



SUCCESS STORIES of ESPIREenergy & ESPIREgreen

BEST PRACTICES OF PAKISTANI INDUSTRY
THAT HAVE IMPLEMENTED BEST PRACTICES IN ENERGY EFFICIENCY
AND CLEANER PRODUCTION

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COORDINATION OF PROJECT

bfz gGmbH (Training and Development Centers of the Bavarian Employers' Associations) was founded in 1983 by the private sector. With more than 2,000 employees, it is today one of Germany's leading service providers in the areas of education, consultancy and integration and provides in its 150 training locations high quality vocational educational training. The International Division of bfz conducts development cooperation projects on behalf of the World Bank, the European Union and the German Government in all parts of the world.

FINANCIAL SUPPORT AND PUBLICATION

The project is supported by the German Ministry for Economic Cooperation and Development (BMZ) via Sequa gGmbH under the program for cooperation between private sector entities (KVP). All content of this publication was developed exclusively under the responsibility of bfz.

PROJECT PARTNERS IN PAKISTAN

Trade associations in Lahore and Karachi are partners of bfz and guarantee outreach and sustainability of the project activities.

Small and Medium Enterprises Development Authority (SMEDA) is supporting project ESPIRE with their technical team and organizational expertise.





1. The ESPIRE project

Monitoring of energy consumption is the basis for improving energy efficiency and thus **reducing energy consumption and energy costs**. However, most companies in Pakistan still hesitate to invest in energy monitoring as they fear high investment costs.

Furthermore, given the limited resources in today's world, industry is forced to use input resources more efficiently, enhance recyclability and maximize use of renewable resources. Eliminating waste within the process rather than at the end-of-pipe will enable industry to curtail pollution and adverse environmental impact. Simultaneously, industry must strive to attain strategic advantage through promotion of a safe and healthy working environment.

Developing competitiveness as the core competence, creates strategic advantage and improves overall performance of a business.

The objective of ESPIRE project was to support industries in Pakistan to work economically more efficiently and ecologically more sustainable.

To replicate the knowhow that was developed during the project, several success stories were documented during the project period 2008-2016. In total 13 companies volunteered to document their success story in order to share their experiences.

Through summarizing all their experiences, the companies realized the importance of efficiently managing the energy inputs and resources. All of them agreed that sustained effort toward increased energy and resource efficiency is required to remain competitive and cost effective.

ESPIREenergy and ESPIREgreen services are offered through Consultants that have been trained and approved through the project partners.

All success stories can also be downloaded separately from **www.espire.com.pk**.

2.ESPIRE Energy and it’s Successes Stories



SAVE ENERGY.
SAVE COSTS.

THESE SERVICES HELP INDUSTRIES TO REDUCE THEIR ENERGY CONSUMPTION, INCREASE ENERGY SECURITY AND IMPLEMENT AN ENERGY MANAGEMENT. INDUSTRIES ARE LEVERAGING THEIR OWN EFFORTS TO SAVE ENERGY AND THUS REDUCE COSTS:



External Energy Audit (EA) for status quo analysis of energy consumption and recommendations for energy saving measures



Installation of Energy Information System (EIS) for continuous measurement and monitoring of energy consumption and costs



Implementation of Energy Management System (EnMS) in the factories for continuous control and reduction of energy consumption and costs with own staff

2.1

M/S INFINITY ENGINEERING PVT. LTD. –PIONEERING ISO50001 IN PAKISTAN

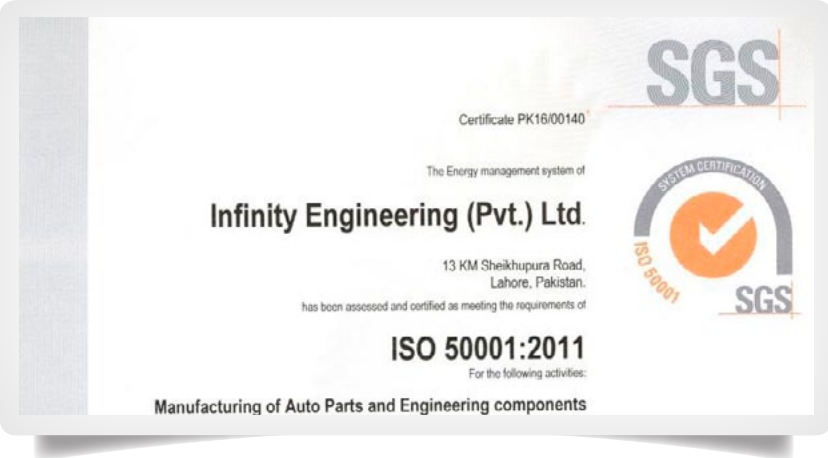
Background

M/s Infinity Engineering Pvt. Ltd. is an ISO50001, TS16949, ISO9001 and ISO14001 certified company mainly oriented in subcontracting activities for Grey Casting, Hot Forging, Precision Machining and Heat Treatment of automotive and engineering components. The company produces international standard engineering and automobile components for major vehicle assemblers in domestic and international markets.

ESPIRE Intervention

In April 2013, Mr. Abdur Razzaq Gohar, CEO, requested bfz for support with the implementation of ISO50001 Energy Management System Standard at Infinity Engineering through services offered by ESPIREnergy.

The services of Mr. Thomas Frank, who is an expert on Energy Management and Monitoring, were hired for the purpose by bfz. Mr. Frank along with a group of local consultant of ESPIREnergy conducted two sessions in April and June 2013 and started the implementation of ISO50001 with Training of Energy Team. An action plan for implementation of standard with targets was developed in first session. Training on energy monitoring was provided in second session and metering and measurement plans were deliberated.



