Pamphlet A0800

TLV®

Vacuumizer VM-H&C

Vacuum Steam Heating & Cooling System

What Method Do You Currently Use for Process Heating at Temperatures Between 104-212°F? What Improvements are Desired with this Method?

■ Warm Water Circulation

- ☐ Reduce the time it takes for the Process to reach control temperature; i.e., reduce long batch times.
- ☐ Eliminate the adverse affects on the product caused by uneven heating.
- ☐ Eliminate the loss of heat due to water overflow and radiation from the hot water tank.
- ☐ Improve the work environment by eliminating the hot water tank and the steam vapor and radiated heat it entails.

■ Positive Pressure Steam

- ☐ Eliminate the adverse affects on the product caused by uneven heating.
- ☐ Eliminate the adverse affects on the product caused by overheating.
- ☐ Eliminate the corrosion and water hammer caused by the back-up of condensate.

■ Alternating Heating and Cooling

- ☐ Reduce the time it takes for the Process to reach control temperature; i.e., reduce long batch times.
- ☐ Eliminate the adverse affects on the product caused by overshooting.
- ☐ Eliminate the adverse affects on the product caused by uneven heating.
- ☐ Eliminate water hammer that occurs during the change between heating and cooling.
- ☐ Control the abnormal temperature increases resulting from exothermic reaction and the heat of friction (plastics).

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THE SOLUTION IS VACUUM TECHNOLOGY

Vacuum Steam Heating System

VM-H

Vacuum Vaporization Cooling System

VM-C

Vacuum Steam Heating & Cooling System

VM-H&C

Vacuum Steam Heating System

The Low-Temperature Heating System That

EASY-TO-USE

Not Necessary to be an Expert

No complex operations required–settings can be made quickly and easily.

IMPROVED ENVIRONMENT

Easy on the Work Environment

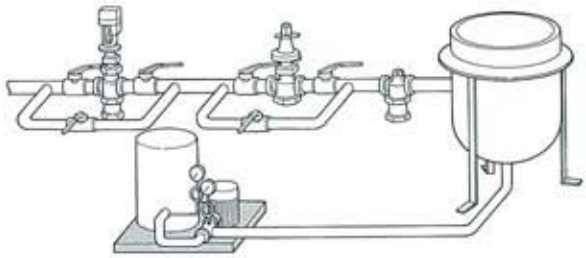
The use of vacuum steam eliminates the steam vapor of open hot water systems. This plus the absence of loud noise and water hammer greatly improves the work environment.

SIMPLE SYSTEM CONFIGURATION

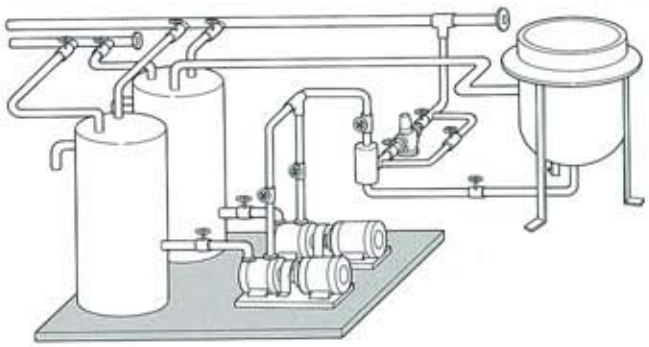
Minimal Space Requirements

The system's compact design means it can be easily adapted to existing equipment and requires little maintenance.

