



# Augmented Manual Procedures



AMP is a patent pending procedural automation solution  
that is based on and incorporates NovaTech patented technology.

**NovaTech®**



# SOPs : The Case for Change

Human error is the primary cause in 42 percent of abnormal events, and a secondary contributing cause in over 65 percent of the cases, according to ARC industry reports. The financial losses stemming from a single incident can exceed \$75 million according to Marsh & McLennan, to say nothing of the risks to plant personnel.

Standard Operation Procedures (SOPs) are an accepted and effective method to mitigate these risks. Further, SOPs represent a significant intellectual investment and source of competitive advantage, but only when they are followed.

Empirical research cites the following reasons why SOPs are not always followed:

## Dated Information

As operating conditions and best practices evolve, paper-based SOPs become inaccurate and irrelevant.

## Incorrect Guidance

A given SOP may have been authored without input from the most experienced personnel or may not reflect industry best practices, and therefore does not provide the best way to do the job.

## Unclear Policy

Personnel do not understand why SOPs are necessary or policy may be unclear.

## Inconsistent Presentation

Variations in layout, syntax and formatting can make SOPs too complex and difficult to use in the field.

## Lack of Accessibility

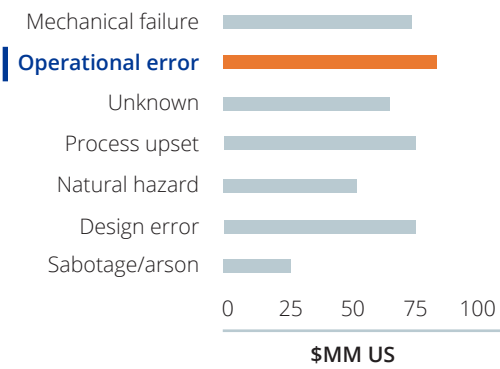
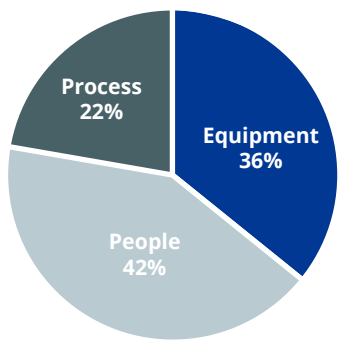
Even the best procedures lose value if they're difficult to locate, especially during rarely executed and therefore riskier procedures.

## Presumed Knowledge

Personnel may rely on personal experience and assume they know the correct procedure without checking.

## Causes of Unscheduled Shutdowns or Slowdowns

Human and procedural error account for more process interruptions and larger losses than any other root cause.



# Mitigate Risk & Maximize Performance with Platform-Independent Procedural Automation

Augmented Manual Procedures™ (AMP) is a patent pending procedural automation solution that reduces the risk of abnormal events. Based on patented NovaTech technology, AMP is a cost-effective way for process manufacturers to integrate manual operator actions with any plant control system, without adding additional I/O.

Drawing from our decades of process, batch, and state-based control expertise, NovaTech developed AMP to bridge the gaps between plant personnel, control systems, and standard operating procedures. It ensures accurate execution, comprehensive information capture, and validation of manual tasks.

## AMP Benefits

### Safer and More Efficient Operations

AMP reduces human error by integrating SOPs into the operator's daily workflow. Updates to procedures are reflected instantly in the Procedure Display. Repeatable and reliable execution of the latest SOP drives efficiency and safety under all operating conditions.

