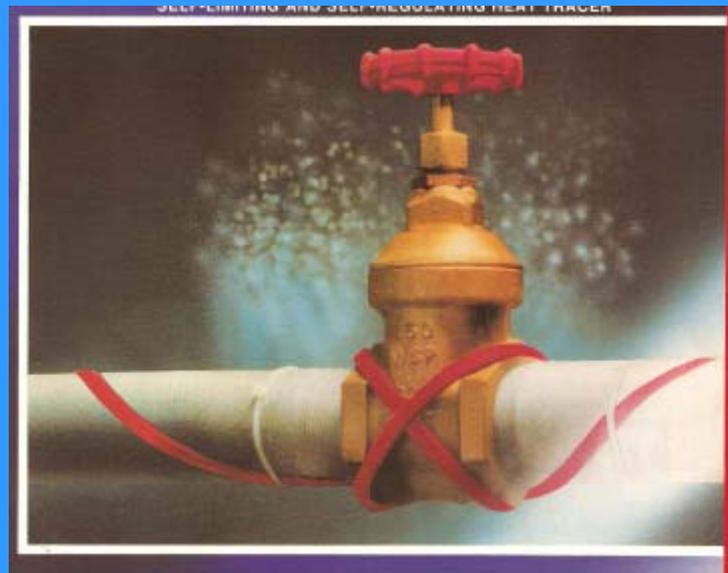


Heat Tracing Applications



Heat Tracing Applications by
Homi R. Mullan

OBJECTIVES

Heat Tracing Applications

- Orientation to:
 - Heat Tracing MARKET
 - Heat Tracing SOLUTIONS
- Help in Sale/ Purchase/
O&M of Heat Tracing

TEMPERATURE BANDS

Heat Tracing Applications

$< 0^{\circ}\text{C}$ FREEZING	$100-119^{\circ}\text{C}$ BOILING
$25-50^{\circ}\text{C}$ WARMING	$120-150^{\circ}\text{C}$ HIGH
$60-99^{\circ}\text{C}$ HOT	$> 160^{\circ}\text{C}$ VERY HIGH
WATER	STEAM



CLASSIFICATION

Heat Tracing Applications

Freeze Protection	Reduce Viscosity
Prevent Condensation	Prevent Bacteria Growth
Prevent Crystallization	Temperature Sensitive Fluids
Prevent Solidification	Special Applications

FREEZE PROTECTION

Heat Tracing Applications

FLUID	M^{TAIN} TEMP. °C	APPLICATION / INDUSTRIES
Water	4 - 10	-Winterization - Freezer Rooms: Drain lines, Trays Coils [PETROCHEM, HOTEL, COLD STORAGE, OEMs]
Moisture	4 - 10	-Freezer Room: Door frame; Coils -Ammonia:Insulated Lines -Refrigerated Vans – Control Panel
Gas	4 - 10	-Safety Valve Freeze up. [REFINERIES, OIL & GAS, PETROCHEM]

PREVENT CONDENSATION

Heat Tracing Applications

FLUID	M'TAIN TEMP. °C	APPLICATION / INDUSTRIES
Gas	30- 40	- Compressed Air - LPG / LNG Pipes [O&G; PETROCHEM, REFINERIES; INDUSTRIES; OEMs]
Emissions	160-180	-To Prevent Corrosion due to SO _x , HCl -Pollution Monitoring [STACKS OF BOILER, FURNACE]
Solvents	60- 80	-Solvent Extraction [EDIBLE OIL PLANTS, CHEMICAL INDUSTRIES; GLYCERINE RECOVERY]

PREVENT CRYSTALISATION

Heat Tracing Applications

FLUID	M'TAIN TEMP. °C	APPLICATION / INDUSTRIES
Inorganic Chemicals / Salts	60- 80	-To prevent Crystallization by under or over heating. [INTERMEDIATES, DYES & CHEMICALS]
Glucose / Sugar Syrup	50- 60	-To prevent Crystallization by under or over heating [PHARMACUTICAL, FOOD]
Starch	50- 60	Yarn & Textile

BACTERIA CONTROL

Heat Tracing Applications

FLUID	M ^{TAIN} TEMP. °C	APPLICATION / INDUSTRIES
Distilled Water	60-80	-Distilled Water Storage Vessel by EHT during weekly plant holiday. [PHARMECUTICALS, HOSPITALS]
Water	45	-Domestic Hot Water supply to prevent 'Legionella' forming bacteria. [HOSPITALS, HOTELS, HEALTH SPA, OLD PEOPLES HOME]

PREVENT SOLIDIFICATION

Heat Tracing Applications

FLUID	M ['] TAIN TEMP. °C	APPLICATION / INDUSTRIES
Low Sulfur Fuel Oils	65 - 90	-Refineries; Boiler & Furnace Plants
Wax	50- 60	-Refinery Production; Match stick; Packaging paper
Petrol. Jelly	50 - 60	-Pharmaceuticals & Cosmetics
PUF Chemicals	60	-Foam Sheets; Shoe soles; Construction

