CYRRUS

CYRRUS PRODUCTS LTD
Powering Clarity in Aviation Innovation

RADAR VIDEO SIGNAL ENHANCER (RVSE)
Enabling safe air traffic over wind farm zones

A Cyrrus innovation to enable air traffic control approach radars to coexist with wind farms

The Cyrrus **Radar Video Signal Enhancer** is uniquely for the traditional airport approach radars used with video display systems. Additionally it addresses both the technical and human factors that have not been resolved by other solutions.

Many airports with air traffic control (ATC) radar raise valid objections to applications for wind energy development because of the clutter that is presented on radar displays. This obscures visibility of the radar returns from aircraft in the vicinity of the turbine arrays and results in reduced or even incorrect display of aircraft tracks.

A technical solution that both removes the clutter and assures continuous surveillance of the airspace around wind farms is required. The ideal solution is one that is reliable and accurate, requires no changes to existing radar and displays, is easy to integrate and use with seamless presentation to the controller, and needs minimal change to the safety management system. Such a solution would enable wind energy development and aviation activities to coexist.

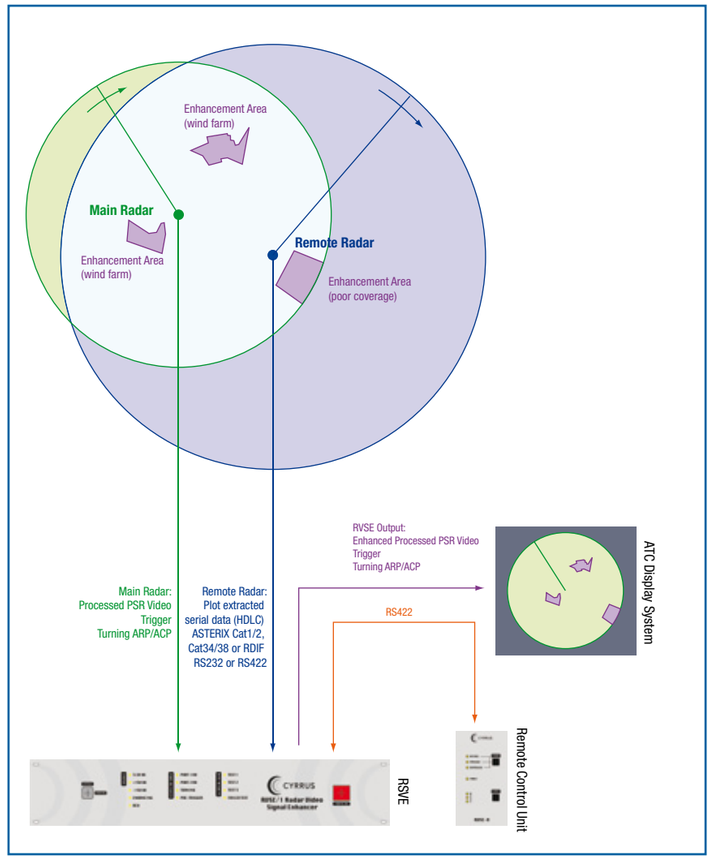
The Cyrrus solution, called **Radar Video Signal Enhancer (RVSE)**, meets all of these requirements.

The RVSE is readily inserted into the video feed from the existing approach radar to the display system. No changes to this equipment are needed. The RVSE augments the local radar's video with the synthetic video it generates from the plot-extracted target data it receives from a remote radar.

The synthetic video is only inserted in the defined areas affected by the wind development – it is presented as if it had come from the local radar. The remote radar must have coverage of the airspace above the wind development without being adversely affected by the turbines. The set-up of the RVSE is configured to optimise any operational situation.

HOW DOES THE RVSE WORK?

- The RVSE is inserted into the processed video feed from the local approach radar to the display system
- The RVSE receives a serial data input from a remote radar, with coverage of the airspace above the wind farms that is not compromised by the turbines
- The RVSE is configured with 'enhancement areas' around wind farms or where existing radar coverage is poor
- The processed video from the local radar is attenuated inside the enhancement areas to pre-configured levels
- The synthetic video is presented seamlessly, as if it were coming from the existing local approach radar
- The RVSE generates synthetic video targets from the plot-extracted targets in the serial data message from the infill radar. Synthetic targets are inserted into the video input of the existing display system within the enhancement areas
- The ATC operator has a simple control panel which enables:
  - The enhancement process to be activated
  - The level of the local radar video in the enhancement areas to be selected
- The enhancement areas are displayed with a video outline to indicate the enhancement process is active within the boundary.



The RVSE neither hides what is happening nor does it use sophisticated algorithms. It simply attenuates the radar returns in the vicinity of the wind farms and overlays them with a synthetic video output generated from the target reports received from another radar that is not affected by the turbines. It does this in a way that provides the ATC Operator with a seamless and accurate presentation of aircraft tracks as if everything is coming from the local radar.

The continued safe provision of Air Traffic Services and the development of the potential for renewable energy from the wind are both vitally important to economic development and prosperity. Reconciling these requirements has created intractable problems. But now Cyrrus has created an outstanding solution, enabling the wind energy and aviation sectors to coexist in harmony.

The **Radar Video Signal Enhancer** is a unique innovation in aviation radar product design developed by Cyrrus. It provides air traffic controllers with a clear 'radar video' presentation of aircraft tracks in the airspace over wind farms, leaving the display free of the clutter generated by the wind turbines. They can view this synthetic video directly on their displays and consequently continue to use SSR overlay presentations. This approach minimises additional ATC training requirements and changes to operational procedures.

Contact us today for the techncial specification and to find out more

The RVSE is just one of the many great ideas for the aviation sector to come out of Cyrrus

If your aviation challenges demand innovative product solutions, engineering expertise and project management excellence, Cyrrus can meet them. We can provide expert advice on single issues or a complete end-to-end project-managed solution. Our skilled and experienced team includes air traffic control officers (ATCOs), engineers and designers, supported by hard-to-source skills via our trusted partner network.

Our services include:

- Air Traffic Management (ATM)
- Air Traffic Control Communication, Navigation & Surveillance (ATC CNS)
- System Engineering and Design
- ATM Project Management
- Technical Safeguarding and Simulation
- ICAO PANS-OPS Instrument Flight Procedure Design
- Regulatory and Technical advice on CNS/ATM
- Advice on the effects of wind energy development on CNS/ATM
- Due diligence and audit of airport CNS and ATM
- ATM Safety Management Systems
- Airport Certification and Regulation of Airports and ATM facilities
- Airspace Design and Development

"With Cyrrus' wealth of air traffic management experience, they were the natural choice to turn to when we required aviation advice to progress our projects".

Chris Thomas, Project Manager
West Coast Energy Ltd.

To find out more about Cyrrus solutions visit us online at: www.cyrrus.co.uk
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