

18 MAY 2022

Abnormal UV peak shape detection using Align & Zoom, PI Vision feature, GSK

Marie-Anne Colocouris

AVEVA



Marie-Anne Colocouris

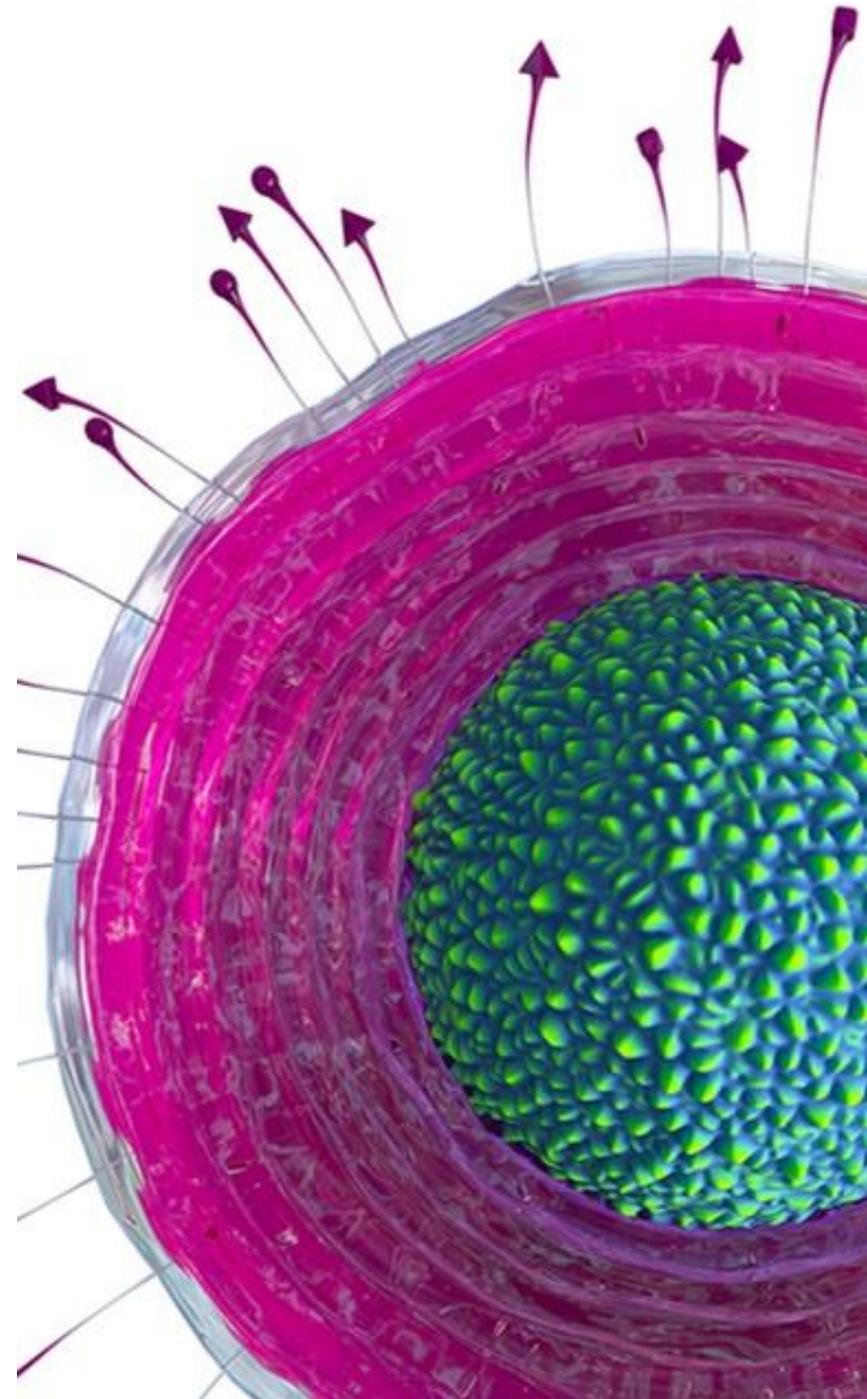
Senior Manager, Product & Process Robustness

- This work was sponsored by GlaxoSmithKline Biologicals SA
- Marie-Anne Colocouris is an employee of the GSK group of companies
- Contact: marie-anne.a.colocouris@gsk.com

About our company



- GSK is a science-led global healthcare company with a special purpose to improve the quality of human life by helping people.
- The Pharmaceuticals business has a broad portfolio of medicines in respiratory, HIV, immuno-inflammation and oncology.
- The Vaccines business delivers vaccines worldwide, helping to protect people from a range of diseases at all stages of life.