TEMP. SENSATIVE FLUIDS

Heat Tracing Applications

FLUID	M'TAIN TEMP. °C	APPLICATION / INDUSTRIES
Phenol	40– 50	-Petrochemicals; Chemicals
Sulfur	138 to145	-Refineries; Polyester Yarn; Acid
Chocolates	50- 60	
Hydrogenated Oils	50 - 60	
Soap	60 - 70	

REDUCE VISCOSITY

Heat Tracing Applications

FLUID	M ['] TAIN TEMP. °C	APPLICATION / INDUSTRIES
Fuel Oil	40 – 50 135	-For Handling & Transfer -For Combustion
Bitumen Coal Tar	135 170	-For Storage, Handling & Transfer. -Drum Heating
Lube Oil / Grease	50 - 60	-For Storage, Handling & Transfer. -Drum Heating

SPECIAL

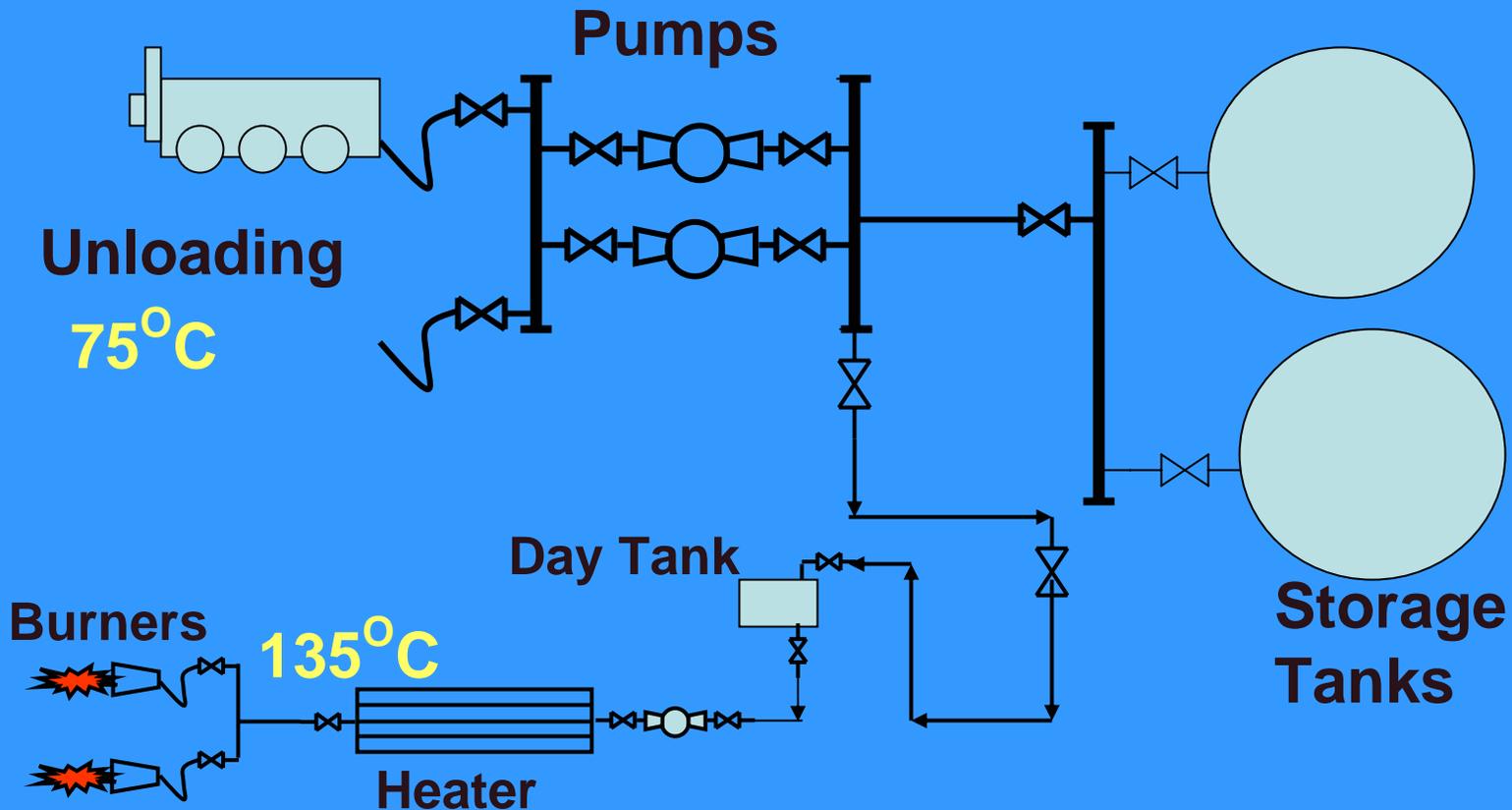
Heat Tracing Applications

Nuclear	Off-shore
Cryogenic	Buried
Very High Temp.	Un-insulated Barriers
Road Tankers	Very High Temp.

