab-148023	B-862, Stadium Road,Malerkotla, Punjab -148023	
61	Kanchan Kanjilal, B.Sc. Tech, M Tech		1990 (S)	Telfax: +91-79-25710383/ 32984748		76982-0399/ 93281-95265	kanchankanjilal@yahoo.com & kanchankanjilal@rediffmail.com	GM - Technical; Zydex Industries, Survey No 29, Rajbai Timber Mart, Near Lake-View Hotel Lane, Narol-Ishanpur Road, (Near Narol BRTS Bust Stop), Ahmedabad – 382405		Product & Business Development, Marketing of Textile Specialty Chemicals
62	Kingshuk Pandit, BSc (Tech), MBA (Int Business, IIFT Delhi)	Spouse: Amrita Children: Kushankur (1999), Kononika (2007)	1990 (S)	0120-2463347		93501-94105	kingshuk.pandit@gmail.com	Tag India, No48,Pocket-A, 1stFloor, VDS Market,Sec-93 , Noida-201304	B-244, Pocket-1, Sector-82, NOIDA-201304	Fabric Garment Export/Import Agency
63	Kishore KumarPaul, B.Tech	Spouse: ShyamaPaul	2001(S)	0120-4368124		98107-52560	kishore_16d@rediffmail.com	Bureau Veritas Consumer Products Services (India) Pvt. Ltd, F-5, Sec-8, Noida, U.P, Pin -201301	W-47, Sec-12, Noida	Textile Testing& client communication.
64	K.N.ChatterjeeB. Sc (Tech), M.Tech,	Spouse: Basabi Chatterjee Daughter: Anannya Chatterjee	1976(B)			9255176649	kn.chatterjee@gmail.com	HOD Fashion and Apparel EngineeringThe Technological Inst. Of Textile & ScienceBhiwani, Haryana, 127021	Lake View Colony, P.O.-Birla Colony Distt.- Bhiwani Haryana-127021	Fashion and Apparel Engineering
65	Krishna Kamal Chakraborty, B.Sc.Tech	Spouse: Kuheli Chakraborty Children: Atrayee (1999)	1990(B)			99960-13950	krishkamal@rediffmail.com	Gnetermann India Pvt. Ltd, D-2, 2nd floor Infocity, Ph-II, Sec -33, Gurgaon	M-5, Govt EmployeeCGHS, Rewari-123401	Manufacturing (Yarn & Thread)
66	Kunal Ghosh, B.Sc.Tech		2003(S)		033-25818598	98717-60359	knl.beck@gmail.com	STR(I) Pvt. Ltd, Plot no.-106, Sector-56, IMT Maneswar, Gurgaon		Quality Assurance

Sl No	Name	Spouse/ Children	Year of Passing	Telephone			Email	Office Address	Residence Address	Area of work
				Office	Res	Mobile				
67	Madan Mohan Maitra, B.Sc. (Tech.)	Spouse: ShampaChildren: Jhilmil	1983 (S)			78699-99062	mmaitra@vardhman.com	Vardhman Fabrics, Budni ,Dist- Sehore, M.P -466441		Chief Manager (Weaving)
68	Manas Kumar Biswas, B.Sc. Tech		2005(S)			99888-04002	mkb_tex@yahoo.co.in	GHS-110,FlatNo-204, Sector20, Panchkula, Chandigarh	C/o-Mr.S.S.Beniwal,House No 1224,Sec-41B, Chandigarh	Marketing of Textile Chemicals and dyes
69	Manas Mukherjee, B.Sc. (Tech.)	Spouse: RumaChildren: Manuj	1971 (S)							
70	Manik Dattagupta, B.Sc, B.Sc. (Tech.), MBA(FMS-Delhi)	Spouse: Neelam Children:Bornona, Snigdha	1965 (B)		011-25255468	98732-26180	manikgupta04@yahoo.com		48B, SunderApartments, PocketGH-10, Paschim Vihar, New Delhi-110087	Advisor Life Quality; Airjet and Sulzer projectile Looms
71	Md Sariful Mondal		2011(S)	0124-4503489	096812-05977	9015-251931	mdsarifbrp88@gmail.com	Intertek India Pvt. Ltd., 290 Udyog Vihar, Phase-II, Gurgaon, Haryana	Khodar Bazar (North), Baruipur, Kolkata, 700144	Testing
72	Mihir Kanti Deb, B.Sc. (Tech.)	Spouse: Anuradha Children: Chiradeep (1972)	1964 (B)			98101-88922	mihiranu@yahoo.co.in	Executive Director, Malwa Cotton Spinning Mills, Division of Malwa Group	D-11/08 FF, DLF Exclusive Floor, DLF Phase-5, Gurgaon-122001	Long Range Corporate Planning; Also new Project & Product Development
73	Mousumi Samanta		2011(S)			82876-97344	mougcetts09@gmail.com	Intertek India Pvt. Ltd., 290 Udyog Vihar, Phase-II, Gurgaon, Haryana		Testing
74	Mr. Austup Maitra, B. (Tech.)		2008 (B)		033-2558-1353	98312-80865	maitra_nlanustup@yahoo.com	Pursuing studies	3811E/2 K.N.DuttaRiad, Kolkata-36	
75	Mridul Biswas, B Tech		2005 (B)	98824-69702	03482-247168	80911-94204	bmridul.in@gmail.com	Vardhman Yarns& Threads Ltd,Unit-4, Sai Road,Baddi (H.P)	Vill+P.O-Nowda,Dist-Murshidabad, Pin-742183	Chemical Processing of Textiles
76	Nasim Reja		2012(S)			9716606996, 9883668898	nasimreja@gmail.com	A-32, aravali House, IIT Delhi, Hauz Khas, New Delhi	Vill- Singtore, PO+PS-Knshmandi, Dist-Dakshin Dinajpur, w.B.	Student

