

DFM-ALPHA™

WITH INTELLIGENT CLOSED LOOP CONTROL

Coil coating is fast, typically running between 50 and up to 200 metres per minute. This means that any coating mis-measurements can be expensive. Imagine the savings, if the coater were at optimal settings 100% of the time.

Welcome to DJH Designs DFM-Alpha ... harnessing science, delivering perfection.

DFM-ALPHA™ - the world's first on-line paint thickness instrument featuring integrated closed loop control (CLC™). ALPHA™ adjusts the coater keeping product on specification. CLC™ continually monitors the coating thickness and at the first sign of drift the roll coater is adjusted. Coater adjustment is quick, precise and the product stays on target. Coater roll speed, metering roll speed, line speed and measured DFT are continually streamed to the advanced DFM-ALPHA algorithms. Paint properties within the coater related to viscosity, volume solids and coater roll leakage are derived in real time and used to precisely adjust the coater. Only DFM-Alpha provides this leading-edge capability. DFM-Alpha monitors coating thickness 24/7 and fine tunes the coater in the event of even the smallest drift and impressively it does this without the need for expensive or complex coater head modifications. This ability comes from Alpha's unique artificial intelligence. Your product will never be out of specification again. Set up the coater, start painting, dial up the target and let DFM-Alpha do the rest. DFM-Alpha quickly and continuously optimizes your coatings. CLC™ does this while safeguarding the quality of your paint finish. The coater roll is kept within strict parameters to maintain the high quality appearance and smoothness of the paint finish.

DFM Alpha and DFM-Ultra™ Performance Features

- Measurement accuracy is better than +/- 0.2 micrometres; multiple thicknesses readings are used to control average rolling thickness to +/- 0.1 micrometres.
- Measurements are independent of paint type, substrate type, colour or paint thickness - no calibration is needed to cover this broad product range.
- DFM accurately measures textured and wrinkle coatings and can characterize the peak to valley depth and spacing of these finishes.
- DFM measures coatings from 3µm to above 100µm.
- 2 units are typically installed on the top finish to measure both sides of the strip while most prime installation only require a single centrally mounted unit. Dual top finish units have active edge detection that will locate the edges of the strip to position the units correctly to accommodate for changes in strip widths. All units have Z height control and will retract to a safe distance to clear the strip splice.
- DFM-Alpha and DFM-Ultra are installed above a strip turn roll after the paint curing.
- DFM-Alpha and DFM-Ultra is designed with extremely low maintenance requirements. Typical life will be up to 20 years.

DFM Operation

At the start of every new coil the INTENSE MEASURE feature takes up to 40 precision measurements in the first 2 metres of painted product. Then DFM measures at user definable pre-programmed intervals, typically every 20 to 90 seconds. DFM communicates with the line PLC, so it knows when painting starts and when it stops. In AUTO mode DFM starts and stops measuring without operator involvement. Operation is simple - the only operator input needed is the TARGET THICKNESS.

Processed Data Status: License Agreement

Database: Reports:

