

# OptiFacts



Optimatics

Water Systems Optimization

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[www.optimatics.com](http://www.optimatics.com)

*OptiCritical™ analyzes both "pipe break" and the often more severe "pipe break isolated" conditions to help utility staff optimize Asset Management plans.*

## Asset Management and Pipe Criticality

New software allows water utilities to confidently assess system reliability

### THE BEST RETURN FOR YOUR O&M DOLLARS

OptiCritical™ is customized software that identifies your hydraulically-critical pipes under break and isolation conditions. Correlating these pipes with high-priority pipes in your Asset Management plan ensures you get maximum Return on Investment.

#### Asset Management Needs

Many water utilities are facing staggering annual asset replacement costs with no end in sight. Budgets to cover pipe replacement - one of the most significant Operation and Maintenance (O&M) costs - must be increased in order to keep systems safe and functional.

Each year at budget time, key questions arise:

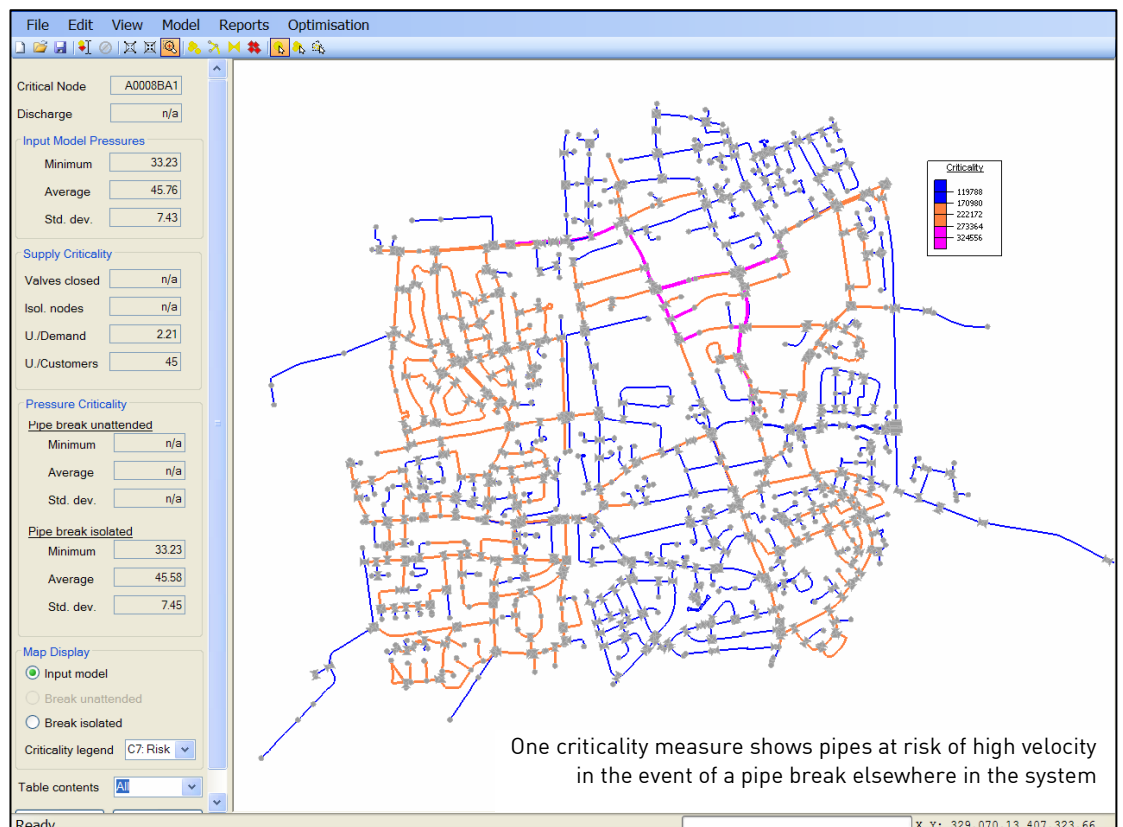
- How can we most effectively spend our O&M dollars?
- Which pipes are most critical to rehabilitate or replace?

Optimatics provides the solution: Pipe criticality software, *OptiCritical™*, that can be customized to your specific

### KEY POINTS

- System-wide analysis of pipe criticality
- Used for pipe rehabilitation, replacement planning and incident management

needs. The software identifies and ranks critical pipes to ensure that your Asset Management plan maximizes valuable O&M dollars. Pipe criticality is assigned, based on risk and vulnerability. *OptiCritical™* can also be utilized by your Operations staff to respond quickly and effectively to a pipe break, or facility outage, incident.



## Step 1 - Pipe Rehab and Replacement Planning

A system-wide criticality analysis is typically a first step. The hydraulic model is prepared in *OptiCritical™* for a base case demand scenario, performance criteria for a pipe break incident are specified, and the pipe criticality analysis is run to simulate a break and record the results for every pipe in the system. The analysis results reveal:

- pipes that would cause the worst disruption in your system if broken
- pipes that would cause the worst disruption when isolated to make repairs
- locations that are most vulnerable to pipe breaks elsewhere
- aging pipes which should receive the highest priority for replacement
- how confident you can be to guarantee service to your top customers
- how to maximise Return on Investment (RoI) while reducing system vulnerability.

## Step 2 - Pipe Break Incident Management

The second application of the *OptiCritical™* software is to analyze in detail the impact that a particular pipe break would have on the system. This can first be performed as a planning exercise for pipes that are of particular concern - whether due to pipe condition and break history or due to the criticality of those pipes. A pipe break simulation planning analysis identifies:

- customers that would lose supply
- nodes that would suffer low pressures
- pipes that would experience high velocities and perhaps subsequent discoloration
- where improvements could be made to reduce system vulnerability by improving redundancy with more looping or by adding new shut-off valves to better isolate breaks (see figure below)
- which pipes should be regularly flushed to avoid water quality problems.

A single pipe break simulation analysis can also be applied in "real-time" to determine how your system will be affected by a recently reported pipe break. Once properly trained, your Operations staff will be able to use *OptiCritical™* to quickly answer critical questions and respond. A real-time emergency simulation will be invaluable in immediately determining :

- the location of water quality problems and if you need to warn businesses of them
- where you can expect to experience loss of supply or reduced system pressures
- which valves to close to most effectively isolate the pipe break
- how your system will perform once the pipe break is isolated.