Sl No	Name	Spouse/ Children	Year of Passing	Telephone			Email	Office Address	Residence Address	Area of work
				Office	Res	Mobile				
77	Nihar Kanti Das, B.Sc. (Tech), GMT(NIFT)	Spouse: Meena Joshi Children: Adwik(2006)	1995 (S)	011-41818324	0124-4060427	98113-17210	itnak74@yahoo.co.in	Manager Technical,Li & Fung (India) Pvt Ltd, 216, Amarchand Towers, Okhla Industrial Area-III, New Delhi	P-1B-122, Princeton Estate, DLF City Phase-V, Gurgaon	
78	Nishit Kumar Baksi, B.Sc. (Tech)	Spouse:Gita Baksi Children: Ranjan Baksi, Mallika Sathinathan	1966 (B)	0124-4245645	0124-4263162	98995-61115	nkbaksi2003@yahoo.com	Prospecta Soft Pvt. Ltd, K/2/5 DLF CITY, Phase- 2, Gurgaon	Tower 3 Flatno 503ORCHID PETALS sec 49 SOHNA RD GURGAON 22	Finance & Management it industry and skill devolopement
79	Palash Kumar Patra		2011(S)			8285224969	patrapalash19@gmail.com	NE 14, Girnar Hostel, IIT Delhi,		Student
80	Pallab Banerjee, B Tech, MBA	Spouse: Soubarna Children: Pushpal (2009)	1998 (S)	0124-4709837		99714-50190	pal_banerjee@yahoo.com	Covideen, 10thFloor, BiuldingNo. 9B, DLF CyberCity, DLF Phase 3,Gurgaon	House No. 288/9 C, Shiv Puri, Gurgaon, Haryana	Spinning,Supply Chain
81	Papan Mandal		2011(S)			99589-14514	papanmandal88@gmail.com	Intertek India Pvt. Ltd., 290 Udyog Vihar, Phase-II, Gurgaon, Haryana		Testing
82	Paresh Chandra Das, B.Sc. (Tech.), M. Tech, MBA	Spouse: Kalpana Children : Aronima (1989) Gaurav (1993)	1978 (S)	011-26280828, 26237355	011-41600937	98113-81419 / 98108-24891	kalpatarudelhi@airtelmail.in	Kalpataru Impex, B 36 A (1st Floor), Kalkaji N.Delhi –110019,Fax: 26280818	G 2B (Second Floor), Kalkaji N. Delhi –110019	Buying agent for Textiles
83	Partha Sarathi Chandra B. (Tech), M.Tech	Spouse: Debika	1995 (S)	0124-4091369		9811433427	pschandra1@rediffmail.com	William E. Connor& Associates Ltd, Spazedge Commercial Tower, Tower B, 1st Floor, Sector 47, Gurgaon	421-B (Regent), Shipra Sun City, Indirapuram, Ghaziabad: 201014	Quality ControlHome Textiles
84	Piyali Hatua		2010(S)				piyali_ijt06@yahoo.co.in	SD 02, Kailash Hostel, IIT Delhi, New Delhi	Vill- Purbabahadurpur, Rajatpur, Bolpur, Birbhum, W.B. 731204	Student
85	Prabhas Chandra Basu B.Sc. (Tech), M.B.A.	Spouse: Ruma Children: Anupam(1985) Anindam(1988)	1971 (S)	011-25771350 /25771198	011-28540958	93505-47878	pcbasu@enaindia.com	General Manager, Engineering & Agencies Pvt. Ltd, 9D, Local Shopping Complex - A Block, Ring Road, Naraina, New Delhi-110028	C-177, Brotherhood Apartments, H-3/17, Vikas Puri, New Delhi-110018	
86	Prabir Jana, B.Sc. (Tech), GMT (NIFT), PhD.	Spouse: Swati Children: Ritam(2002)	1988 (S)	011-26542129	011-26510908	98113-72994	prabirjana@gmail.com	Professor ,Dept of FashionTechnology, NIFT,Hauz Khas, NewDelhi - 110016	C7- 135, SDA NaveenNiketan, New Delhi –110016	Education, Research and Advisor