"As a responsible Pakistani industrialist we have to take systematic measures to conserve power in all our business and production processes, making our products competitive and contribute in saving the precious national resource of energy for use of our other country fellows and maintaining a cleaner environment."

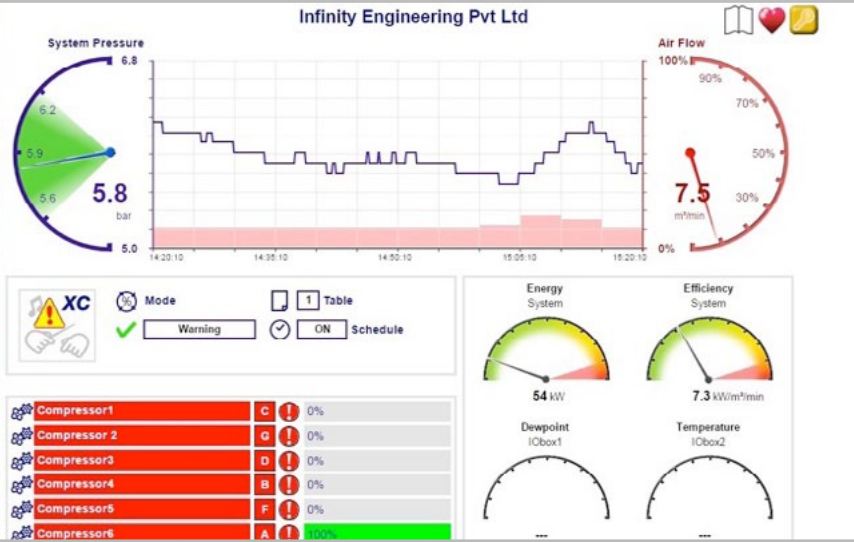
Mr. Abdur Razzaq Gohar
CEO, Infinity Engineering Pvt. Ltd.

Achievements

The company formed an Energy Team to implement Energy Management System as per ISO 50001 requirements and guidelines. Major investment was made in developing an Energy Monitoring System that included installation of energy meters for all significant energy uses.

The efforts of the Energy Team finally paid off in February 2016 when Infinity Engineering became the first Pakistani company certified on ISO50001 Energy Management System.

In addition to implementation of standard, the company has taken aggressive measures to improve their energy performance.



Compressed Air Management System

Background

Pakistan Hoisery Manufacturers and Exporters Association (PHMA) is one of the largest and oldest Business Membership organisation of Pakistan representing the largest exporting sector of Pakistan.

PHMA has four offices across Pakistan and has one in New York, USA. PHMA along with bfg GmbH international division has established a technical support cell (TSC) to facilitate its member textile units in terms of capacity building of Human Resource through trainings and technical testing of major energy consuming equipments.

ESPIRE Intervention

In July 2013, PHMA Technical Support Cell, along with SMEDA and bfg GmbH organized two days Energy Manager Training with the aim of internal capacity building of industries to become self-sufficient for conducting energy audits. 9 participants from 4 industries have participated in the program and has gone through extensive learning sessions on Electrical Energy Audits, Thermal Energy Audits and Energy Management System. The trainers have shared their industry experience with the participants.



Energy Manager Training Session

"The Energy Manager Training program was a unique program in which complete practical approach was adopted which has helped us to reduce external reliance for energy audits."

Masood Abbas Khan
Director, Al-Hadeed Industries

Through Energy Manager Training program two companies have conducted Internal Energy Audits and 12 energy conservation measures were identified with an annual energy saving potential of more than 0.2 Million PKR.

A monitoring visit was also conducted by PHMA TSC to verify the savings and implementation status.

Achievements

Al Hadeed Industries have implemented 7 improvement measures within 2 months which resulted in annual energy savings of 0.105 Million PKR with no investment.

Another company MEB, has implemented 3 improvement measures and have saved 0.06 Million PKR without any investment.

To further improve the energy efficiency both companies have developed an Energy Policy and developed an energy team which is monitoring energy consumption and implementing energy saving measures without external support.

ENERGY SAVING MEASURES [implemented within first 6 months]	ENERGY SAVING [M-PKR/year]	INVESTMENT [M-PKR]
Lighting system improvement	0.078	0.00
Compressed Air Leakages	0.052	0.00
Insulation of Steam lines	0.02	0.01
Insulation of steam lines	0.015	0.007
TOTAL	0.165	0.017



Localized air compressor helps reduce overall system pressure

Background

M/s AL Badar Engineering Company (Pvt.) Ltd. has been supplying quality products to leading multinational and national OEM'S of Automotive Sector. The company is ISO 9001 Certified and has got two plants, at Sheikhpura and Wazirabad. The area of two plants is 27000 and 2600 Sq. meters respectively. The average electricity consumption of the company is 1000 kWh per Hour.

ESPIRE Intervention

In June 2013, Mr. Satwat Kaleem Qureshi, General Manager, contacted Bfg GmbH through Pakistan Association of Auto Parts and Accessories Manufacturers (PAAPAM) to avail services of ESPIRE Energy (see description on the left).

Through Energy Audit 14 energy conservation measures were identified with an annual energy saving potential of 18.47 Million PKR with an investment of only 3.31 Million PKR at Payback of 3 Months.

For 4 months the consultant assigned by ESPIRE Energy monitored and supported implementation, documented the progress and quantified the realized cost savings.

"Working with ESPIRE in energy audit is much fruitful for us. By working on their suggestions we are continuously improving which is not only helping us in decreasing our cost but also helping in purifying our environment."

