**Stream Processing – Use Case**

**Source:** [Kafka : the definitive guide: real-time data and stream processing at scale](https://ie.on.worldcat.org/detailed-record/992751510?databaseList=1271&databaseList=1672&databaseList=1697&databaseList=1842&databaseList=2038&databaseList=2236&databaseList=2237&databaseList=2259&databaseList=2269&databaseList=2270&databaseList=2278&databaseList=2375&databaseList=239&databaseList=2572&databaseList=2626&databaseList=2897&databaseList=3200&databaseList=3410&databaseList=638) (Available as E-Book at IE-Library) – Page 277

**Link:** <https://web-a-ebscohost-com.ezxy.ie.edu/ehost/ebookviewer/ebook/bmxlYmtfXzE1ODU5MzVfX0FO0?sid=8544eaac-1d45-4128-81ec-34ded668840a@sessionmgr4007&vid=0&format=EB>

**Task:**

A description of a use-case that has at least one of the following characteristics:

1. It requires Stream Processing or Real-Time Analytics to be useful and why:

Industry 4.0 – Internet of Things (IoT) – Manufacturing Use-Case

An interesting field of application for stream processing is the real-time analysis of process and machine data in a manufacturing-environment. The interpretation of sensor data (e.g. infrared, acoustics (partial discharge and ultrasound), vibration analysis, sound level measurements, etc.) makes it possible to make predictions that form the basis for maintenance in line with requirements. This enables very precise advance planning of maintenance. There is also maximum transparency regarding the performance data of the respective machines.

The real-time analysis of the data is also important to ensure that maintenance is not only cost-efficient but also performance-efficient, i.e. that maintenance is carried out before the machine is at risk of a loss of performance.

1. It can benefit from using Stream Processing or Real-Time Analytics to deliver more value and why:

Real-Time Analytics in the manufacturing environment offers a number of different advantages, these are among others:

Monetary-advantages:

* Predictive detection of maintenance requirements can reduce downtime (respectively increase plant availability), as technicians can solve the problem before it arises.
* Costs can also be reduced compared to routine or time-based preventive maintenance, as tasks are only carried out when they are actually necessary.
* Optimized prediction lead to a better resource planning and resource allocation for maintenance work.

Non-monetary-advantages

* increase in plant safety and the resulting optimized accident statistics.
* Depending on the machine, this may also reduce the emission of pollutants, so that the impact on the environment can also be improved.