Vaccines: our global presence



More than 15,000 people working at 13 sites strategically positioned around the world





About GSK Vaccines



Vaccines

- Vaccination prevents 2-3 million deaths every year
- Largest vaccines portfolio to help protect people against 21 diseases
- Largest vaccine pipeline with 20 candidate vaccines
- Supply to 160 countries in the world
- 12 manufacturing sites, 3 R&D centers, 15 000 employees
- 2 million doses produced everyday

Wavre Site

- Largest vaccines production site in the world
- 550 000 m² or 70 football fields
- 9 000 employees in Belgium
- 80% of GSK vaccines production volume



Basic steps of vaccine production

Primary

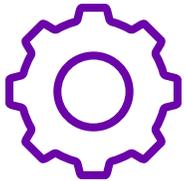


Secondary



Continued Process Verification

Is the third stage of Process Validation that has a central purpose to ensure that processes are in a constant state of control



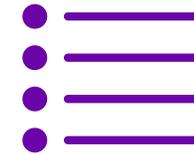
Challenge

- Access to (real-time) manufacturing data is time consuming, requires to be trained to multiple supervision systems (DCS, SCADA, Reporting Tools...) to export the data and manually add production context. Data is accessible and used by data experts only.



Solution

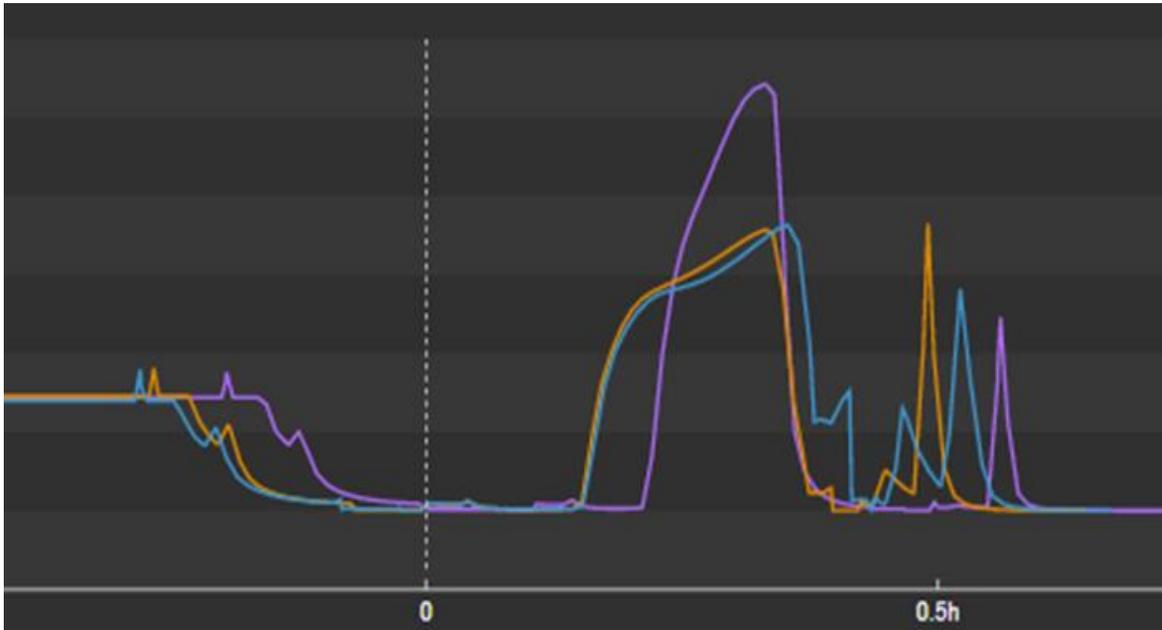
- PI Vision allows to access the manufacturing data of all processes with their metadata, with limited training.
- Process Experts can compare batches by overlaying them, in real time or after the events using the Align and Zoom feature of PI Vision