Vacuum Steam Heating Systems **VM-H**



Conventional Hot Water Heating System



VM-H

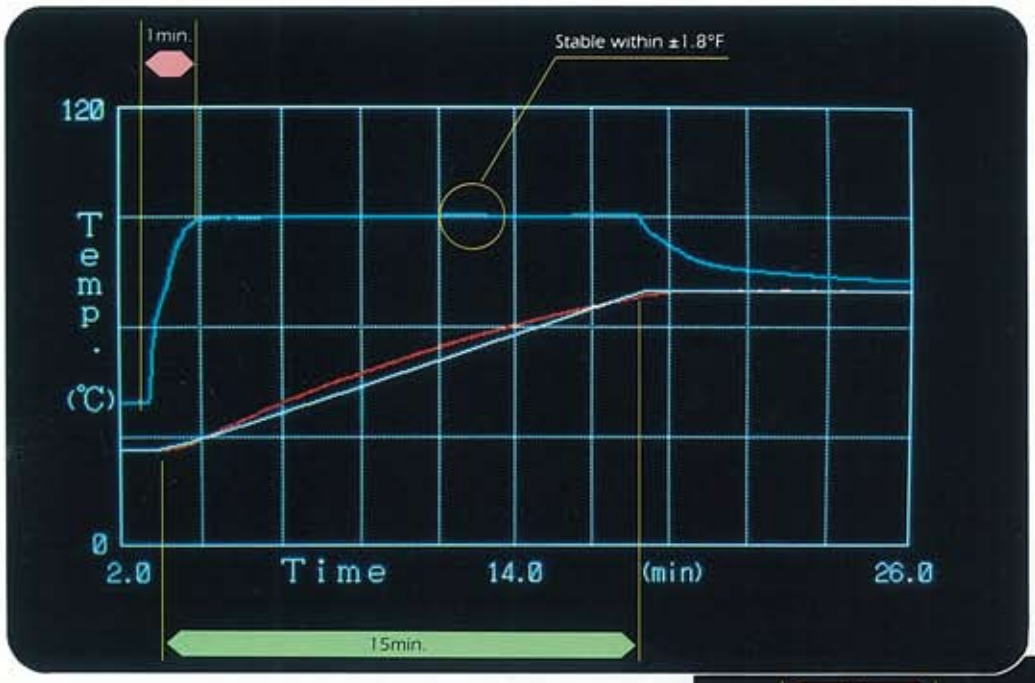
Uses Vacuum Steam for Stable Process Temperatures and Reduced Heating Time

QUALITY

Heating at Optimum Temperature Means No Overheating of Products

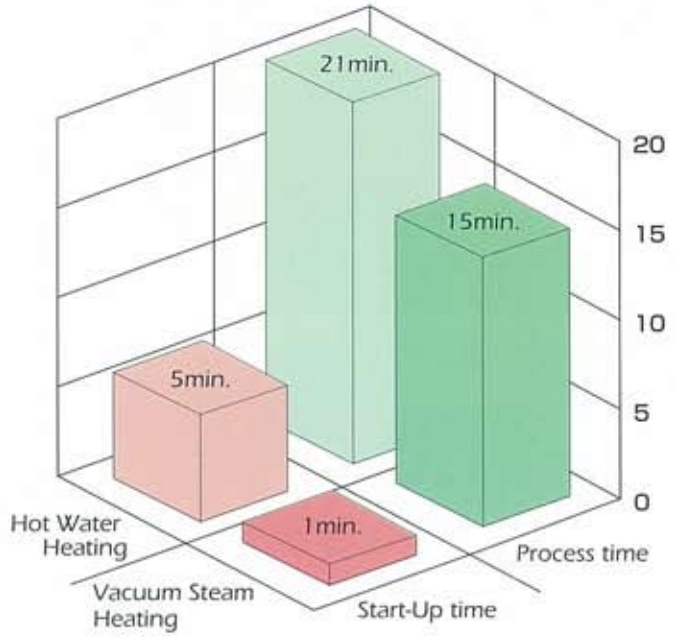
Unstable and excessive heating temperatures can burn or otherwise deform products. To create high-quality products, heating must be done by supplying steam at a stable temperature. **TLV**'s VM-H vacuum steam heating system controls the steam temperature to within ±1.8 °F of the set value. This enables heating at an even temperature not possible with hot water heating and prevents burning and other related problems.

■ **Vacuum Steam Heating System VM-H**



BLUE : Heating Temperature
RED : Product Temperature
WHITE: Set Temperature

■ **Conventional Hot Water Heating Equipment**



Comparison of Batch Times

PRODUCTIVITY

Faster Heating

TLV's VM-H vacuum steam heating system reduces process times by an average of about 25%. The time required for the temperature of the steam supply to stabilize is also reduced by over 80%, making it a fast, highly productive system.

