A CUT ABOVE THE REST
Need Assessment Survey of Baruipur Surgical Instruments Cluster

MSME DESIGNCLINIC SCHEME, GOVERNMENT OF INDIA
& NATIONAL INSTITUTE OF DESIGN
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My deepest acknowledgements to all the people who contributed and facilitated the need assessment survey at Baruipur.

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Design Clinic Scheme for Design Expertise to MSMEs, a unique and ambitious design intervention scheme for the country’s large micro, small and medium scale enterprises, is an initiative of Ministry of MSME, Government of India has been launched under National Manufacturing Competitiveness programme. The main objective of the Design Clinic Scheme is to bring MSME sector and design expertise into a common platform and to provide expert advice and solutions on real time design problems, resulting in continuous improvement and value addition for existing products. This model brings design exposure to the door step of industry clusters for design awareness, improvement, evaluation, analysis and design related intervention. Design clinic scheme will assist industrial clusters to open a channel for design information inflow for creative, innovative and futuristic approach towards the product, process, operations, manufacturing and business design. The scheme will help generate insight for opportunity identification and design intervention for competitive and break-through solutions for MSMEs.

The National Institute of Design, Ahmedabad, has been setup as the nodal agency for the scheme. With its rich experience in design training and consultancy, NID will act as matchmaker to the MSMEs and design professionals. It shall also administer effective implementation of the plan.

As a part of phase 2, need assessment survey of 20 units in the Banaripore cluster, West Bengal, India was conducted between 17th - 23rd November 2011. This report summaries the findings of the NAS attempting to identify the design opportunities, which would help in the upgradation of the cluster.

Design sensitization seminars (Phase 1), need assessment surveys & design awareness programme (phase 2) and design projects (Phase 3) will help MSMEs in various stages to develop competitiveness.
NEED ASSESSMENT

The NAS (Need Assessment Survey) was conducted between November 23 - 30 2011. The exercise covered 17 small scale units of the surgical cluster. The NAS focussed on collecting information about the manufacturing practices, problems and issues that the units face.

The methodology included:
- Questionnaire based survey of manufacturing units
- Interviews with unit owners & employees
- Observation of process and workplace
- Market visit to dealers and stockists

The objective of the information collection was to identify specific design opportunities that would help in the revival of the cluster.

The NAS focussed on:
- Raw Material at different stages of manufacturing
- Infrastructure setup and work stations
- Skill and techniques
- Finishes
- Product form, shape and usage
- Tools and technology
- Capability of manufacturing units
- Present Market status
- Current Competition
- Packaging, logistic and storage

Expected Deliverables

The expected outcome of the need assessment survey is to be able to generate precise and indepth data on the products, processes and practices in the cluster. It seeks to identify product related issues, process related problems and other critical parameters related to distribution, packaging and marketing of the finished products.
Eminent medical historian John Kirkup argues that fingers, nails and the mouth were the earliest surgical tools, used by prehistoric humans to remove foreign objects from wounds. Surgical instruments have evolved over millennia as humans have discovered new materials for tool making. Early humans used objects such as bones, ivory, bamboo and stones to remove thorns and arrowheads from wounds.

Primitive stone knives, used for ritual surgeries such as circumcision and trepanation, appeared as early as 10,000 BC. Discovery of copper and bronze in 4000 BC revolutionized the weapons and tools industry, leading to stronger, lighter and better equipment. Moller-Christensen believes that the first copper tweezers appeared in Egypt in 3300 BC.

The first recorded point in history is AD 97, where definitive instrumentation was described and illustrated in the physician's houses of Pompeii, Italy. Classical surgeons used forceps, scalpels, speculum and other instruments made from iron, bronze or gold, which they believed had healing properties. From the 17th century to the 19th century, new anatomical knowledge led to the development of tools with specialized functions, including bone drills and saws, lancets for bleeding and forceps. Steel and nickel-plated instruments became common.

The earliest historical records show that medicine men of the 17th century kept lancets and cannula with suturing needles in a convenient pocket; along with plaster box for bandages, razors, salves and ointments. As the different types of surgical instruments increased, carved wooden boxes or leather covered wooden boxes with velvet lining with instrument depressions became popular. Also, complete kits for special surgeries emerged for lithotomy, dentistry, eye surgery etc.
Although iron was discovered in 1500 BC, bronze was still a first choice and it phased out very slowly. Iron was exclusively used for blades, saws and others. During the middle ages, iron replaced bronze completely. Corrosion dogged steel throughout 19th century but steam sterilization, nickel plating and chromium reduced the corrosion related issues.

Discovery of stainless steel ended the problems altogether and was introduced by Down Brothers, England 1918. Stainless steel made surgical instruments cleaner and safer. Rubber tubes and catheters emerged in the 1960s.

More recent developments include the use of titanium and disposable blades.
TYPICAL PRODUCTION PROCESS

Before a surgeon holds the scalpel in his hand, the instrument undergoes several processes. Blocks of stainless steel are cast in the steelworks, are rolled into manageable profiles and semi-finished rods in a steel mill. The half-finished rods are cut to the length of the desired instrument. The rod is heated until the material glows (about 900ºC) and inserted into the die for forging. The die is a two-compartment tool into which the shape of the blank is reamed or eroded. The lower section of the die is attached to the drop hammer bench, while the upper section is connected to the lower part of the drop hammer - also called the bear. The drop hammer now rebounds with great force on the glowing material and presses it into the reamed shape. This process is called “die forging”. The die-forging process is repeated in order to stamp the shape of the blank as precisely as possible. The material thickens considerably under the distortion force.

Unintentional hardening occurs during the cooling phase. In this state, further processing would be impossible, so the blank is reheated at a temperature of about 800º C. After being reheated, the blanks are trimmed manually using various grades of grinding wheels and belts.

Once precisely shaped, the instrument is heated slowly to a temperature of 1000ºC in an automated hardening machine. This is carried out under a blanket of nitrogen. Nitrogen is a gas with very low reactivity and does not react with the heated steel even at high temperatures. The instrument remains metallically pure. If the blanket of nitrogen were to be replaced by oxygen, a scale layer would form on the instrument. This would be extremely difficult to remove at a later stage and could lead to corrosion during subsequent use. A temperature of 1000ºC is maintained until the instrument is completely heated through. The instrument is subject to shock-type cooling (at 700ºC). The steel structure and hence the properties of the instrument are modified during the cooling process.

Once the instrument has hardened, it is further heat-treated. This process is called annealing. The previously achieved hardness and brittleness of the needle holder is now transformed into elasticity and toughness. Furthermore, annealing removes the material of tension, which would subsequently result in loss of function. After annealing the needle holder is light brown in colour - this is referred to as the annealing colour.

Surface precision work is carried out after heat treatment. This initially involves polishing. The projecting edges of the instrument are ground to the desired shape and size using grinding wheels of several grades. The surface is manually refined by buffing (polishing). Particular caution must be exercised in this respect, because improper polishing could distort the shape of the instrument. The surface condition is then inspected. After this processing phase, the instrument is washed in an ultrasonic bath to remove dirt particles. The instrument is now electropolished in order to finally seal the surface. Electropolishing is an electrochemical process whereby microscopically small, uneven areas are levelled out. These areas not reached during mechanical processing are smoothed and any oxidation residue is removed. This working process is one of the most important stages in addition to instrument hardening, particularly in terms of protection against corrosion.