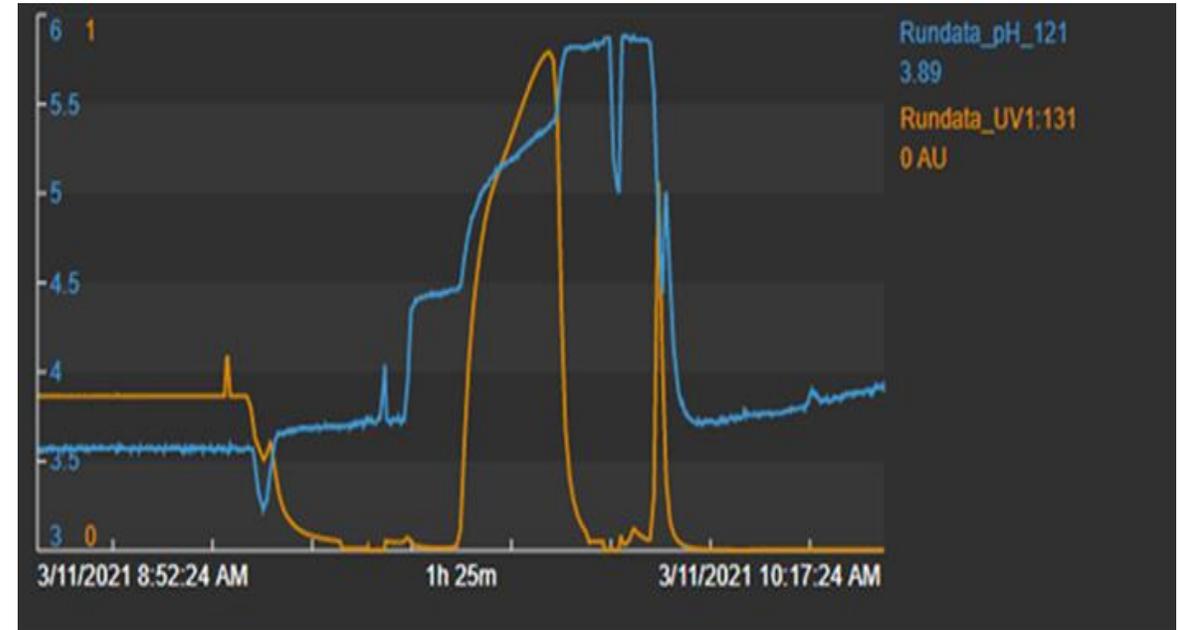
Benefits

- Data can be used by anyone, regardless his/her data education background.
- PI Analytics and Align&Zoom feature allows rapid detection of abnormalities not detectable by classical alarm systems