Sl No	Name	Spouse/ Children	Year of Passing	Telephone			Email	Office Address	Residence Address	Area of work
				Office	Res	Mobile				
87	Prabir Kumar Banerjee, B.Sc. (Tech), M.Tech., Dr.Ing.	Spouse: Enakshi Children: Soma (1986)	1966 (S)			98364-59953	pkbt@hotmail.com	Retired Professor, Deptt. of Textile Technology, IIT, Hauz Khas, N Delhi-110016	Flat No. 30646, Jodhpur ParkKolkata - 700068	
88	Prabir Kumar Chaudhuri, B.Sc.(Tech)		1975 (S)					Regional Director (Uttaranchal) NCDC		
89	Prabir Kumar Mukhopadhyay	Spouse: Sonali Children: Arnab(1994)	1978 (B)	011-25813333-6	0120-2800514	98711-99323	prabir_ind2002@yahoo.com	Executive President, AMD Textiles Limited,18, Pusa Road, Karol Bagh, New Delhi	Express Garden, Flat No-2. Block-2, Vaibabh Khand, Indirapuram, Ghaziabad	
90	Pradip Bhattacharya, B.Tech,Six Sigma (Green Belt) PGDRM (Retail Management)	Spouse: Soumita	1999 (S)			9967970687	pradipbhattacharya@rediffmail.com, pradip.b003@gmail.com	Pantaloon Fashion and Retail LimitedMumbai		Fabric Sourcing, Garment Quality & Finishing, ProductIntegrity
91	Pradip Dey, B.Sc. (Tech), M.Tech, Ph.D.	Spouse: Rima Children: Rishav	1978 (B)		0120-2403674	90509-99555	dey_drpradip@yahoo.com	Senior VP,Welspun India Ltd,Glowflame Cotspin(India) SpinningDept, Village Morai,Dt: Valsad, Vapi,Gujarat	Plot B/1, Flat B-905, Sector 62, Noida	
92	Pradip Kumar Musib, B. Sc Tech	Spouse: Suhita Children: Disa (2003), Diya (2007)	1993 (B)			93121-02527	pradipkmisib@spinidea.in		C 3, 838 Vaibhav Appartment, Shalimar Garden, Ext 1, Shiv Chawk, Shahibabad -201005	Spinning accessories & machinary sales
93	Pranab Das B Sc Tech (Textiles)	Spouse: Mousumi	1999 (S)					Vardhman Spinning & Weaving Mills, Budhni, Madyapradesh		
94	Pranab Kr Maity, B.Tech		2001 (S)	0120-2424846	03228-254619	98184-16559	pranab_bapi@yahoo.co.in	Bureau Veritas Consumer Products Services (India) Pvt. Ltd, F-5, Sector-VIII, Noida, UP-201301	Vill: Joykrishnapur, Po: Panskura, Dt: Midnapur (E),-721139	Inspection & Assessment
95	Pranab SamuiB. Sc. (Tech)		1976 (S)	05662-235096				Pasupati Fabrics Ltd, Kosikalan, U.P.- 281403		

