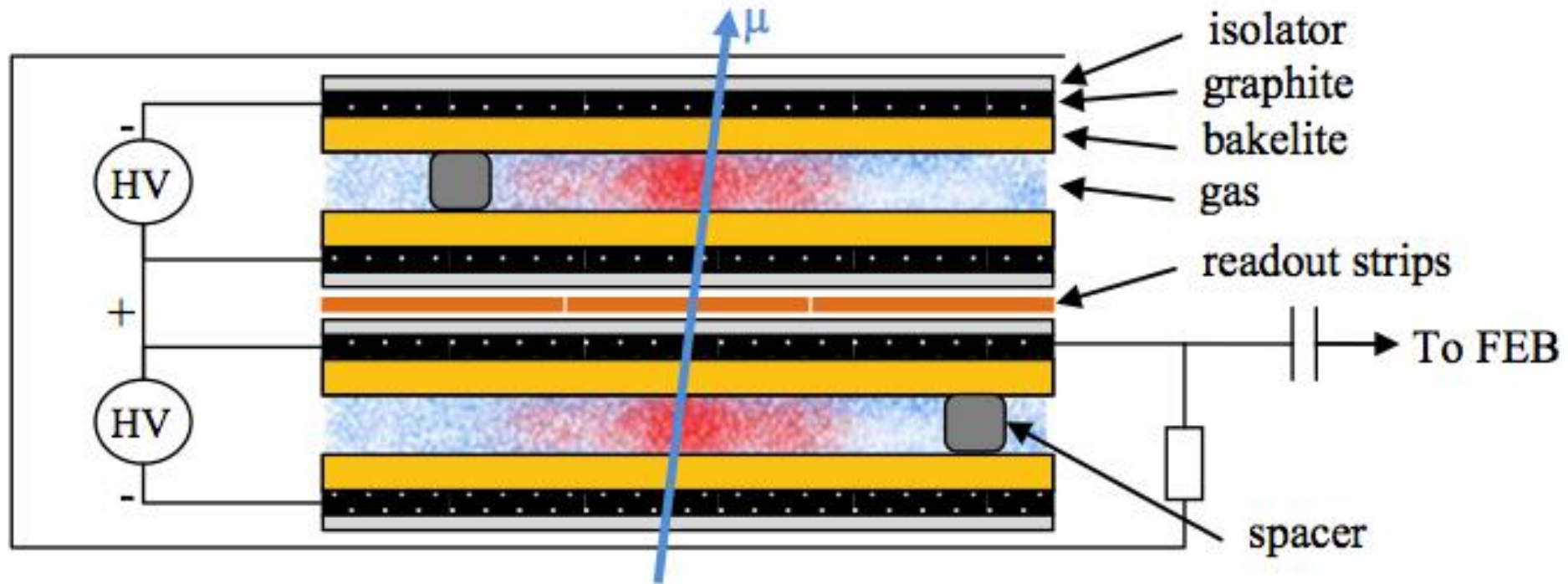


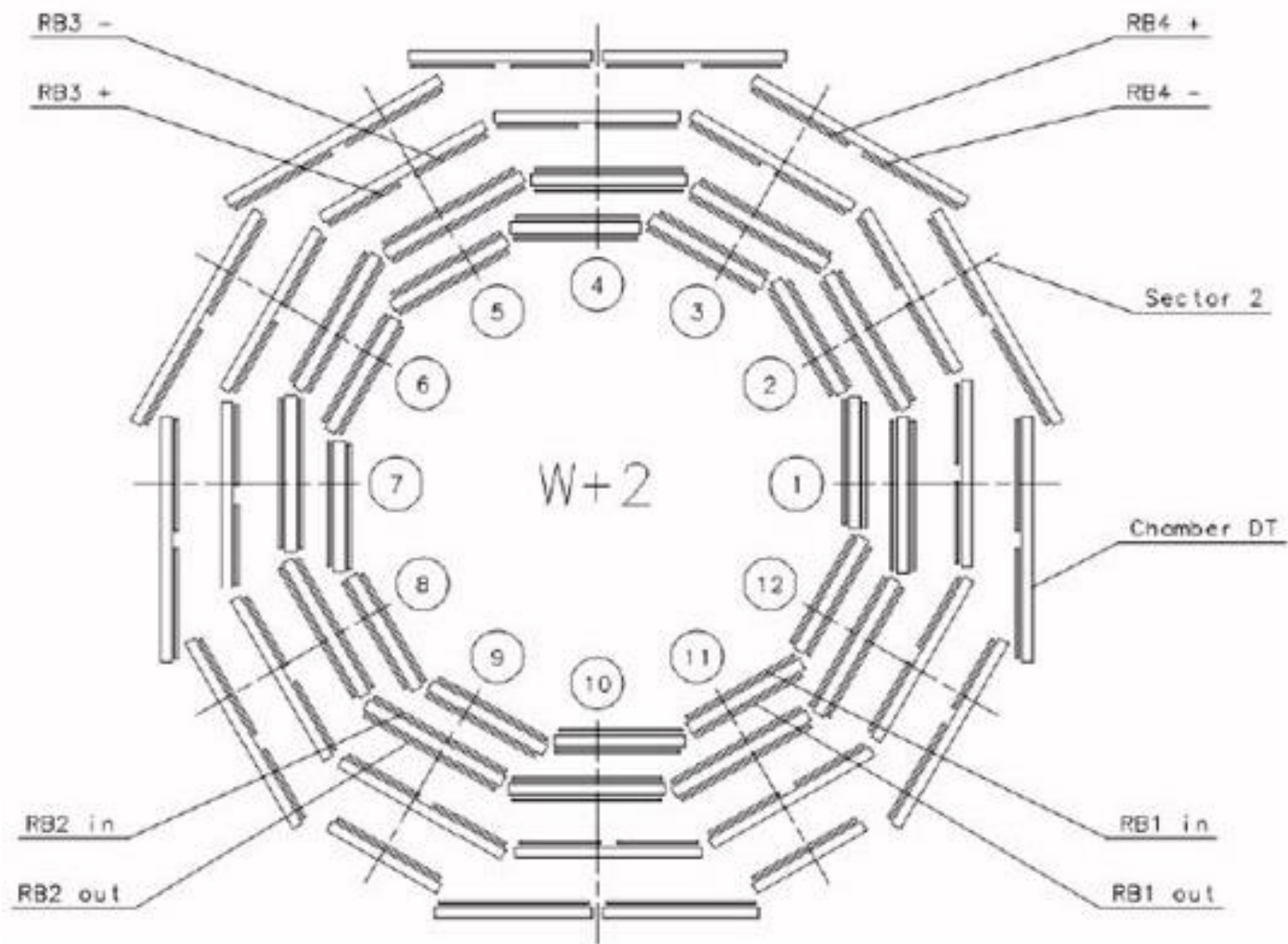


# Разработване на алгоритъм за засичане на течове

CMS RPC

# Resistive Plate Chambers - RPC





- 95% от газовата смес е  $C_2H_2F_4$  – фреон
- В атмосферата изтичат около 1000 литра на ден поради течове в системата
- Много фреон в атмосферата → Глобално затопляне



