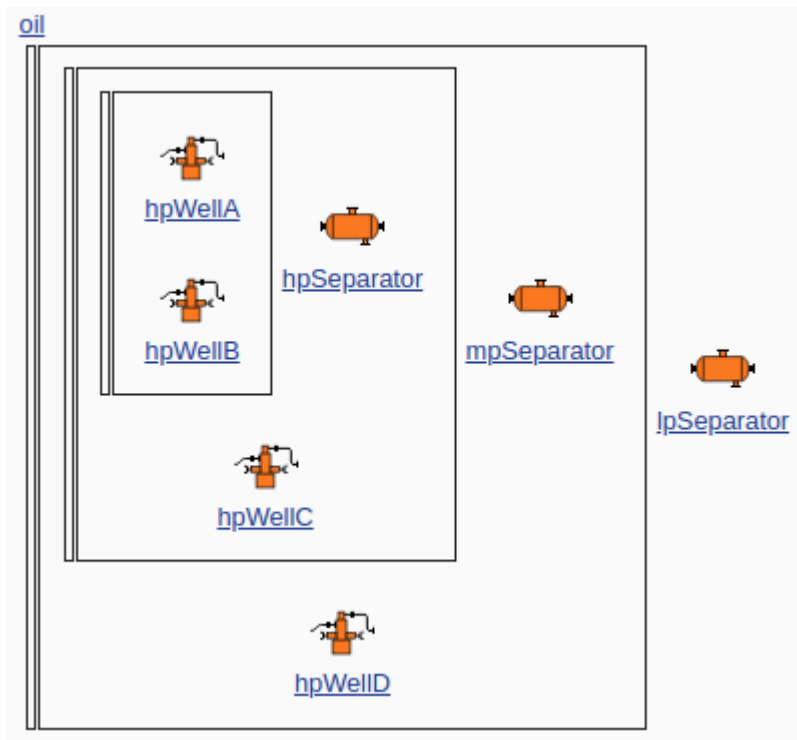


Diagram

An availability diagram, also referred to as a reliability block diagram or a dependence diagram, is a graphical representation of the items and groups in series or parallel, depending on their effect on production capacity when they are down. In contrast to a Process Flow Diagram that shows the flows between equipment items, an availability diagram shows the impact on the “ability to operate” of the system. An availability diagram is an abstract representation; it has mass balance but it has no flow!

For example, the diagram below shows an oil group with 4 wells, 2 on high pressure, 1 on medium pressure, and 1 on low pressure and 3 separators. The wells are parallel to each other; if there is a mechanical or operational problem with one of them, and it is down, then the other wells can continue to produce. The separators are in series with their wells; when one of the separators goes down for offline inspection, the production from its wells has to stop.



The building blocks

In general, an availability diagram can have

- named elements: these are items and groups
- parallel elements: arranged vertically, in boxes
- series of elements: arranged horizontally, with a narrow bar to their left

In the diagram, elements are in series if their proper functioning is critical for the availability of the system. If the element fails then the system cannot continue to operate at its full capacity.

Elements are parallel if, upon failure of one of them, the other elements can continue to operate at their full capacity and (wholly or partly) take over.

ARTIS can handle all parallel / serial diagrams, with nesting to arbitrary depths. In this manual, nested diagrams are also referred to as 'diagrams'. The complete availability diagram, with all elements in the selection, has a special name, it is called the system diagram.

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