If the instrument has a tungsten carbide insert, certain parts are platinised. The golden rings are indicative of tungsten carbide inserts on the working end of the instrument. As the materials used in the instrument are all highly precious metals, pure gold is used for plating purposes. The generation of an electrochemical series is thus prevented during subsequent use and especially during instrument preparation. This, in turn, prevents corrosion. The currently standard matte surface of the instrument is achieved by sandblasting or matte brushing. In the case of sandblasting, the polished surface of the instrument becomes dented through bombardment with microscopically small glass beads and is thus rendered matt. Despite every effort to automate the manufacture of surgical instruments, the manual skills of the surgical mechanic are crucial.
GLOBAL PRODUCERS

TUTTLINGEN, GERMANY

Tuttlingen is a town in Baden-Württemberg, capital of the district Tuttlingen. Hambach, Möhringen and Ellingen are three former municipalities that belong to Tuttlingen. In the 1700s, the initial clustering of surgical instrument production was a result of specific location factors that provided beneficial geographical resources, such as iron ore and wood around Tuttlingen and transportation along the river Danube. The first product specialization of these metal-based firms was in nail and writing forgers.

The move from knives to surgical instruments came out of the superior performance of Solingen, forcing Tuttlingen to seek its own market niche. Gottfried Jetter, who founded Tuttlingen’s current leading firm in medical engineering, Aesculap, took the initial steps towards specialization and introduced modern machines such as steam engines. In subsequent years, other firms followed, pooling knowledge from all over Europe, especially Paris, which was then the world’s leading centre of medical knowledge and surgical instruments. Soon after the beginning of the 20th Century the increasing number of instrument types led to further specialization, enabling craftsmen to reduce the production time of each single instrument and obtain economies of scale.

Today Tuttlingen has many businesses and considerable industry and is the home for more than 200 surgical equipment companies, including Karl Storz GmbH, Aesculap, Hettich Centrifuges, KLS Martin and Instrumed International Inc. Fifty percent of the world’s surgical equipment is manufactured in this town. About 170 manufacturers and sales companies show their products and services in the permanent exhibition of surgical instruments and medical appliances.

SIALKOT, PAKISTAN

Surgical industry of Pakistan holds a history of more than 100 years, when British doctors got their surgical instruments repaired from the skilled workers of Sialkot. The sector manufactures a wide range of medical, surgical and veterinary instruments exporting more than 95%, which includes 80% of disposable and 20% of reusable surgical instruments, of its production annually. It exports to over 140 countries.

The surgical instrument manufacturing started in Sialkot at the turn of the 19th century, when the American Mission Hospital in Sialkot initially got its scalpels and other instruments repaired from the local artisan community of blacksmiths. These craftsmen successfully replicated these imported instruments, which were being used by the hospitals. When Sialkot industry started exporting surgical instruments, for the improvement of instruments, British Government established the Metal Industries Development Centre (MIDC) in 1941. After 1947, Sialkot inherited total of 17 registered surgical instruments manufacturers. In 1958 Surgical Instrument Manufacturers Association of Pakistan (SIMAP) was

(Gerhard Hafkenscheid, 2002)
incorporated as representative body of the exporters and manufacturers of surgical industry, to safeguard the interest of the Industry. Sialkot in Pakistan is considered to be one of the biggest cluster suppliers of surgical instruments to the medical industry across the world. With the world market for Surgical Instruments is over US $ 30 billion, Pakistan’s exports currently stands at US$227 Million during 2009-10. The total Capital Investment in the surgical industry is estimated at Pakistani Rupee 20 Billion. There are about 1000 to 1200 active small and medium surgical units with labour force ranging from (10-500). The industry association estimates the number of workers in the surgical industry is about 500,000. The industry manufactures about 110 Million instruments pieces annually. (www.simap.org.pk)

Pakistan main manufactures two types of surgical instruments: Disposable instruments, which constitutes 80% of exports; Reusable instruments, which forms 19% of exports; Advanced devices, which forms 1% of exports.

Top buyers for instruments from Pakistan during FY 2009-10 were:
- United States: US$ 57 Million
- Germany: US$ 34 Million
- United Kingdom: US$ 24 Million
- France: US$ 11 Million
- Brazil: US$ 08 Million
- Italy: US$ 07 Million
- Japan: US$ 06 Million
- Australia: US$ 05 Million
- UAE: US$ 04 Million
- Mexico: US$ 04 Million
Baruipur is a city and a municipality in South 24 Parganas district in the state of West Bengal, India. Baruipur is 25 km from Sealdah Station. Baruipur is located at 22.35°N 88.44°E; it has an average elevation of 9 metres (29 feet).

As of 2001 India census,[2] Baruipur had a population of 44,964. Males constitute 51% of the population and females 49%. Baruipur has an average literacy rate of 84%, higher than the national average of 59.5%; with 52% of the literates being male and 48% being female. Baruipur is well served by both railways and roadways. The nearest railway station is Baruipur Junction.

The gajan utsab of Baruipur is famous. According to local legend, there was once a severely contested lathi fight between the lathials of the Sabarna Choudhurys of Barisa and the Roy Choudhurys of Baruipur concerning the boundary dispute of their respective zamindaris. The Sardar of the lathials of the Sabarna Roy Choudhury was Bhriguram. The lathials of Baruipur managed to cut off his head with a sword and won the fight. However, Bhriguram was so much respected in the area that a lock of his hair was preserved. Bhriguram is still publicly honoured by the exposition of lock during the gajan mela at Baruipur.

Baruipur has a surgical tools industry efforts which are on to ensure a revival. Baruipur is known for its fruits, with significant production.

Most religions coexist at Baruipur with predominantly Hindus and Muslims forming the majority.
The story of the Baruipur cluster dates back to 1937, when a few Karmakars (blacksmiths) like Pawan Karmakar, Gaur Karmakar and Nitai Karmakar adopted the business of manufacturing surgical instruments at Baruipur. Expertise was passed on from one generation to the next. The units specialise in surgical instruments for orthopaedics, ENT, laparoscopy and others.

Many are engaged in forging at a nearby village in Balakhali, while another 350 are into finishing and polishing these instruments at Baruipur.

In the 1980s, Paul Instruments, one of the larger units at Baruipur exported its first consignment of instruments to the US. From then onwards a small number of instruments are supplied to international clients either directly or through traders in countries like the USA, the UK, Bangladesh, Nepal and Bhutan by some units that are relatively larger in size.

Exporting units typically employ 50-55 individuals, while the majority of these units are small employing one to four people.

In the domestic market, these instruments are sold primarily in the wholesale markets in Central Avenue, Kolkata and Chandni Chowk in Delhi. Turnover for the entire area ranges from Rs 8-10 crore, while exports would be about INR 1 - 1.5 crore. (Economic Times, 23.05.2006).
2.0 ERGONOMIC ANALYSIS OF SECTOR UNITS
Ergonomics is the science of fitting workplace conditions and job demands to the capabilities of the working population. Effective and successful fits assure high productivity, avoidance of illness and injury risks, and increased satisfaction among the workforce.

Although the scope of ergonomics is much broader, the term refers to assessing those work-related factors that may pose a risk of musculoskeletal disorders and recommendations to alleviate them. Common examples of ergonomic risk factors are found in jobs requiring repetitive, forceful or prolonged exertions of the hands; frequent or heavy lifting, pushing, pulling or carrying of heavy objects; and prolonged awkward postures. Vibration and cold may add risk to these work conditions. Jobs or working conditions presenting multiple risk factors will have a higher probability of causing a musculoskeletal problem.

The level of risk depends on the intensity, frequency and duration of the exposure to these conditions. Environmental work conditions that affect risk include intensity, frequency and duration of activities.

Coal-fired furnaces lead to inhalation of poisonous carbon dioxide and carbon monoxide. Prolonged exposure leads to breathing difficulties, reduced stamina, low immunity, low productivity and may also lead to tuberculosis.

Low internal lighting, insufficient illumination, lack of natural light is seen in all most all units. This leads to loss of vision, loss in productivity and low worker morale.
There was a complete absence of safety equipment in all units surveyed. During grinding and buffing, fine, microscopic particles of stainless steel are inhaled by workers or run the risk of eye damage due to flying shards.