Mr. Satwat Kaleem Qureshi

Achievements

Al Badar Engineering implemented 5 improvement measures identified during Energy Audit within 4 months which resulted in annual energy savings of 7.38 Million PKR with an investment of only 0.84 Million PKR at a 2 months payback time.

The company has established an Energy Policy with clear goals and objectives for improving the energy efficiency. An Energy Team; led by Mr. Zamir-ul Hassan Assistant Manager Maintenance; has been formed which continuously monitors the Energy Performance Indicators.

ENERGY SAVING MEASURES [implemented within first 6 months]	ENERGY SAVING [M-PKR/year]	INVESTMENT [M-PKR]
Control Compressed Air Leakages	4.15	0.00
Reduce Compressed Air Pressure to 6 bar, Install 7kW Inline Booster	1.52	0.6
Insulation of Hot Surfaces	0.38	0.03
PFI Capacitor Health management	1.33	0.21
Set Frequency limits on Generators	Improved Safety	0.0
TOTAL	0.165	0.017

M/S COMBINED FABRICS – SAVE MORE BY RE-INVESTING THE SAVINGS

Background

M/s Combined Fabrics Pvt. Ltd. is a WRAP certified vertically integrated Knit Apparel Manufacturing Unit situated in Lahore, Pakistan. The company produces international standard apparel for international buyers. The average electricity consumption of the company is 1000 kW per Hour and steam generation capacity of 12 Tons per Hour.

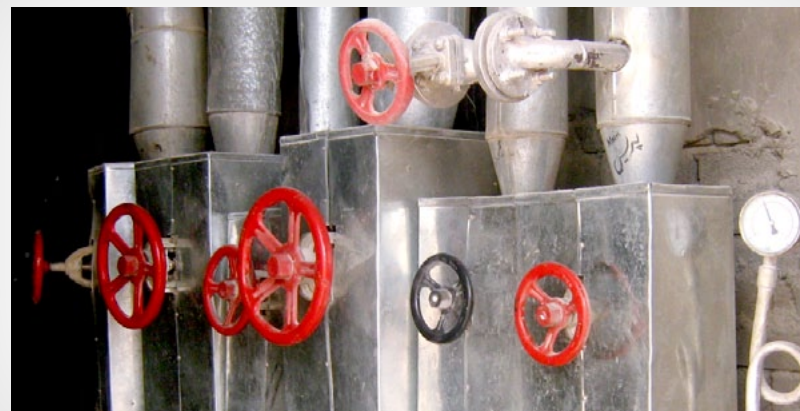
ESPIRE Intervention

In October 2011, Mr. Sheikh Tariq Mahmood, Director, decided to avail services offered by ESPIREnergy (see description on the left).

Through Energy Audit 28 energy conservation measures were identified with an annual energy saving potential of 6.1 Million PKR.

An Energy Information Software was installed, an Energy Management System developed and an Energy Team formed and trained to monitor and improve energy use without external support.

For 6 months the consultant assigned by ESPIREnergy monitored and supported implementation, documented the progress and quantified the realized cost savings.



Insulated steam valves

"This energy audit has opened our eyes to new and innovative avenues of energy efficiency. We have already conserved a lot of energy."

Mr. Sheikh Tariq Mahmood
Director, Combined Fabrics

Achievements

Combined Fabrics implemented 7 improvement measures identified during Energy Audit within 6 months which resulted in annual energy savings of 2.35 Million PKR with an investment of only 0.62 Million PKR and a 3.2 months pay-back time.

The company has established an Energy Policy with clear goals and objectives for improving the energy efficiency. An Energy Team; led by the Director himself; has been developed which continuously monitors the energy performance.

In addition to saving potential identified from the Energy Audit, the Energy Team of Combined Fabrics improved their hot water system resulting in energy savings of 2.3. Million PKR.

ENERGY SAVING MEASURES [implemented within first 6 months]	ENERGY SAVING [M-PKR/year]	INVESTMENT [M-PKR]
Boiler Tuning – Control of excess air	1.045	0.0
Repairing of steam leakages	0.2	0.0
Operate HT switch at transformer during off load	0.18	0.0
Replacing inappropriate steam traps	0.88	0.1
Insulation of steam headers	0.046	0.005
Installation of sub-meters	N/A	0.515
Improving hot water system	2.3	2.5
TOTAL	4.651	3.12

M/S DELTA GARMENTS – REDUCING ENERGY SHARE IN MANUFACTURING COST

Background

M/s Delta Garments Ltd. professional Jeans manufacturing and exporting company. Since the inception in 1992, Delta Garments has acquired an outstanding reputation with their customers and with industries all over Pakistan as a company that values corporate ethics and the relationships it builds with its clients, vendors and employees. The average electricity consumption of the company is 500 kW per Hour and steam generation capacity of 2 Tons per Hour.

ESPIRE Intervention

In October 2011, Mr. Sajid Saleem Minhas, CEO, decided to avail services offered by ESPIREnergy (see description on the left) and thus the company was nominated by Pakistan Readymade Garments and Exporters Association (PRGMEA).

Through Energy Audit 20 energy conservation measures were identified with an annual energy saving potential of 1.63 Million PKR with an indicative investment of 0.73 Million PKR.

An Energy Information Software was installed, an Energy Management System developed and an Energy Team formed and trained to monitor and improve energy use without external support.



Boiler Exhaust Waste Heat utilized in Wood Furnace

"We have realized that with all physical systems in place we never paid attention to the health of the components which has a significant effect on costs. We feel that after this project we have started communicating with the components more effectively to ensure that they are healthy."

