When is Accreditation and Quality Assurance Systems not enough to guarantee accurate analysis?

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Concrete is the most used material on earth and the essential ingredient is cement. As the construction industry developed in level of sophistication in design and engineering, the demands placed on cement manufacturers increased. Today complex mix designs are used to prepare a concrete for a specific application and the client demands consistency and strength performance from the cement. In the production of cement it is the manufacturer's task to ensure that the properties of cement are kept at a certain level, with variations as small as possible to meet the standard specifications and to comply with the demands and needs of the market. This implies that variability in material composition and processing throughout the manufacturing process must be minimised.

In South Africa, Cement is manufactured to the specifications of the European standard, EN 197-1 for Common cements (SANS 50197-1, SANS 50197-2). The standard covers cement types based on composition and strength classes, with specifications for performance and conformity criteria (South African Bureau of Standards, 2000; 2004; 2011). PPC Group Laboratory Services are also ISO17025:2005 accredited, but as a company PPC is striving not just for conformity but operational excellence and in this paper the internal systems and procedures aimed at continually improving performance over the long term will be addressed.

Instead of using quality control as a reactive process where products and processes are tested and action taken when these are found to be outside specifications, a pro-active approach where quality is the golden thread running throughout the entire process is the approach taken. Effective quality control ensures continually improving performance – but we need quality control on our test methods too and this is what will be addressed in this paper. Being accredited certifies that you have quality systems in place and that you do what you say you do, but unless daily quality checks becomes part of a laboratory’s genetic makeup, the accreditation certificate is just that, a piece of paper.

The real value add of a good quality system is when you have confidence in your analytical results, and can thus use the data with the assurance that process decisions made on the analytical data is of a sound base. This makes it easier to trouble shoot problems in both the laboratory and the process. It also enables data mining to optimise processes and reduce standard deviations on process controls. To do this, control systems for all your analytical methods and data needs to be in place and case studies will be used in this paper to provide examples.