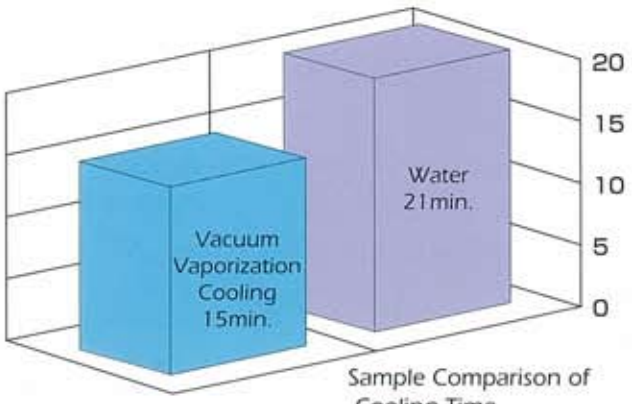
Vacuum Vaporization Cooling System VM-C

Vaporization Cooling Technology Reduces Cooling Time

PRODUCTIVITY

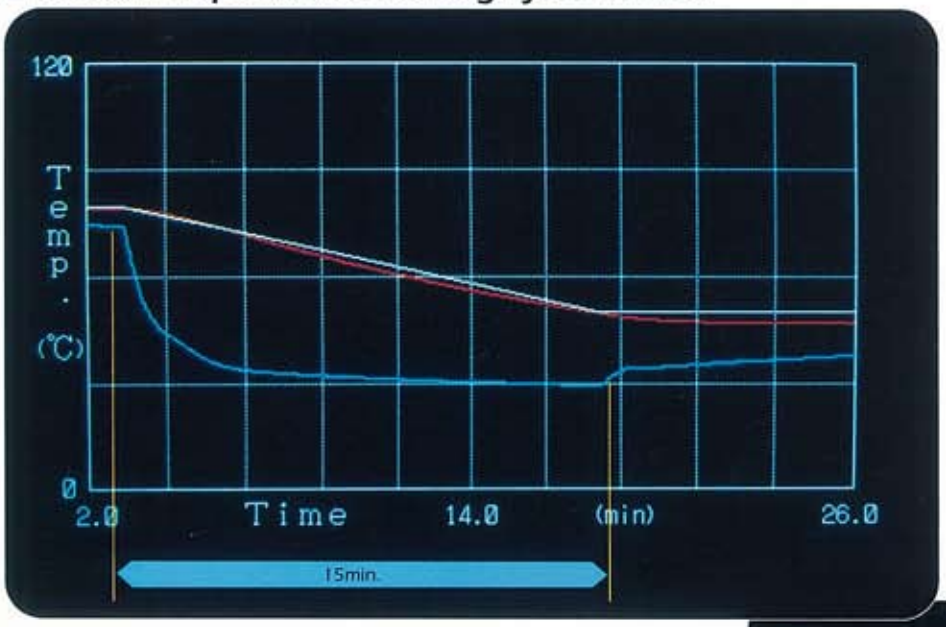
Solves the Problems Typically Experienced with Water Cooling

The **TLV** vacuum vaporization cooling system cools by vaporizing water. This results in a high film coefficient of heat transfer and reduces cooling time by about 25%. This system is ideal for exothermic reaction processes and other similar applications that require rapid cooling.



Sample Comparison of Cooling Time

■ **Vacuum Vaporization Cooling System VM-C**



BLUE : Cooling Temperature
RED : Product Temperature
WHITE: Set Temperature

■ **Conventional Water Cooling Equipment**

NUMEROUS APPLICATIONS

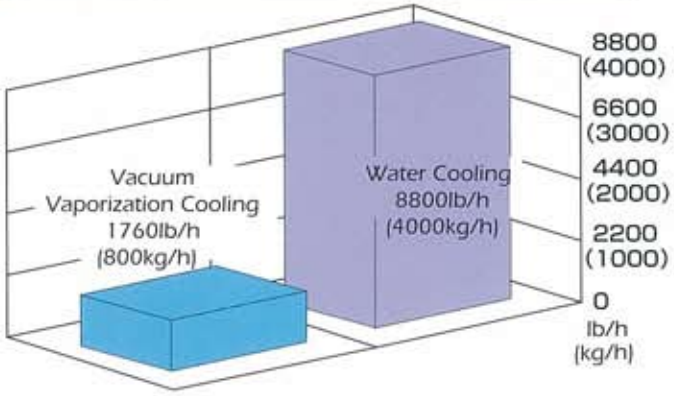
Enables Cooling Below 32°F(0°C)

The VM-C system can be used for a wide variety of applications, from cooling at room temperature to cooling below 32°F(0°C) using brine.

