Easy and Secure Remote Access for Improved Machinery Services

- **Application** Real-Time Support for Remote Machine Maintenance
- **Industry** Manufacturing
- **Region** Taiwan

Introduction

Maximum uptime is key for machine productivity. Therefore, a customer required a timelier and more efficient after-sales service from a leading manufacturer of mechanical power presses in order to ensure improved machine performance and effective troubleshooting. The mechanics power press machine is very complex. Its setup is just as complex, as its installation and commissioning take one full month. At the request of the overseas customer, the manufacturer installed the Moxa Remote Connect (MRC) gateway in the power press machine to enable a timely remote after-sales service.

At first, the machine builder adopted Windows-based Remote Desktop Control (RDC) technology, but security risks and additional costs came at a high price. Windows-based RDC requires a Windows-operated computer to be installed at the factory so that the machine has remote connection capabilities. However, the Windows-based computer by itself is susceptible to security risks, and the possibility of attacks increases even more when the computer connects to the Internet. Needless to say, a cyberattack will result in a shutdown of factory operations. To preempt security risks, the machine builder needs to adopt complex IT-related firewall equipment, which is time-consuming and hard to manage. Also, each computer running RDC on the machine side requires a costly controller software license, making a remote connection very expensive in order to conduct machine maintenance or troubleshooting.

Instead of RDC, the machine builder adopted the new cloud-based MRC remote access technology that hosts the MRC server on Amazon's AWS cloud platform to manage end-to-end secure tunnels between the engineering team (as a MRC client) and the press machine (connected behind the MRC gateway) for easy and secure remote diagnostics, maintenance, and troubleshooting. The MRC server can support a mesh-type tunnel infrastructure that is scalable to connect computers (via MRC clients) and machines (via MRC gateways)—up to 5000 devices to create many-to-many, end-to-end connections.

With the MRC connection, only the computer that runs the MRC client needs to install a controller software license for remote access. Compared to RDC, MRC saves on computers and the license costs associated with each remote machine. More importantly, engineers can now save time and money on unnecessary trips by solving the customer's problems directly from their office. In fact, if more and more machines were equipped with MRC gateways, engineering teams would be more readily available to efficiently serve their customers from anywhere in the world.

System Requirements

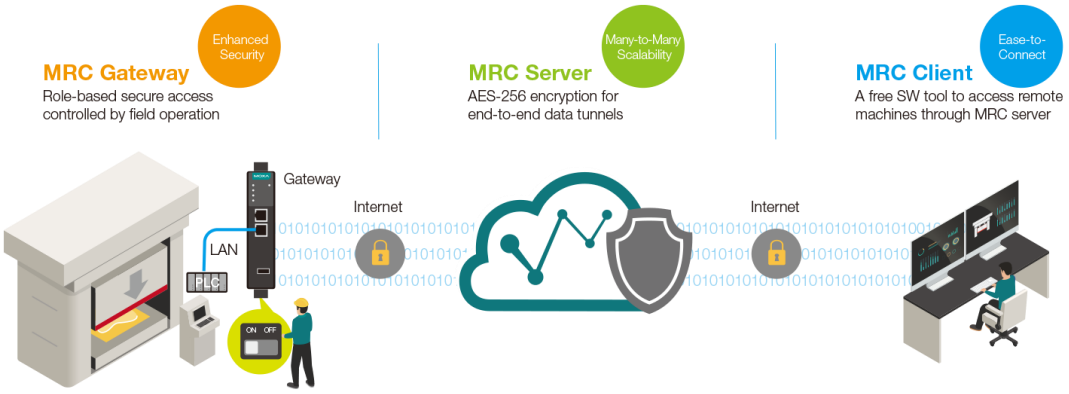
- A secure connection between engineers and the machines without an add-on computer
- Remote access controlled by machine operators in the field
- An easy network connection that does not require extensive IT expertise for both engineers and machine operators

Moxa Solution

Among remote connection solutions, Moxa's MRC solution stands out for a number of reasons: end-to-end and fully-integrated security, ease-of-use, cloud-based flexibility, and proven reliability in harsh factory conditions. Only three components—MRC gateway, a cloud server, and client software— are needed to build the cloud-based remote access connection.

- The machine provider integrated the LTE version of the MRC gateway into its mechanical equipment to enable 4G cellular connectivity, which enables out-of-band remote access to isolate this connection from local machine networks.
- The second investment was signing up for AWS to host the MRC server that administrates different user roles and privileges for end-to-end interconnections and management.
- The MRC client software is installed for free on the computers at the engineering team's side, so the engineer can simply press a button to request a remote connection to a specified machine.
- The remote connection is simple and secure; it is controlled by machine operators through the local on/off control of the MRC gateway in the field. Operators can control and limit remote access to specified devices and services connected to the MRC gateway, which enables a role-based access control with an embedded firewall under whitelist control.

The timely remote services by machine engineers over the simple and secure MRC connection met the customer's requirements. At the same time, the machine maker took full advantage of the collected data on machine status and operation conditions, and made valuable recommendations for machine operations to ensure less wear and tear and optimal performance. To maintain this improved after-sales maintenance service in their business model, the machine maker's possible strategy forward is to install the MRC gateway in their machines shipped around the world.



Why Moxa

- Fully-integrated secure connection with end-to-end data-encryption
- Cloud-based interconnections and security management for service scalability
- With one simple click, engineers with no IT background can access remote machines with no complex firewall settings and IP management
- Easy for non-IT background operators to set control for access security
- Transparent tunnels suitable for existing software tools
- Out-of-bound LTE cellular connection for isolated protection from local networks