Цел на проекта: Откриване на **НОВИ** течове в газовата  
система

# Софтуера: Detector Control System (DCS)



**WM1 Gas Flow**

Rack Flow

Rack70

Total Flow In 437.8 l/h

Total Flow Out 377.5 l/h

Rack75

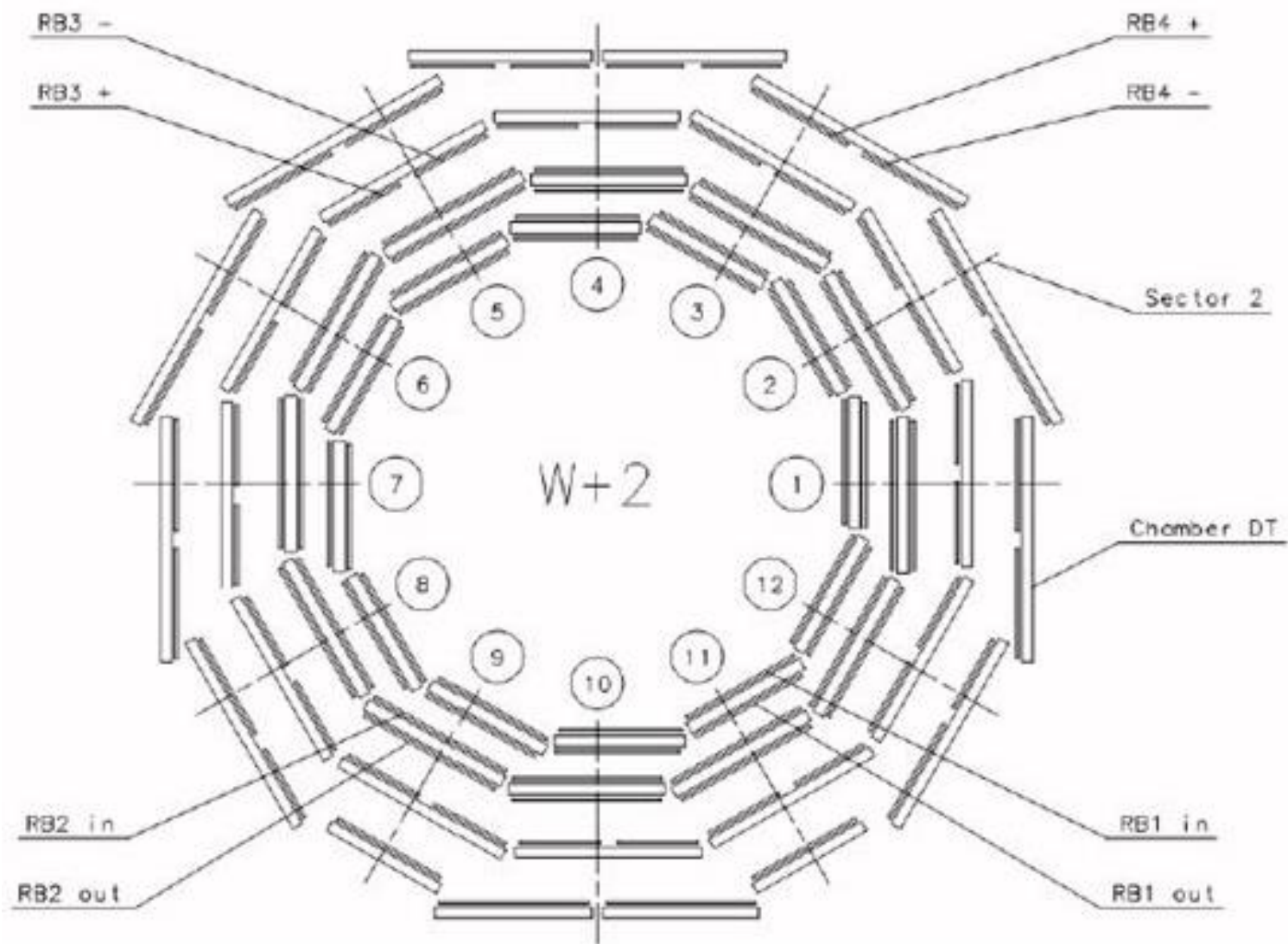
Total Flow In 441.9 l/h

Total Flow Out 458.4 l/h

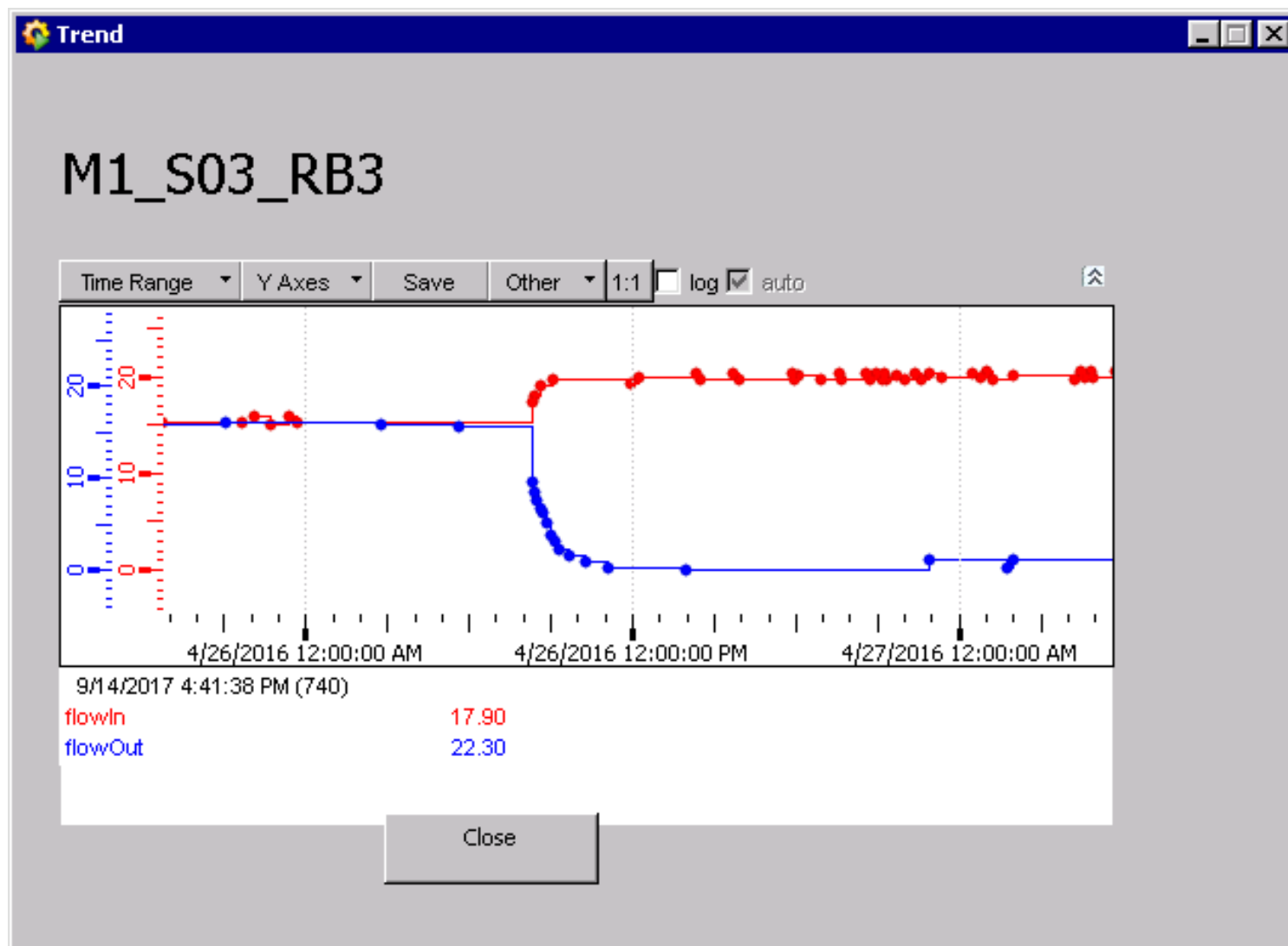
Chamber	Flow In (l/h)	Flow Out (l/h)	diff %	Plot
WM1_S01_RB1	17.1	16.5	3	trend
WM1_S01_RB2	21.1	19.7	6	trend
WM1_S01_RB3	13.3	32.0	-139	trend
WM1_S01_RB4	32.9	32.2	1	trend
WM1_S02_RB1	17.7	31.8	-80	trend
WM1_S02_RB2	20.7	21.1	-1	trend
WM1_S02_RB3	13.3	12.3	7	trend
WM1_S02_RB4	21.8	24.8	-13	trend
WM1_S03_RB1	19.3	18.5	4	trend
WM1_S03_RB2	19.7	20.8	-6	trend