ENERGY SAVINGS

Enables Cooling With Reduced Utility Use

Conventional water cooling requires large quantities of water. In contrast, the **TLV** vacuum vaporization cooling system cools by vaporizing water, so cooling is possible utilizing only about 20% of the water required by conventional systems.



Vacuum Steam Heating & Cooling System VM-H&C

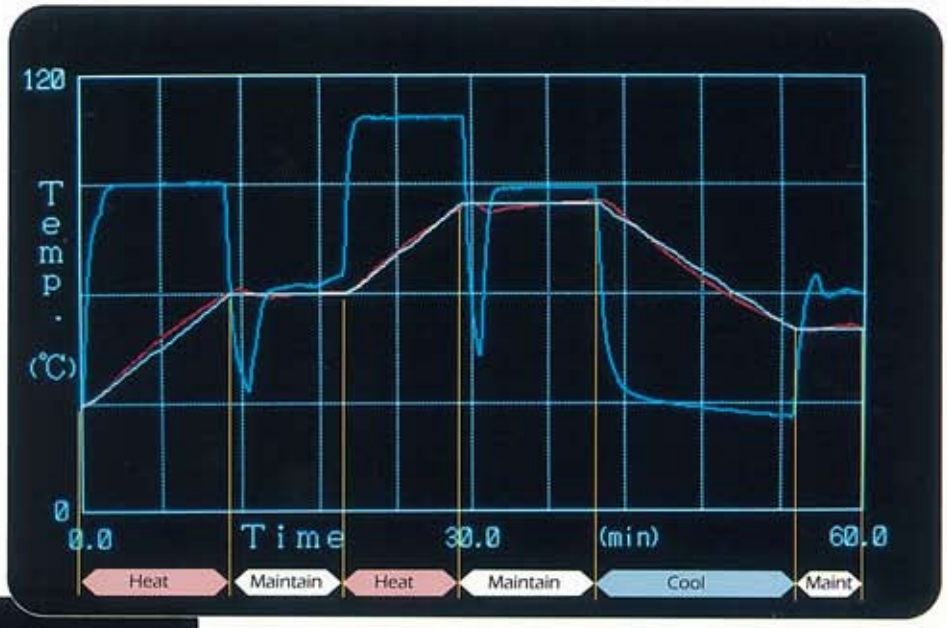
Heating and Cooling Temperatures Can Be Easily Controlled

QUALITY

Ideal Combination of Heating and Cooling

The VM-H&C system combines the strengths of both vacuum steam heating and vaporization cooling. As process reactions change, the VM-H&C system switches smoothly between heating and cooling, maintaining accurate control of the product temperature.

■ **Vacuum Steam Heating/ Cooling System/VM-H&C**



■ **Conventional Hot Water Heating/Water Cooling Equipment**

BLUE : Heating/Cooling Temperature
RED : Product Temperature
WHITE: Set Temperature

Computer Control of Process

EASE OF OPERATION

Production Temperature Patterns can be Easily Set

Complex temperature patterns can be easily set and computer-controlled. 24-hour automatic operation is possible.

Setting Screen

STABILITY

Alarm Function Provides Added Security

Built-in alarm functions protect the process and provide operational guidance, as well as reporting, in the unlikely event of any system failure.

Setting on Touch Screen

TLV Technology and Service Can Solve Problems

Steps in Introduction

EVALUATE EXISTING PROCESS

CLARIFY PROBLEMS

ESTABLISH OBJECTIVES FOR IMPROVEMENTS

- ☐ Improve product quality
- ☐ Reduce processing time
- ☐ Save manpower
- ☐ Conserve energy

STUDY THE TECHNOLOGY FOR IMPROVING PROCESS

CONSIDER AVAILABLE OPTIONS

DETERMINE COSTS

DECIDE ON SYSTEM

- ☐ Vacuum steam/vaporization cooling vs. alternatives
- ☐ Effect of new system on production.
- ☐ Cost effectiveness of proposal

TLV Services

- ○ Preliminary Analysis
- ○ Actual Analysis
- ○ Report Results of Analysis

- ○ Explain New Technology
- ○ Introduce Examples of Effectiveness
- ○ Determine Specifications
- ○ Total System Design
- ○ Cost Estimate
- ○ Anticipated Benefits
- ○ System Assurance
- ○ Pilot Plant Test Results of Designed System

Specialist Survey

The process starts with an analysis of the factory. A careful survey of actual conditions reveals problems that were previously unrecognized.