Cramped workspaces with minimal arm space lead to errors of judgement, injuries, low productivity and loss of concentration.

Bad ergonomic working postures lead to back injuries and hamper the capability of the individual worker for sustained hours.

Cluttered, unorganised workspaces noticed.
use of strong acids in acid bath and exposure without safety equipment is a serious hazard

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Working posture need to be improved for most of the operations like lifting material, machining operations of parts, finishing and assembly. Design of proper seating material handling devices, jigs and fixtures for faster accurate operation is required.

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3.0 PROCESS ANALYSIS
The below mentioned fields have been discussed in this report which are required urgent attention and have been affecting the overall development of blue art pottery. These include:

- Process and Techniques
- Kiln and Firing
- Machines and Tools
- Logistic, Packaging and Transportation
- Workstation and Infrastructure
- Market, Merchandising and Display
- Earlier Design Interventions and Workshops
ISSUES
There is complete lack of awareness of design or new product development throughout the cluster. Most units are involved in large-scale copying of instruments from international markets. The units have no access to information regarding advances in surgical tools. Most technical drawings are copied from catalogues or from samples.

RECOMMENDATIONS
Awareness seminars regarding developments should be organised with the help of surgeons and doctors in West Bengal. A repository of drawings should be maintained by the Common Facility Center (CFC) which would allow access to all members.

ISSUES
The entire cluster is unanimous in the opinion that the stainless steel that is currently available in Baruipur through dealers such as Mukund Steels, is substandard and of inferior quality. The MSME units also believe that fake local steel is often passed off as original make Mukund Steel which causes rust and corrosion within months. This seriously jeopardises the brand of Baruipur make instruments, with big clients preferring to purchase from Sialkot, Pakistan.
The current buying capacity of each unit is very small given the fact that most purchase steel on a month to month basis. Without buying capacities, they are unable to individually ensure that good, certified raw material reaches their doorsteps.

RECOMMENDATIONS
Common testing lab to be started so that the purity can be determined. The raw material can be certified and sold with supporting documents. Standardised testing methods and equipment should be developed such that the units can check the raw material before purchase or on receipt.
The common facility center (CFC) can start a material bank which can provide raw material to the units who do not have enough storage.
FORGING

ISSUES
The entire cluster suffers from the lack of forging facilities, which prevents them from catering to large export facilities. Currently, the maximum output comes from small, unorganized, manual forges run by local blacksmiths, which is inadequate, unscientific, and crude. The productivity of hand forging process is extremely low, and hence most units are unable to execute large orders.

There is no temperature control, and hence the piece is not annealed and tempered properly, which causes rusting in the long run.

There is no dimensional accuracy in hand forging, which causes serious error and rejection of consignments.

The Common Facility Centre (CFC) was touted to be an answer to the problem, but the procurement of the wrong forging machine, understaffing, and lack of cohesive vision on the part of the government has resulted in a complete failure of the money spent on the CFC.

RECOMMENDATIONS
Better forging machines should be used. The cluster should look at mini forging machines, which would dramatically improve the productivity of the process.

The heated pieces should be quenched in oil to retain hardness and dimensional accuracy. This would lead to better stress distribution, preventing rust.

Forging dies should be used for dimensional accuracy and speed of production.

GRINDING

ISSUES
Buffing is dependent on the skill of the worker.

The products from Bauipur show a low level of finishing as compared to products from Sialkot/Germany.

Loss in dimensional accuracy due to lack of skill is seen.

The finishing of instruments is not uniform.

RECOMMENDATIONS
Jigs and fixtures to be developed for dimensional accuracy and quality control.

Incentives should be offered to workers whose output is of higher quality, which would motivate others to earn more by improving skills.
SURFACE TREATMENT

ISSUES
The MSMEs in Baruipur do not have electropolishing facilities at all.

The convention followed is to use a mixture of concentrated acids in a plastic container and dip the finished pieces for 30 minutes. The corrosive nature of acid eats away the surface impurities from the pieces.

The uncontrolled use of acids is damaging to the environment and poses a serious safety hazard to the workers in the units.

RECOMMENDATIONS
The units need to be informed about the electropolishing process.
Use of electropolishing tanks should be encouraged, as this would seriously reduce the problem of rusting and improve the finish of the instruments.
Safe and well designed electropolishing machines should be installed in units.
The Common Facility Center could start a mid size electropolishing facility which could be used by all member units.

BUFFING

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MACHINES & TOOLS USED

EXISTING
Rudimentary implements for heat treatment

RECOMMENDED
Mini forges with high degree of temperature control which increases productivity and quality of forgings

EXISTING
Hand forged blanks of poor quality, poor productivity

RECOMMENDED
Mini mechanical hammer forges which are fast, economical to operate and occupy less space in units
EXISTING
Locally assembled grinding machines which break down often

RECOMMENDED
Surface grinding machines from reputed companies that offer better finish, more control leading to less injuries and ergonomic comfort

EXISTING
Unbranded locally made hand tools of inferior quality

RECOMMENDED
Tools from reputed companies that offer better finish, more control leading to less injuries and ergonomic comfort
EXISTING
Haphazard mixture of strong acids in a plastic container

RECOMMENDED
Mini electropolishing machines at unit level / CFC which would immensely increase finish of instruments and reduce rust.

4.0
PRODUCT ANALYSIS
DEFECTS

All instruments are designed as per British / American / German anthropometric standards. Indian anthropometric standards being different, the instruments could be made more comfortable for Indian user by designing according to Indian standard sizes.

Electroplating, which is a mandatory procedure to prevent rust, is often performed by dipping the instruments in a cocktail of acids, with absolutely no scientific understanding. Whereas electroplating requires precise equipment, none of the MSME units audited had formal understanding or access to electroplating.

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Bad fitment issues between moving parts leading to difficulties for surgeon.

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Furthermore, there is no control on the production process, which further compounds the problem.

The instruments from Baruipur cluster exhibit a very low technical capability of surface finishes and textures. Compared to German and Pakistani instruments, the quality of surfaces leaves a lot to be desired.

There is a lack of technical knowledge or new thirst regarding the finishes. Coatings that are available to prevent rust and improve finishes are not known to the majority of the units.

Furthermore, there is no control on the production process, which further compounds the problem.

No dimensional accuracy.

Understanding the ergonomics of surgical instruments is completely absent as most instruments are copies of foreign make instruments, copied from catalogues or drawings or visually reproduced.
Use of non medical grade polymers is a serious problem for quality approvals, which could make exports impossible. The entire cluster experience rapid corrosion problems in the instruments manufactured. This is cataclysmic, as exposure to corrosion can cause genital and death in patients. Whilst the corrosion is originally blamed on the sub-standard raw material, the units are also to blame. Lack of scientific tempering and annealing in the forged pieces causes the instruments to be brittle and rust prone. Added to this, electroplating, which is a mandatory procedure to prevent rust, is often performed by dipping the instruments in a cocktail of acids, with absolutely no scientific understanding. The acid mixture is often crudely prepared, which causes the quality to completely fail within months of use.

