Dynamic simulation for safety assessment: on C3 splitter

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Pressure safety valve (PSV) is used to tolerate a certain maximum pressure that should not be exceeded because that may cause any emergency situation involved in equipment rupture. Based on the steady-state simulation or recognized method of approximation can lead to inaccurate calculating relief load which is involved in unnecessary capital cost or insufficient relief capacity. In addressing these situations, dynamic simulation has become an accepted methodology to evaluate existing pressure relief and flare load capacity. Within the scope of this research, C3 splitter section under operation currently is simulated for evaluating safety assessment using Aspen dynamics. As a result of this, dynamic simulation model verified its design validity covering three overpressure scenarios with transient reliving behavior. Each of scenarios is considered and duly weighed on the practical abnormal situation, blocked outlet, cooling water failure and power failure. The gained knowledge can be used for the development of efficient protection concepts for the several scenarios.