

---

ABB MEASUREMENT & ANALYTICS | WHITE PAPER

# ABB 266 multivariable use for upstream multi-tube measurement



---

## Ruggedness for the Field

The following are details Leon Black, ABB Product Development Engineer, shared with BJ Walker, ABB Automation Sales Manager, about the 266JST Transient Testing. Just one of the proven field worthy features designed into the transmitter.

---

## Leon's story

Leon: We were in NTS in Dallas doing the EMC compatibility testing on the 266JST. And one of the tests that we do is for transient protection, where we actually shock the device with simulated lightening from a huge transformer that generates up to 8000 volts. And when we got through with that, I asked the independent lab operator if he had anything bigger because at 8000 volts we didn't see anything – no affect at all. The operator made a call, and two people then came, pushing a cart with a transformer that was so massive that they couldn't even lift it. The operator hooked it up and shocked the 266 Transmitter. The transient voltage was hitting the 266 transmitter so hard you could hear it, literally, outside the chamber, but the 266 didn't even waiver. We had already passed all the published tests, so when he did this he did it just to appease me.

BJ: How was that installed in that lab to be able to withstand that? Was the ground hooked up to case?

Leon: The ground was hooked up to the case. Just like the specification calls for. So, it was a little connection on the side; it was a braided cable that they (NTS) installed and hooked up, and the shock was going directly to the case in every direction. But again, there was nothing. NO marks, nothing to show us that the unit had sustained any damage at all. Now realize we were monitoring this unit at this time, so the 485 bus was running, and it was running out of the environmental system with a shielded cable, that has all the chokes, so that it doesn't hurt anybody on the outside. And we saw nothing in the data set.

BJ: At a high level, generically, how has the multivariable able to withstand that kind of shock?

Leon: First of all, the multivariable is the first product that does not use the case as a ground path. It uses the case as another layer of protection, as a high current path for transients, and the measurement electronics are totally isolated. We don't use the DC return (power minus) in any way to move transients back and forth. Transients can still be carried across the attachment cables, but is all blocked by a four-level cascading transient protection system. Directly coupled transients are redirected to the case and then by connection into a dissipation area or earth ground. The electronics will not be affected for transients inductively or directly coupled to the case, because there is no direct contact between the case and electronics. Transients must always be a part of the equation when customers look at cost of ownership or instrumentation downtime. The design team for the ABB 266 MODBUS Multivariable knew this upfront and wanted to make a positive change in the measurement section of the industry. I believe we have.

---

## Performance and Versatility

The ABB 266JST was designed to be highly accurate for custody transfer flow measurement. The combination of the electronic design and component selection, the extended, unique characterization process of each transmitter and the factory calibration process results in market leading accuracy. With datasheet comparisons you will find that the standard 266JST's accuracy of  $\pm 0.05\%$  of reading from 10 to 100% full calibrated span is the highest accuracy multivariable pressure transmitter on the market.

ABB's open architecture design of the 266JST transmitter allows for use with most any RTU, Flow Computer or system on the market. Full transparency is given with the complete Modbus mapping details included in the 266JST operating instructions, as well as pre-programmed mapping selections.

The 266 Modbus® multivariable provides precise and reliable measurement of differential pressure, static pressure, temperature (from an external RTD) as well as diagnostic information once every second to the Host devices such as RTUs and flow computers. Individual device Modbus® addresses, setup and calibration can easily be configured using 1) the display keypad, 2) standard Modbus networks or 3) using the XMV Interface application of ABB's Totalflow flow computers or RTUs. The XMV Interface application creates a "plug and play" interface to the multivariable sensor and indicates any active alarms that may be present in easily understood text. One or more ABB 266 Modbus® multivariable transmitters combined with an RTU is a cost-effective solution when multi-tube measurement is required, and/or when the transmitters must be located in a Class I, Division 1 hazardous location.



Figure 1: 266JST application on a 6-well site

---

**ABB Inc.****Upstream Oil & Gas**

Quotes: [totalflow.inquiry@us.abb.com](mailto:totalflow.inquiry@us.abb.com)  
Orders: [totalflow.order@us.abb.com](mailto:totalflow.order@us.abb.com)  
Training: [totalflow.training@us.abb.com](mailto:totalflow.training@us.abb.com)  
Support: [totalflowsupport@us.abb.com](mailto:totalflowsupport@us.abb.com)  
+1 800 442 3097 (opt. 2)

---

**Main Office**

7051 Industrial Boulevard  
Bartlesville, Oklahoma 74006  
Ph: +1 918 338 4888

---

**Kansas Office**

2705 Centennial Boulevard  
Liberal, Kansas 67901  
Ph: +1 620 626 4350

---

**Texas Office – Houston**

3700 West Sam Houston  
Parkway South, Suite 600  
Houston, Texas 77042  
Ph: +1 713 587 8000

---

**Texas Office – Pleasanton**

150 Eagle Ford Road  
Pleasanton, Texas 78064  
Ph: +1 830 569 8062

[www.abb.com/upstream](http://www.abb.com/upstream)

---

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB AG does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB.

Copyright© 2019 ABB  
All rights reserved