FINISHES

Surface finishes of Baruipur made instruments show degradation over time. Whereas most internationally made surgical instruments have mirror finishes, the instruments from Baruipur are yet to achieve the said quality. This kind of surface finishes need to be achieved.
EXISTING

No branding / labelling; generic cardboard packaging

Most units have no designed packaging for the proper despatch of manufactured goods. They are mostly in the 'white label' business wherein the buyer rebrands the product with own name and logo. This has caused a complete loss of identity over the past 50 years.
PROCESS IMPROVEMENTS
5.0 MSME UNITS AUDIT
AMINA SURGICALS

Baruipur, Kolkata India
Contact person: Daiyen Naskar
Type of firm: Unregistered
Established in: 
Main product mix: Scissors & forceps
Number of employees: 10
Annual turnover: INR 18,00,000 (18 lacs)

PROCUREMENT
Steel consumed. As required, supplied by dealer
Grades of stainless steel used: 410 & 420
Raw material vendor: Mukund Steels

PRODUCTION
Annual production: 50,000
Types manufactured: 200 types of scissors
Specialty areas: Scissors & Artery/Musquito forceps
Number of employees: 10
Average wages paid: INR 2000 - 5000

DESIGN
In house design capabilities: tacit knowledge, no formal mechanism
Database of designs: Drawings given by dealers, no access
Access to user information and feedback: None
New product Development: Yes

SALES, MARKETING & PROMOTIONS
Main selling routes: Dealers
Branding & promotion: None
Packaging: Unmarked boxes, rebranded by dealer
Web presence: None

STRENGTHS
Daiyen Naskar is well known and renowned for the quality of scissors and forceps he produces. Mihir has also branched out into fishing products such as tackle and hooks as they are also made from stainless steel of similar grade.

WEAKNESSES
Dependent on dealer network to a large extent. He cannot afford a marketing team. He has attempted it, but production quality completely suffered in his absence. He had to give up marketing to focus on quality and production.

THREATS
Daiyen’s local branding as a good scissor maker would be completely lost in time, if he is not known beyond the boundaries of Baruipur. Threats include other units, Jallandhur, Chennai, Mumbai and imports from Sialkot, Pakistan.

OPPORTUNITIES
Daiyen could capitalize on his fame as a scissors maker of repute. He should also look at similar product mix (horizontal expansion) or develop high value, high technology cutting equipment (vertical expansion).
Unclean & disorganised surroundings
Material management issues during storage and despatch
Unorganised workspaces & non-ergonomic workdesks
APEXO SURGICALS

22555, Baruipur, Kolkata 322456 India
Contact person: Proshonta Das
Type of firm: Proprietorship
Established in: 
Main product mix: Theatre Instruments
Number of employees: 3
Annual turnover: INR 900,000

PROCUREMENT
Steel consumed: 600-700 kg
Grades of stainless steel used: 410, 420
Raw material purchased from: Mukund Steel Baruipur

PRODUCTION
Annual production: 8000
Speciality areas: Dental, Dent plastic surgery instruments
Number of employees: 3
Average wages paid: INR 200 per day

DESIGN
In house design capabilities: None
Database of designs: Down Brothers Catalogue
Access to user information and feedback: None

SALES, MARKETING & PROMOTIONS
Main selling routes: Dealers in Bihar, Gujarat, Orissa, Bengal
Branding & promotion: None
Packaging: None
Web presence: None

STRENGTHS
Being smaller gives nimbleness to Apexo, which could render a long term advantage in changes in product mix. Experimentation with new designs, finishes and textures could be done faster as compared to bigger companies with product lines.

WEAKNESSES
Dependency on manual forging render Apexo completely vulnerable to supply issues. Coupled with low quality steel, sometimes fake, Apexo has to deal with low manpower availability and inability to pay skilled workers.

THREATS
Since Apexo is a small player in the segment, it is vulnerable to changes in the demand supply equation in the markets. Rising competition from Punjab cluster and instruments from Pakistan further render the situation critical. Inability to design new instruments and lack of contact with doctors and user groups is also an important factor.

OPPORTUNITIES
Apexo could adopt two different approaches - one, to build core competency in general theatre instruments by introducing quality systems, finishes and inserts. The other option would be to look at a steady diversion into low volume - high value specialist instruments such as endoscopes and laparoscopy instruments.
Urgeronomic posture and bad lighting conditions
Unclean & disorganised surroundings, lack of organised work desks
Unorganised work conditions, leading to several long term health issues
BARUIPUR SURGICALS

Baruipur, Kolkata 000000 India
Contact person: Himangshu Das
Type of firm: Unregistered, proprietor & son
Established in:
Main product mix: Surgical instruments
Number of employees: 9
Annual turnover: INR 12,00,000 (12 lacs)

PROCUREMENT
Steel consumed: 1200 Kg
Grades of stainless steel used: SS 410 / 420
Raw material purchased from: Mukund Steel Baruipur

PRODUCTION
Annual production: 6000 Pcs
Types manufactured: General surgery instruments
Speciality areas: Dental / orthodontic instruments
Number of employees: 9
Average wages paid:

DESIGN
In house design capabilities: Minimal
Database of designs:
Access to user information and feedback: Doctors' feedback

SALES, MARKETING & PROMOTIONS
Main selling routes: Dealer network
Branding & promotion: Logo, basic packaging
Packaging: Printed plastic sleeves
Web presence: None

STRENGTHS
Dental surgery equipment

WEAKNESSES
Lack of exposure to clients, hospitals and other routes of marketing
Unit partially dependent on the dealer network, that exploits them
Unavailability of micro-finance prevents them from marketing
Deterioration of quality in hand forged blanks
Steel of inferior quality - corrosion faced in instruments

THREATS
From Sialkot made instruments
Lack of information about new developments in surgery
Over dependence on dealer network

OPPORTUNITIES
Product diversification into other instruments
Development of new & advanced tools for exports
Development of brand through strategic inputs
Web & online presence
Lack of illumination within workshop

Cramped work places lead to back injuries

Low lighting & non-ergonomic work stations
CALBER SURGICALS
Baruipur, Kolkata, India
Contact person: Kamal Das
Type of firm: Registered, proprietorship
Established in: Not revealed
Main product mix: Theatre instruments
Number of employees: 15
Annual turnover: Not revealed

PROCUREMENT
Steel consumed: 800 kilos per annum
Grades of stainless steel used: 410 / 420 / 316 (implants)
Raw material purchased from: Mukund Steels, Mumbai

PRODUCTION
Annual production: 50,000 pieces
Types manufactured: 800 types
Speciality areas: ENT / Ophthalmic / Micro / Cardio / Neurosurgical
Number of employees: 15
Average wages paid: 200 per day

DESIGN
In house design capabilities: None
New Product Development: None
Database of designs: Samples from dealers, drawings, catalogues
Access to user information and feedback: Through doctors

SALES, MARKETING & PROMOTIONS
Main selling routes: Dealers, direct sales, conferences
Branding & promotion: Partial
Packaging: None
Web presence: Through sister concern (Paul Instruments)
Exports: Through sister concern (Paul Instruments)

STRENGTHS
One of the key established companies in the cluster
Exports through sister concern - Paul Instruments India
Active in association & governing body of cluster

WEAKNESSES
Rusting is seen in instruments within 2 years.
Hand forged blanks - no control over thicknesses
Productivity less, costs are rising
Rejection by self-evaluation + client’s rejection: 30%

THREATS
No ergonomics data / understanding
No self initiated new product development
Stiff Chinese competition in coming years
Sialkot, Pakistan as a main competitor

OPPORTUNITIES
Product diversification
Brand development
Lack of ergonomic workstations

Cramped work places lead to injuries

Rusting of instruments is extremely common, a huge health issue
CHATTERJEE SURGICALS

Baruipur, Kolkata, India
Contact person: Chatterjee
Type of firm: Trading & manufacturing
Established in: 
Main product mix: All instruments
Number of employees: NA
Annual turnover: Not revealed

PROCUREMENT
Steel consumed: NA
Grades of stainless steel used: 410 / 420 / 316 / TC
Raw material purchased from: Mumbai, Kolkata

PRODUCTION
Annual production: NA
Types manufactured: All
Speciality areas: All
Number of employees: NA
Average wages paid: 150

DESIGN
In house design capabilities: No
Database of designs: Yes
Access to user information and feedback: Yes

SALES, MARKETING & PROMOTIONS
Main selling routes: Trade fairs, institutions, sub dealers
Branding & promotion: Yes
Packaging: Custom designed
Web presence: Website

STRENGTHS
One of the biggest dealers in Baruipur. Chatterjee has tremendous contacts with institutions, clients, and sub-dealers across India. Chatterjee surgicals is widely exposed to the trends and design issues in surgical instruments. The firm is financially secure and has databases of international catalogues. Chatterjee uses vendor management practices - provides training, manpower, material and finance to vendors, in return for complete participation in trade fairs activity. Chatterjee is a member of Jallandhar cluster as well.

