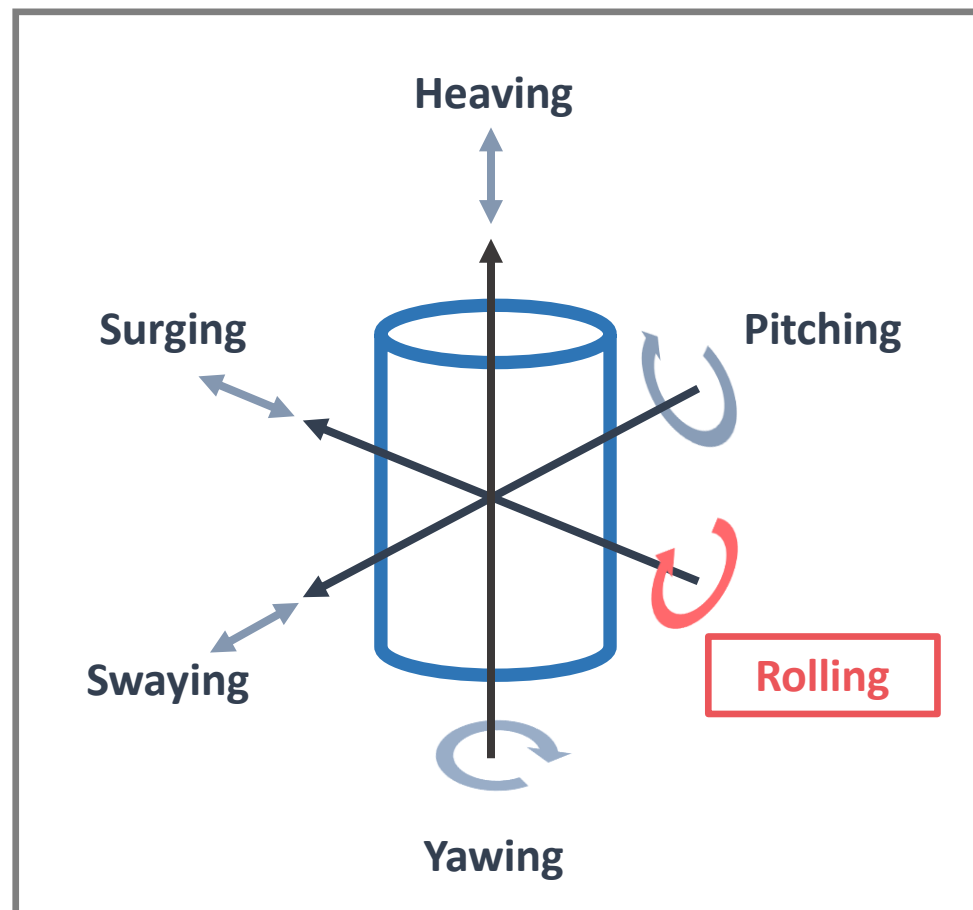


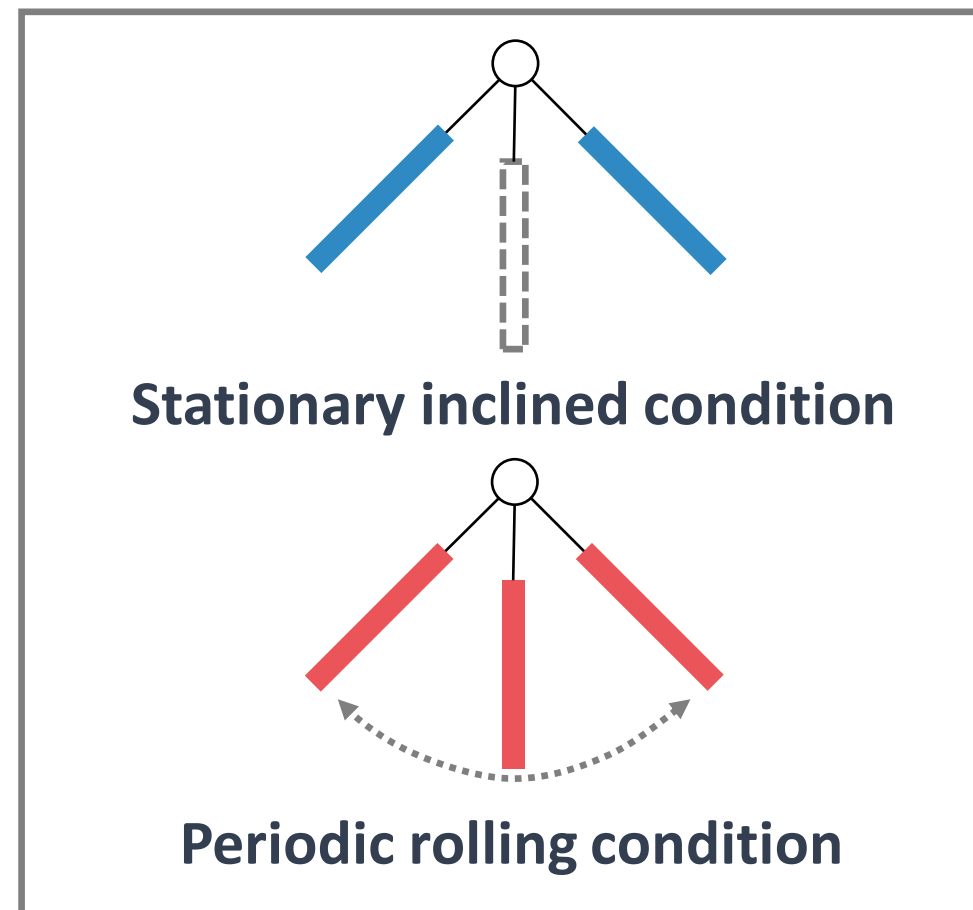
## Introduction

### Background

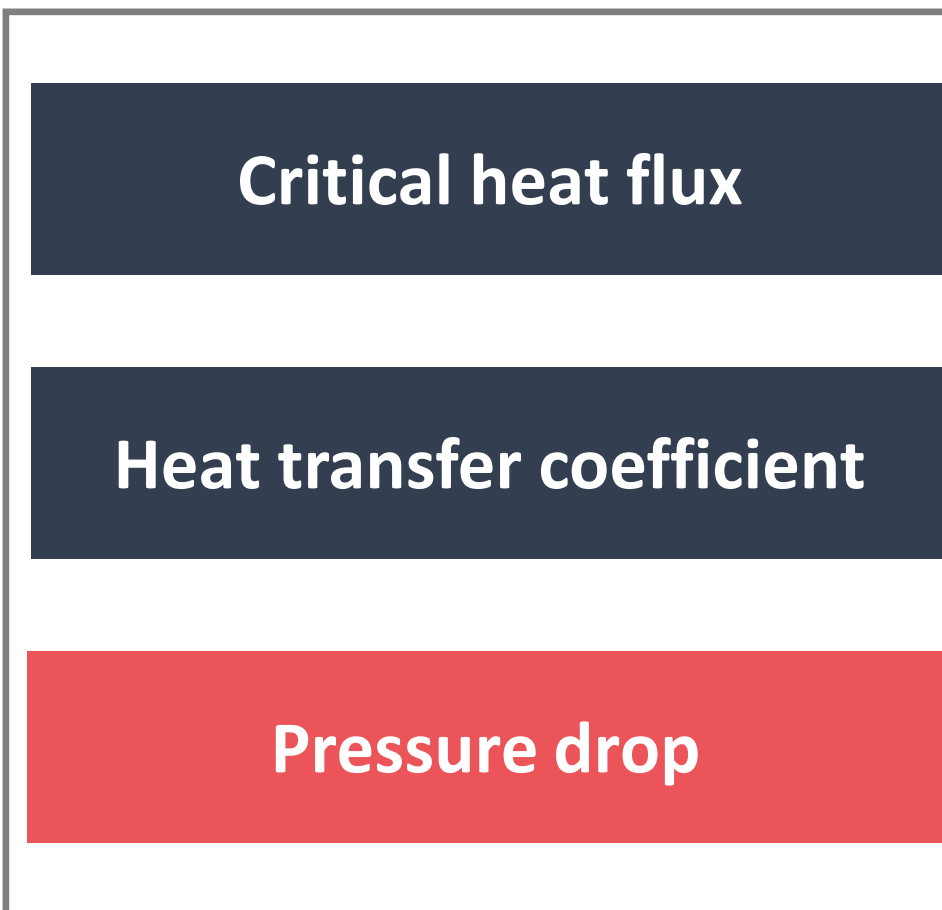
#### 6DOF movement of floating reactors



#### Possible conditions with rolling axis



#### Thermal-Hydraulic behaviors of interest

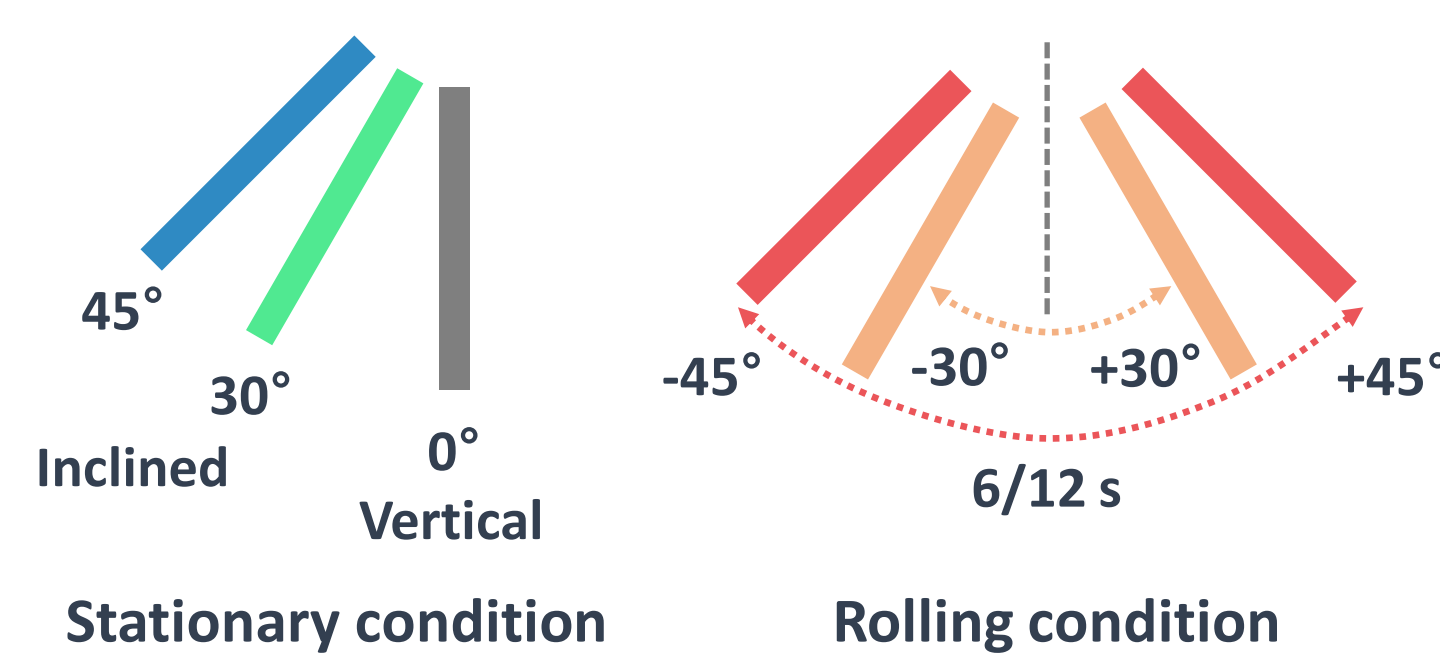
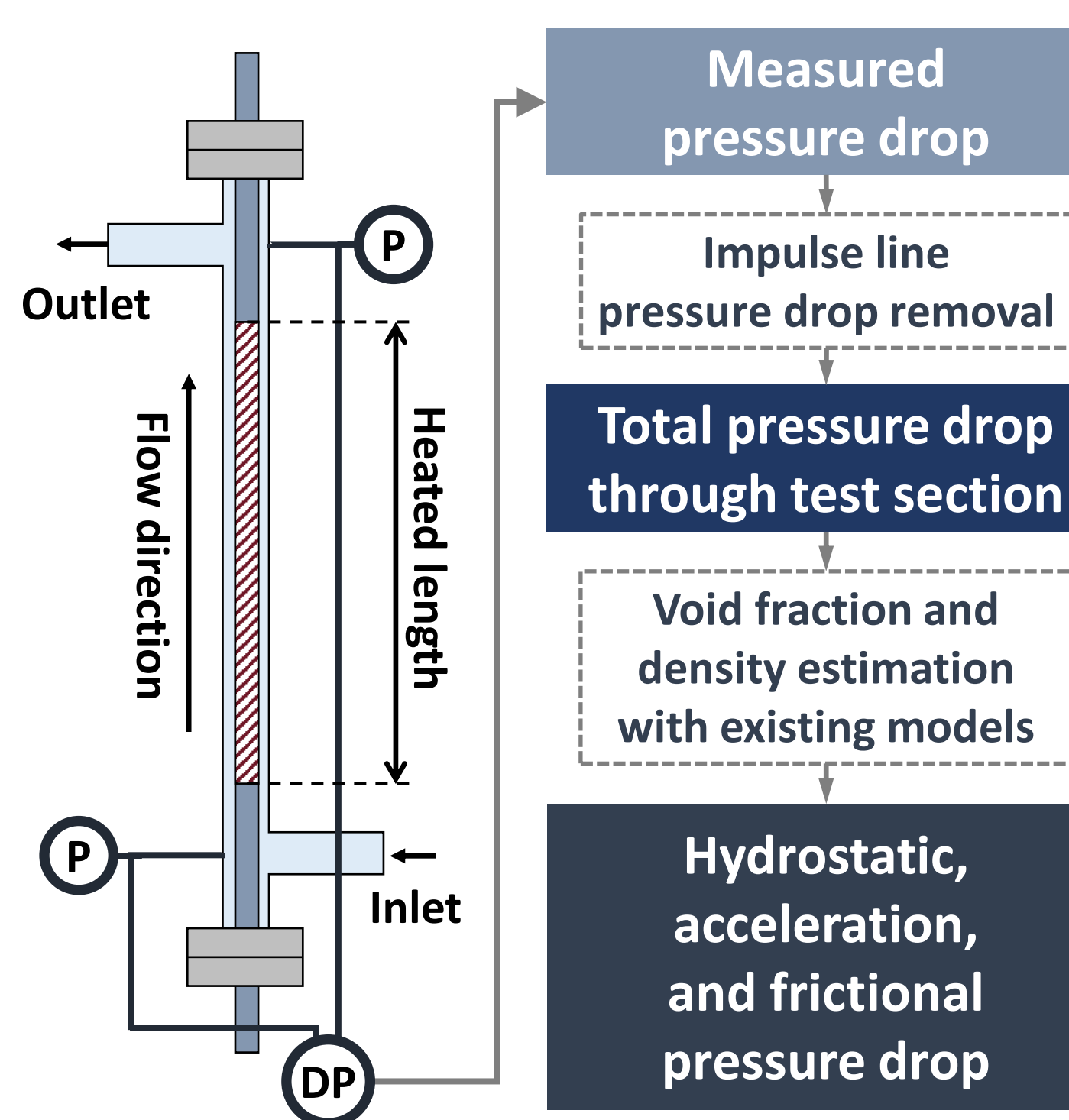


### Experiment conditions and analysis method

#### Thermal-hydraulic and inclination/rolling Experiment condition

|            | Working fluid R-134a          | Water equivalent              |
|------------|-------------------------------|-------------------------------|
| Pressure   | 16 ~ 32 bar                   | 100 ~ 180 bar                 |
| Mass flux  | 35 ~ 1400 kg/m <sup>2</sup> s | 50 ~ 2000 kg/m <sup>2</sup> s |
| Subcooling | 8 ~ 70 K                      | 21 ~ 195 K                    |