Expert

GeneralAcknowledge SetAlarm GlobalTrend Close

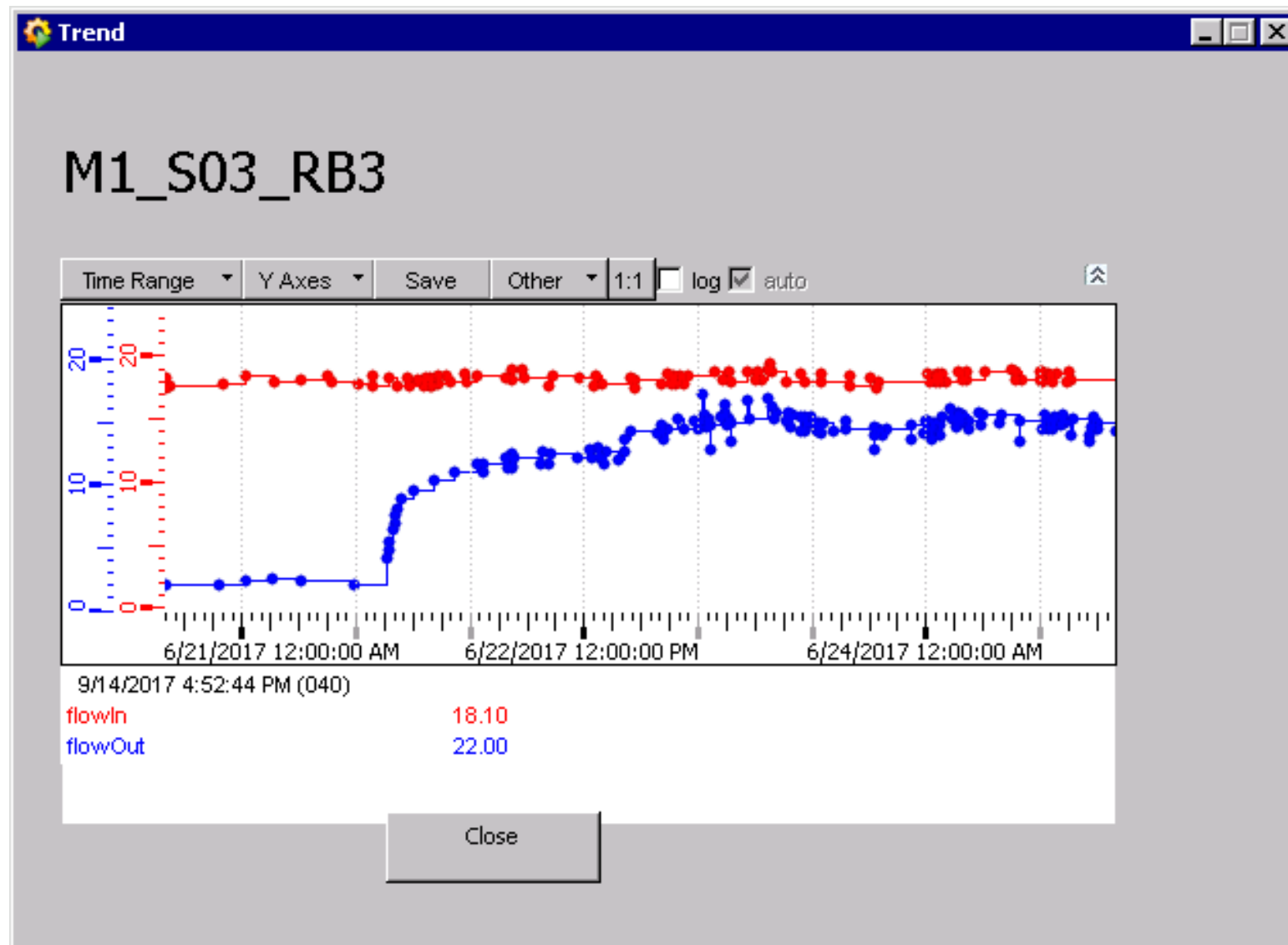


# Характерни течове