WEAKNESSES
Still depends on manual forging for blanks. The quantity of production / supply is affected because of manual forging. Manual forging sector is affected because of low income. Forge workers prefer to work as casual labour.

THREATS
Dealers of similar size in Jallandhar, Chennai and Mumbai clusters such as Appaswamy surgicals. Lack of trust and accusations of monopoly by other units in Baruipur is prevalent.

OPPORTUNITIES
Chatterjee surgicals could look at leading an effort at combined marketing. Given Chatterjee’s financial strength and reach, a formal marketing network promotion can be initiated which would increase visibility. New product development (NPD) with advanced surgical capabilities can be initiated for exports.
CROSSLAND INTERNATIONAL

22555, Baruipur, Kolkata 322456 India
Contact person: Protosh Roy Chaudhary
Type of firm: Proprietorship
Established in: 1985
Main product mix: Ophthalmic instruments
Number of employees: 5
Annual turnover: 100,00,000 (1 crore)

PROCUREMENT
Steel consumed: 600 Kg
Grades of stainless steel used: 410 / 420
Raw material purchased from: Kolkata, Mumbai

PRODUCTION
Annual production: 120,000
Types manufactured: 10 types
Speciality areas: Ophthalmic Scissors & forceps
Number of employees: 5
Average wages paid: INR 8000-10,000 per month

DESIGN
In house design capabilities: No
Database of designs: No
Access to user information and feedback: Yes

SALES, MARKETING & PROMOTIONS
Main selling routes: Exports
Branding & promotion: Minimal
Packaging: Export quality packing
Web presence: Yes

STRENGTHS
Quality conscious to a very high extent
Invested in punching die, controls production through vendors
Very conscious of design and new product development

WEAKNESSES
More HR needed, buys blank, gets punched, some treatment, time consuming for treatment, uses skilled labour for unskilled jobs

THREATS
Change in foreign exchange rates affects margins

OPPORTUNITIES
New product development with medical plastics
Huge demand for existing products
Lack of ergonomic workstations
Unorganised workplaces
EYE GLANCE ASSOCIATES

Baruipur, Kolkata India
Contact person: Chandan Sardar
Type of firm: Unregistered
Established in:
Main product mix: Ophthalmic Instruments
Number of employees: 4
Annual turnover: INR 400,000 (4 lacs)

PROCUREMENT
Steel consumed: 200 kg
Grades of stainless steel used: 420
Raw material purchased from: Classic Metals / Hyderabad & Mumbai

PRODUCTION
Annual production: 25000
Types manufactured: Ophthalmic instruments
Speciality areas: Ophthalmic disposables
Number of employees:
Average wages paid: 125-150 per day

DESIGN
In house design capabilities: Yes
Database of designs: As per standard designs of imported instruments
Access to user information and feedback: Yes

SALES, MARKETING & PROMOTIONS
Main selling routes: Dealer, Self Marketing
Branding & promotion: Own brand
Packaging: Has developed customised packaging
Web presence: None

STRENGTHS
Progressive design approach
Aggressive towards opportunities
Invests in moulds and dies, get production done through local vendor

WEAKNESSES
Financing for expansion
No forging facility
Outsources heat treatment of tips
Outsources powerpress jobs

THREATS
Narrow product mix makes Eye Glass vulnerable to economic changes.
Low value products also mean tighter margins which get affected if there is an economic downturn.
Low value Chinese imports could be a cause of concern in the near future.

OPPORTUNITIES
Product diversification into other disposables is a huge potential area.
Ergonomic design of new ophthalmic knives is a strong possibility.
Web design, branding and catalogue design to improve brand visibility is a possibility.
Lack of ergonomic workstations

Unorganised workplaces
KANJI SURGICALS

Baruipur, Kolkata India
Contact person: Supren Kanji
Type of firm: Unregistered: 1980-00, registered in 2000
Established in: 1980
Main product mix: Theatre instruments
Number of employees: NA
Annual turnover: Not revealed

PROCUREMENT
- Steel consumed: NA
- Grades of stainless steel used: 410 / 420 / 304
- Raw material purchased from: NA

PRODUCTION
- Annual production: NA
- Types manufactured: 500 types of instruments
- Specialty areas: General, Ophthalmic, Dental, Gynaecology
- Number of employees: 50
- Average wages paid: 200 per day

DESIGN
- In house design capabilities: Yes
- Database of designs: Yes
- Access to user information and feedback: Yes

SALES, MARKETING & PROMOTIONS
- Main selling routes: Only governmental institutions
- Branding & promotion: Yes
- Packaging: Custom designed
- Web presence: Yes
- Exports: Just commenced

STRENGTHS
In business for 30 years, has a very strong presence in the institutional and government sectors. Kanji Surgicals has ISO 9001 certification, which gives them a strong standing as quality conscious players in the segment. Kanji surgicals gets the finished products tested at metal testing labs in Kolkata, as a part of the quality control processes.

WEAKNESSES
- Not known as visit to works was not allowed
- Catering to only the governmental sector limits expansion prospects

THREATS
- Instruments from Sialkot, Pakistan

OPPORTUNITIES
- New product development for export markets. Given Kanji's quality certifications and production capabilities, a conscious strategy of new product development with advanced materials and finishes could be initiated. New and emerging areas such as Titanium carbide tools, medical plastics, noninvasive surgical tools and laser surgical equipment could be possibilities. A better web design is recommended to add strength to Kanji Surgicals, as current website does not reflect their standing in the markets.
MIHIR NASKAR

Baruipur, Kolkata India
Contact person: Mihir Laskar
Type of firm: Unregistered
Established in:
Main product mix: All instruments
Annual turnover: 200,000 (2 lacs)

PROCUREMENT
Steel consumed: variable, as per orders
Grades of stainless steel used: 410, 420
Raw material purchased from: Supplied by dealers

PRODUCTION
Annual production: 18,000
Types manufactured: General instruments
Speciality areas: None
Number of employees: 6
Average wages paid: INR 100 per day

DESIGN
In house design capabilities: None
Database of designs: None
Access to user information and feedback: None

SALES, MARKETING & PROMOTIONS
Main selling routes: Dealers who outsource jobs
Branding & promotion: None
Packaging: None
Web presence: None

STRENGTHS
None

WEAKNESSES
Mihir is completely dependent on dealers such as Chatterjee surgicals for everything. He equates the situation to the ancient zamindari system, wherein the vendor is completely subjugated in all aspects of the trade. He receives his orders from Chatterjee surgicals who also supplies the raw materials, arranges financing and other necessities.

THREATS
Dependency on dealer leads to subjugation at all levels. Caught in a vicious cycle of lack of finance and not being able to market the products, Mihir is subject to unpredictability of trade.