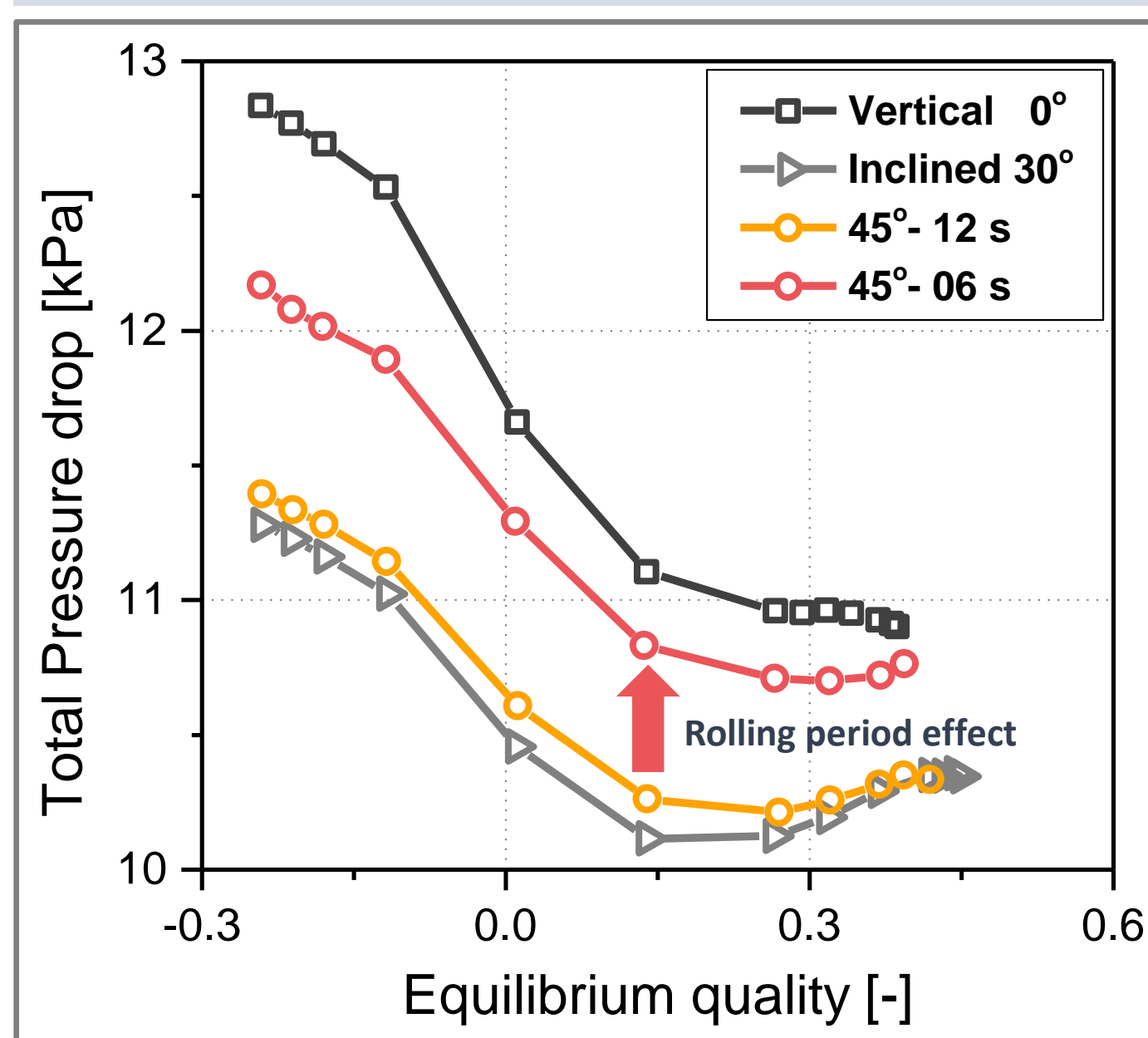
#### Test section configuration and pressure drop analysis method