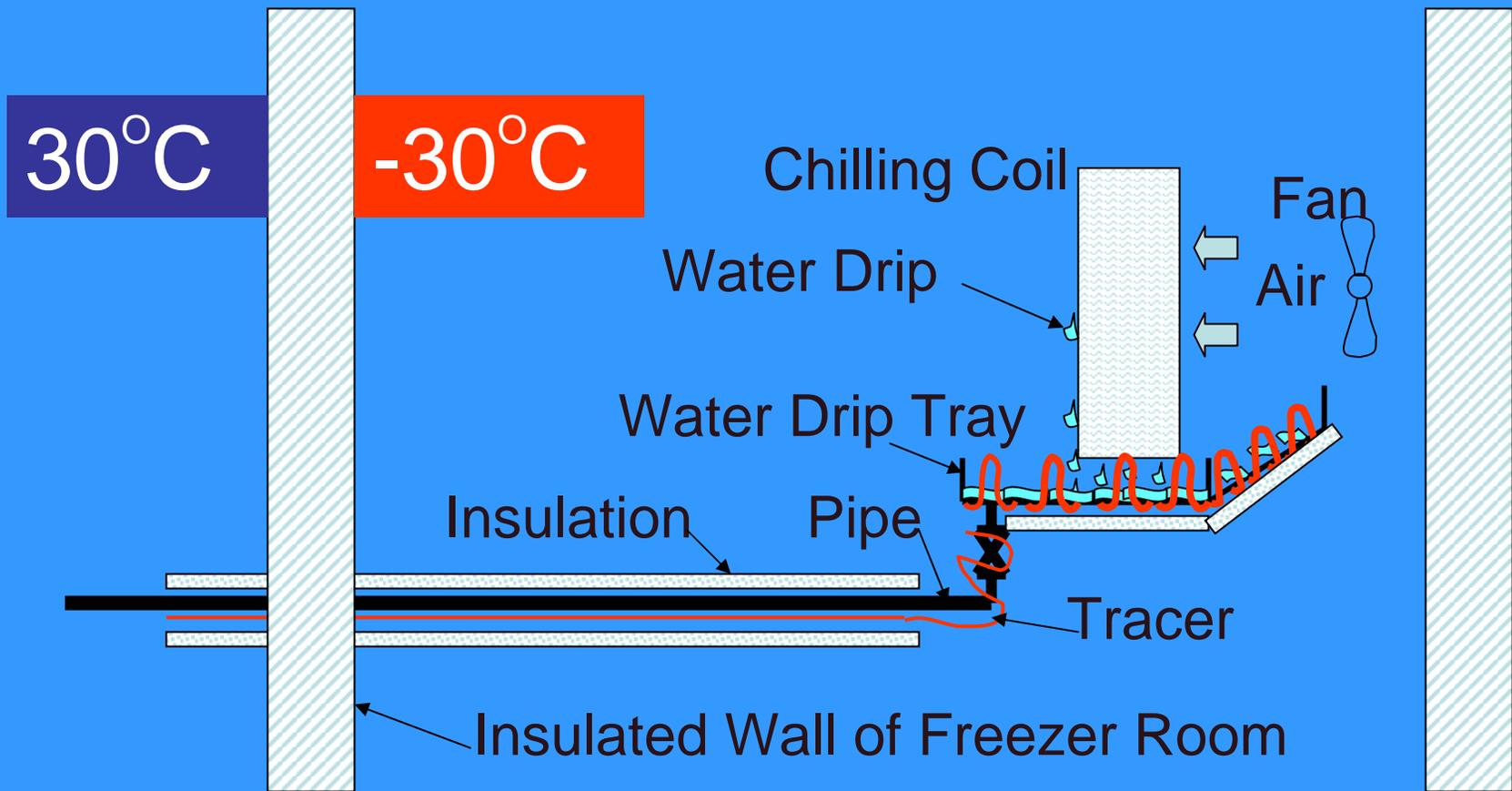
Process Plant Applications

- ◆ Steam Supply and Condensate Lines
- ◆ Safety Showers
- ◆ Caustic Lines
- ◆ Crude Oils and Fuel Oils
- ◆ Instruments and Sample Lines
- ◆ Control Valve Manifolds
- ◆ Process Fluids
- ◆ Molten Sulfur
- ◆ Fire Protection
- ◆ Pump Manifolds
- ◆ Storage Tanks
- ◆ Frost Heave Prevention
- ◆ Service Air & Water

Heavy Fuel Oil Applications



Freezer Room Applications



Steam Trace Application Areas

Hazardous Area (Process Units)	Quick Heatup Requirements
Maintain Temp. 160 to 200 deg.C	Storage Tanks
Low Cost Waste Heat Steam	Customer's Preference to use Steam

Electric Trace Application Areas

Where Steam is not available (Glass, Steel, Cement, etc,)	Long Transfer Lines, >2 Km
Maintenance Temp. >210 deg.C	Buried Pipes, Tanks
Maintenance Temp. <90 deg.C	Short length, Complex Piping and Flexible hose
Remote Location (Jetty, Pumping Station, etc,)	

Heat Trace Applications

Heat Trace Applications deal with finding Solutions to Customers Plant's Fluid / Material handling problems, at a Fraction of Cost over the achieved Benefits; and providing Profitable Business to the Manufacturer of Heat Trace Products for funding sustainable development.