

Expro Excellence

Expro check metering improves production separator performance and throughput in Middle East project

Well Flow Management | Flow Surveillance



Customer challenges

- An operator in the Middle East was unable to reconcile oil and gas production rates due to discrepancies between measurements obtained from the satellite facilities and the stock tank readings at the central processing facility
- Expro were requested to: provide an independent audit of the existing metering devices; and assist with determining whether the discrepancy is related to measurement devices, the process conditions or a combination of both

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- Expro deployed ActiveSONAR and PassiveSONAR meters, which were installed on the liquid and gas outlets of each of the satellite flow stations separators, alongside the existing inline metering devices (satellite production separators were being operated as two-phase)
- Sonar meter internal diagnostic speed of sound data indicated the presence of free gas in the oil outflow for several of the separators – the free gas in the oil line was the cause for measurement errors in the existing inline metering devices
- After this initial diagnosis the sonar meters were left in place while remedial actions were taken; during this extended surveillance period additional metering issues were observed, with data drop out and offsets between central processing and satellite data sets
- Additional work by Expro determined the presence of gas in the oil lines was due to gas flashing as a result of the export line pressure dropping below the separator oil saturation pressure
- An analysis indicated that a change in level control would alleviate the issue with free gas in the oil line at point of measurement - Expro designed and fabricated a retrofit level control skid with integrated sonar meter to maintain the appropriate line pressure at point of export

Value to the client

- The initial check metering work was performed without any interruption or shut down in production due to clamp-on metering for both oil and gas lines
- Advanced internal sonar meter diagnostics were able to pinpoint free gas at actual measurement conditions
- Data was returned to remote data room, avoiding requirement to have personnel continually onsite to log and record data sets
- Expro were able to provide the customer a single point of contact and access to a multi-disciplinary team: measurement, fluids and process engineers
- The retrofit level control skid improved separator performance and eliminated fluctuations associated with cycle behavior of the control valve, maintaining separator pressure above saturation point keeping export lines in single phase to suit operating envelope of existing metering devices
- The sonar meter on the control valve skid provided continuous real-time surveillance of satellite production separator performance
- Maintenance costs for liquid pumps were significantly reduced - pumps were not designed to handle large flow rate fluctuations or free gas slugs

24/7 monitoring