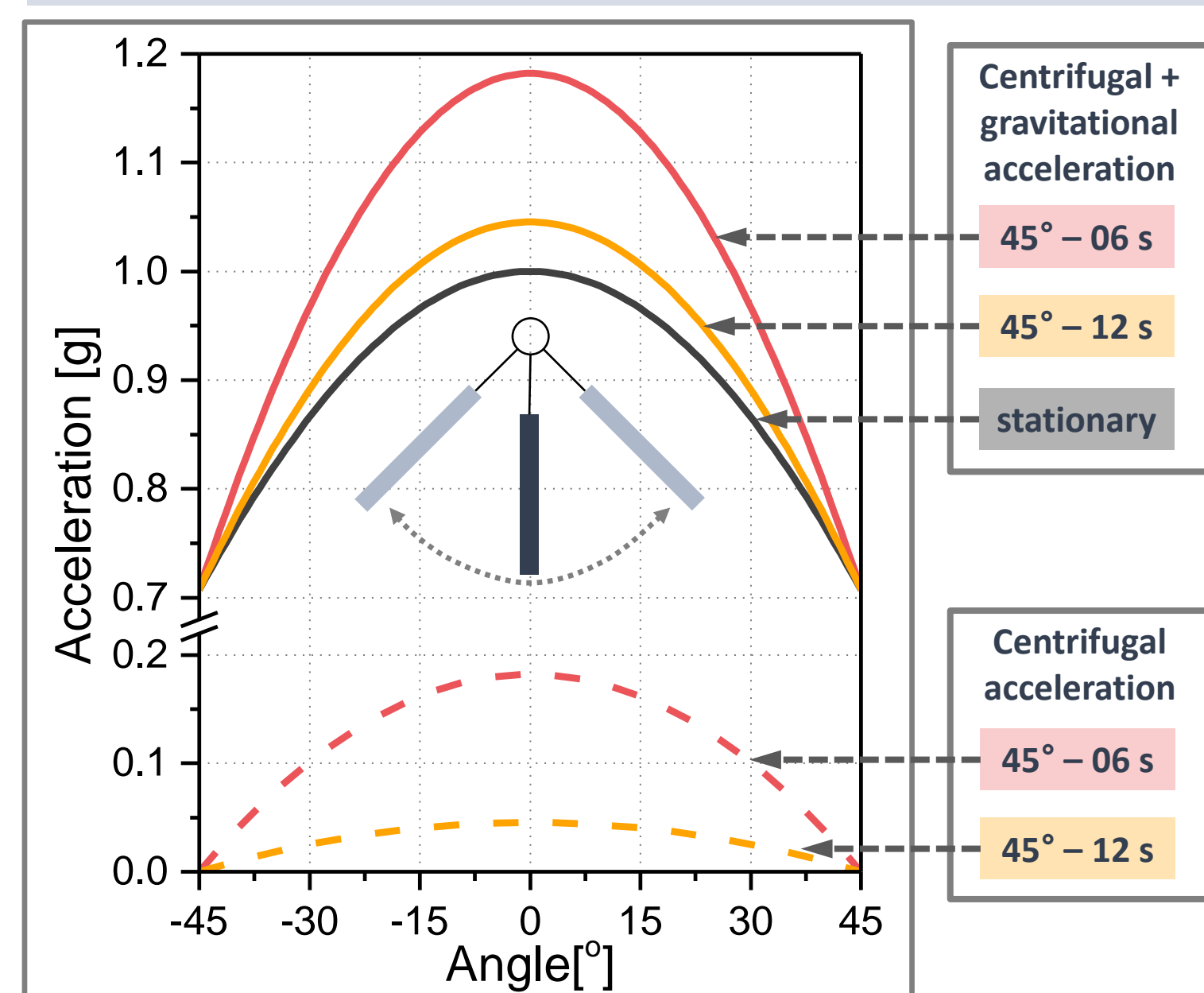
## Rolling motion effect

### Experimental results

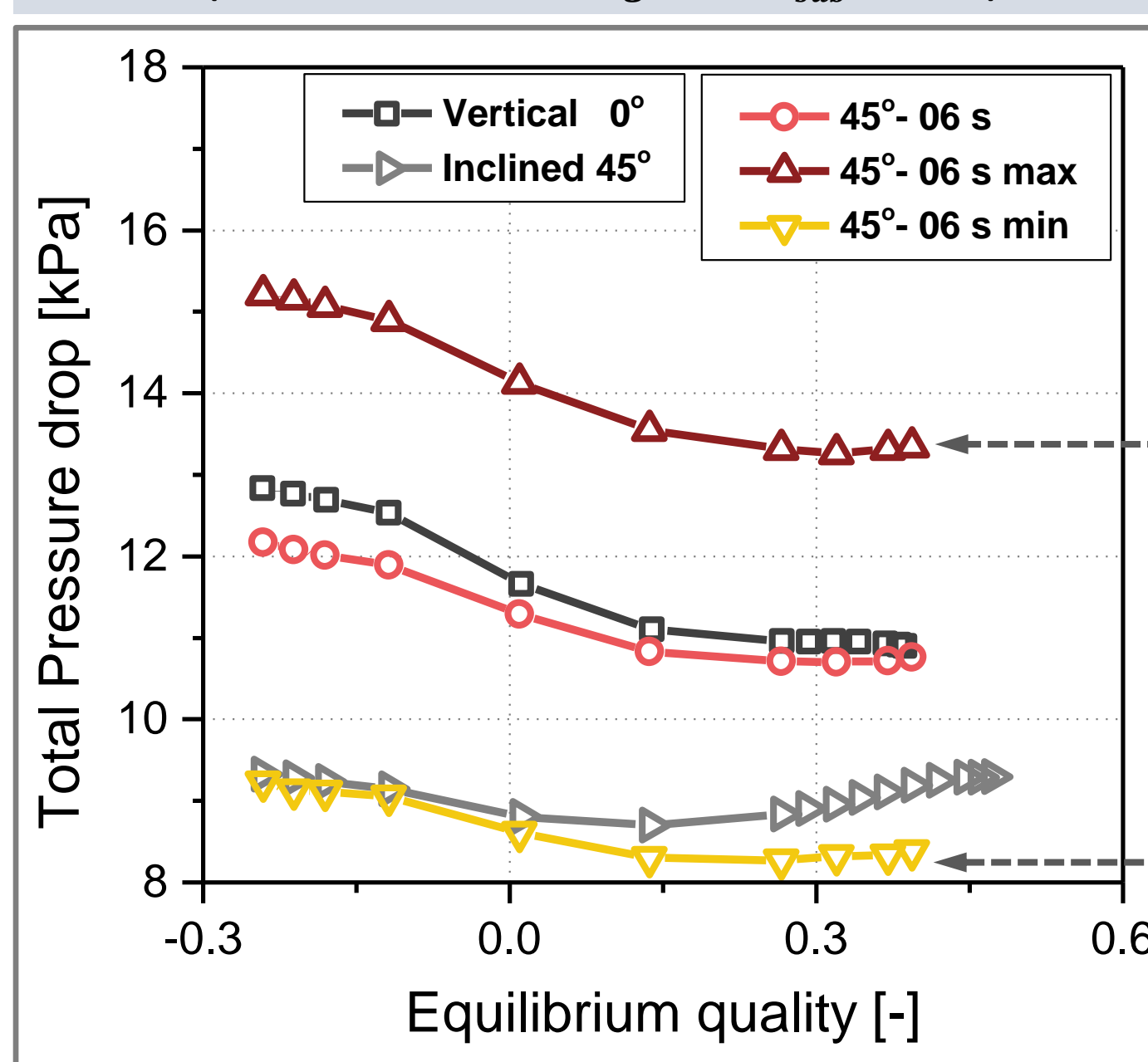
#### Time-averaged rolling condition results



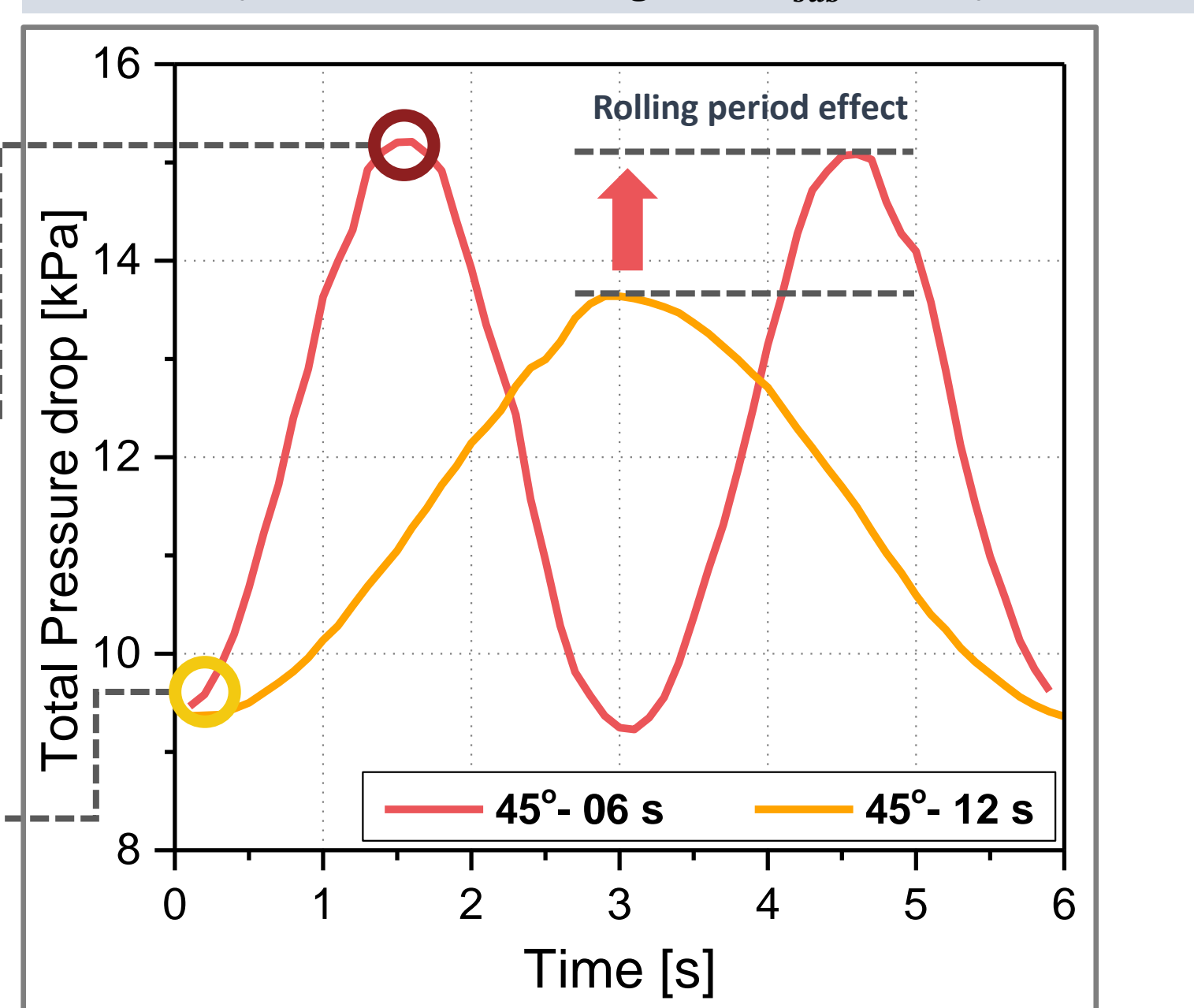
#### Axial acceleration under rolling condition