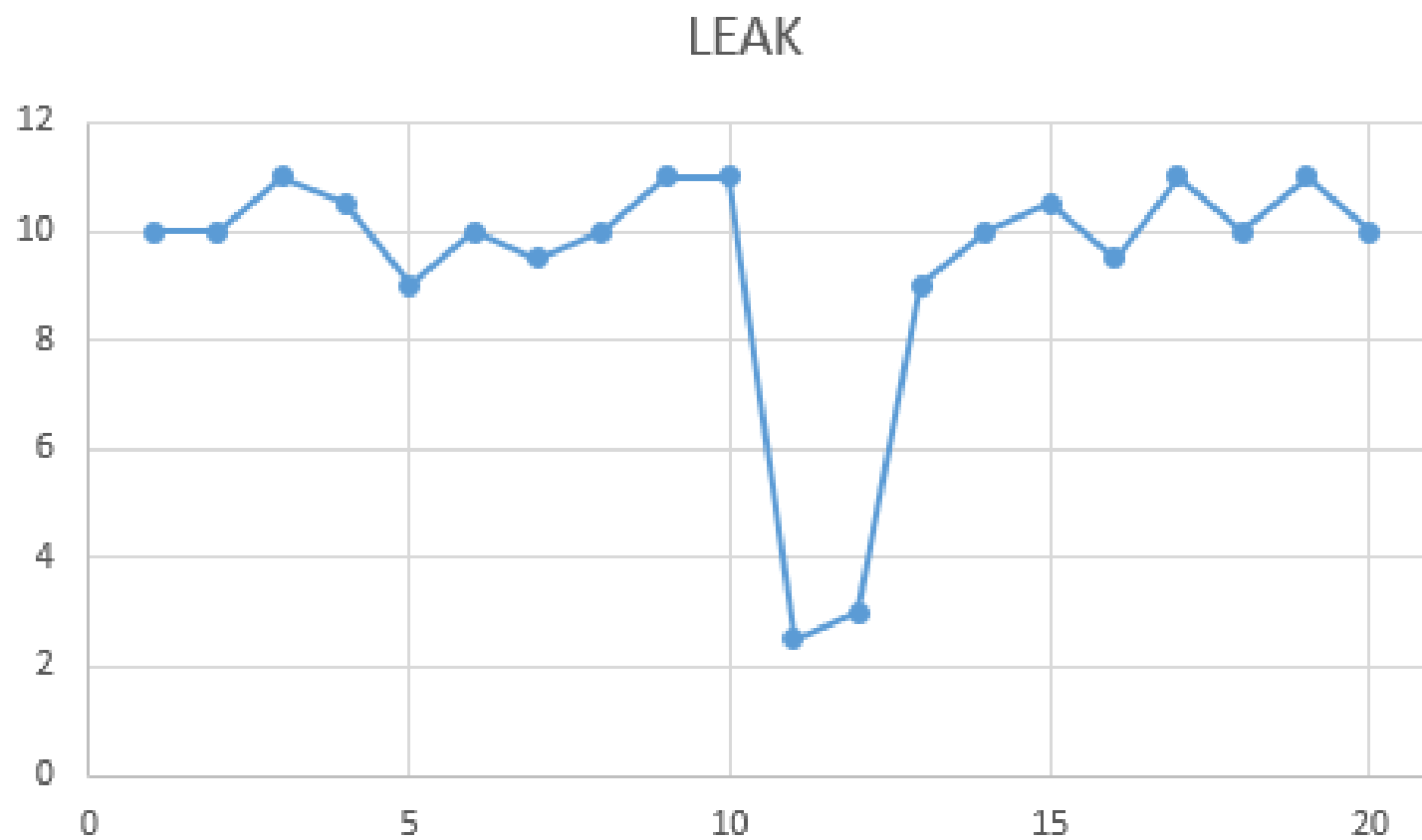


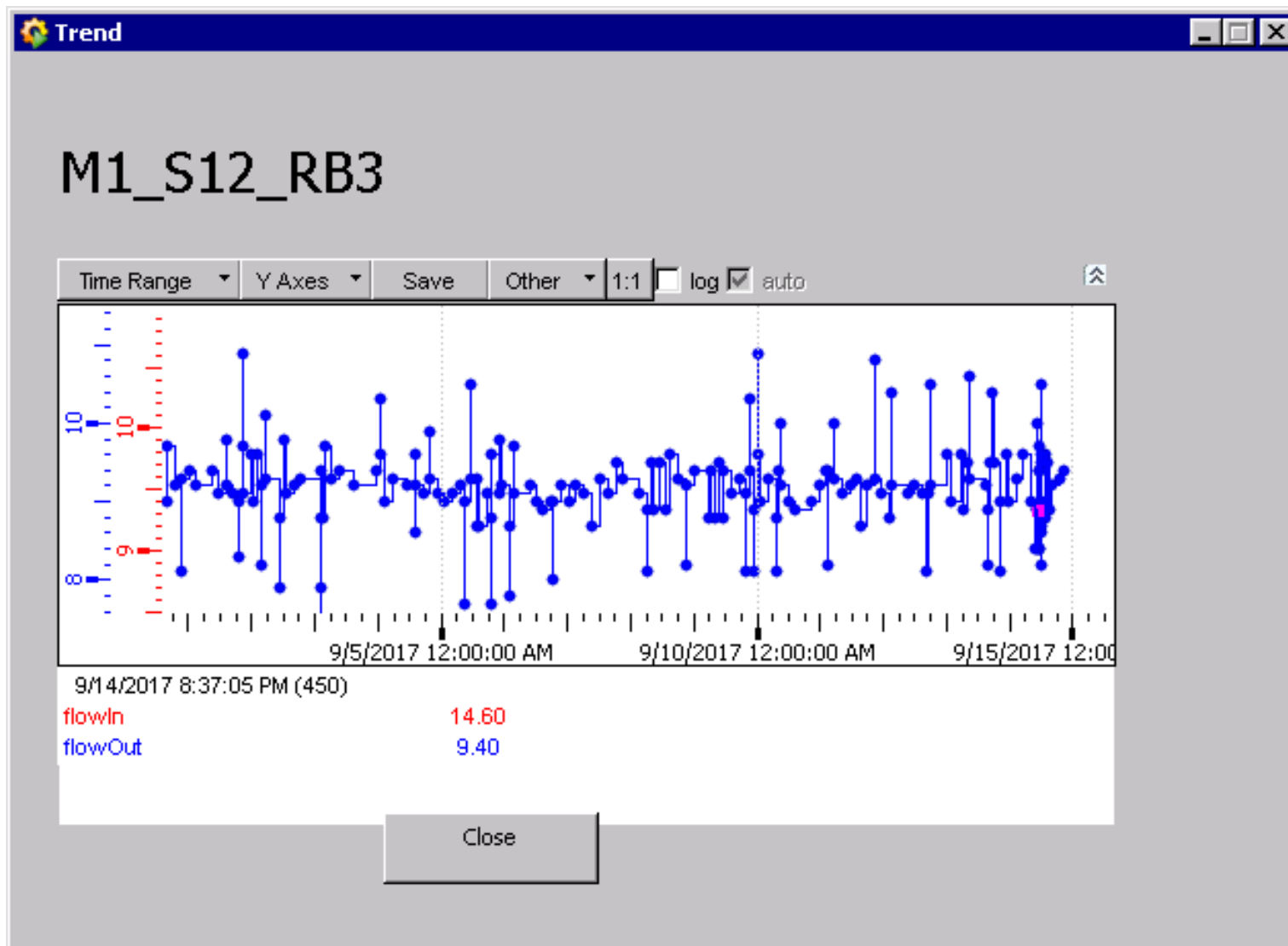


# Характерни течове