### Consistent Operations Across Multiple Control Systems

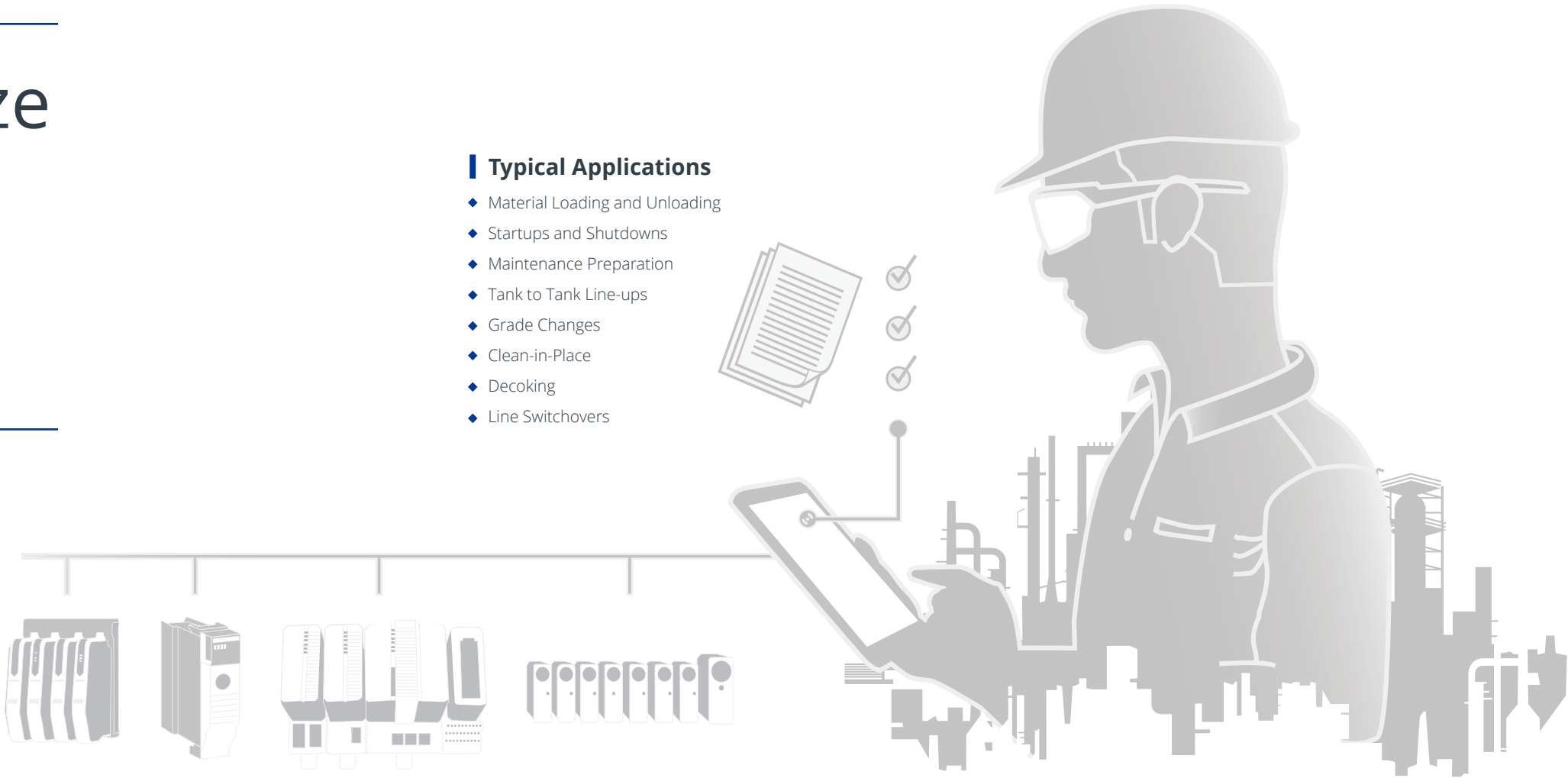
AMP is built on a platform-independent OPC (both server and client) architecture, allowing it to be deployed in any control system environment. This creates a uniform operator experience and procedural consistency in all of your facilities.

### Transfer of Knowledge

Bridging the gap between experienced personnel and new operators is a constant challenge. Visually designed SOPs are a more effective way to transfer industry know-how across generations. Training is reinforced with every procedure, and comments and other feedback loops allow for continuous improvements.

### Typical Applications

- ◆ Material Loading and Unloading
- ◆ Startups and Shutdowns
- ◆ Maintenance Preparation
- ◆ Tank to Tank Line-ups
- ◆ Grade Changes
- ◆ Clean-in-Place
- ◆ Decoking
- ◆ Line Switchovers



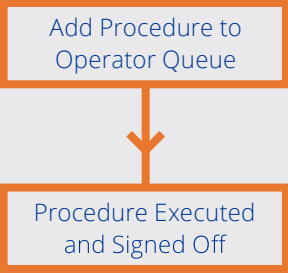
## The AMP Difference

Manual steps (covered by an SOP) are executed in harmony with the automated control strategy.

