

Hyperion Creates 'Smart' Solution for Rotary Cutter Units to Help Improve Productivity

The Opportunity

As a supplier of high-precision rotary cutters, Hyperion Materials & Technologies knows that manufacturers of hygiene products want to operate their production in a controlled way to reduce the risks of manufacturing hazards, and thus deliver the desired products to their customers.

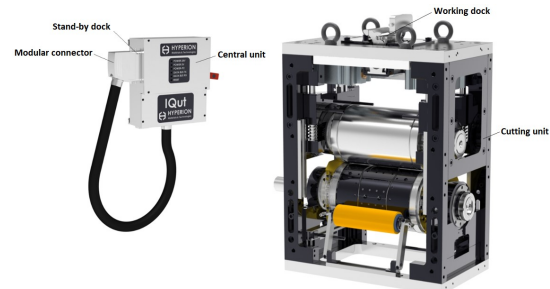
Cutting units are a central piece in converting lines, and the ability to monitor the cutting function and perform preventative maintenance helps generate continuous savings.

In response, Hyperion's rotary cutter engineering team launched the IQUT project. This innovation in rotary cutters addresses our customers' challenges by providing a way to collect critical working data.



Hyperion team from left to right: Jérôme Cremillieux, Arnaud Pras, Jacques Secondi, Florent Joubert, Pierre-Luc Dijon.

Through customer engagement, the Hyperion team found that we needed to meet the needs of both large companies (who may have more dedicated IT services, defined standards for software, data storage and security) as well as small companies (who may have IT implemented by people running the line).



Electronic Central Unit (ECU) the interface which collects all data and communicates with the sensors and PLC or cloud.

The Solution

Hyperion's rotary cutter engineering team, based in Epinouze, France, successfully designed, and ultimately patented, the IQUT technology rotary cutter extension.

The IQUT platform makes process information available in different ways to best meet the needs of our customers. The cutting unit can be used as instrumented equipment, it can be integrated into the converting line, and it can be connected to a cloud as a part of the industrial internet of things (IIoT).

IQUT - An instrumented cutting unit

The IQUT extension contains many sensors integrated in the cutting unit. Some sensors are embedded in the tools, while others are stationary on the frame.

The IQUT electronic cabinet is fixed on the wall of the converting line, and the electronic cabinet has a computer which generates a website.

This is the primary interface for the IQUT solution. Any computer on the same local area network (LAN) can access the interface and obtain the monitored information.

The IQUT extension is designed to be easy to use and to maintain. Important features are:

- Wireless information transfer from tools to the frame
- Fast plugs to allow easy connections and disconnections between the elements of the cutting unit
- A modular plug connecting the IQUT cabinet to the cutting unit
- Automatic detection of tools' IDs before starting to collect data.
- Live data displayed in the workshop
- Warnings sent by email or text message
- Data analyzed to define action plans during production meetings
- Data summarized daily, weekly, and/or monthly to understand the performance over each period.

As a complement, the IQUT has all-or-nothing outputs that can be activated as warnings to generate light signals or to send information to the line programmable logic controller (PLC).

IQUT – An integrated solution

Converting lines use protocols to exchange information between the PLC and line components (drives, sensors, actuators, etc.). Many protocols are available around the world, and some are based on communication over an industrial ethernet (i.e., PROFINET®) while others are based on specific media (i.e., MODBUS RTU®, CANopen®).

The IQUT computer exports data in a defined format, and a gateway is used to transform IQUT data into the desired protocol.

Then IQUT data are made available to the PLC, and this allows a real integration into the line control and its interface. The IQUT data can be handled as all other data from the converting line, e.g., displayed, saved, analyzed, etc.

IQUT – An IIoT Solution

Industrial internet of things (IIoT) is a type of solution that makes information available in real time to increase overall equipment effectiveness (OEE).

Once data is available, it can be used to drive operations. Examples of this include:



Rotary cutting unit with a view of the monitoring interface.

Working data is not only available for operators, maintenance, and engineering but is also used by managers to drive production.

When the number of converting lines is limited to 1 or 2, this can be done using the primary IQUT website, but when there are four to 10 lines and several cutting units per line, it becomes tricky to have an actual overview of the production site.

Hyperion has set up its own cloud to receive IQUT data and proposes an access to a secured website.

From this website, it is possible to drill down into the customer's organization from consolidated data at a group or site level to the line level and then to get detailed data for a given cutting unit.

This is a valuable support to understand quickly where situations must be addressed to support production output.

Conclusion

IT capabilities are rapidly increasing in terms of data handling and communication, enabling the development of new tools to increase the operability of production lines. The Hyperion rotary cutter engineering team leveraged this technology together with their expertise in rotary cutting operations to develop IQUT technology.

IQUT's design brings sensors and communication tools into Hyperion's world-class cutting units to help our customers improve process control and maximize productivity. Our three options allow each company, depending on its size and IT capabilities, to apply an IQUT solution adapted to its needs when it comes to bringing IT into cutting edge performance. Visit our website for more information on IQUT and our rotary cutter solutions or email marketing@hyperionmt.com.