Business Challenge : Increase Process Knowledge & Understanding

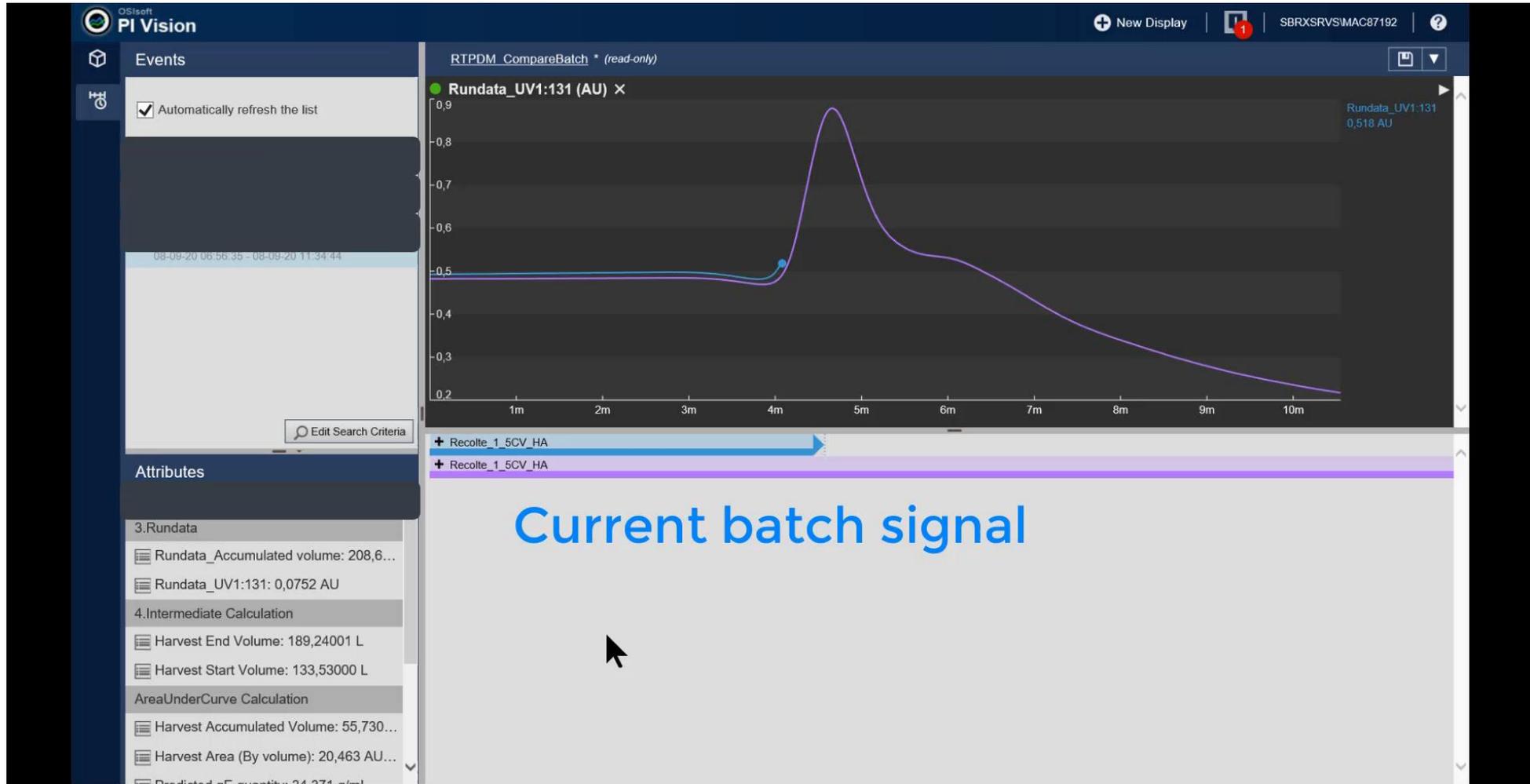


- Overlay of UV signal of three different batches
 - **Why is the peak shape so different?**