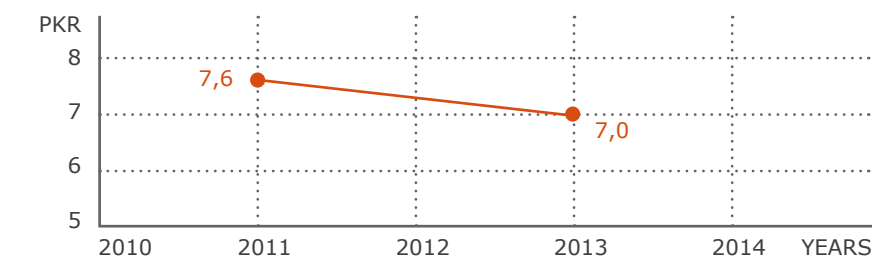
Mr. Sajid Saleem Minhas
CEO, Delta Garments Ltd.

For 6 months the consultant assigned by ESPIREnergy monitored and supported implementation, documented the progress and quantified the realized cost savings.

Achievements

Delta Garments implemented 5 improvement measures identified during Energy Audit within 6 months. The intervention resulted in Energy Savings of 0.9 Million PKR per annum with an investment of merely 0.15 Million PKR. The savings have translated into reduction of average steam cost on wood from 7.60 PKR per Garment to 7.00 PKR per Garment.

The company is very concerned about the energy costs. Being a volume producer and a mid sized factory the cost of energy bears heavily on profit margins. For this the company has developed a reporting system that monitors energy cost on a daily basis and management intervention is done where improvements are needed. The company has established an Energy Policy with clear goals and objectives for improving the energy efficiency. An Energy Team; led by Mr. Zamir-ul Hassan Assistant Manager Maintenance; has been formed which continuously monitors the Energy Performance Indicators.

Steam Cost [PKR per Garment]



Star-delta drive installed on Ring Frame

Background

M/s Asli Pari is a textile processing unit situated in Federeal B. Industrial Area, Karachi, Pakistan.

The company produces international standard sewing threads (cotton and polyester) for local market.

ESPIRE Intervention

In November 2011, Mr. Muhammad Irfan, Director Asli Pari, decided to avail services offered by ESPIREenergy (see description on the left).

Through Energy Audit 15 energy conservation measures were identified with an annual energy saving potential of 3.8 Million PKR.

An Energy Information Software was installed to enable the company to continuously monitor its energy consumption and costs.

An Energy Team was formed and trained and an Energy Management System developed to enable the company to reduce its energy consumption further without external support.

"We started with implementation of the first energy measure right after the Energy Audit. The results were so convincing that we duplicated the measure on other machines."

Mr. Muhammad Irfan
Director, Asli Pari

For 6 months the consultant assigned by ESPIREenergy monitored and supported implementation, documented the progress and quantified the realized cost savings.

Achievements

Asli Pari implemented 6 improvement measures within 6 months which resulted in annual energy savings of 2.75 Million PKR with an investment of only 0.58 Million PKR and a 2.5 months payback time.

To further improve the energy efficiency Asli Pari has developed an Energy Policy and developed an energy team which is monitoring energy consumption and implementing energy saving measures without external support.

ENERGY SAVING MEASURES [implemented within first 6 months]	ENERGY SAVING [M-PKR/year]	INVESTMENT [M-PKR]
Insulation of steam lines	0.333	0.200
Installation of star delta drives on ring spinning	0.446	0.310
Boiler Tuning to increase Combustion Efficiency	1.823	0.060
Repairing of ineffective insulation	0.044	0.0
Boiler surface insulation	0.030	0.006
Repairing of steam leakages	0.071	0.0
TOTAL	2.747	0.576

Background

M/s Metrotex Industries is a Garment stitching factory in export business situated in S.I.T.E. area, Karachi, Pakistan.

The company manufactures and exports international standard apparel while complying to international standards on quality and social compliance.

ESPIRE Intervention

In May 2012, Mr. Sarfaraz Khan Qaim Khani, Chief Executive Metrotex, showed his interest in Espireenergy in order to improve Energy Efficiency at Metro tex.

Through Energy Audit 6 energy conservation measures were identified with an annual energy saving potential of 0.627 Million PKR.

An Energy Team was formed and trained to ensure sustainability at the company to reduce its energy consumption further without external support.

For 3 months the consultant assigned by ESPIREenergy monitored and supported implementation, documented the progress and quantified the realized cost savings.



Light Management at Stitching Floor

"We are fully satisfied about the Energy audit & its outcome. We appreciate the services & efforts of ESPIRE for Energy saving and hope it will be beneficial for Industries as well as for our beloved Homeland."

Mr. Sarfaraz Khan Qaim Khani
Chief Executive, Metrotex

Achievements

Metrotex implemented 4 improvement measures within 3 months which resulted in annual energy savings of 0.532 Million PKR with an investment of only 0.019 Million PKR and a payback time of less than a month.

To further improve the energy efficiency Metrotex has developed an energy team which is monitoring energy consumption and implementing energy saving measures without external support.

ENERGY SAVING MEASURES [implemented within first 6 months]	ENERGY SAVING [M-PKR/year]	INVESTMENT [M-PKR]
Repairing Steam Leakages	0.018	0.0
Cleaning of Exhaust Fan	0.024	0.0
Lighting Management	0.31	0.0
Replacement of Lights	0.18	0.019
TOTAL	0.532	0.019

Background

Established in 1989, Rajby Industries is a vertically integrated garment manufacturing organization. Rajby Industries has been a pioneer and market leader in manufacturing of woven bottoms with specialty now in Denim Jeans and Casual Bottoms, which are principally exported to some of the top and distinguished garment houses in North America and Europe. In an effort to strive for higher level of energy efficiency and cost control, Rajby Industries, General manager, Mr. Atiq Kochra, contacted bfz to take benefit from Espire energy.

