VICOR

Case study:
Ultrasonic Pipeline Inspection

Power solution reduces downtime

Customer's challenge

This manufacturer of inspection equipment was looking for ways of improving the integrity of pipeline surveys while reducing the associated downtime. Upgrades to the sensors, cameras and onboard processors, together with the use of higher torque drive motors to provide higher crawler speed, increased the onboard power required. Space and weight for the power supply upgrade was, however, limited. The key challenges were:

- In-depth inspection requires more sensors, increased processing and higher power demands
- Minimizing pipeline downtime requires a faster crawler with more power for drive motors
- Maximizing crawler payload limits space available for the power supply

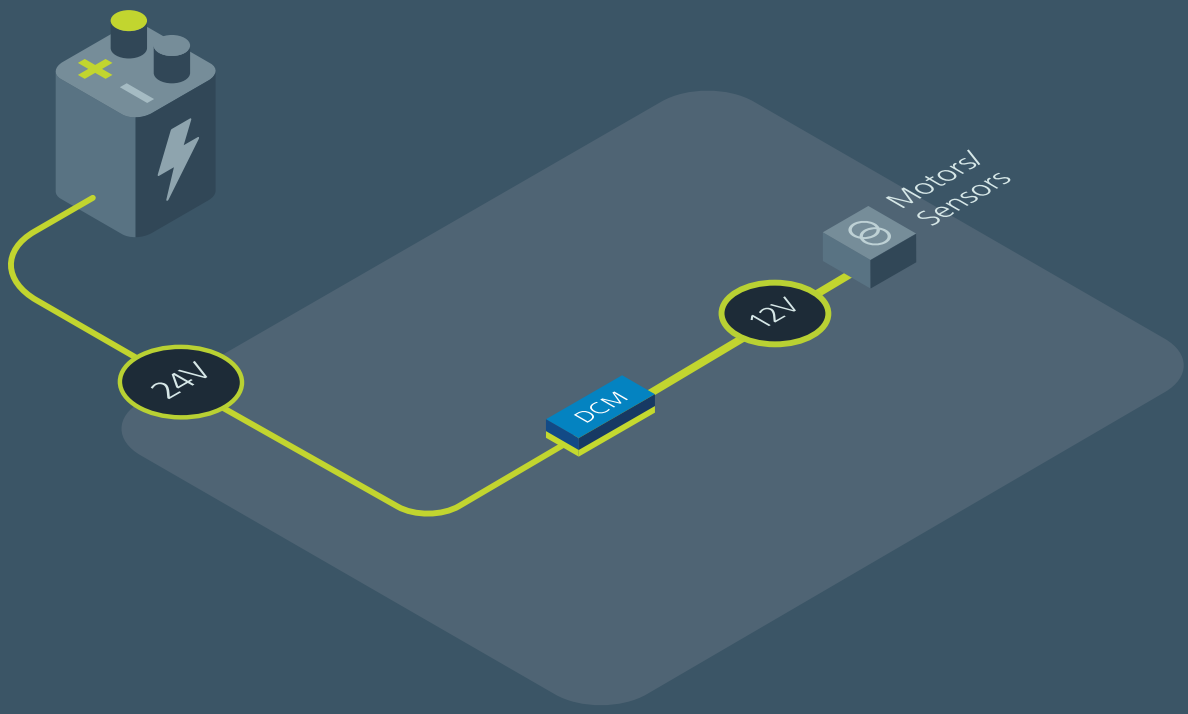
The Vicor solution

On board the crawler the 24V battery supply was regulated down to 12V for the drive motors, sensors and processor by a DCM DC-DC converter. The small size of the DCM converter, which provided 320W in a package of just 38.7 x 22.8 x 7.2mm, freed up space for the additional sensors. Key benefits were:

- Power supply size reduced by a small footprint, low profile (7.2mm) and low weight converter
- Reduction in size of heat sink enabled by a high efficiency power converter with double-sided cooling
- Downtime reduced by reliable, robust, converters designed for use in harsh environments

Vicor DCM solution reduces downtime

Power delivery network: A DCM converter provided the isolation and regulation for motors and sensors. The rugged packaging and high efficiency (93%) of the DCM converter helped to reduce the operating temperature and improved the reliability of the power solution. To analyze this power chain go to the **Vicor Whiteboard** online tool.



DCM™ DC-DC converter

Isolated regulated

Input: 9 – 420V

Output: 3.3, 5, 12, 13.8, 15, 24, 28, 36, 48V

Power: Up to 1300W

Peak efficiency: 96%

As small as
24.8 x 22.8 x 7.21mm

vicorpower.com/dcm

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