

# Smart Cities infrastructure with digital monitoring and control

## INDUSTRY

Transport

## SOLUTION

CoolX Fanless Power Supplies

## EQUIPMENT

Traffic management system

## CHALLENGE

Smart Cities program was implemented to improve the utilisation of public services infrastructure. As part of this plan, many control boxes will be deployed throughout the city with each control box power supply being monitored remotely from a central location. Reliability was a key for the system designers and the power supply was expected to have a long life, with little/low maintenance cost. The system requires an AC-DC power supply to provide multiple DC outputs of different voltages in compact low profile package to reduce system size and weight. Additionally, the power supply needed to be fanless to increase reliability and mean time before failure.

## SOLUTION

Advanced Energy's fanless CoolX power supplies were the only products on the market that could provide the necessary variety of output voltages in a 1U compact enclosure. The CoolX1000 and CoolX600 are both fanless, convection cooled power supplies that feature digital communications in the form of PMBus.

A 48 Volt output is provided by two CmD modules in parallel, which can provide a peak output power of 8.34 amps per module pair, to drive system data acquisition devices.

A CmA module provides an isolated 12 V output power to system controls and computing hardware. PMBus serial communication is used to control signal timings in the form of a custom programmed Pic micro-controller. PMBus is also used to monitor module voltage and current and this data is fed to a separate network system which can communicate remotely with HQ.



Working closely with the customer and utilizing the modularity of the CoolX platform, the Advanced Energy team was able to configure a power supply to meet the customers diverse requirements.

A fanless power supply provides a long life and increased reliability, avoiding the traditional lack of reliability associated with components such

as fans which rely on moving parts. Additional benefits included:

- PMBus for additional control and monitoring. Modules can be monitored (Input voltage, module output voltage and current.) enabled, disabled and trimmed as well as have their maximum current values set.
- Side DIN rail Mounting option allows easy integration to customer system.
- Aux power output can power a screen for diagnostics at remote locations.
- Choice between 6-slot 1000 Watts or 4 slot 600 Watts. Fanless operation provided by both CoolX 600 and CoolX 1000.
- High Reliability: CoolX 600 MTBF > 400,000 hours

## RESULT

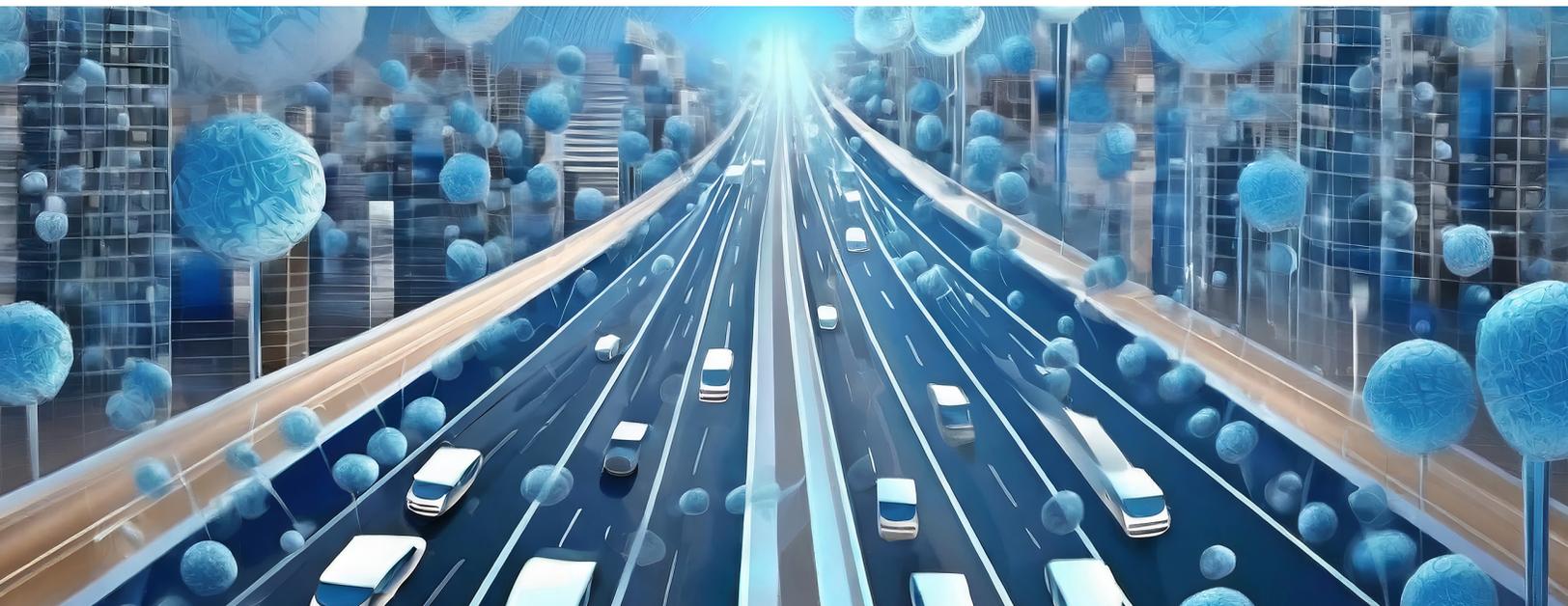
The CoolX1000 and CoolX600 give a high level of performance while meeting budget expectations. The CoolX1000 meets the requirements of IEC 62368, ensuring no major investments will be needed to reassess power system when the standard comes into effect.

Given Advanced Energy's modular customization ability and exceptional applications support, the customer was able to incorporate highly tailored features easily, leading to a fast time to market and reduced development costs.

## CONCLUSION

The high reliability of fanless power sealed the deal for this major customer. PMBus control allowed the customer to bring new levels of control to their high tech connected application.

With the advanced features of CoolX product line, Advanced Energy can support isolated DC power requirements of a wide variety of applications in industrial, Medical and military systems with little or no customization, thereby enabling a fast time to market huge savings in engineering, qualification and certification costs.



For international contact information, visit [advancedenergy.com](http://advancedenergy.com).

[powersales@aei.com](mailto:powersales@aei.com)

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