ESPIRE Intervention

Through Energy Audit 26 energy conservation measures were identified with an annual energy saving potential of 10.393 Million PKR. Energy Management System was developed to enable the company to reduce its energy consumption further without external support. For 6 months the consultant assigned by ESPIREnergy monitored and supported implementation, documented the progress and quantified the realized cost savings.



Steam Flow Meter Installed

"The initiative is very useful and at perfect time due to prevalent energy crisis and rise in energy cost. Their consultants are professional and focused that has helped in successful implementation at our Unit."

Mr. Atiq A. Kochra
General Manager, Rajby Industries

Achievements

Rajby Industries implemented 16 improvement measures within 6 months which resulted in annual energy savings of 3.903 Million PKR with an investment of only 0.755 Million PKR and a 2.32 months payback time.

To further improve the energy efficiency Rajby Industries has developed an Energy Policy and developed an energy team which is monitoring energy consumption and implementing energy saving measures without external support.

ENERGY SAVING MEASURES [implemented within first 6 months]	ENERGY SAVING [M-PKR/year]	INVESTMENT [M-PKR]
Boiler Tuning to increase combustion Efficiency	1.160	0.06
Fixing Steam Leakages	0.843	0.00
Insulating Valves	0.671	0.428
Managing Lights & Using Efficient Lights	0.368	0.109
Repairing compressed Air Leakages	0.273	0.0
Insulating Steam Lines	0.195	0.065
Insulating Condensate Lines	0.194	0.086
Fixing Steam Traps	0.172	0.0
TOTAL	3.876	0.748



Insulated steam pipes

Background

M/s Soorty Garments Apparel is a leading garments manufacturer situated in K.A.T.I. Karachi, Pakistan, producing highest quality of fashion garments for three decades. Soorty Garments Apparel has been manufacturing for world leading brands and is adhering to international standards like ISO 9001:2008, WRAP, SA 8000, OEKO TEX 100, and GOTS.

ESPIRE Intervention

Energy efficiency has been identified as another important topic and the management of Soorty Garments Apparel decided in January 2012 to avail services offered under Espire energy.

Through Energy Audit energy conservation measures were identified with an annual energy saving potential of 4.537 Million PKR. An Energy Information Software was installed to enable the company to continuously monitor its energy consumption and costs. Energy Management System was developed to enable the company to reduce its energy consumption further without external support. For 6 months the consultant assigned by ESPIRE energy monitored and supported implementation, documented the progress and quantified the realized cost savings.

"Energy Conservation is important as saving energy means saving money by lowering the energy bill. But energy conservation is also important from an environmental perspective. Reducing energy consumption leads to reduced greenhouse gas emissions thus helping to prevent climate change."

Mr. Sarfraz Cheema
General Manager Soorty

Achievements

Soorty Garments Apparel implemented 7 improvement measures within 6 months which resulted in annual energy savings of 3.345 Million PKR with an investment of only 1.138 Million PKR and a 4.08 months payback time.

To further improve the energy efficiency Soorty Garments Apparel has developed an Energy Policy and developed an energy team which is monitoring energy consumption and implementing energy conservation measures without external support.

ENERGY SAVING MEASURES [implemented within first 6 months]	ENERGY SAVING [M-PKR/year]	INVESTMENT [M-PKR]
Boiler Tuning to increase combustion Efficiency	0.33	0.06
Insulation of Condensate return and Steam Lines	0.429	0.178
Repairing of Ineffective Insulation	0.216	0.15
Repairing of Steam Leakages	0.225	0.0
Condensate Recovery	1.33	0.025
Management of Unnecessary Lights	0.39	0.0
Repairing compressed Air Leakages	0.425	0.0
TOTAL	3.345	0.413

3.ESPIRE Green and it’s Successes Stories



SMALL CHANGES.
GREAT RESULTS.

THESE SERVICES HELP INDUSTRIES TO IMPROVE THEIR ENVIRONMENTAL PERFORMANCE AND PROFITABILITY. INDUSTRIES ARE LEVERAGING THEIR OWN EFFORTS TO ATTAIN COMPETITIVENESS, REDUCE ENVIRONMENTAL POLLUTION AND THUS REDUCE COSTS:



Chemical Management (CM) Assessment to identify Waste Streams and risks in Chemical Flow and recommendations for Risk Mitigation and Wastage Reduction



Productivity Assessments to analyze Process and Material Flows, identify Production Wastes and recommendations for improving productivity



Resource Efficiency (RE) Assessment to identify Waste Streams in processes and facilities and recommendations for Wastage Reduction through Good Housekeeping



Training of Companies on Green Productivity issues such as Health, Safety, Environment etc. to build an enabling environment for sustainability

3.1

M/S RUSTAM TOWEL – SAVING ENVIRONMENT AND REDUCING COST

Background

M/s Rustam Towel Pvt. Ltd. is a premier manufacturer and exporter of high quality Towels. Major operations of the company are Towel Weaving, Yarn Dyeing, Towel Dyeing and Stitching. The company already has an operational waste water treatment plant.

ESPIRE Intervention

In January 2013, Mr. Zaka Ullah Dogar, Director, showed interest in the Green Productivity (GP) Assessment to bfz through services offered by ESPIREgreen (see description on the left).

