

Reducing Insulation Consumption Through Off-Line Measurement

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Save up to 5% on insulation material costs by using modern and effective tools.

It is imperative to control manufacturing costs in today's competitive wire and cable market. Proper and accurate measurements and sampling of insulated wires and cables is required by UL standards, and there are numerous methods for accomplishing this. While manual off-line insulation sample measurements are common practice, it must be understood that these measurements are time consuming and inaccurate by 5% to 7%.

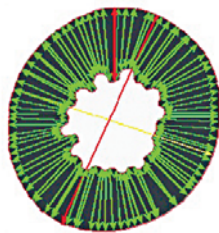
Today's technology allows us to measure insulation samples within one to three seconds, with an accuracy of 0.2%. **ACM AB** of Sweden, which is represented in North America by **HOWAR Equipment**, manufactures KSM offline insulation measurement equipment that has been adopted by many of today's leading wire and cable manufacturers.

Over the past years, many collaborative studies with European and American factories have provided great insight into how effective these units are at helping manufacturers save up to 5% of their raw insulation materials by reducing their wall thicknesses through careful and accurate measurements and corrective actions.

Off-Line vs. On-line Measuring

The most important thing to understand is that the off-line measurements are by no means a way to replace on-line measurements. Quite to the contrary, as off-line measurements are used to calibrate and verify the operation of the on-line equipment. The main difference between the two systems is the amount of measurements that are conducted and to what detail each system can accurately determine true insulation values.

On-line equipment uses only two or three axes to control the insulation, and it averages values over a set of readings. The off-line version takes an infinitely more accurate digital image of the actual sample slice, utilizing an average of 300 measurements to obtain a detailed and precise result of the sample, no matter how complex the shape may be.

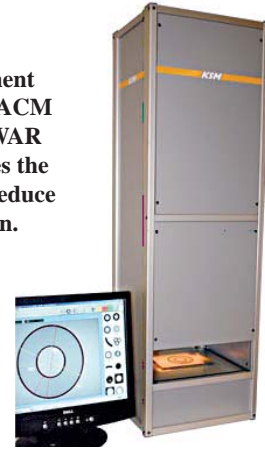


Cross measurement made with off-line equipment.

Manual vs. Electronic Measuring

Habits are hard to break, but when new and more effective tools become available we must look at these with an open mind as tools which will only simplify our processes. For many years QA labs in wire and cable factories have employed and still employ various manual methods to measure insulation samples coming from cables produced on the factory floor. These methods are only relatively accurate (within 5% to 7%) and do take quite a while to complete. The discrepancy of measurements is not a fault of the person performing the measurements, but

KSM off-line measurement system manufactured by ACM and available from HOWAR Equipment Inc., simplifies the measurement process to reduce insulation consumption.



rather a limitation of the tools being used.

The new electronic versions of sample measurement can be completed within one to three seconds to an accuracy of 0.2% each and every time. This leaves the QA team with more time to analyze the variations, and to then effectively address and correct the problems.

Trends & Specifications

Quality control is a means to verify that the machinery and operators are manufacturing products as specified. The measuring and sampling of products is only a small part of the QA lab. These measurements will not do the company any good, unless something is done with the results.

All information obtained through the use of the KSM measurement system is easily stored in various formats for future reference and current analysis. By storing information about products and machines, one can create a very accurate picture of the manufacturing process over time, and any problems will be visually identifiable.

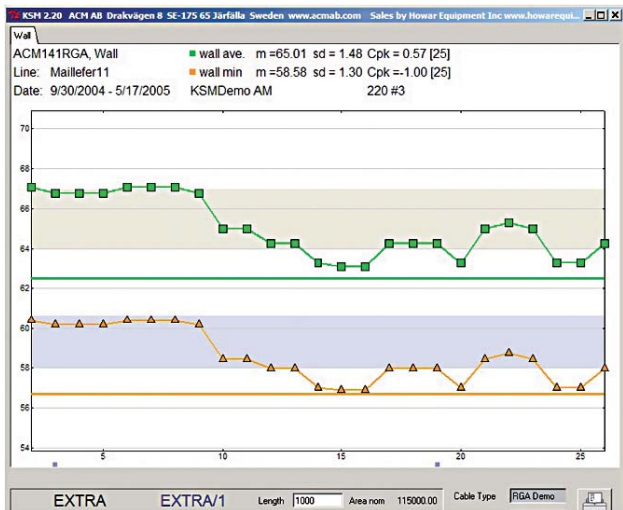
Using Measurements to Reduce Costs

Once measurements have been taken, one needs to analyze the measurements and use the results to improve the production process. Through close collaboration with factories, it has been made clear that the implementation of a computer-aided KSM off-line insulation measurement unit can help factories reduce their raw material consumption by up to 5%, sometimes even more. This is done by fine tuning the extruders to insulate as close as possible to the minimum required wall thickness, thus not giving free insulation away.

The close collaboration between extrusion operators and the QA team will allow the fine tuning of the extrusion process for each product and each machine.

Records Keeping

An added benefit that the fast measurement of samples provides is that each reel of cable which leaves the factory will have a quickly traceable compliance certificate available. These certificates are a handy and trustworthy tool for government



Trend screen generated with KSM off-line equipment.

agencies and customers who may question compliance of the product to the standards.

Moving Forward with New Technology

The adoption of new technology in a factory has to be a cumulative effort between the QA team, operators and management. The implementation of such a system will provide numerous new advantages only if all those involved are able

to understand the benefits and changes which will take place with the new equipment.

QA teams will have more time to evaluate, analyze and rectify issues instead of simply monitoring. They will now become much more involved in implementing solutions and improving the manufacturing process. Operators will work together with the QA team to implement over insulation in order to save on insulation material consumption.

In turn, management will be responsible to oversee the collaboration and implementation of a clear record keeping system which will promote easily accessible and worthwhile information which has the goal to reduce manufacturing costs and not increase paperwork.

KSM off-line insulation measurement units will help your factory become a leaner and more profitable manufacturing facility.

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Company Profiles:

HOWAR Equipment was founded to service the needs of the wire and cable manufacturing industry by providing high-quality machinery and accessories through its specialized quality-oriented European manufacturing partners.

www.howarequipment.com

ACM AB manufactures automatic off-line cable cross-section measurement machines designed to measure insulation cross-section, wall thickness, concentricity and extrusion trends.

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