

T27 Optical Quality control - INCORE

How it works

T27 groups optical quality control solutions based two-dimensional imaging and height measurement solutions based on optical technologies. Starting with a laboratory-based feasibility study on samples, the chosen technology can be implemented in a S2S or R2R pilot or production line in order to control and improve the quality in for example electrode coating, printing or calendering processes.

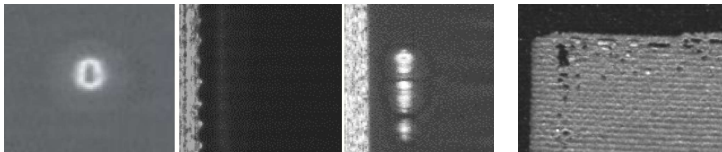
2D optical quality control

What can be seen?

[Industrial solutions provided by INCORE](#) perform for example dimensional control on each side (position of coatings, relative measurements)



and defect detection on Li-Ion or Zinc (right) electrodes.



Integration

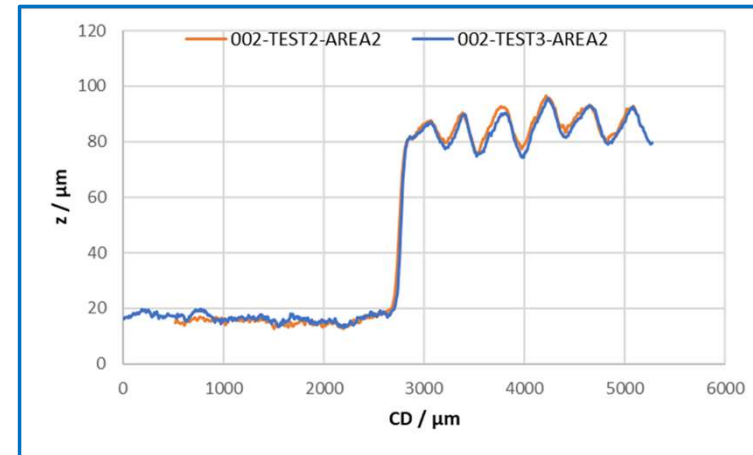
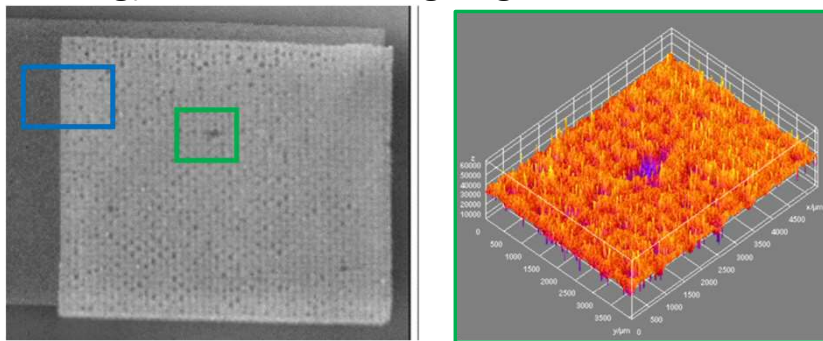
Depending on available integration space, INCORE either deploys Contact Image Sensors (very compact, top) or line scan camera(s) (bottom). The optical setup and resolution can be adapted to match process parameters (product type, production width and speed) and quality control demands (defect size and measurement accuracy)



3D optical quality control

What can be seen?

Shown from a TEESMAT project service user case ([Zinergy](#)) and acquired at 5x5 μm 2D resolution with a 550nm height resolution stereo vision camera, the printed electrode height profile is shown for area marked blue and a local defect for the area marked green. Similarly, the used technologies can for example be used to measure cross or machine (intermittent coating) direction coating edges for Li-Ion electrodes.



What technologies are used?

In the framework of TEESMAT project laser triangulation and Stereovision were implemented into the range of provided inspection solution. Technology, two-dimensional resolution (down to 5 μm), height accuracy (down to 0.55 μm) and inspection width are adjusted depending on the product, measurement specifications and production speed.



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What kind of sample ?

In this application sector two- and three-dimensional have been successfully used on Anodes and Cathodes batteries (Li-Ion, Zinc), separators, battery electrode foils and fuel cell electrodes.

Samples for the initial laboratory-based study should be in about A4 sheet format and be of production quality or exhibit production defects so that the framework of the dynamic study can be evaluated.

Investigation time-scale :

Laboratory based evaluation: Results within two weeks concluding on the feasibility of the requested measurement

Dynamic trials in production: Lead time for installation mostly depends on complexity of mechanical integration; measurements can be performed depending on needs over several days up to months

Why is it useful ?

Two- and three-dimensional measurements and defect control permit to detect and trace the variables responsible for cell performance variations.

It can be employed at all stages of the electrode production (foil, coating/printing, converting) to objectively judge production quality, improving production yield, shorting production ramp-up time and tracing performance.

Maturity level :

Industrial: two-dimensional imaging based quality control and traceability solutions.

Advanced: Three dimensional measurement techniques