OPPORTUNITIES
Improve quality control procedures such that the output can be recognised in the dealer circles. Access to catalogues and designs, standards and other information about advances in the field would only enable Mihir to develop newer products which could bring in revenue.
Lack of ergonomic workstations
Unorganised workplaces
N SURGICALS

Baruipur, Kolkata 322456 India
Contact person: Hamid Mohalla
Type of firm: Proprietorship
Established in: 1990
Main product mix: Theatre instruments
Number of employees: 14
Annual turnover: INR 45,00,000 (45 lacs)

PROCUREMENT
Steel consumed: 1500 Kg
Grades of stainless steel used: 410, 420
Raw material purchased from: Classic metals / Mukund steels

PRODUCTION
Annual production: 36,000
Types manufactured: 100 types
Speciality areas: Orthopaedic / Ophthalmic / Neurosurgical
Number of employees: 14
Average wages paid: INR 200 per day

DESIGN
In house design capabilities: Partial
Database of designs: Yes, Optech & Martin Medical catalogues
Access to user information and feedback: Yes

SALES, MARKETING & PROMOTIONS
Main selling routes: Dealer - Modern Surgicals, Kolkata
Branding & promotion: None
Packaging: None
Web presence: None

STRENGTHS
N Surgicals is a well established firm that is quite known in the dealer network. Hamid is a vocal, aggressive proponent of positive change in the association and cluster. Large Hamid understands quality, market dynamics and the need to create a product differentiation through aesthetic treatment of instruments. He recommends titanium coating, which though expensive, places him in a higher league as compared to other units.

WEAKNESSES
Quality of steel is a suspect. Rust is seen in the instruments which has a negative repercussion from the market.

THREATS
IndoGerman, Chennai; Sialkot, German & Punjab clusters.

OPPORTUNITIES
Given the financial stability, Hamid Mohalla could explore new product development focusing on niche, specially high value surgical instruments. This would create a brand value. Also, a strong web presence is required to attract export business.
Lack of ergonomic workstations
Rusting, a huge health issue in surgery
NETAI SARKAR

Baruipur, Kolkata India
Contact person: Netai Sarkar
Type of firm: Unregistered / micro
Established in: 1995
Main product mix: General instruments / brain surgery
Number of employees: 4
Annual turnover: INR 200,000

PROCUREMENT
Steel consumed: 150 Kg
Grades of stainless steel used: 410, 420
Raw material purchased from: Mukund Steel Dealer supplied

PRODUCTION
Annual production: Varies
Types manufactured: General instruments
Specialty areas: Brain Surgery
Number of employees: 3
Average wages paid: INR 180 per day

DESIGN
In house design capabilities: None
Database of designs: Catalogues of international companies
Access to user information and feedback: None

SALES, MARKETING & PROMOTIONS
Main selling routes: Dealers
Branding & promotion: None
Packaging: None
Web presence: None

STRENGTHS
Able to replicate complicated brain surgery instruments just with the help of an image.

WEAKNESSES
Is financially insecure, unable to market oneself, completely subjugated by prominent dealers in the cluster / Kolkata.

THREATS
Has no identity or brand. He is susceptible to market fluctuations. Even with the capability of making complicated instruments, he has no information as to what the final selling price or where it sells. Each unit is sold by Netai Sarkar for INR 25,000, whereas the final selling price in the market is 4 times more. Due to low turnover, he is extremely vulnerable to labour issues, since he is not able to pay higher wages.

OPPORTUNITIES
To work with the dealers to develop specialty instruments, which has higher value.
Rusting of instruments is extremely common, a huge health issue.

Lack of ergonomic workstations

Copying from catalogues / drawings, no design initiatives
NIVIA SURGICALS

Baruipur, Kolkata, India
Contact person: Nivia Mondal
Type of firm: Unregistered
Established in:
Main product mix: All theatre instruments
Number of employees: 10
Annual turnover: 18,00,000 (18 lacs)

PROCUREMENT
Steel consumed: 800 kg
Grades of stainless steel used: 410 / 420
Raw material purchased from: Mukund Steels, Baruipur

PRODUCTION
Annual production:
Types manufactured: Cardiac instruments / general
Speciality areas: Cardiac surgery
Number of employees: 10
Average wages paid: 175 per day

DESIGN
In house design capabilities: Yes
Database of designs: No
Access to user information and feedback: Yes

SALES, MARKETING & PROMOTIONS
Main selling routes: Dealers in Bhopal, Jaipur, Ranchi and Uttar Pradesh
Branding & promotion: Self marketing / door to door sales
Packaging: Yes
Web presence: None

STRENGTHS
Nivia Mondal is quite confident about the quality of his instruments. Nivia Sur-
gicals has a marketing network which makes it independent of dealers in Barui-
pur. This gives greater access to Nivia surgicals. Nivia surgicals also specialises in one-off development in very low volumes of specialized instruments in gy-
naeology. This open up possibilities for further specialisation and expansion.

WEAKNESSES
Lack of availability of good quality stainless steel is a big deterrent. Lack of knowledge about the technicalities of the instruments is a big factor. Lack of good electropolishing capabilities is an issue.

THREATS
Instruments from Sialkot pose a serious threat. Instruments from Sialkot look better and last longer without rusting, which points towards very high level of electropolishing knowledge. Lack of manpower is another big factor. The indu-
try as a whole is facing the issue, but Nivia Mondal contends that the Common Facility Centre (CFC) has been a contributor to the manpower issue. Workers often migrate to other professions as they are convinced that the CFC would replace them eventually with machines.

OPPORTUNITIES
Improving finishes and textures of existing instruments. New product develop-
ment for other areas which are low volume - high value.
Lack of ergonomic workstations
Low lighting and cramped work stations
PLUS
SURGICAL

22555, Barulpur, Kolkata 322456 India
Contact person: Sanjib Chakraborthy
Type of firm: Registered
Established in:
Main product mix: Ophthalmic surgery instruments
Number of employees:
Annual turnover:

PROCUREMENT
Steel consumed: NA
Grades of stainless steel used: 304, 420
Raw material purchased from: Classic metals, Mumbai

PRODUCTION
Annual production: 700,000
Types manufactured: Ophthalmic disposables
Speciality areas: Ophthalmic surgery
Number of employees: NA
Average wages paid: NA

DESIGN
In house design capabilities: Yes
Database of designs: Yes
Access to user information and feedback: Yes

SALES, MARKETING & PROMOTIONS
Main selling routes: Arabian countries, conferences, direct sales
Branding & promotion: Yes
Packaging: Yes
Web presence: Yes

STRENGTHS
One of the very established and professional firms in the cluster. Supplies ophthalmic disposables to Europe, Arab nations, Bangladesh and to dealers all over India. Has a 4 member marketing team which tours India, attends all medical conferences and promotes the product. Has invested in moulds for plastic moulding for use and throw knives.

WEAKNESSES
Low availability of trained manpower forces Plus Surgical to limit their capacity to supply. This in turn chases clients away. Plus is asked to supply 100,000 pieces per month but their capacity is 60,000.

THREATS
Rapid advances in medical technology might render the existing designs obsolete. In disposables, China is a looming threat with their capacity at massive volumes and plastic working capabilities. Mumbai cluster produces instruments with better raw material that does not rust with time. The design of the current ophthalmic disposable knives are easily copied.

OPPORTUNITIES
New product development focusing on medical grade polymers, with insertable cutting tips.
**SUPER SURGICALS**

Baruipur, Kolkata India  
Contact person: Giasuddin Mistry  
Type of firm:  
Established in:  
Main product mix: Ophthalmic instruments  
Number of employees: 6  
Annual turnover: 500,000 (5 lacs)

**PROCUREMENT**
Steel consumed  
Grades of stainless steel used: 410 / 420  
Raw material purchased from: Mukund Steel Baruipur

**PRODUCTION**
Annual production: 12000  
Types manufactured: General Surgery theatre instruments  
Speciality areas: Ear, Nose, Throat (ENT) & Ophthalmology  
Number of employees: 6  
Average wages paid: 150 per day

**DESIGN**
In house design capabilities: Minimal, modifications only  
Database of designs: None  
Access to user information and feedback: None

**SALES, MARKETING & PROMOTIONS**
Main selling routes: Dealers such as Appaswamy & Indo-Webel  
Branding & promotion: None  
Packaging: None  
Web presence: None

**STRENGTHS**
Quality and finish of instruments from super surgicals is good.

**WEAKNESSES**
Lack of exposure to clients, hospitals and other routes of marketing. Unit partially dependent on the dealer network, that exploits them. Unavailability of micro finance prevents them from marketing. Deterioration of quality in hand forged blanks. Steel of inferior quality – corrosion faced in instruments.