#### Max. and min. rolling condition results



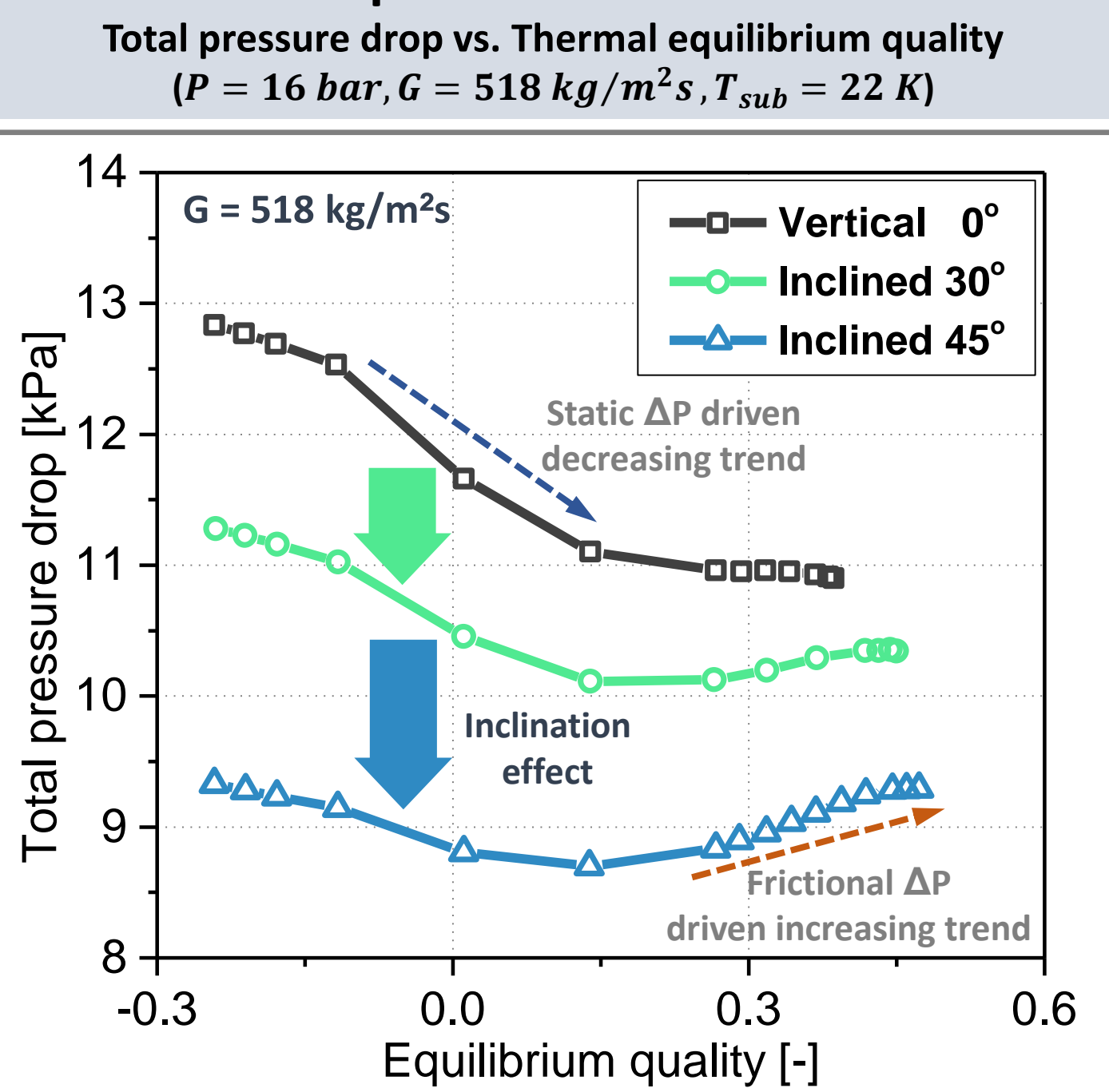
#### Rolling condition transient result for 6 s



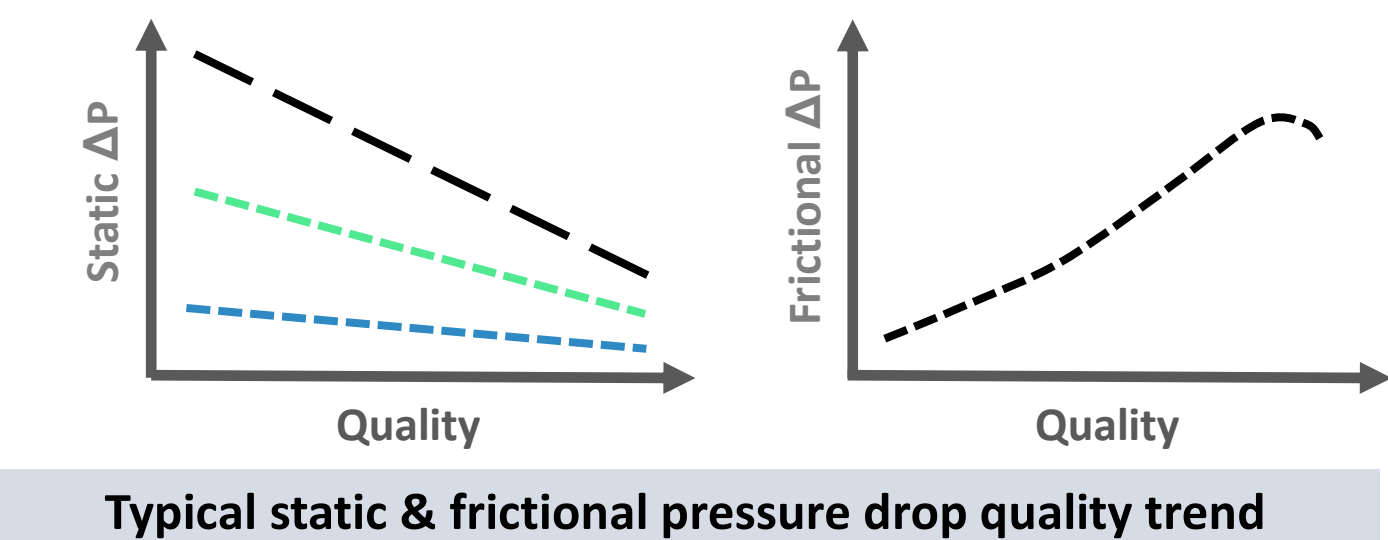
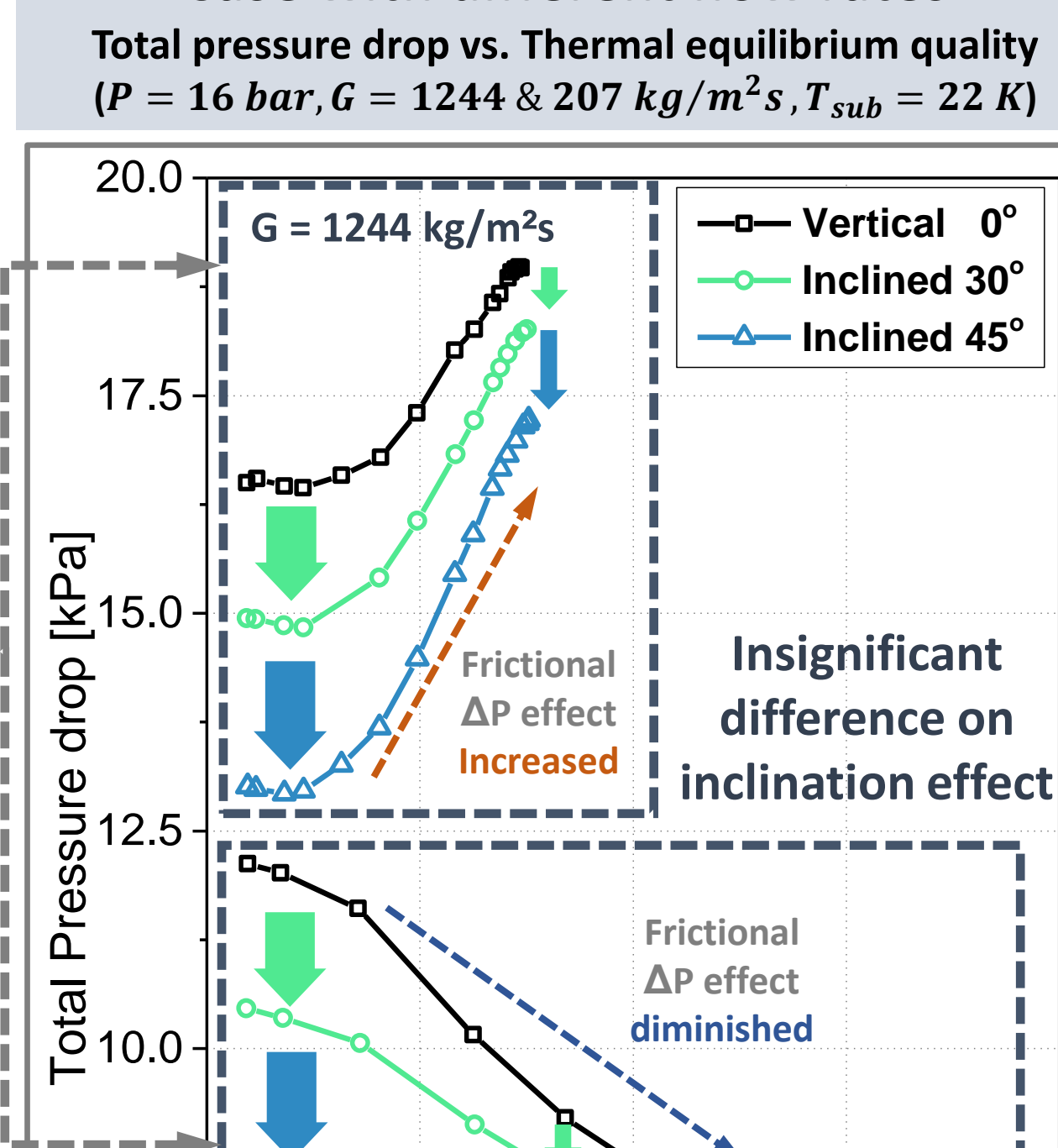
## Inclination effect