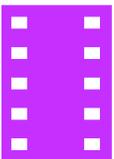
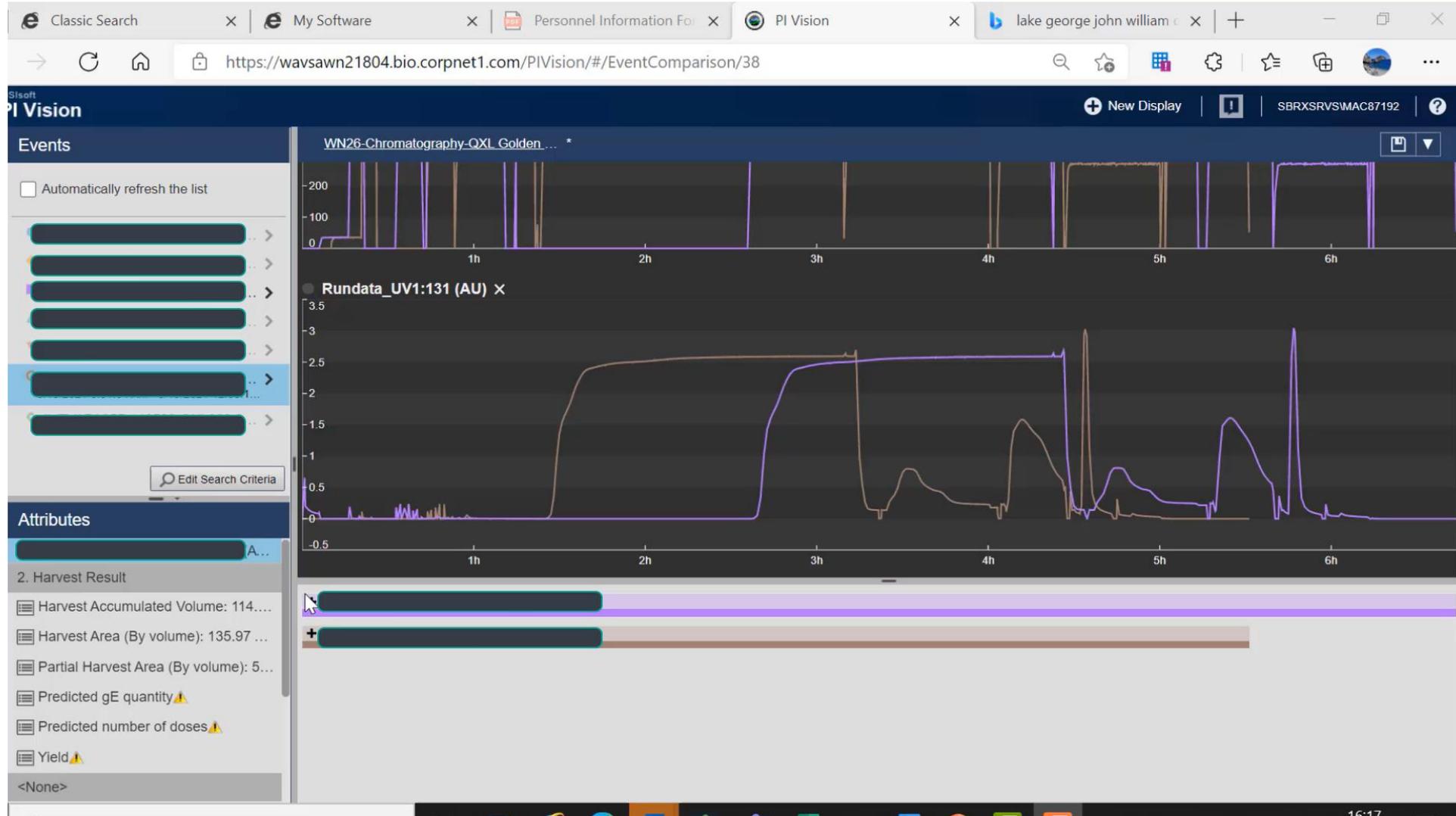


- Superposition of UV signal with pH
- **The pH was slightly lower by for the « abnormal » peak !**

AVEVA Application used : PI-Vision 2017R2 with Gantt chart (during the event)



AVEVA Application used : PI-Vision 2017R2 with Gantt chart (after the event)



Align & Zoom Feature in PI Vision 2017R2

What works well

- Allows to compare multiple events (event = one batch)
- Allows to “pin” or select a reference event
- Allows to zoom on child-event to align the signals that don’t occur at the exact same timestamp

Difficulty

- Alignment on PI Vision 2017R2 is done on the **child event number**
- Mis-alignment of signals when automation recipe has more events (unpredictable - not abnormal)

Excellent Customer Experience

- GSK challenge was shared with the AVEVA Customer Success Manager and a work-around was found by the Technical Product Manager of AVEVA while still using PI Vision 2017R2 (Search Criteria > Event Name : mimics the Align and Zoom feature)
- The User Feedback Page was updated by an excellent news : PI-Vision 2022 will allow alignment with the **child-event name**
- [Align Child Event Frames by Name as opposed to Sequence Number – User Feedback for OSIsoft \(now part of AVEVA\) Products and Services](#)

Impact & Savings

“Thanks to RTPDM and PI Vision, I was able to detect the atypical UV elution profile in SP chromatography on bulk production. This information obtained much easier and quicker than with the usual monitoring made on our batches has led to the immediate change of the batch of elution buffer which was incriminated in this deviation, thereby avoiding other deviations”

Philippe Charles “Product & Process Specialist, Wavre, Belgium”