**THREATS**
From Sialkot made instruments  
Lack of information about new developments in surgery  
Over dependence on dealer network

**OPPORTUNITIES**
Product diversification into other instruments  
Development of new & advanced tools for exports  
Development of brand through strategic inputs  
Web / online presence
SURIA INDUSTRIES

Baruipur, Kolkata India
Contact person: Nikhil Chakraborty
Type of firm: Registered
Established in: 
Main product mix: Infra Red lamps, OT lamps, Number of employees: 95
Annual turnover: INR 60,00,000

PROCUREMENT
Steel consumed: 1200 Kg
Grades of stainless steel used: 410, 420
Raw material purchased from: Mukund Steel Baruipur

PRODUCTION
Annual production: 36000
Types manufactured: General Instruments
Speciality areas: NA
Number of employees: 10 for surgical, 85 total
Average wages paid: Per piece basis

DESIGN
In house design capabilities: Yes
Database of designs: Yes
Access to user information and feedback: Yes

SALES, MARKETING & PROMOTIONS
Main selling routes: 4 salesman, all India marketing
Branding & promotion: Branded, ASI Surgical Industries
Packaging: Yes
Web presence: None

STRENGTHS
One of the very established and professional firms in the cluster. Supplies general surgical instruments and lamps to dealers all over India. Has a 4 member marketing team which tours India to promote the product.

WEAKNESSES
Unavailability of good raw materials and forging facility deters them from aggressively marketing product. Raw material is inferior and rust is seen.

THREATS
Rapid advances in medical technology might render the existing designs obsolete. In disposables, China is a looming threat with their capacity at massive volumes and plastic working capabilities. Mumbai cluster produces instruments with better raw material that does not rust with time.

OPPORTUNITIES
New product development focusing on medical grade polymers, with insertable cutting tips. An e-portal offering various types of instruments can be initiated which would increase visibility. New product development (NPD) with advanced surgical capabilities can be initiated for exports.
Lack of ergonomic workstations
Low lighting and crowded work stations
T A SURGICALS

Baruipur, Kolkata India
Contact person: Tajuddin Ahmed
Type of firm: Unregistered
Established in: 
Main product mix: Ophthalmic instruments
Number of employees: 5
Annual turnover: 600,000 (6 lacs)

PROCUREMENT
Steel consumed:
Grades of stainless steel used: 420
Raw material purchased from: Mukund steels / Dealer supplied

PRODUCTION
Annual production: 24,000 pcs
Types manufactured: 15 Types
Speciality areas: Ophthalmic Instruments
Number of employees: 5
Average wages paid: INR 150 per day

DESIGN
In house design capabilities: None
Database of designs: None
Access to user information and feedback: None

SALES, MARKETING & PROMOTIONS
Main selling routes: Local dealers
Branding & promotion: None
Packaging: None
Web presence: None

STRENGTHS
Products are of reasonable quality

WEAKNESSES
Lack of exposure to clients, hospitals and other routes of marketing
Unit partially dependent on the dealer network, that exploits them
Unavailability of micro finance prevents them from marketing
Deterioration of quality in hand forged blanks
Steel of inferior quality – corrosion faced in instruments

THREATS
From Sialkot made instruments
Lack of information about new developments in surgery
Over dependence on dealer network

OPPORTUNITIES
Product diversification into other instruments
Development of new & advanced tools for exports
Development of brand through strategic inputs
Web / online presence
Lack of ergonomic workstations
Low lighting and crowded work stations
UK SURGICALS

Baruipur, Kolkata India
Contact person: Mihir Laskar
Type of firm: Unregistered
Established in:
Main product mix: All instruments
Number of employees: 5
Annual turnover: 700,00 (7 Lacs)

PROCUREMENT
Steel consumed: 700 Kg
Grades of stainless steel used: 410, 420 SS
Raw material purchased from: Mukund Steels, Baruipur

PRODUCTION
Annual production:
Types manufactured: General surgery instruments
Speciality areas: Tungsten Carbide tools
Number of employees: 5
Average wages paid: 150-175 per day

DESIGN
In house design capabilities: None
Database of designs: None
Access to user information and feedback: Yes

SALES, MARKETING & PROMOTIONS
Main selling routes: Dealers
Branding & promotion: None
Packaging: None
Web presence: None

STRENGTHS
Quality and finish of instruments from UK surgicals is good.

WEAKNESSES
Lack of exposure to clients, hospitals and other routes of marketing
Unit partially dependent on the dealer network, that exploits them
Unavailability of micro finance prevents them from marketing
Deterioration of quality in hand forged blanks
Steel of inferior quality - corrosion faced in instruments

THREATS
From Sialkot made instruments
Lack of information about new developments in surgery
Over dependence on dealer network

OPPORTUNITIES
Product diversification into other instruments
Development of new & advanced tools for exports
Development of brand through strategic inputs
Web / online presence
Lack of ergonomic workstations
Problems of material handling during production
5.0
CLUSTER
SWOT ANALYSIS
Oldest cluster operating since last 60 years with largest market share in surgical instruments industry today

Proximity to Kolkata, which is a major hub for transport inland and exports through the port.

Increasing demand for disposable and theater surgical instruments as healthcare industry in India rapidly expands. Public health infrastructure is extremely poor and has great potential for growth in India.

Inspite of the fact that the quality of surgical instruments are below par, there are several units that are producing instruments of excellent finish and construction. The cluster largely helps in catering to the demand of the unorganised sector.

Despite lacking formal education, people engaged in this trade possess a traditional manufacturing and good business acumen to face the future challenges.

Level of design awareness and developments in sector extremely poor
Low level of competitiveness in national and international markets due to manual processes
Technical knowledge of processes, materials and quality knowhow is a poor among majority of units in Baruipur
Lack of available finance for expansion
Use of poor and unreliable material for production. The units are unable to get the right materials individually due to the low take. No efforts being made to pool orders and buy the same collectively
The quality of the final product is poor and no proper attempt made to improve the same. Minimal exports due to bad packaging
Poor working conditions in the cluster leading to labor absenteeism and turnover. Low availability of skilled workers causes immense losses to sector
No quality certifications which hamper sales to institutions and international buyers

India’s public health spending is bound to increase in coming years. Given that the penetration of health facilities is at an abysmal 30%, the sector is bound to see tremendous growth and government investment

Presence of institutions of higher education such as Durgapur University, University of Calcutta etc can help in process and product upgradation
Availabilities of advanced technology to achieve cost & process efficiency

Imported instruments from Sialkot, Pakistan
Chinese research into low cost instruments
Rapid changes in technology / medical sciences
Advanced materials such as polymers replacing steel as primary material

STRENGTH

WEAKNESS

OPPORTUNITY

THREAT
CRITICAL ISSUES

6.0
QUALITY RAW MATERIAL PROCUREMENT
The entire cluster is unanimous in the opinion that the stainless steel that is currently available in Baruipur through dealers such as Mukund Steels, is substandard and of inferior quality. The MSME units also believe that fake, local steel is often passed off as original make Mukund Steel, which causes rust and corrosion within months. This seriously jeopardizes the brand of Baruipur make instruments, with big clients preferring to purchase from Sialkot, Pakistan.

