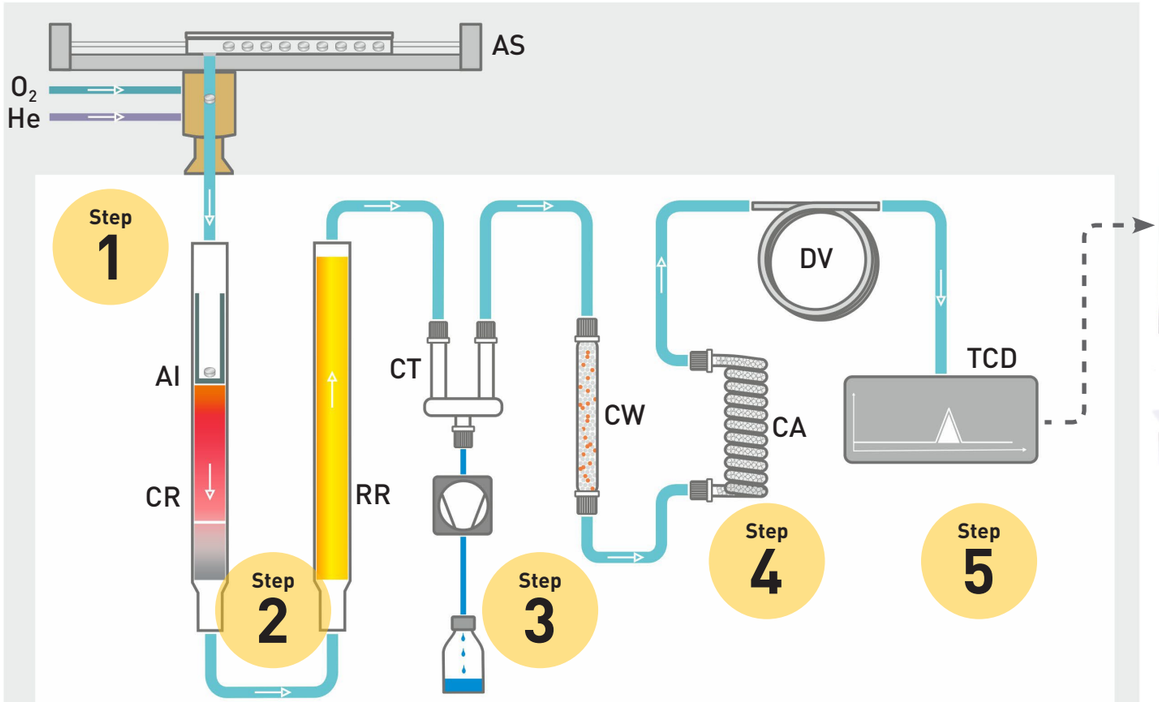
N-Realyzer

Precise and fast analysis results thanks to intelligent technology



Data PC
REAL-OS

$C_nH_mN_x + a\ O_2 \xrightarrow[\text{[catalyst]}]{\sim 1000\ °C} n\ CO_2 + 0.5\ m\ H_2O + x\ N\text{-Oxide}$

$N\text{-Oxide} \xrightarrow[\text{[copper]}]{\sim 800\ °C} N_2$

AS	Autosampler
AI	Ash insert
CR	Combustion reactor
RR	Reduction reactor
CT	Condensation trap
CW	Chemical absorption trap
CA	CO_2 adsorption trap
DV	Delay volume
TCD	Thermal conductivity detector

Step 1

The sample enters the Dumas system via autosampler (AS). In the combustion reactor (CR) at temperatures from approx. 1000°C an exothermic reaction takes place between oxygen (O2), the tin foil and the sample. The sample is completely combusted with the help of oxidation catalysts.

Step 2

After combustion, the oxygen flow is switched back to helium (He) which serves as the carrier gas for the rest of the analytical process. The reduction into N_2 takes place on a copper surface in the reduction reactor (RR).

Step 3

The byproduct water is then separated by a condensation trap (CT) and the chemical absorption trap (CW). CW is an absorbent with colour change for the separation of residual moisture from the gas flow.

Step 4

Carbon Dioxide CO_2 is separated from the gas into a CO_2 adsorber / desorber system (CA). The CO_2 adsorbent is regenerated in the degassing furnace.
The delay volume (DV) homogenises the gas flow that reaches the thermal conductivity detector (TCD).

Step 5

The remaining gas mixture passes the TCD leading to an output signal which is proportional to the nitrogen concentration in the combusted sample. Standard samples with a known concentration of nitrogen (eg. EDTA) are used for the calibration of the detector.