### Experimental results

#### Representative case

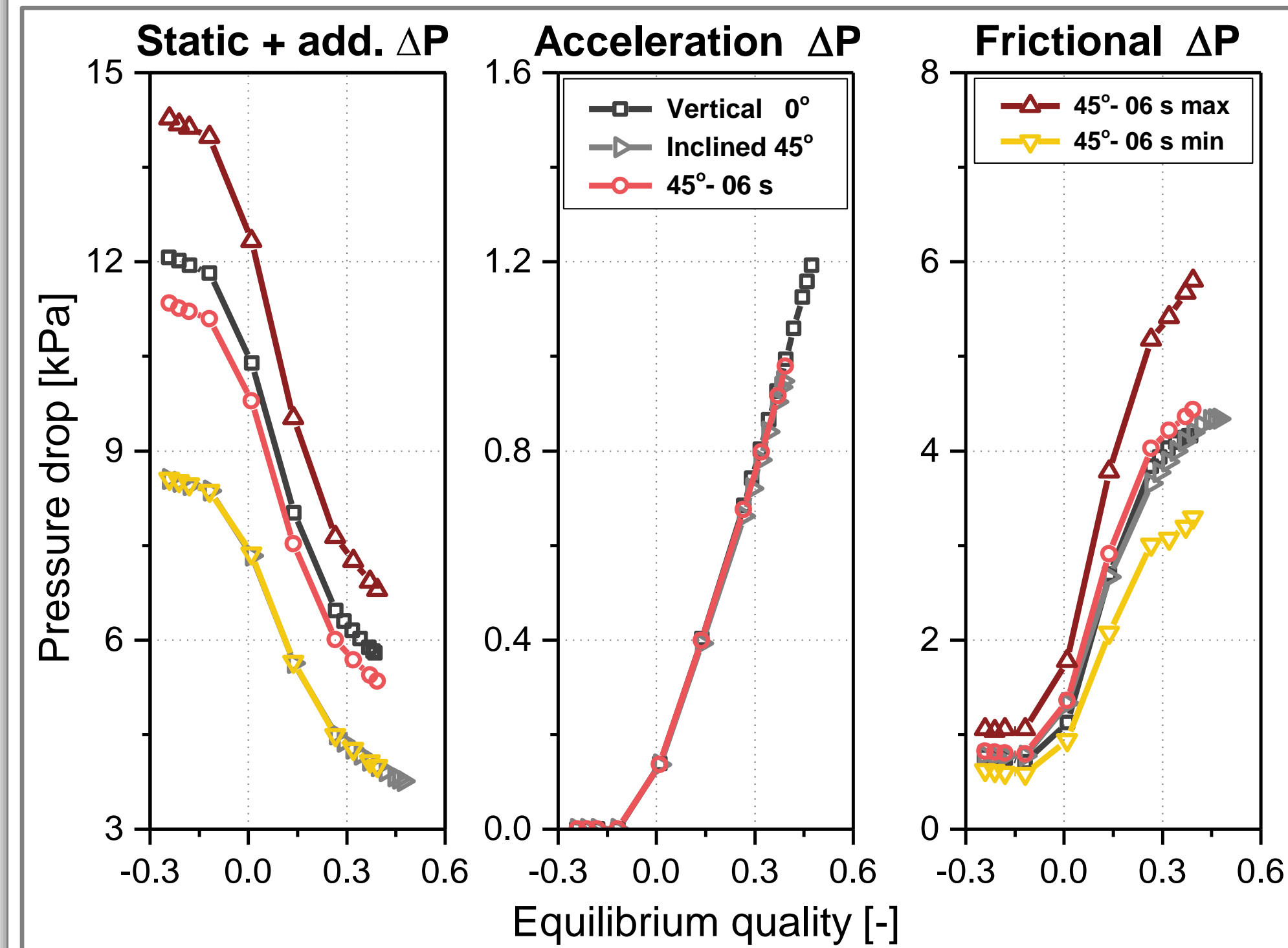


#### Case with different flow rates

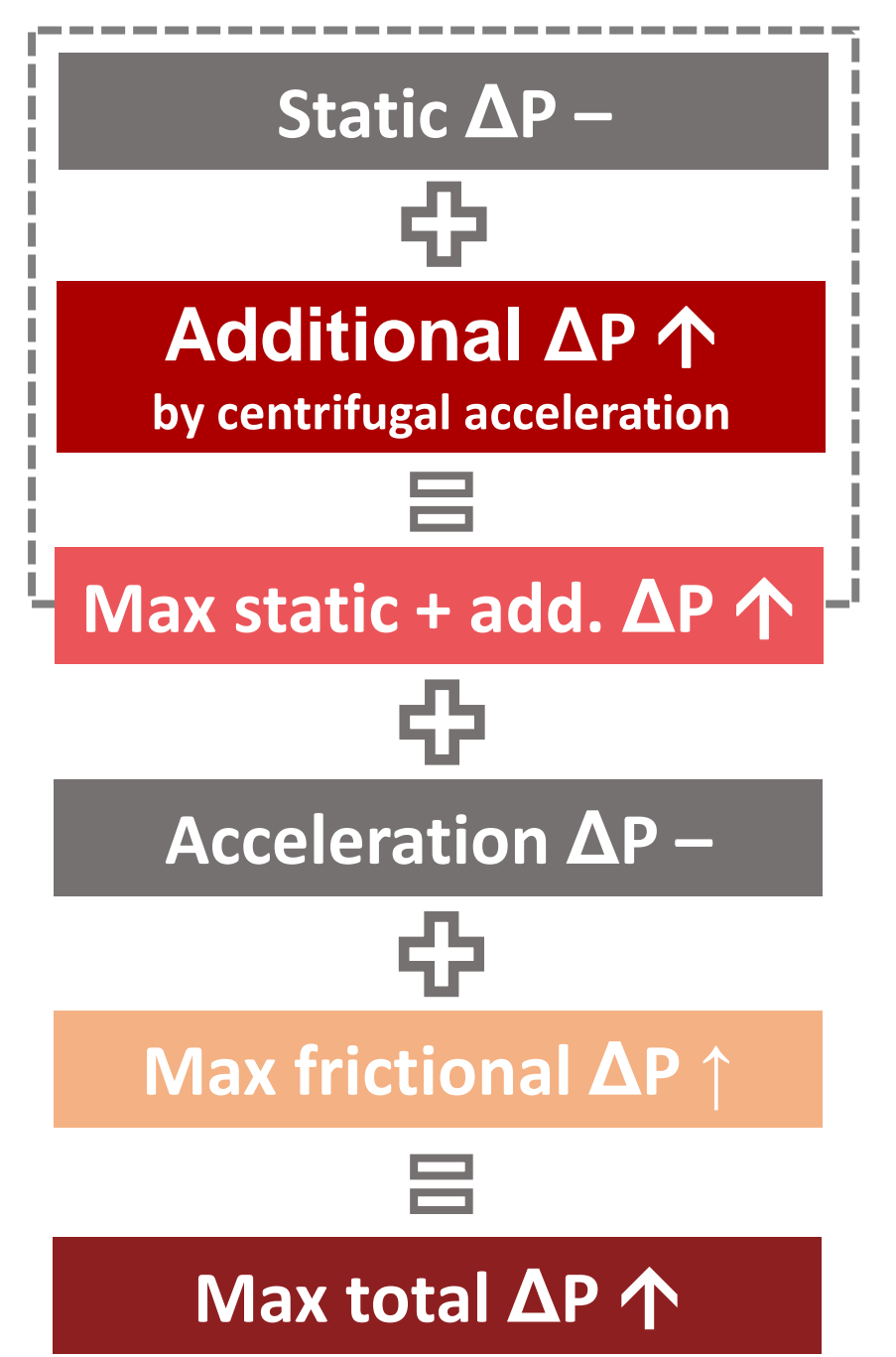


### Pressure drop partitioning results

#### Representative case rolling condition partitioning result

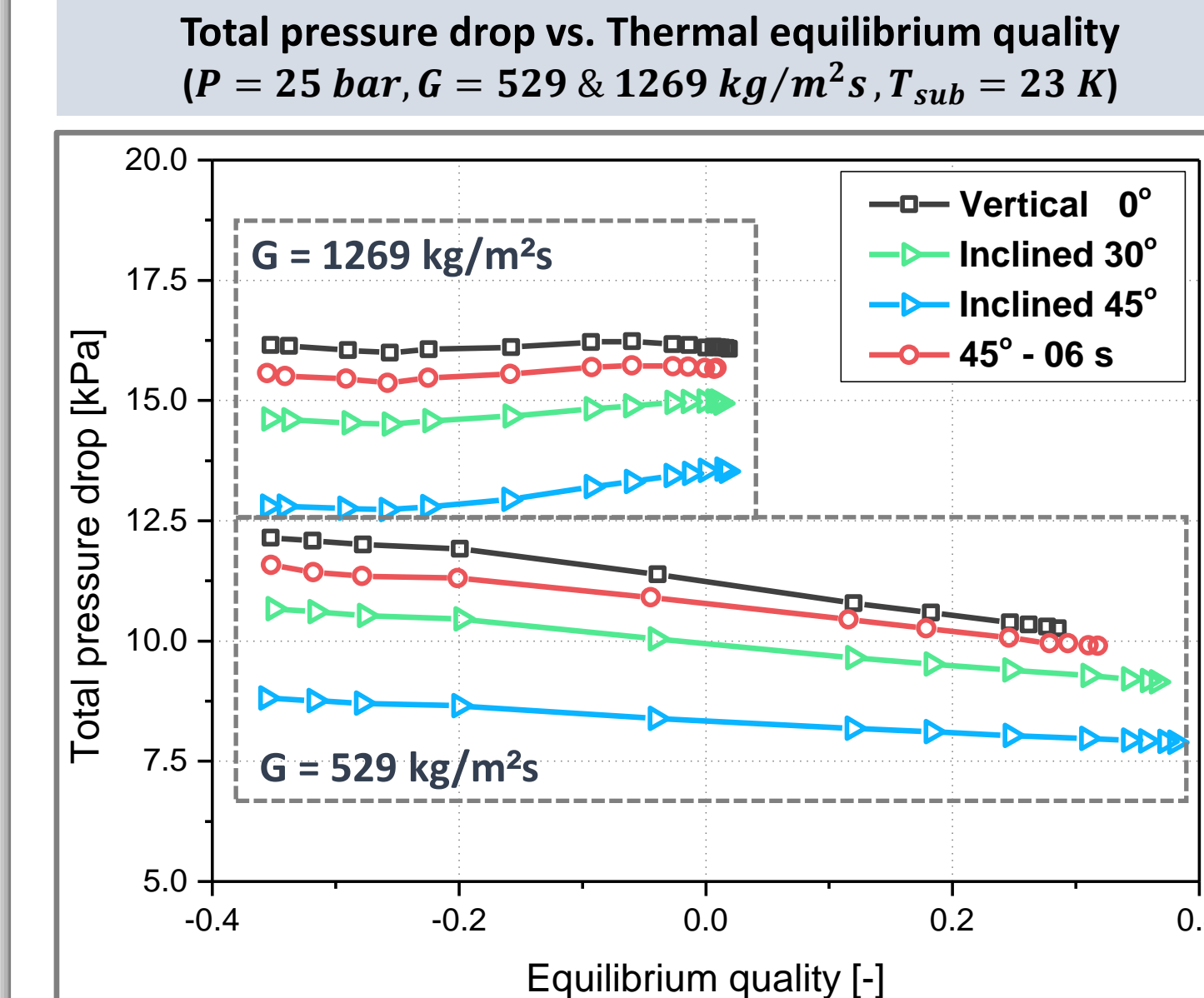


#### Rolling motion effect

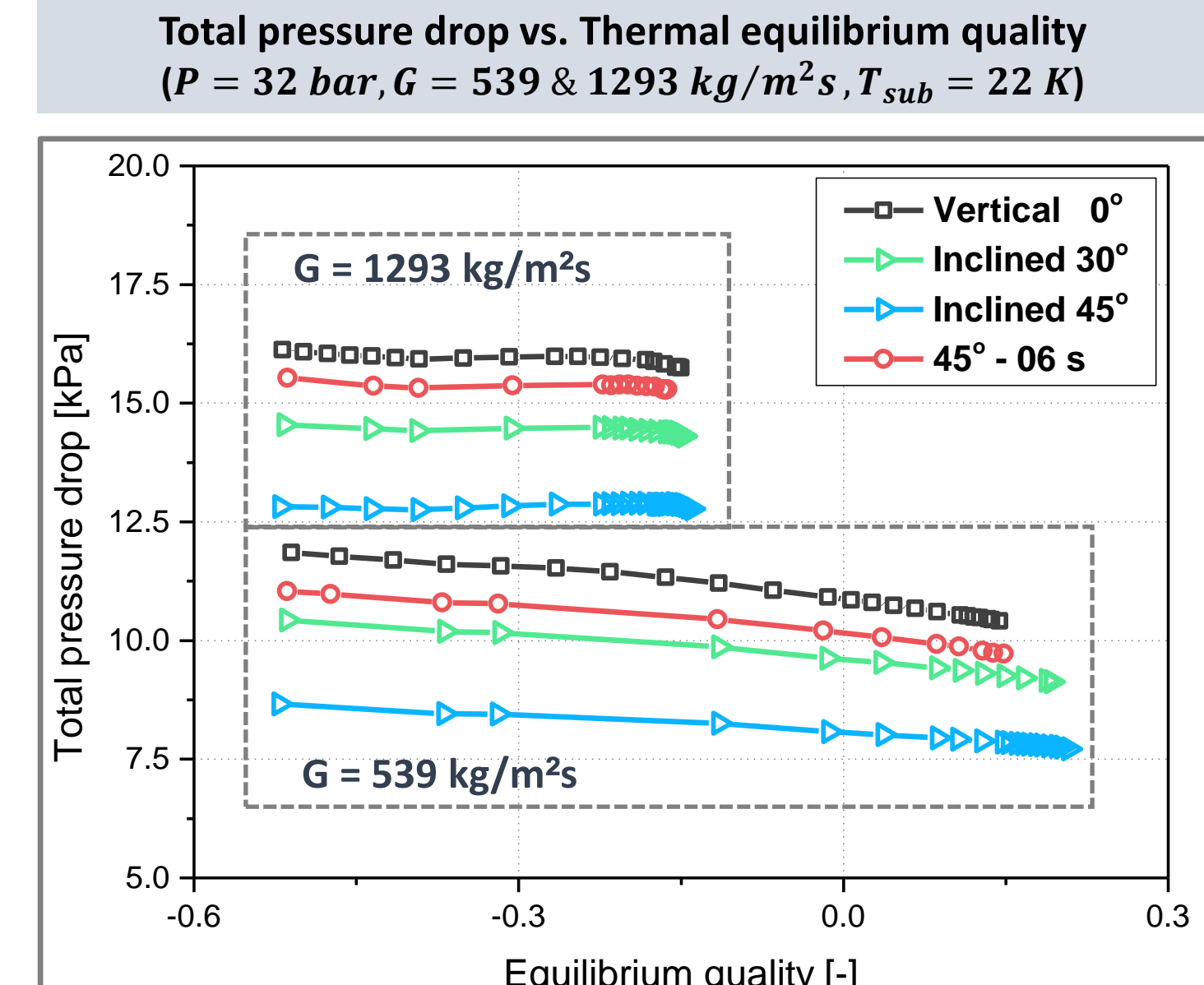