Sl No	Name	Spouse/ Children	Year of Passing	Telephone			Email	Office Address	Residence Address	Area of work
				Office	Res	Mobile				
96	Prasanta SarkarB. TechPG-Tech (GMT)from NIFT, Delhi	Spouse: BabeeSarkar	2004 (S)			099108-26376	prsarkar@gmail.com	Operations Engineer, Computer Solutions Inc. , (Leadtec Division), Delhi	Vill - Baragram, P.O: Badalpur, Banshi Hari, West Bengal	Garment Consulting
97	Prasenjit Barik B.Tech MTech(eng.)		2010(S)			88027-14493	barikprasen88@ gmail.com	M.Tech, GirnarHostel, IIT Delhi		1 yr in Vardhman in spinning
98	Pratap Sharma, B. Sc. (Tech.)	Spouse:Jayanti Children : Dr Yashdeep	1971 (S)	079-30411113(d)	079-32506931	97171-00407	pratap_sarma@ yahoo.co.in	Truetzschler/ Trumac Engineering, Ahmedabad	BH-002, Abhimannu Appt. 65, Vasundhara Enclave, Delhi-110096	
99	Pratul Gobindo Majumder	Spouse: Gauri Children: Pralay, Sangita	1960 (B)		011-22750491		pgmajumder@ hotmail.com		B-51, Manu Apartment Lawyer's Coop. Society, Delhi-110091	
100	Prithwiraj Mal, B.Sc. Tech	Spouse: Shampa Chaudhury	2000(B)			99102-01949	pmal77@rediffmail. com	SGS India Pvt Ltd,250, Udyog Vihar,Phase 4 , Gurgaon,Haryana	353/3, Prem Nagar(opposite Raj Cinema)	Spinning , Testing
101	Prosenjit Pandit B.Tech, M.Tech (IITD)		2005 (B)	01795-39-2686	092185-29401	088947-23430	prosenjit.pandit@ gmail.com	Technical Department, Auro Textiles, Sai Road, Baddi, H.P -173205	Vill+P.O: Salsalboni, Dist: Jalpaiguri, W.B. -736208	Chemical Processing of textiles
102	Pulak Debnath, B.Tech, M.Tech	Spouse: Sucharita	2005(S)	0180-2569700		82958-27956	pulak.debnath06@ gmail.com	Panipat Institute of Engineering & Technology, 70, Milestone, GT Road, Samalkha, Panipat-132102	Vill- Badhagachi, PO-Dhatrigram, Burdwan WB-713405	Teaching
103	Pulak Gangopadhyay, B.Sc(Tech), M.Tech		1964 (B)				pkgangopadhyay@ hotmail.com	Abhitex International, Plot No. 3 & 4 HUDA, Sector – 29, Panipat	House No. 444, HUDA Phase-1, Sector 11, Panipat-132103	
104	Pulak Mukherjee, B. Sc. Tech	Spouse: Mita	1975 (B)	0124-4380450	0124 – 5051512, 5055622	98101-85172	pmpg@airtelmail.in	Director, PMP Global, E - 12 /3, DLF City, Phase-1, Gurgaon - 122 002	E - 12 / 3 , DLF City, Phase - 1 , Gurgaon -122 002	
105	Pulokesh Guha Niyogi, B.Sc(Tech), M.Tech(I.I.I.D)	Spouse: Swapna Children: Ruchita(1982) Somnath	(B)			093168-30042/ 9872004702	pgniyogi@owmnahar. com	Oswal Denim, Oswal Wollen Mills Ltd, Vill: Jalalpur, PO:Dappar, Ambala Chandigarh Rd-140506	802, Sector-11, PKL,Haryana	R & DManagament
106	Pushpak Roy, B.Tech. (Apparel Production), PGDM (IMT Ghaziabad)		2011 (S)		+91-657-234-6558	+91-750-313-9697	pushpak.roy@ googlemail.com	Institute of Management Technology, Raj Nagar, PO Box No.137, Ghaziabad -201001, India.	Debashish, 285/B, Bhalubasa, PO: Agrico, Jamshedpur - 831009, India.	Student, Marketing Management

