

SUBMITTED TO

KNOOR NADEEMA.

SUBMITTED BY

MUHAMMAD
HUSSAIN

STUDENT ID

7739

SECTION

"B"

SUBJECT

WASTEWATER

TREATMENT

Qno 1: Briefly discuss each one of these parameters.

Ans:

Hydraulic Retention time:

HRT defined as ratio between the reactor volume and the feed flow rate represents the average time the cells and substrates stay inside the reactor. HRT is very important parameter for the hydrogen and methane production in continuous mode very low HRT comporta the washout at reactor which means all active micro-organisms escape out from reactor on the contrary an adequate HRT results in abundant hydrogen and methane yields.

⇒ HRT is measure of average length of time that soluble compounds remains in constructed bioreactor.

Solid retention time (SRT):

It is the average time^{the} activated sludge solid are in the system. The SRT is an important design and operation parameter for activated sludge process and is usually expressed in days.

$$SRT = \frac{V \times c_d}{Q_{out} \times C_{out}}$$

SRT is time the solid fraction at the wastewater spends in a treatment unit.

It is quantity of solids maintained in reactor divided by quantity of solids coming out of reactor each day.

2) Methods Used for decoupling SRT from HRT.

Decoupling SRT and HRT Enhance
the organic loading rate and enable
reactor size reductions.

Four Approaches to decouple SRT from
HRT.

→ Approaches,

→ Biomass Immobilization in
attached growth system

→ Granulation and floc formation

→ Biomass recycling.

→ Biomass retention.

3) Advantages:

⇒ Decoupling implied using less

resources and generating less waste

per unit of economic activity.

→ less space required for an HRT
treatment plant compared to an aerobic
treatment plant

⇒ HRT treatment technology has relatively
low equipment cost.

⇒ Waste biomass disposal cost are ~~are~~ low.

⇒ Management required is low.

⇒ Relative decoupling is a positive

sign, the real aim is to achieve.

absolute decoupling, where the economy
can continue to grow and waste
generation reduces.