

# Weigh-In-Motion-measurement system

imc measurement technology ensures bridge safety

Application Note



# The right weight class for crossing bridges

At 5.5 Kilometers, the Suramadu Bridge is the longest in Indonesia. This cable-stayed toll bridge connects the cities of Surabaya on the island of Java and Bangkalan on the island of Madura. It has two lanes in each direction plus additional lanes for emergency vehicles and motorcycles.



SuraMadu Bridge, Indonesia

## Weighing vehicles for a safe crossing

To ensure the safety of all who use the bridge, it is important to comply with certain load limits. Vehicles that want to cross the Suramadu Bridge may not weigh more than 10 tons. Before a vehicle gets the green light to cross the bridge, it must pass over a “Weigh-in-Motion” system. This presents particular challenges on both sensors and measurement systems. To accurately weigh trucks that are already in motion requires high-speed sensors and measurement systems that can operate in

real time. After all, the goal is to allow an uninterrupted flow of traffic.

For its Weigh-in-Motion system, the customer *Pt Struktur Pintar Indonesia* uses imc C-SERIES measurement systems having real-time calculation functionality.



Compact measurement device: imc C-SERIES

*Pt Struktur Pintar Indonesia* installed Weigh-in-Motion systems at four locations and uses imc-C-SERIES devices at to measure vehicle weight data on two lanes.



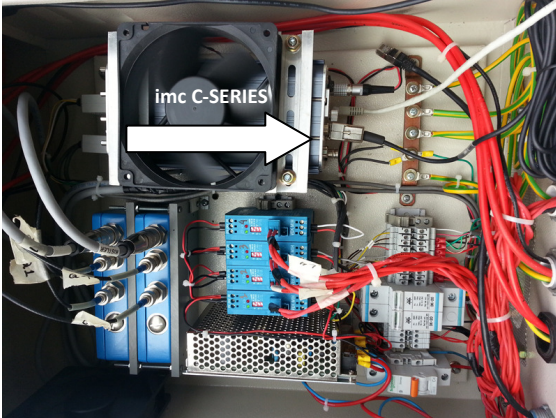
This is where the imc devices really show their benefits. The independent trigger-machines allow to capture and process data from each lane independently of the adjacent lane. The



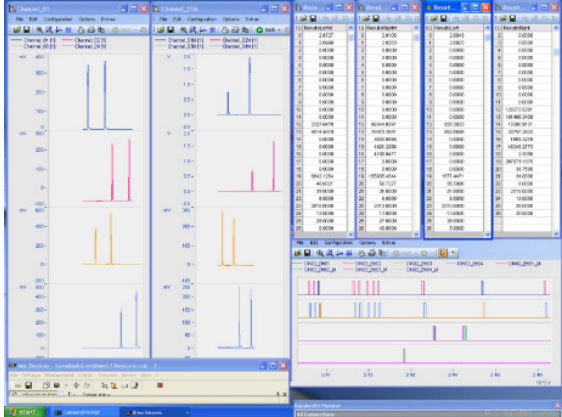
powerful trigger system selectively saves the most important data to permit simpler and time-efficient analysis. As the measured data are processed in real time, the vehicle's driver is given either the green or the red light, depending on whether the vehicle is respectively under or over the weight limit.

More advantages of the imc C-SERIES measurement device at a glance:

- Automatic self-start
- Autarkic operation possible without PC
- Remote controllable
- Flexible data storage options, removable Flash-card
- Reliable operation throughout an extended temperature range; high ambient humidity is no problem
- Intelligent power supply with short-term UPS provides secure operation even in unstable power supply conditions
- Guaranteed data integrity even in a power outage



**Results in real time**



The sensors provide load readings which are then calculated in real time by the imc Online FAMOS software on board the measurement system. This information reveals the axle count, axle distance, total weight and speed or provides notification of limit violations.

imc Online FAMOS performs synchronized, deterministic mathematical operations on multiple channels, compiles statistics, calculates comparisons and runs advanced open- and closed-loop control algorithms. In this way, imc Online FAMOS saves time and money, since the need for subsequent analysis is either eliminated or substantially reduced.

**Automated data transfer**

Another gain in productivity is achieved through automated remote data transfer provided by imc LINK software. The four measurement devices are connected with the imc LINK software in parallel to send the computed data automatically, with a time-stamp, to Pt Struktur Pintar Indonesia's server.

Thus, imc LINK dispenses with manual operation of the measurement devices and guarantees seamless and secure automated data transfer from measurement devices – whether directly connected to a computer or not.

## Additional information:

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imc Test & Measurement GmbH is a manufacturer and solution provider of productive test and measurement systems. imc implements metrological solutions for research, development, service and production. imc has particular expertise in the design and production of turnkey electric motor test benches. Precisely outfitted sensor and telemetry systems complement our customer applications.

Our customers from the fields of automotive engineering, mechanical engineering, railway, aerospace and energy use imc measurement devices, software solutions and test stands to validate prototypes, optimize products, monitor processes and gain insights from measurement data. As a solution

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