Sl No	Name	Spouse/ Children	Year of Passing	Telephone			Email	Office Address	Residence Address	Area of work
				Office	Res	Mobile				
107	R. Mandal , B.Sc. (Tech), M.Tech (IIT-D), PhD (Manchester)	Spouse:Ratna Children:Debashish (1980), Sreelekha (1986)	1969 (S)	011-30615703	~~0124-4145346~~	98105-62455	rmandal@yojana.nic.in/ r.mandal@hotmail.com	Executive Director, SREI CAPITAL MARKETS LTD,D2, Saket place,5th floor, SouthernAvenue, New Delhi	B 84 Sun City, Sector54, Gurgaon	
108	Rabin Kumar Bera, B. (Tech) , GMT (Pearl)		2000 (S)			90046-87995	kumarbera@yahoo.com	Production Manager IDT Clothing Co. Ltd, Mumbai	Vill- Gokulnagar,Po-Baragokulnagar,Purba Medinipur, WestBengal - 721152	Apparel
109	Rabishankar Chattopadhyay, B.Sc. (Tech), M. Tech, PhD	Spouse: SonaliChildren: Kinjal	1977 (S)	011-26591412, 48	011-26581977	98710-95892	rchat@textile.iitd.ernet.in	Professor, Deptt. of Textile Technology, IIT, Hauz Khas,New Delhi - 110016	New Campus, IIT, HauzKhas, New Delhi-110016	Spinning, Quality Issues, Product Designing.
110	Rajarshi Sengupta, B.Sc. (Tech), MBM(IIT-KGP)	Spouse: Anamika	1998 (S)		033-65442032	98312-89642	rajarshi.sengupta@gmail.com	Manager, Advisory, Price water house Coopers LLP, 300, Madison Avenue, New York, NY-10017	FD 470/7, Salt Lake, Sector 3, Kolkata – 700106/[Liberty View Apartment 99, Battery Place, New York City, NY - 10280]	Business Consulting
111	Rajat Bhattacharya					098105-57283	rajat3201@yahoo.co.in		645/F-2,Shalimar Garden Ext-I Sahibabad (Gzb.) Pin-201005	
112	Rajkumar Rai, B.Sc. (Tech), PGDIT, IIFT	Spouse:Ranjana Children: Rachana (1983) Ruchika (1990)	1980 (B)	011-26145885/ 3860 / 3784	0124 –2382328	98108-31771	rkr@intercontiprojects.com / rajkr.rai@indiatimes.com	Product Manager, Interconti Projects Pvt. Ltd, C-5, Main Shopping Centre, Paschimi Marg, Vasant Vihar, New Delhi – 110057	M 107, 2nd Floor, South City I, Gurgaon	Textile processing & International Marketing
113	Ram Ranjan Rudra, B.Sc. (Tech), M.Tech	Spouse: Papia Children: Ankita, Anayna	1980 (B)				ramranjan.rudra@adityabirla.com			
114	Rati Kant Malik, B. Sc. (Tech), M. Tech		1990 (S)	05414-225504		94502-54736	r_k_malik@rediffmail.com	Asstt. Prof, Indian Institute of Carpet Technology, Chauri Road , Bhadohi221401, Fax 05414225509	Indian Institute of Carpet Technology, Chauri Road , Bhadohi221401	
115	Rudra Prasad Sengupta, B.Sc. (Tech)	Spouse: Kalyani Children: Rijul (1985), Pushan (1990)	1974 (B)		011-26894023	`9999-797649	rpsengupta@iocl.co.in	Indian Oil Corporation,Yusuf Sarai, New Delhi	274C, DakshinyanAptt. Plot No. 19,Sector-4, Dwarka, NewDelhi-110045	Textile, Petrochemicals project