The services of 02 GP experts from CITEVE Portugal; Ms. Maria Carvalho and Mr. Renato Dias; were hired for the purpose by bfz in February 2013. The experts along with a group of local consultant of ESPIREgreen conducted GP Assessment (CP Assessment and Productivity Enhancement) at Rustam Towels which was completed by the assigned local consultants after the experts departed.

25 improvement measures were suggested in the GP Assessment (16 CP & 09 Productivity) with an annual saving potential of 13000 Tons Water and 30% reduction in Dyeing Process Time resulting in annual saving of 74.93 Million PKR



New Condensate Return System

"This was a very good experience for our company. Reduced water consumption and increased productivity have brought us enormous savings. We are committed to invest more on green productivity in near future"

Mr. Zaka Ullah Dogar
Director, Rustam Towels Pvt. Ltd.

For 6 months the consultant assigned by ESPIREgreen monitored and supported implementation, documented the progress and quantified the realized cost savings.

Achievements

Rustam Towels implemented 09 improvement measures (05 CP, 04 Productivity) identified during GP Assessment within 6 months which resulted in annual savings of 3185 Tons of Water and 30% reduction in Dyeing Process Time resulting in annual saving of 10.2 Million PKR with an investment of only 1.45 Million PKR at a 2 months payback time.

GP MEASURES [implemented within first 6 months]	ANNUAL SAVING [M-PKR]	INVESTMENT [M-PKR]
Productivity Improvement in Towel Stitching	0.84	0.0
Steam Pipeline Insulation	1.8	0.4
Condensate Recovery	6.48	0.25
Improve heat exchange by Increasing Steam Pressure	Process time 30% reduced	0.0
Repair Steam Leakages	1.08	0.05
Installation of Steam Flow Meter	0.0	0.75
TOTAL	10.2	1.45

Background

M/s AB Mauri operates globally in yeast and bakery ingredients production with 52 plants in 26 countries, supplying plant and artisanbakers and the food service and wholesale channels. It is a technology leader in bread improvers, dough conditioners and bakery mixers.

ESPIRE Intervention

In February 2014, bfz gGmbH in collaboration with the Small & Medium Enterprises Development Authority (SMEDA) launched a certification training on Lean Six Sigma Green Belt for local industry.

The services of Six Sigma expert from VRI USA (Pakistan Chapter), Ms. Bilquis Yasmeen, were engaged for the purpose. The expert conducted an extensive 10 day training which was attended by 17 participants from 8 companies including Mr. M. Nasir Ahmed (Manager Production AB Mauri). The participants were assigned projects of Lean Six Sigma in their respective companies as a Lean Six Sigma Green Belt Certification requirement.

AB Mauri selected two projects for Lean Six Sigma: (i) Fresh Compressed Yeast (FCY) Production Process Optimization; (ii) Reduction of Packing Cycle



Yeast Production Plant – AB Mauri

"It was a new experience of how industries in Pakistan can improve their outcome significantly by improving their production process. Management Commitment and Employee ownership are keys to continuous improvement."

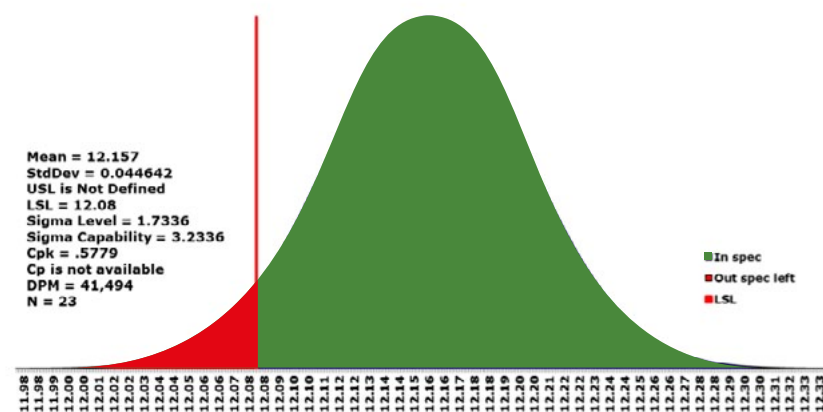
Mr. Aslam Karimi
GM, AB Mauri Pakistan (Pvt.) Ltd.

Time of Fresh Compressed Yeast (FCY). For 6 months the expert monitored the implementation of the projects at AB Mauri, and guided in documenting the progress and quantifying the realized cost savings.

Achievements

AB Mauri identified the root causes of variance in the Fresh Compressed Yeast production process and achieved the production increase of 9.2% and variance reduction of 90% by controlling variance in Process Parameters and developing Standard Operating Procedures. A 29% reduction in Cycle Time of Fresh Compressed Yeast Packing was achieved with variance reduction of 72% by standardizing the process parameters, increasing the speed of processes and improving conditions for workers.

The projects resulted in cumulative annual saving of 16.3 Million PKR with an investment of only 1.5 Million PKR at a 2 month payback time.

Improved FCY Production Process

Improved Design to Reduce Spillage

Background

M/s Pesticides Formulation Industries (PFI) Pvt. Ltd. is an industry leader in the formulation of granular pesticides. The company primarily focuses on the automation to control the processes. With an experienced team and state of the art facility, the company has placed itself as a leader in innovation and quality.

ESPIRE Intervention

In February 2014, bfz gGmbH in collaboration with the Small & Medium Enterprises Development Authority (SMEDA) launched a 10 day training on Lean Six Sigma Green Belt certification for local industry. Mr. M. Hamza Bajwa (Director, PFI) attended the training and was assigned to design and implement a Lean Six Sigma project in his company.