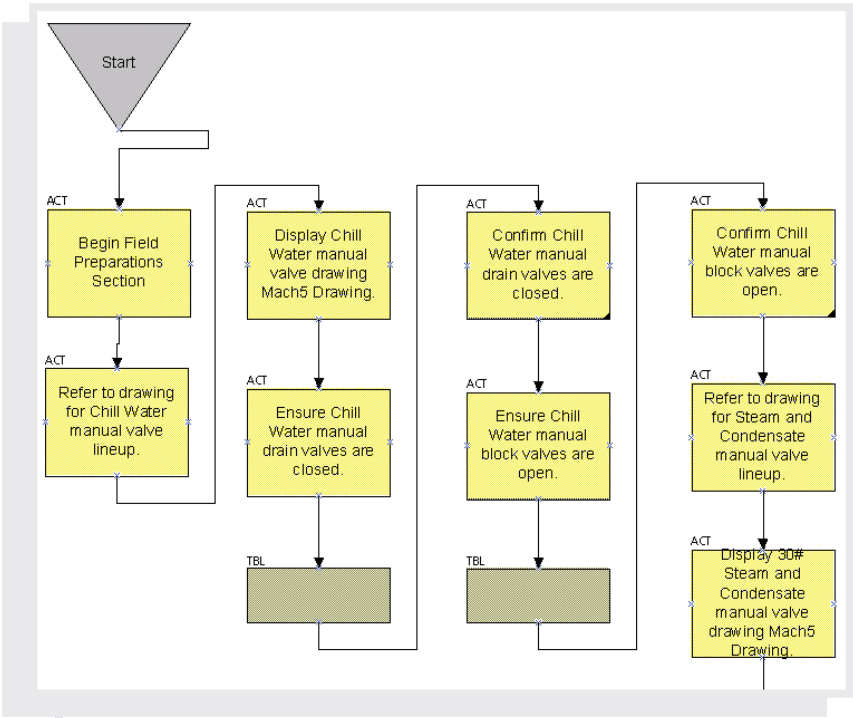
### Control System



### AMP



# Easily Create, Manage, and Execute Procedures



## Create Procedures Graphically

AMP uses an intuitive object palette built into Microsoft® Visio® that allows procedure writers and engineers to collaborate and capture best practices and industry knowledge into consistently structured SOPs. The underlying code is used to create conventional SOPs and to drive the Procedure Overview Display that operators can view on any standard PC or tablet (mobile coming soon).

## Generate Consistent SOPs

AMP generates hard copy and PDF SOPs from the structured environment of Visio, so there's no chance of a missed or forgotten step - everything has to connect. The layout and location of information is kept uniform and standardized across revisions, allowing staff to quickly find what they're looking for.

Equipment Tag	Position	Comment
CW-3	Closed	
CW-4	Closed	
CW-5	Closed	
CW-6	Closed	

4.6.6 CONFIRM Chill Water manual drain valves are closed.  
ENTRY: OK

4.6.6 ENSURE Chill Water manual block valves are open.  
OK

Open the following Chill Water manual block valves.

Equipment Tag	Position	Comment
CW-1	Open	
CW-2	Open	

4.6.7 CONFIRM Chill Water manual block valves are open.  
4.6.8 REFER TO drawing for Steam and Condensate manual valve lineup.  
4.6.9 DISPLAY 30# Steam and Condensate manual valve drawing Mach5 Drawing

30# Steam  
Allow the lines to heat slowly. Care must be taken not the heat the steam lines too quickly or damage may occur.

Technical - Use Every Time  
Refrigeration Machine #5

Procedure: Absorption Machine 5  
Revision: 1  
Effective Date: 3/14/2016  
Manual: 919AG Machine Ops  
Page: 7 of 17

Executed (Manual) on 1/30/2017 4:58:32 PM Eastern Standard Time

**Startup:**  
The startup procedure assumes that the Absorption Refrigeration unit No. 5 has been purged (evacuated) to a normal operating level of vacuum. Currently, extensive service work responsibilities such as pump removal, refrigerant addition and removal, and auxiliary cooling water supply connections are being done by maintenance or outside contractors. Therefore, the procedure for these will not be discussed. However, it may be necessary to assist maintenance or contractors in such duties. Maintenance, contractors, or management will give special instructions if necessary. This procedure will describe startup as if the river water, chilled water, and steam and condensate headers are valved out and drained.

4.5.2 ENTER your initials. Initials: CK

**4.6 Field Preparations**

4.6.1 BEGIN Field Preparations Section  
16:59:26 1/30/2017

4.6.2 REFER TO drawing for Chill Water manual valve lineup.  
16:59:28 1/30/2017

4.6.3 DISPLAY Chill Water manual valve drawing Mach5 Drawing.  
16:59:30 1/30/2017

4.6.4 ENSURE Chill Water manual drain valves are closed.  
16:59:33 1/30/2017

Close the following Chill Water manual drain valves.

Equipment Tag	Position	Checked	Op Comment	Executed
CW-3	Closed	✓		16:59:34
CW-4	Closed	✓		16:59:36
CW-5	Closed	✓		16:59:37
CW-6	Closed	✓		16:59:38

## Manage and Execute Procedures

The AMP Procedure Display delivers SOPs to the operator through an intuitive checklist interface that allows for easy scheduling and running of approved procedures. The real-time interaction between the executing SOP and the control system ensures accurate capture of data and timely execution of procedure steps. Steps can be executed either manually or with computer assistance. Embedded scripts can extend functionality with logic and access to other databases and systems.

## Ensure Accountability

Executed procedure records, including timestamps, operator comments, and control system results are generated as secure PDFs.

Visit [novatechweb.com/amp](http://novatechweb.com/amp) for more information.

Contact us at [amp@novatechweb.com](mailto:amp@novatechweb.com) to start your pilot today.



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