Sl No	Name	Spouse/ Children	Year of Passing	Telephone			Email	Office Address	Residence Address	Area of work
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116	S.A. Mandal, B.Sc. (Tech), M. Tech	Spouse: Sabha Begum Children: Shaheen Mandai	1991 (S)	01232-242201-09	01232-322547			Modipon Fibre Co, Modi Nagar, U.P-201204	A-12, Alok Park, ModiNagar, U.P.	
117	Sabayasachi Basu, B.Sc.Tech	Spouse: Indrani Basu Children:Srinjal Basu (2003)	1995 (S)	033 22495125		98309-10755	basu1973@gmail.com	Croda Chemicals(I) P ltd	24 Prantik Pally, Bosepukur, Kolkata-42	
118	Sailen Kumar Chaudhuri, B.Sc. (Tech), M.Tech, Ph D.	Spouse: Tripti Children: Sougat (1979), Suhrid (1982)	1968 (S)	0129-4174615	0129-4174615	98101-88118	sailenchaudhuri@gmail.com	International Inspection Initiative & Fibres Services International	B 303/304, Kennwood Towers, Charmwood Village, Surajkund Road, Faridabad-121009	
119	Sajal Chowdhury, B.Sc. (Tech)	Spouse: SoumiChildren: Anurag	1980 (S)	05662-233008	05662-235060			Senior Manager, Weaving, Pasupati Fabrics Ltd, Kosikalan, U.P.-281403	C/o Pasupati FabricsLtd, Kosikalan,U.P.-281403	
120	Samir Kumar Ghosh, B.Sc. (Tech), M.Tech	Spouse: Pritha Children: Souvik (1982), Saptrishi(1987)	1973 (S)	0172-5092397	011-26674313	99157-39575	skghosh_textile@yahoo.com	CEO,Winsum Knitsware Ltd., Mohali	A-254, Shivalik, Malviya Nagar, NewDelhi-110017	
121	Samir Majumdar, B.Sc. (Tech), M.Tech, MIE	Spouse: Shampa Children: Swatilekha (1989), Anulekha (1991)	1976 (B)	011-23313445	011-22770338	98105-01298	majumdarsk@peclimited.com	General Manager, PEC Ltd, Hansalaya, 15, Barakhamba Road, N.Delhi – 110001,Fax: 011-23313647	212-A, Pocket-B, Mayur Vihar Phase-II, Delhi - 110 091	
122	Samrat Mukhopadhyay, B.Tech, M.Tech, Phd, (IIT D)	Spouse: Haimanti	1996 (B)	011 26591477			sm_iitd@yahoo.com	TX 105, Department of Textile Technology, IIT Delhi, New Delhi110016	16, North Avenue, IITDelhi	
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125	Sanjib KumarDey, B.Sc. (Tech)		2003 (S)	011-6626760		93134-99964	deysanjib@yahoo.co.in	Li & Fung Pvt Ltd,	W,-145, 1st Floor, Sector-12, Noida	Fabric Soucing

Sl No	Name	Spouse/ Children	Year of Passing	Telephone			Email	Office Address	Residence Address	Area of work
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126	Sanjoy GanguliB. Sc. (Tech)	Spouse: Ruma Children: Sohini (2004)	1996 (S)			9958-055249	ganguly_ sanjoy2003@yahoo. com	Bureau Veritas Consumer Products Services (India) Pvt. Ltd, F-5, Sector -8, Noida, U.P	P 408, Bose Nagar, P.O: Madhyamgram, North 24-Pgs, Kolkata -700129	Inspection, Audit & Spinning
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128	Saumyadip Santra, B.Sc. (Tech)		2004(S)		3212 240275	99580-71730	saumyadip.santra@ gmail.com	S/6/11-1st Floor DLF phase-III, Gurgaon.	Vill-Sahapur, P.O.- Bhangamsa, Hoogly, WB-712410	Fabric/Lab
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130	Shambhu Shaw, B. Tech		2006 (S)			92391-62018	shambhu_ textile2006@yahoo. com	VOITH PAPER FABRICS INDIA LIMITED, 113/114A, SECTOR - 24, FARIDABAD - 121005. Haryana.	8C / H / 3 JagodyanLane, Kolkata - 700054	Weaving
131	Shanti Kumari		2012(S)			9717357830	shanti.tt@gmail.com	Kailash Hostel, IIT Delhi, New Delhi	Station Para, Ward No. 12, Vivekanand by Lane, Dinlata, Coochbehar, W.B.	Student
132	Sheikh Minhazuddin, B.Tech		2002(S)			99999-87266	minhaz_sheikh@ yahoo.co.in	Senior Technical Governance Officer/Regulatory SpecialistTUV SUD373, Udyog Vihar, Phase-2Gurgaon,Haryana		Textile Testing and Certification.