PFI selected three projects for Lean Six Sigma; (i) Reducing Material Wastage in Pesticide Granule Formulation; (ii) Leaning the Information Flow of Quality Test Results; (iii) Material Saving by reducing Over Filling in final bags. For 6 months the Lean Six Sigma expert Ms. Bilquis Yasmeen from VRI USA (Pakistan Chapter) monitored the implementation of the projects at PFI, and guided in documenting the progress and quantifying the realized cost savings.

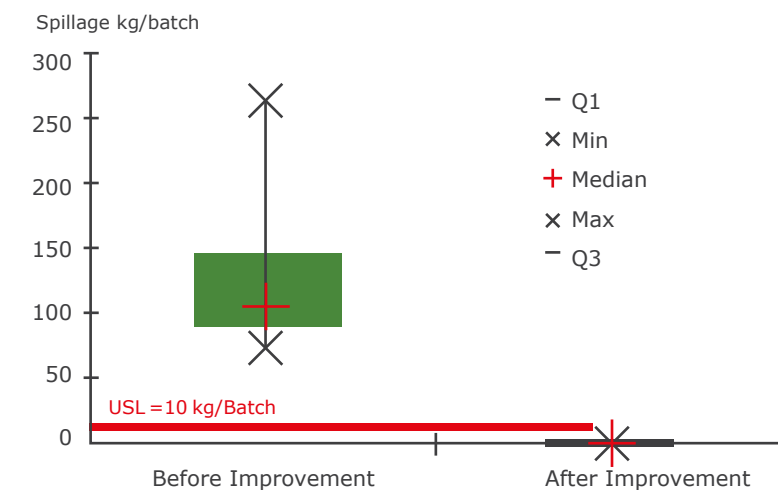
"If you want to improve, you have to measure first. Measurement leads to understanding and controlling the processes eventually."

Mr. M. Hamza Bajwa
Director, Pesticides Formulation Industries Pvt. Ltd.

Achievements

PFI managed to reduce material loss due to spillage by 98% by improving maintenance and housekeeping practices. A 86.7% reduction in Information Flow Lead Time of pesticide formulation testing lab was achieved by reducing documentation requirements and developing an ERP software. Variance in Overfilling of final bags was reduced by 84% by standardizing the process parameters and training of staff.

The projects resulted in cumulative annual saving of 2.63 Million PKR with an investment of only 0.05 Million PKR at a 7 day payback time.

Reduction in Material Spillage

Background

M/s Al-Hadeed Industries (Private) Limited is a diversified engineering Company which has been manufacturing customized products for various national & multinational customers with the help of wide range of In-House facilities and a well-trained, experienced & dynamic team.

ESPIRE Intervention

In February 2015, Mr. Masood Abbas Khan, Director, showed interest in the Productivity Assessment services offered by ESPIREgreen (see description on the left).

During a Productivity Assessment the production line of the main component was selected for having highest monetary impact for the company. Through the assessment, opportunities for cycle time improvement and defect reduction were identified at three stations.

A Team was formed and trained to ensure sustainability at the company to improve productivity further without the need of external support.

For 3 months the consultant assigned by ESPIREgreen monitored and sup-



Improved Welding Process

"This initiative is really useful and of great timing. Our company has really benefitted through the project and we are able to increase our productivity without any extra investments"

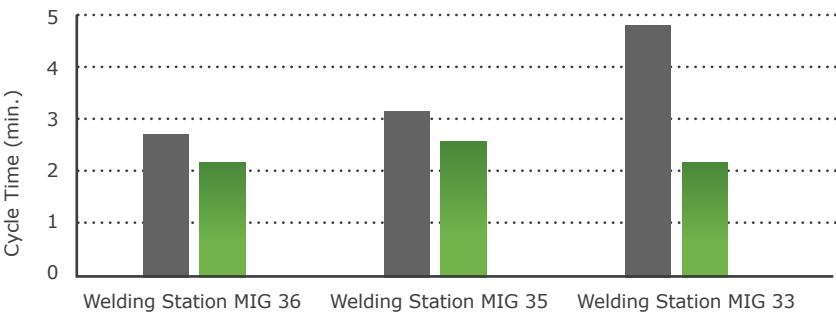
Mr. Masood Abbas Khan
Director, Al-Hadeed Industries

ported implementation, documented the progress and quantified the realized cost savings.

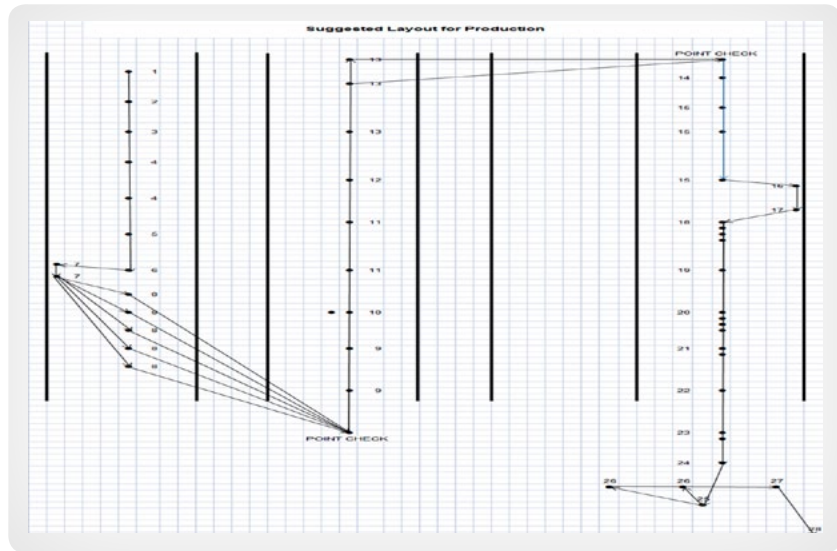
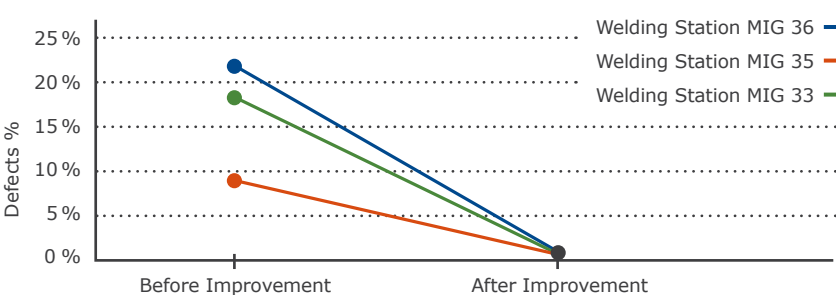
Achievements

