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Quality Analysis for uPVC pipes

by

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This thesis was submitted to the department of Chemical and Process Engineering of the University of Moratuwa in partial fulfillment of the requirements for the Degree of Master of Science in Polymer Technology

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Srilanka

March 2003

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Abstract

There is no doubt that quality has become a major feature in the survival plan of many companies today. Each company employee must be committed to the use of effective methods to achieve optimum efficiency, productivity, and quality to produce competitive goods. Statistical Process Control (SPC), in its broad sense, is a collection of production methods and management concepts and practices that can be used throughout the company. SPC involves the use of statistical signals to identify sources of variation, to improve performance, and to maintain control production at higher quality levels.

This work investigates the implementation phase of SPC in a company, which produce rigid unplasticized poly vinyl chloride (uPVC) pipes for cold water supplies. SPC techniques were used to identify the variations of finished pipes quality parameters and quantify these variations. Stepwise approach was initiated to control the processes and uplift the quality of the finished pipes. Selected processes were monitored, analyzed and improved through multi-disciplinary process actions teams. By using awareness and pilot project phases SPC was successfully implemented in a pipe extrusion line.

Process flow chart was used to define variable and attribute data of pipe extrusion line. Flow chart was helped to control and minimize external causes to a great extent. Internal and external customer satisfaction was achieved due to through monitoring of variable and attribute data from the incoming raw materials to finished pipe storage. Root causes for variations in the extrusion line were studied through detailed cause and effect relations. Improvements were initiated by treating to the root causes. Using control charts out of control situations were identified and out of control action plan was prepared to take prompt actions. Accuracy of the testing methods and calibration of measuring equipments were given more attention at each process step. From planed control charts PATs managed to obtain well-described measurements, knowledge on process control and detection of process disturbances, product assurance, knowledge on the level of control of the process, and control limits for process inherent variation.

Improvements in uPVC pipe quality and consistency was achieved through the use of SPC. This step was not easily or quickly achieved. It required extensive training at all levels, considerable planning, and most importantly, the consistent support of upper management in committing the manpower and funds to make it happen.

Acknowledgements

I kneel down with gratitude before many, who criticized, argued, advised, guided and encouraged me throughout in making this a success.

- ❖ **Mr. K. Subramaniam**, M.Sc. Course coordinator, Polymer Division, Department of Chemical and Process Engineering, for many eye opening discussions I had with him and for valuable advise given to me at the initial stages.
- ❖ **Dr. Shantha Amarasinghe**, Senior Lecturer, Department of Chemical and Process Engineering, my supervisor: for lengthy discussions and inspirations given to me when I needed it most and giving me valuable advice and hints during the draft stages to make this a success and for correcting the draft.
- ❖ **Dr. Jagath Premachandra**, Senior Lecturer, Department of Chemical and Process Engineering, and **Ms. Shantha Maduwage**, Lecturer, Department of Chemical and Process Engineering, for their assistance in searching for a company to carry out the project.
- ❖ **Mr. Gamini Darmawardana**, Assistant Director, Srilanka Standards Institution, and **Mr. Sujeewa Mahagama**, Quality Assurance Officer, Srilanka Standards Institution, for providing me with necessary information to select a company to initiate the project.
- ❖ **The Managing Director, Factory Manager, Quality Assurance Executive, Quality Assurance Assistants and all the staff at the factory** for providing me with necessary data, discussions and granting permission to carry out the project in their premises.
- ❖ My dear friends **Erosh, Sydney, Prashantha, Chandana, Ruwan, and all others**, who have become a source of help, assistance and encouragement at my needy moments.
- ❖ **Equity Investments Lanka Ltd.**, My Employer, For granting leave and all assistance
- ❖ Last but not least, **my beloved wife Masha, her parents and my parents**, who were like my shadow, ready to help me at a moment of notice be it night or day, for their continuous guidance, encouragement and blessings given at all times.

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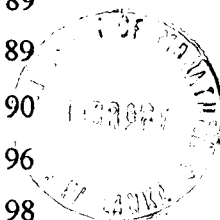
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