Sl No	Name	Spouse/ Children	Year of Passing	Telephone			Email	Office Address	Residence Address	Area of work
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134	Sobhan Pramanik, B.Sc. (Tech)	Spouse: Moumita, Children:Srijan (2009)	2000(S)			98716-98185	sobhan_pramanik@rediffmail.com	Quality Control. Home Textile, William E. Connors& Associates Ltd, 13th Floor, Signature Towers, South City, Gurgaon	508B/9, Shivpuri, Gurgaon-122001, Haryana	Quality Assurance
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136	Soubhik Mallick B. (Tech.), M.Tech.		2004 (B)	9999310310 /9999310320		98727-72295	souvik.mallick@gmail.com	Asst. Manager (Designing & development), Nahar Fabrics, Lalru, Punjab	9/178 A,Sec3,Rajendra Nagar,Shah ibabad,Ghaziabad,U.P.	Weaving Loomshed prod. dept.Want to switch over in marketing/ garment industry
137	Soumen Ghosh, B. Tech			0124-2451000-08	03243-255811	98110-84468	soumen_somu2002@yahoo.co.in	Quality Executive, Omega Design,863 Udyog Vihar, Phase-V, Gurgaon	Vill + Po: Khatra, DtBankura, West Bengal-722140	Textile Testing and Fabric Technology
138	Soumyajit Sarkar B.Tech MTech(eng.)		2008(S)			95400-23659	soumyajit23@gmail.com	M.Tech, IIT Delhi, Girnar Hostel, Delhi		3 yrs in Vardhman Fabrics in weaving and quality assurance
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141	Subhadip Datta, B. Tech		2002(S)	0120-4368102		98181-91065	Subhadip.dutta@decathlon.com, subhadip.dutta@oxylane.com	Indecca Sporting Goods Pvt. Ltd, Decathlon, Vatika towers, 8th floor, Mehrauli-Gurgaon Road, Sector-54		Quality Assurance
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144	Subrata Dube		1996 (B)			99115-48253	dubesubrata@rediffmail.com			
145	Subrata Kapri, B. Tech		2004(B)			98734-60041	subratakapri_81@yahoo.co.in	Executive, SGS India Pvt. Ltd,250, Udyog Vihar,Phase-IV, Gurgaon	U-60/17, DLF Phase-III, Gurgaon	Retail
146	Subrata Palit, B. Tech		2002 (S)			98795-62015	palit.subrata@gmail.com	Welspun, Anjar.		
147	Subrata Paul,B. Tech (Textile), M. Tech (IIT Delhi)	Spouse: Shatabdi, Children: Soham (2006)	1998 (S)			99003-77448	spiitd@rediffmail.com	MQE, WalmartGlobal Sourcing,D block,5th Floor,RMZ Centennial,Near GraphiteIndia,ITPL Road,Mahadevpura Post,Bangalore, 560048	B-305, Brigade Metropolis, ITPL Road, Mahadevpura, Bangalore, 560048	Fabric Merchandising
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150	Suman Ray, M.Tech (IIT Delhi)		2009 (B)	0129-4292451		85272-08568	sumantextile@gmail.com	Product Application Engineer, Voith Paper FabricsIndia Ltd., 113-114 A, Sector 24,Faridabad -121005		Technical Textiles
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154	Sushil Bala, B.Tech	Spouse: Snigdha	2005(S)	0124-4503522		98734-47358	sushil.bala@gmail.com	Intertek India Pvt. Ltd., Plot No.290, Udyog Vihar, Phase-2, Gurgaon, Haryana-122 016,Tel.: +91-124-4503400.	89/9, Shivpuri, Gurgaon-122001, Haryana	Quality Assurance, Testing
155	Susil Kumar Saha B.Sc. (Tech)-CTTS, M.Tech.(Tex. Engg)-IIT/D	Spouse: Uma Saha; Children: Sukanya(1992)	1977 (S)	0129-4292244		08447-639564	susil.saha@voith.com; sksaha.brd@gmail.com	AGM, Voith Paper Fabrics India Ltd.,113/114 A Sector 24, Faridabad -121005	Present: 921, Sec-21-D, Faridabad. Permanent: 302, Shaily Appt., Opp. GEB Sub- station, Gotri Road, Vadodara - 390021.	Tech. Textiles
156	Suvendu BikashDas, B.Sc. (Tech)	Spouse: Sanjkuta	1993 (S)					Pasupati Fabrics Ltd, Kosikalan, U.P.- 281403		