Business case extract, expected benefits

The visualization on-line of Critical Process Parameters will

- Improve access to data from shop-floor ✓
- Pro-actively correct process deviations from shop-floor ✓
- Improve data integrity by removing data encoding ✗
- Increase the product knowledge and process understanding ✓
- Increase yield using golden batch comparison ✓
- Provide one of the foundation element to data analytics framework ✓

- Expected savings 10 M€ / year ✓

Our next steps

Real Time Process Data Monitoring using PI Vision “proof of concept” for GSK Vaccines in 2020 – 2021 and still in the learning curve

- Increase technical knowledge of the core teams in charge
- Roll-out RTPDM to Vaccines manufacturing sites from 2022
- Expand PI Vision usage to other users than process experts (maintenance, EHS,...)
 - Install PI System Data Infrastructure with PI Vision in all manufacturing sites
 - Move from a “sprint” mode to a “marathon” mode
 - Increase internal capabilities
 - Find out the right organization model to sustain digital transformation
- Use PI System as the primary production data source for other applications (MES, digital twin)
- Maintain the Excellent Customer Service from AVEVA 😊

DZIĘKUJĘ CI
 NGIYABONGA
 TEŞEKKÜR EDERİM
 DANKIE
 TERIMA KASIH
 СПАСИБО
 GRAZIE
 МАХАДСАНИД
 GO RAIBH MAITH AGAT
 БЛАГОДАРЯ
 GRACIAS
 ТИ БЛАГОДАРАМ
 TAK DANKE
 RAHMAT
 HATUR NUHUN
 PAKKA PÉR
 HATUR NUHUN
 PAXMAT САГА
 CÁM ƠN BẠN
 WAZVIITA
 FALEMINDERIT
 謝謝
 ТАРАДН ЛЕІВН
 KEA LЕВОНА
 БАЯРЛАЛАА
 MISAOTRA ANAO
 WHAKAWHETAI KOE
 DANKON TANK
 ТАРАДН ЛЕАТ
 SALAMAT
 MATUR NUWUN
 ХВАЛА ВАМ
 MULŢUMESC
 ПAKMET CІЗГЕ
 고맙습니다
 GRAZIE
 شڪرا
 HVALA
 FAAFETAИ
 ESKERRIK ASKO
 HVALA
 TEŞEKKÜR EDERİM
 OBRIGADO
 DANKJE
 EΥΧΑΡΙΣΤΩ
 GRATIAS TIBI
 ИКУРКУИ
 AČIŪ
 SALAMAT MAHALO IĀ 'ŌE
 TAKK SKALDU HA
 MERCИ
 DI OU MÈSI
 ĎAKUJEM
 GRAZZI
 SIPAS JI WERE
 TERIMA KASIH
 UA TSAUG RAU KOJ
 ТИ БЛАГОДАРАМ
 СИПОС

This presentation may include predictions, estimates, intentions, beliefs and other statements that are or may be construed as being forward-looking. While these forward-looking statements represent our current judgment on what the future holds, they are subject to risks and uncertainties that could result in actual outcomes differing materially from those projected in these statements. No statement contained herein constitutes a commitment by AVEVA to perform any particular action or to deliver any particular product or product features. Readers are cautioned not to place undue reliance on these forward-looking statements, which reflect our opinions only as of the date of this presentation.

The Company shall not be obliged to disclose any revision to these forward-looking statements to reflect events or circumstances occurring after the date on which they are made or to reflect the occurrence of future events.

 [linkedin.com/company/aveva](https://www.linkedin.com/company/aveva)

 [@avevagroup](https://twitter.com/avevagroup)

ABOUT AVEVA

AVEVA is a global leader in industrial software, driving digital transformation and sustainability. By connecting the power of information and artificial intelligence with human insight, AVEVA enables teams to use their data to unlock new value. We call this Performance Intelligence. AVEVA's comprehensive portfolio enables more than 20,000 industrial enterprises to engineer smarter, operate better and drive sustainable efficiency. AVEVA supports customers through a trusted ecosystem that includes 5,500 partners and 5,700 certified developers around the world. The company is headquartered in Cambridge, UK, with over 6,500 employees and 90 offices in over 40 countries.

Learn more at www.aveva.com