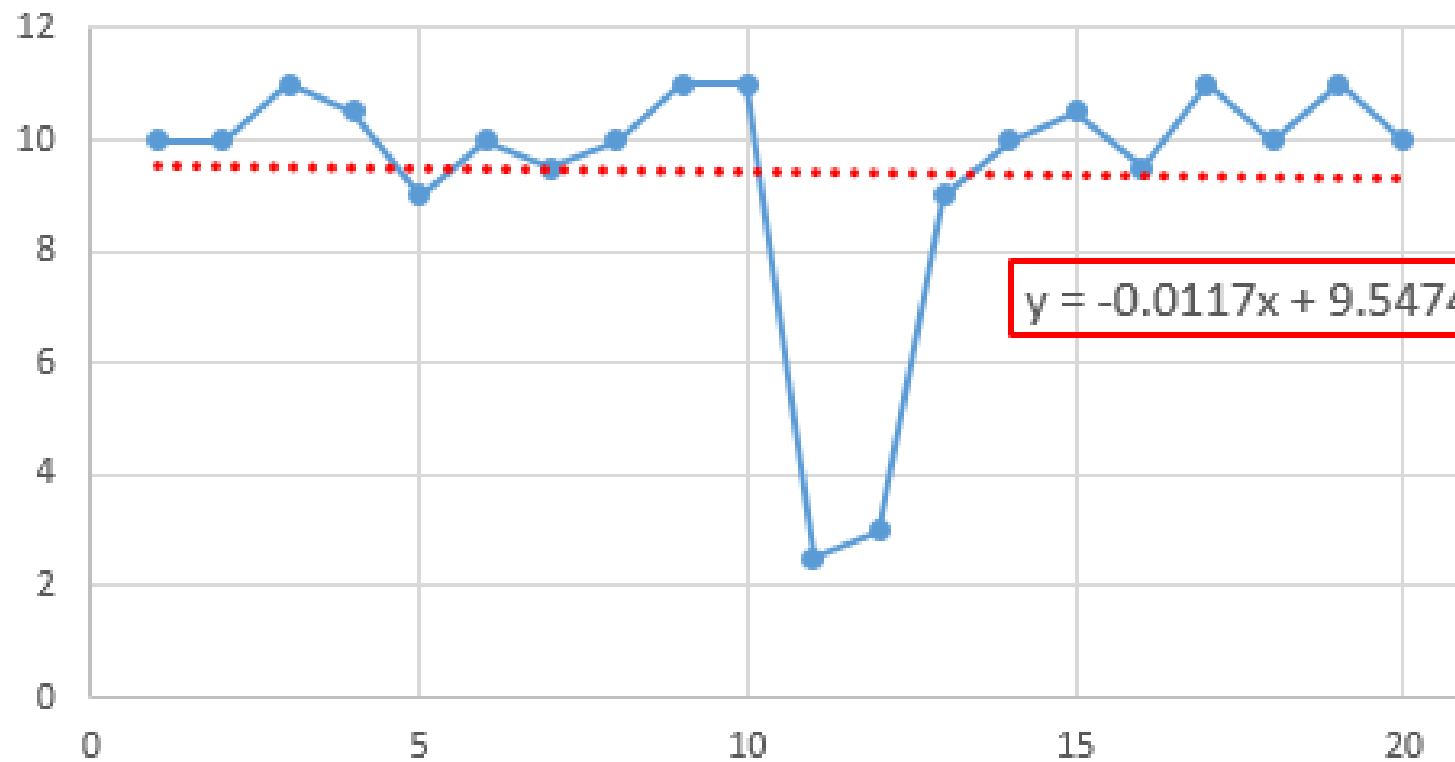


# Рязък спад и рязко покачване



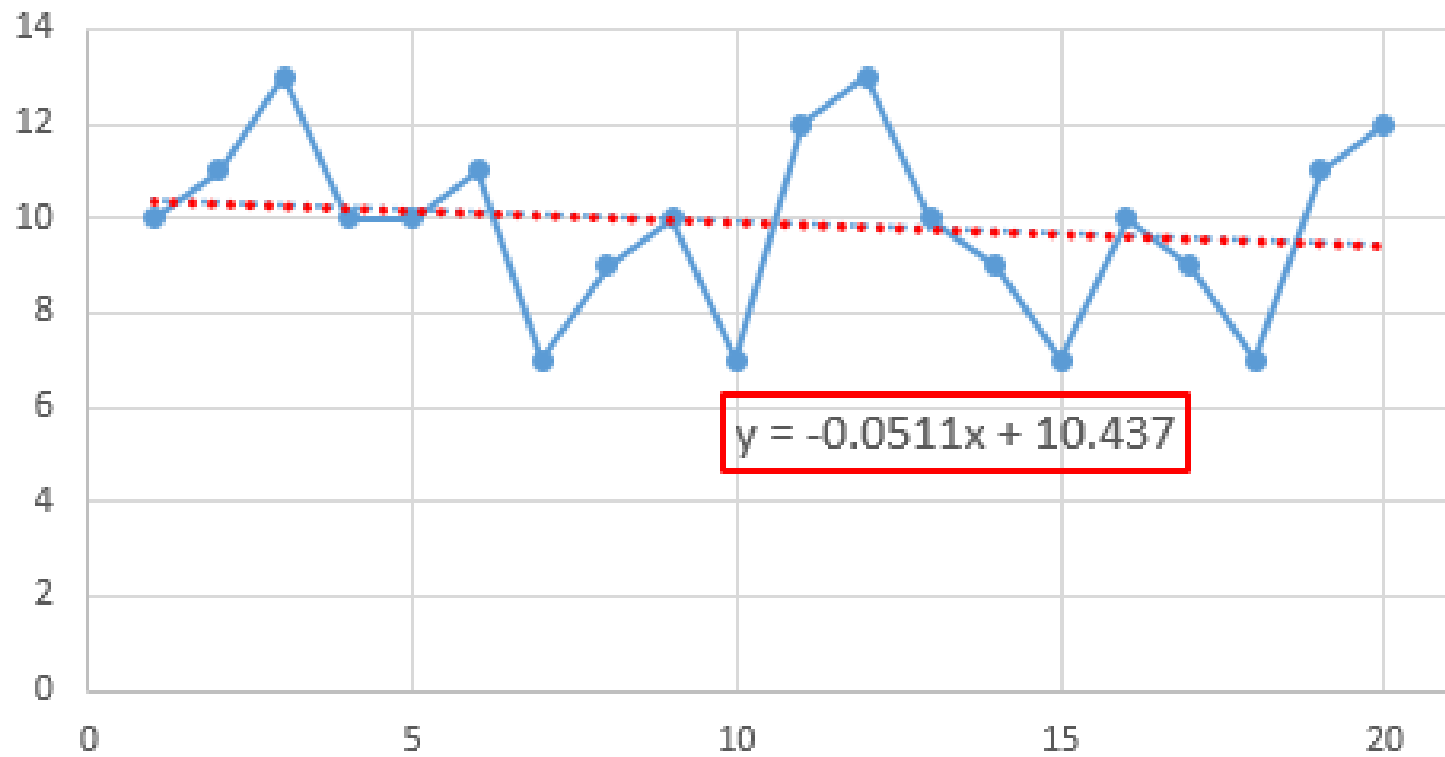


# LEAK



$\sigma = 2.291$   
 $D_i = 7.056$

# NO LEAK



$\sigma = 2.034$   
 $D_i = 3.794$

$y = -0.0511x + 10.437$



# CERN FTW