### Other pressure condition results

#### 25 bar condition results

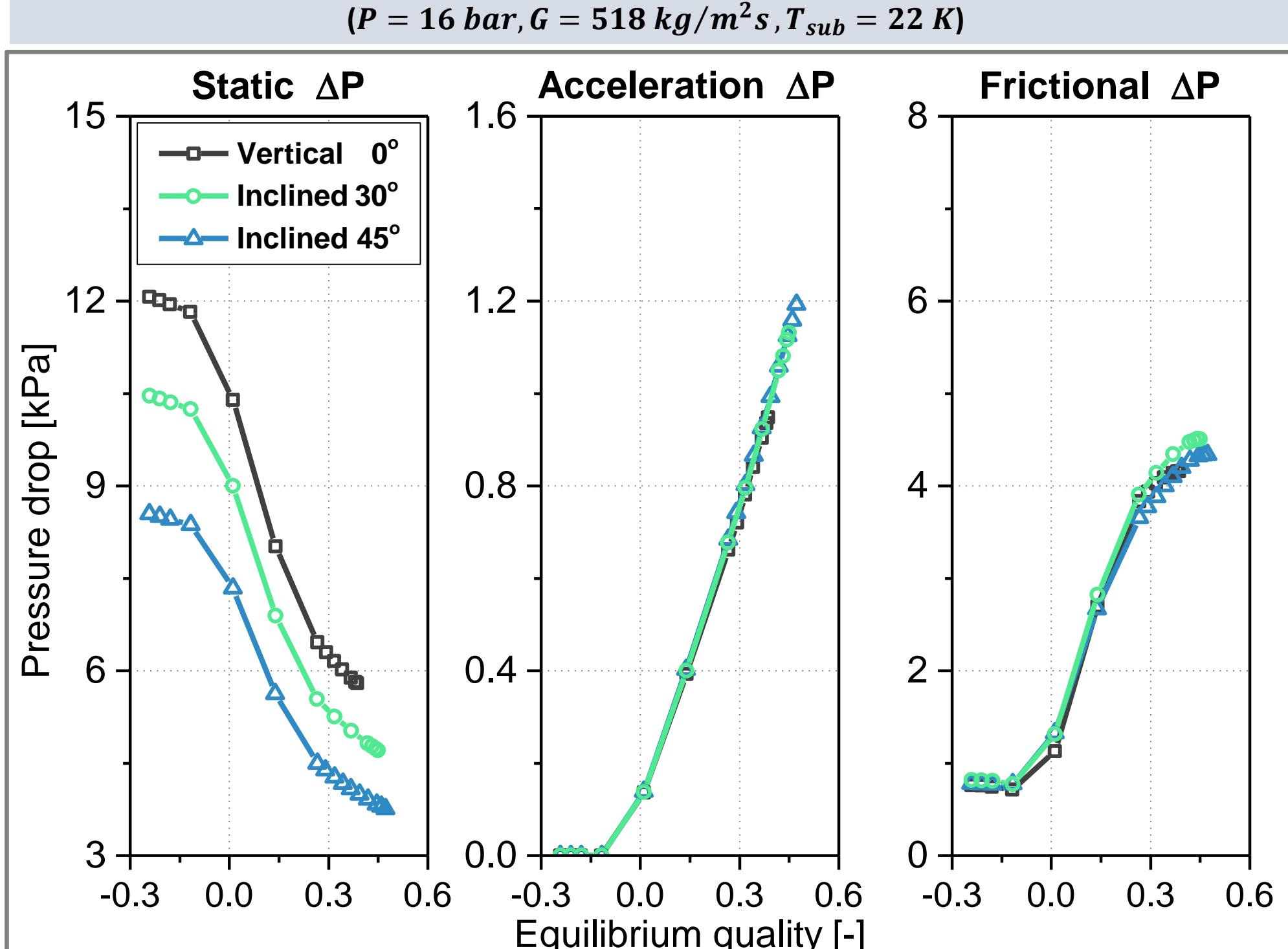


#### 32 bar condition results

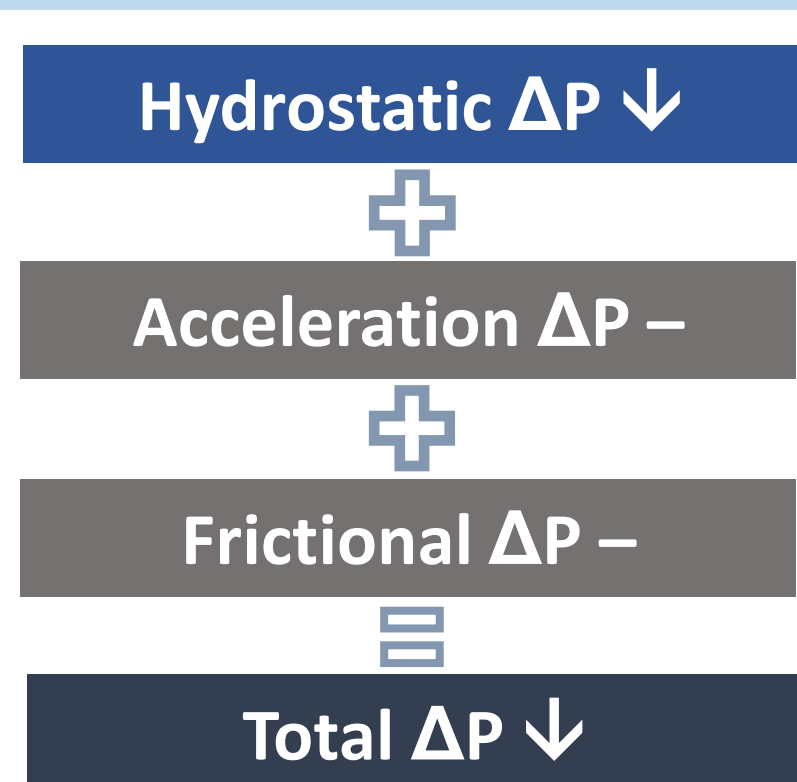


### Pressure drop partitioning result

#### Representative case partitioning result



#### Inclination effect



Models used for partitioning  
 OSV model  
 : Saha and Zuber(1974)  
 Equilibrium to flow quality model  
 : Ahmad(1970)  
 Inclined channel void fraction model  
 : Bhagwat and Ghajar(2014)

## Future work

### ❖ Extension of experimental database and code assessment

- Inclination and rolling motion experiment with circular channel.
- Assessment of calculated pressure drop results under inclined and rolling condition by thermal-hydraulic code.