Documed Coil Settings

Settings Standard Architectura

Repeat every 40 seconds

Next cycle starts after 0 secs

Intense Measurement

Target Thickness 0.55 mil

Scan Comments

Order Number Coil Number Comments/Colors

Stop Requires Painting I/P Painting

Line Speed 329.14

CLOSED LOOP CONTROL

CLC IS ON PVS% 42.00 CR/LS Min 1.68

CLC SETTINGS Leakage 0.05 CR/LS Max 1.25

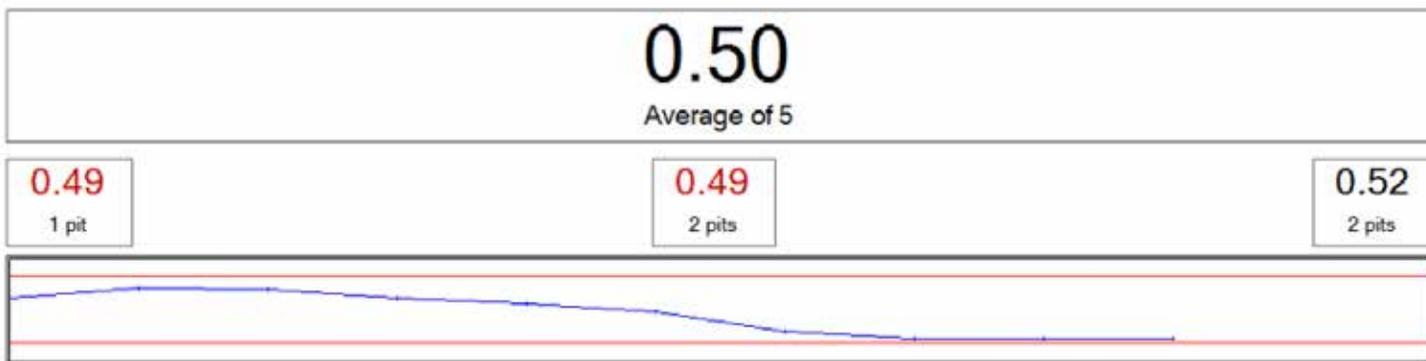
CLC LOGS Max CRS incr 5.0 Avg No 3

OUTPUTS

CR Speed **387.71**

New AvgDFT **0.57**

MIDDLE



The DFM software runs on a robust industrial computer and is licensed to the end user.

An annual software maintenance plan provides security, support, and ensures being up to date with the latest upgrades. Internet Access for the PC is required.

One or more remote monitors are supported via a VGA or HDMI interface.

Production Report Features

DFM software produces detailed PRODUCTION REPORTS and COIL REPORTS. All results are stored in an archival database that can be exported at the simple press of a button.

- The report can be customized for any time period whether a shift, a day, a week, or a month,
- The report can be automatically sent by the system to an email address, for example, the production manager can set it up to receive a daily email at a regular time,
- The report includes the stop and start time, line speed, painted strip length, and details of coating thickness for each coil during the period,
- The report includes the percentage of time that the line was painting, and the total painted length (metres or feet) for the report duration.

Coil Report Features

Coil reports can be generated by going into the production database and selecting the required coil numbers.

- The reports includes the coil start and stop time, the length painted, and the line speed,
- A graph shows paint thickness including the upper and lower control limits, and
- The coil report requires coil numbers at the DFM™ computer for each coil during production.

Principle of Operation

DFM-Alpha and DFM-Ultra are the most advanced, easy to use, and the most accurate on-line system in the world.

DFM™ technology uses patented direct measurement technology (DMT). DMT™ is the most scientifically sound principle for accuracy in film thickness measurement. A major benefit is that it is calibration free regardless of the paint or substrate type. A laser is used to ablate an extremely tiny 170 micrometre wide measurement point to the surface of the metallic substrate. A high precision laser sensor measures the depth at the spot, and this equates precisely to coating thickness. The spots are almost impossible to find and do not affect product performance; this has been verified independently by an independent coating manufacturer's lab. Coil coating paint systems are designed to perform well with end product features including bends, cut edges, laps, scratches and fasteners. DFM measurement of the product provides a guarantee of quality and assurance that the coatings will perform to specification and meet paint thickness standards.

DFM Alpha and Ultra Specifications (Typical)

Dimensions: 970mm X 330mm X 290mm

Weight: 54 Kgs

Power Supply: 110 - 250V 5/60Hz AC, 10 Amps - auto-sensing.

Sensor resolution max : 0.03µm

Analogue Inputs from the production line: 4 to 20 mA for line speed, coater roll speed, and metering roll speed.

Digital Inputs from the production line: Painting OPEN/CLOSED circuit to carry a 24V DC signal.

Warranty: 1 year all parts and labor.

Specifications are subject to change;

DFM Alpha and DFM Ultra are protected by granted and pending patents. IP is protected in the USA, China, Europe, Canada, India, Australia, Japan, South Korea, Canada, New Zealand, Asia, and the Middle East. E.g., granted US patent 9,366,528.

For more information visit our website or contact our Sales Team:



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