Sl No	Name	Spouse/ Children	Year of Passing	Telephone			Email	Office Address	Residence Address	Area of work
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158	Swarup Sarkar		1994(B)	011-55505526		`98187-89236	swarup1972@gmail.com	Associated Head-Marketing, Dharampal Satyapal Ltd, Noida		
159	Tapan Kumar Sannigrahi, B.Sc. (Tech)	Spouse: Shubhra Children: Sanchita(2001) Aurko (2006)	1994 (B)	022-66591600 (Exn- 243)		97020-19555	tapan_sannigrahi@yahoo.com	Grasim Industries Ltd, 3rd Floor, Century Bhawan, Dr. AB Road, Worli, Mumbai-30	Flat No- 602, Nisarg Vihar, Plot No: 96, Sector: 19, Kharghar, Navi Mumbai	BusinessDevel-opment
160	Tapan Mandal, B.Sc. (Tech), M. Tech, IAS		1973 (B)							
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163	Umed Sethia, B. Sc. (Tech.)	Spouse:Puja, Children: Kavya (2004), Manu (2010)	1995 (S)			99710-96596	umedsethia@karnisoftsol.com, umedsethia@hotmail.com	Director, Karnisoft Solution Pvt. Ltd.,1 Chandney Chowk Street, 1st Floor, B-blok, Kolkata-700072	F6/10, Krishna Nagar, 2nd Floor, Delhi-110051	Business Solution like ERP/ SCM/BI/DR Implementation
164	Vivek Agarwal, B.Sc. (Tech), M.B.A	Spouse: Monika Children: Vaibhav (1992) Shreya (1994)	1987 (B)	011-27231498		98991-20006	vivek.aggarwal@mnylindia.com	Financial Advisor, H-28, Ashok Vihar Phase-I, New Delhi-110052	H-28, Ashok ViharPhase-I, New Delhi-110052	FinancialAdvisor

Magic is Within You

BY SUBRATA SIDDHANTA

Non verbal communication is the truth. It never lies. It is the expression of energy in purest form derived out of thought, emotion & feeling. There is no scope of misunderstanding. It is overflowing from our within to the universe and a tiny part of it becomes verbal. Verbal communication is not a pure expression of our inner reality, incomplete & mostly it is not true, distorted and well dressed to suit the situation. Moreover it is not the whole, only a visible fraction of whole communication. Verbal communication goes through multiple filter (time, intensity, speed, tonality, context etc) before expressing itself. Nature works this way.

There is no miscommunication in animal, plants, at atomic or cellular level. The communication is basically interplay of energy amongst multiple bodies.

As our sensitivity is very low to this energy phenomena we interpret sound (written & vocal) as vehicle of communication. We only understand human communication & miss all other communications those are happening every moment in our surroundings. As human consciousness level go to higher level, energy communications become available & a holistic picture is understood.

The thought emanates from the surface of consciousness. It is the single largest energy for manifestation. Our life is nothing but a mould of thoughts shaped in unconscious state. What happens to us on everyday basis is exact manifestation of predominant thoughts. If we look back in our life we find how true it is. But the science is not known to us.

Einstein's greatest contribution to mankind is $E = MC^2$. When matter travels at a speed of light it converts to energy. Matter does not remain. What a great revelation for science.

What Einstein had actually discovered is the science of materialization & dematerialization. What a benediction for human being. If it is true that matter becomes energy at speed of light, it is also true that if speed of light is reduced it will first become sound & then condense to matter. Yes it is true & that's how every matter is manifested in universe in third dimension reality of forms.

Every single thought we think, travels at a higher speed than light in the medium of consciousness. If the speed of these thoughts can be reduced and made still, it will materialize. It is amazingly true. That's what we do every moment consciously or unconsciously. The only thing we do not know is how to reduce the speed of thought below speed of light so that it manifests. We are basically thought popping machines without any interval so most of the thoughts do not materialize. It there any way out ?

Yes. And the answer lies in silencing the mind. Switching off connection from mind machine. In spiritual term we call it meditation or stilling the mind. Our Rishis were knowing this. So once you think of your intention to manifest certain desire with full intensity (body,mind & emotion) which will travel at a higher speed of light you need to go to the zone of thoughtlessness & stay there till manifestation. No other thoughts are allowed to pop up. Manifestation is guaranteed. Then why we are not able to manifest all our desire? Because we are not able to silence our mind. Moreover it is the positive thoughts which is lighter will travel, negative thoughts can not as they are heavy & vibrate in low frequency.

We have done this throughout our life many a times without knowing. Our elders used to say that if you want to fulfill your wish think about it in early morning as soon as you get up from bed or at night before you go to sleep. These are the moments of meditative awareness. So it has simple two steps, think with intensity & then go into deep silence. Create whatever you want.

Try it. You will be pleasantly surprised. ***The magic is within you.***

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