TESTS USING DEMONSTRATION/PILOT PLANT

The elimination of problems and the effectiveness of introducing new technologies to the heating and cooling processes can be checked utilizing **TLV**'s own Pilot plant.

Engineering

TLV will handle the entire process, from selection of all production equipment including the VM system, to installation and start-up.

in Your Company's Heating and Cooling Process

PLAN INTRODUCTION

ACCEPT OR REJECT PROPOSAL
CARRY OUT INSTALLATION
CONDUCT COMMISSIONING

- ☐ Finalize design
- ☐ Determine supervision of installation
- ☐ Liaise with production
- ☐ Commision new system

- ○ Plan Introduction Schedule
- ○ Co-ordinate Execution of the Plan
- ○ Commission

CONFIRMATION OF BENEFITS

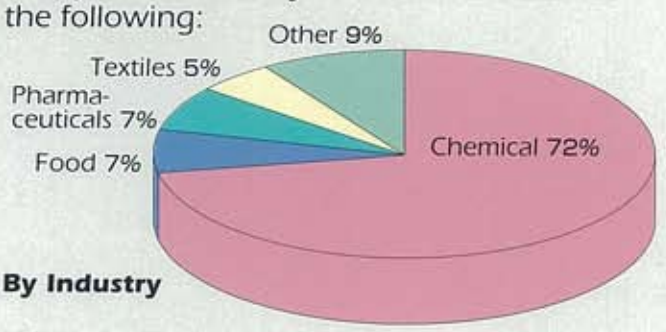
HAND OVER TO PRODUCTION
VERIFY ATTAINMENT OF OBJECTIVES

- ☐ Training of production personnel
- ☐ Monitoring of performance
- ☐ Verification of benefits

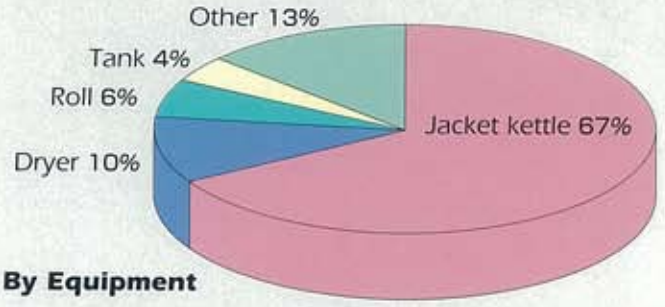
- ○ Analyze Performance
- ○ Report Results
- ○ Confirm Objectives Have Been Met

RESULTS

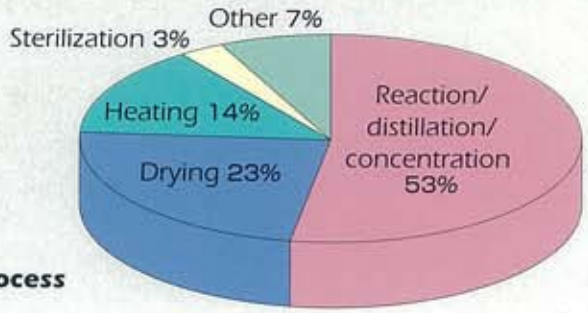
VM systems currently in use can be found in the following:



By Industry



By Equipment



By Process

After-Sales Service

TLV provides full follow-up service after installation, from checking operating conditions to maintenance procedures.

TLV CORPORATION

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Member of FCI FLUID CONTROLS INSTITUTE

Manufacturer
TLV CO.,LTD.
Kakogawa, Japan
is approved by LRQA Ltd. to ISO 9001/14001

ISO 9001/ISO 14001

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