Al-Hadeed achieved improvement in quality and reduction in cycle time at all selected stations which resulted in annual cost reduction of of 3.9 Million PKR without any investment.

Cycle Time Reduction



Quality Improvement



Improved Design to Reduce Spillage

Background

M/s MEB is a group of companies engaged in the manufacturing and exporting of quality knitwear, apparels and other textile products. Established in 1988, it has been growing consistently & continuously improving, enhancing its services and quality of systems & products.

ESPIRE Intervention

In March 2013, Mr. Babar Khan, Director, showed interest in the Green Productivity (GP) Assessment services offered by ESPIREgreen (see description on the left).

For this purpose, a team of three ESPIREgreen Consultants was assigned to the factory. During the GP Assessment improvement potential was identified in Energy Efficiency, Productivity Enhancement and Occupational Health and Safety.

"ESPIRE's team was really proficient and supportive. They have helped us identifying hidden problems and supported us to remove them. We have chieved enormous improvements."

Mr. Babar Khan
Director, M.E.B.

A Team was formed and trained to ensure sustainability at the company to improve productivity further without external support.

For 3 months the consultant assigned by ESPIREgreen monitored and supported implementation, documented the progress and quantified the realized cost savings.

Achievements

MEB were able to reduce transportation of product by 70% [from 500 meters to 152 meters] by rearranging the layout of stitching department.

Implementation of other improvement measures resulted in annual savings of 2.55 Million PKR with an investment of only 0.35 Million PKR at payback time of less than two months.

Safety at workplace was also improved by the isolation of boilers near emergency exits and creating awareness in workers through trainings.

GP MEASURES [Implemented within first 6 months]	ANNUAL SAVING [M-PKR]	INVESTMENT [M-PKR]
Rework and Rejects	2.1	0
Installation of Servo Motors	0.25	0.3
Installation of Electronic Ballasts	0.2	0.05
TOTAL	2.55	0.35

4. Benefits for companies at a glance

High quality guaranteed: bfz gGmbH selected, trained and monitored the consultants!

BENEFITS FOR ESPIREenergy



SAVE MONEY IN SHORT-TERM

Proven record of energy savings between 5-10% within 6 months!



SAVE MONEY IN THE LONG RUN

Through training of your staff and implementation of an Energy Management System your company can further reduce energy costs without external support!



COST CONTROL

Implementation of Energy Information System enables you to monitor your energy consumption and costs in real time!



COMPETITIVE ADVANTAGE

Production costs and dependency on energy providers reduced compared to competitors!

BENEFITS FOR ESPIREgreen



HIGH QUALITY GUARANTEED

bfz gGmbH selects, trains and monitors consultants!



PRODUCE MORE BY USING LESS

Reduce your production costs by minimizing input of raw materials and reducing wastages in materials, water, time, space etc.



IMPROVE MANAGEMENT AND PROCESSES

Improve your production processes and get your staff trained to lift your efficiency on the next level.



COMPETITIVE ADVANTAGE

Prepare for compliance with international environmental and social standards and thus get access to new markets.

APPROVED CONSULTANTS - PUNJAB ZONE

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SBS Pak	Saif Ullah Farooqi	Occupational Health & Safety	saif.farooqi@sbs.org.pk

** Please note that it only reflects those services that form part of ESPIRE service portfolio. Consultants also offer other services with different focus that are not included here.*

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** Please note that it only reflects those services that form part of ESPIRE service portfolio. Consultants also offer other services with different focus that are not included here.*

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SUCCESS STORIES OF PROJECT ESPIRE

The Federal Ministry for Economic Cooperation and Development of the Federal Republic of Germany supports institutional development projects worldwide between chambers and business associations with their counterparts in Germany, in favour to support the development of SME companies.

ESPIRE was a partnership project between the Training and Development Centers of the Bavarian Employers' Association (bfz) gGmbH and business associations in Lahore and Karachi in Pakistan. It started in 2008 in Karachi and was extended to Lahore, Punjab in 2011. The project ended on 15th of May 2016.

The objective of ESPIRE project was to support industries in Pakistan to work economically more efficiently and ecologically more sustainable. To replicate the knowhow that was developed during the project between the years 2008 and 2016, several success stories were documented. In total 13 Pakistani companies, representing each sub-sector of Textile SME's, volunteered to document their success story.

This publication reports their experiences to share them with other companies who are interested in implementing Energy Efficiency and Cleaner Production measures.