The current buying capacity of each unit is very small given the fact that most purchase steel on a month to month basis. Without buying capacities, they are unable to individually ensure that good, certified raw material reaches their doorsteps.

Whilst certain large units conduct testing and certification through laboratories in Kolkata, most units are unable to do so due to cost and financial reasons.

LACK OF FORGING FACILITIES
The entire cluster suffers from the lack of forging facilities, which prevents them from catering to large export facilities. Currently the maximum output comes from small, unorganized manual forges run by local blacksmiths, which is inadequate, unscientific and crude.

The Common Facility Centre (CFC) was touted to be an answer to the problem, but the procurement of the wrong forging machine, understaffing and lack of cohesive vision on the part of the government has resulted in a complete failure of the money spent on the CFC.

CORROSION IN INSTRUMENTS
The entire cluster experience rapid corrosion problems in the instruments manufactured. This is catastrophic, as exposure to corrosion can cause gangrene and death in patients. Whilst the corrosion is originally blamed on the substandard raw material, the units are also to blame. Lack of scientific tempering and annealing in the forged pieces causes the instruments to be brittle and rust prone. Added to this, electroplating, which is a mandatory procedure to prevent rust, is often performed by dipping the instruments in a cocktail of acids, with absolutely no scientific understanding. The acid mixture is often crudely prepared, which causes the quality to completely fail within months of use.
SURFACE FINISHING OF INSTRUMENTS

The instruments from Baruipur cluster exhibit a very low technical capability of surface finishes and textures. Compared to German and Pakistani instruments, the quality of surfaces leaves a lot to be desired.

There is a lack of technical knowledge or research regarding the finishes. Coatings that are available to prevent rust and improve finishes are not known to the majority of the units.

Furthermore, there is no control on the production process, which further compounds the problem.

ELECTROPLATING

Electroplating, which is a mandatory procedure to prevent rust, is often performed by dipping the instruments in a cocktail of acids, with absolutely no scientific understanding. Whereas electroplating requires precise equipment, none of the MSME units audited had formal understanding or access to electroplating.

The acid mixture is often crudely prepared, which causes the quality to completely fail within months of use.

ERGONOMICS OF SURGICAL INSTRUMENTS

Understanding the ergonomics of surgical instruments is completely absent as most instruments are copies of foreign make instruments, copied from catalogues or drawings or visually reproduced.

NEW PRODUCT DEVELOPMENT OF HIGH TECHNOLOGY TOOLS

There is very little effort towards new product development of high technology or specialty surgery equipment, which could be an answer to the growing competition. All units manufacture simple, commonplace disposable which is a high volume - low price segment, which brings it into direct competition with Sialkot.

If the units were to produce specialty equipment as a part of their overall product mix, it would help in carving a unique niche for themselves.
PACKAGING

Most units have no designed packaging for the proper despatch of manufactured goods. They are mostly in the ‘white label’ business wherein the buyer rebands the product with own name and logo. This has caused a complete loss of identity over the past 50 years.

WEBSITE & ELECTRONIC IDENTITY

Only two of all the units audited had websites. With the complete absence of any sort of identity, location in the deep interiors and no efforts of self-promotion has resulted in the entire cluster being completely unknown. Whilst the units believe that they are well known, it is only partially in pockets. There is no global recognition or acknowledgement of existence. This has lead all units to be completely subservient to dealers in metros, who exploit the units and claim the margins of profitability.

HUMAN RESOURCES

All units suffer from lack of skilled manpower which is a direct result of low wages and growth opportunities for the workers. Lack of training, segmentation and wage levels plus opportunities in other sectors for low skilled work has contributed in a glut of workers.
7.0
POLICY INTERVENTIONS
DESIGN OF BARUIPUR QUALITY SYMBOL

The cluster units in Baruipur need to develop a “quality mark” which could be carried on all produced items of quality from the zone of Baruipur. The mark would be awarded as a symbol of trust to those companies which have followed the laid down norms of quality from raw materials, production and process perspectives. This would ensure, in the long run, to differentiate between low cost low quality products and high quality products. This differentiation is critical to the survival of the industries in Baruipur, opening up opportunities for growth in both domestic and international markets.

DESIGN OF E-PORTAL

At most, there is a very scattered presence of the Baruipur cluster companies on the internet. In today’s times of great web awareness, this comes as a surprise, and the virtual presence of these companies is compromised with. Clusters in Pakistan and Germany have a strong promotional internet presence, which clearly allows buying houses or importers to contact them. Baruipur companies would benefit from a unified presence on the web, which allows customers to be directed into the site. Sites like www.jimtrade.com, www.alibaba.com are good benchmark. Using free platforms such as blogs (www.wordpress.com), mini social networking sites (www.ning.com) or free platforms with commercial templates (www.wordpress.org) could be a small start to the process. Each company could be given a single page with a pre existing template to display their products and contact information.

DESIGN OF MUSEUM

The BASIMAA body should take the initiative to promote good design that would become showcase reference for other companies to benchmark against. The establishment of a museum or display of good design has several benefits. The museum would contain sourced pieces from Germany, British, American and other sources. This would enable comparison of quality and finishes, as a constant reference. There could be a section dedicated to new and innovative tools that are being developed and manufactured by other clusters. This could spur knowledge growth and new product development in the cluster. Library of design data & library of catalogues could be maintained in the center.

MATERIAL BANK

The BASIMAA body should take the initiative to commence a material bank which leverages the cumulative buying power of all units together. Rather than individual buying, if all units develop a joint material procurement plan, the power to negotiate the rates, quality and supply terms is higher. This would be a fruitful solution to other vendors, other than Mukund Steel at Baruipur.

EMPLOYEE TRAINING & CERTIFICATION PROGRAM

BASIMAA could initiate a worker training program in collaboration with JadHAVpur University, ITI centres or Indo German Tool Room. This would infuse confidence into the worker community about future employment prospects and provide the units with a steady supply of manpower. Fixing of wage levels could also aid in the certification, which could give growth prospects to the workers.

EROGONOMICS & DESIGN RESEARCH

A joint effort by BASIMAA with units should focus on a surgical ergonomics and New Product Development program with help of institutions such as NID, IITs etc, which could give the opportunity of shifting from low value mass produced disposables to low volume - high value goods, which would increase branding, global recognition and reach of exports.

DESIGN OF PACKAGING, SURGICAL ALLIANCE NORMS

A joint effort by BASIMAA with units should focus on design and development of generic packaging, which could be purchased by all units. This common branding and good quality packaging would help in promotion and branding. A surgical alliance should be commenced in league with institutions of higher research and learning, whose affiliation would increase the identity and presence of the individual units.
FUTURE SCOPE
IMMEDIATE

Improvements in products with ergonomics
Better product features, finishes
Rust control & prevention through betterment in instrument construction, materials, branding and surface treatments
Betterment of worker productivity by design of better workstations, improved work conditions through principles of occupational ergonomics
Design of better manufacturing processes, material handling devices and tools

MID TERM

Standardization of all designs through development of dies
Design of mini hammer forging machines to improve the forging output
Standardization of finishes and surface treatments
Design and development of improved tools
Design of packaging
Design and introduction of electropolishing machines
Higher worker productivity through better production lines, improved work conditions, formal wage system & increased safety norms

LONG TERM

Design of laproscopic surgical instruments
Design of Tungsten Carbide instruments
Application of modern manufacturing practices and use of automation to improve productivity
Introduction of cluster level stringent quality norms for exports
Development of the Common Facility Center into a marketing unit, which processes orders. Conversion of CFC into a R&D cell focusing of design and productivity related activities

FUTURISTIC

Completely automated production lines
Waste management systems
Material testing laboratories in individual units
Quality certifications from UL, ISO, etc
100% Export Oriented Units (EOUs)