

# DEMAND MORE

FROM YOUR BUILDING

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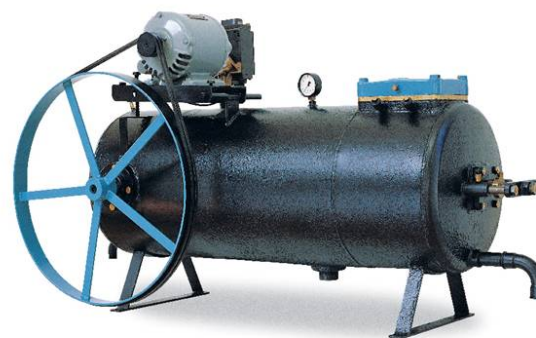
be think innovate

GRUNDFOS 

# Grundfos history



**Poul Due Jensen (1912-1977)**



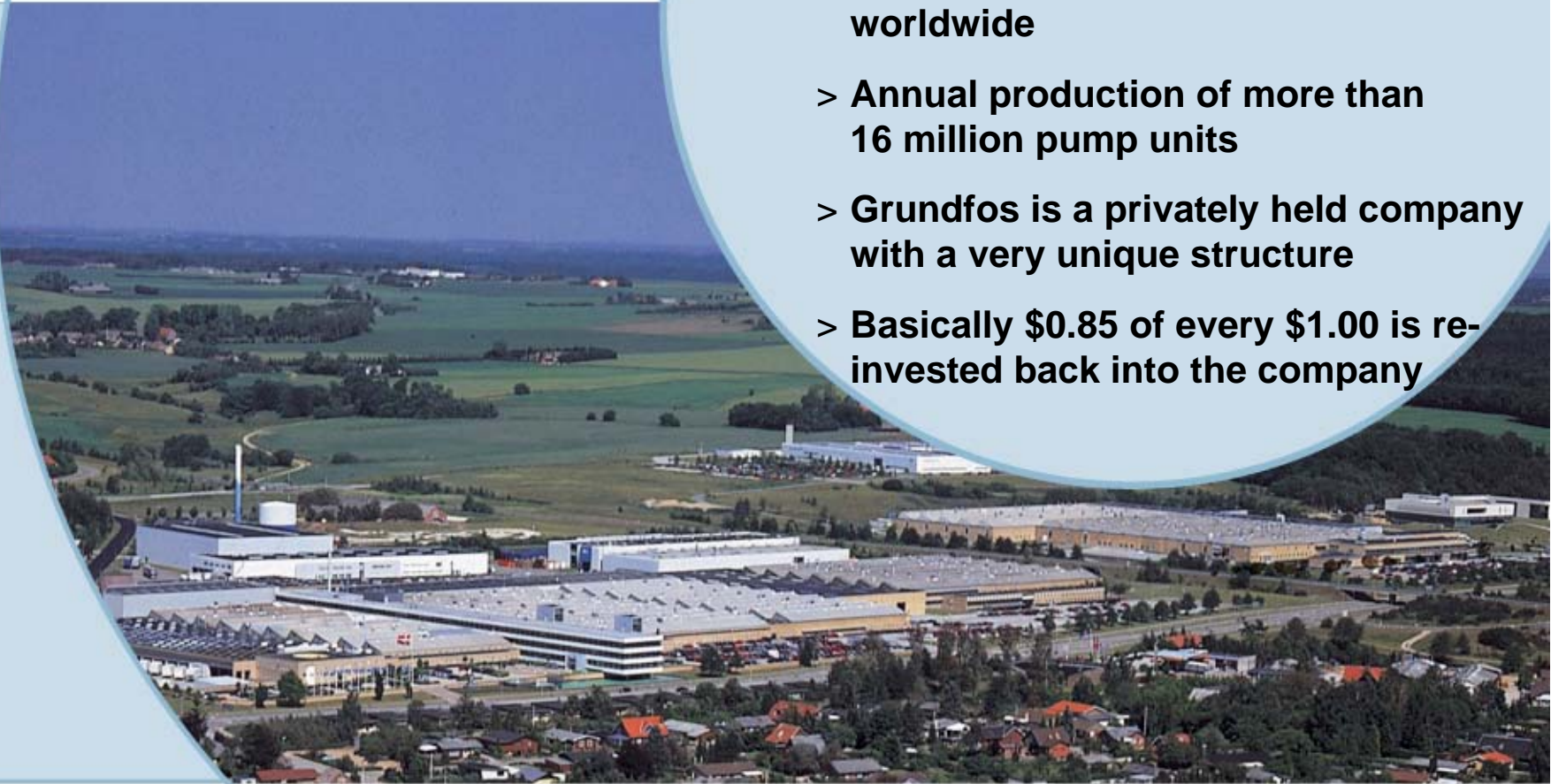
# Grundfos history





○○○ GRUNDFOS IN BRIEF

- > Turnover of approximately 4 billion in 2012
- > More than 16,000 employees worldwide
- > Annual production of more than 16 million pump units
- > Grundfos is a privately held company with a very unique structure
- > Basically \$0.85 of every \$1.00 is re-invested back into the company



# Research and development



- 4.5% of companies annual revenue is contributed to R&D
- Expansion of R&D presence in North America to provide:
  - Increased understanding of growth markets
  - Better support to markets
  - Quick response times



# GRUNDFOS NORTH AMERICA

- Kansas City, KS – Headquarters
- Fresno, CA – Manufacturing
- Brookshire, TX – Manufacturing (PACO)
- Indianapolis, IN – Manufacturing (Peerless)
- Aurora, IL – Manufacturing (Wastewater)
- Allentown, PA – Distribution/Service
- Hayward, CA - Service
- Seattle, WA - Service
- Tualatin, OR - Service





# PACO Pumps



## A GRUNDFOS BRAND

### Facts about PACO

- Founded in 1907 in San Francisco
- Now headquartered in Brookshire, Texas
- Acquired by Grundfos in 2006
- Nearly all PACO pumps are custom engineered to fit to each application



# Fresno Manufacturing Plant Solar Farm

- > 7.5 Acre, 1.1 MW Solar Farm that utilizes a High Efficiency Advanced Tracking System – capturing up to 25% more energy than fixed systems
- > Generates more than 50% of the facility's annual energy usage, reducing over 2.4 billion pounds of CO2 annually





# Grundfos CBS

## PUMPS + PUMP SYSTEMS FOR COMMERCIAL BUILDING SERVICES

### APPLICATIONS

HEATING

AIR  
CONDITIONING

PRESSURE  
BOOSTING

WASTEWATER



➤ Magna3



➤ LCSE



➤ KP/KPV  
Split  
Case



➤ VLSE

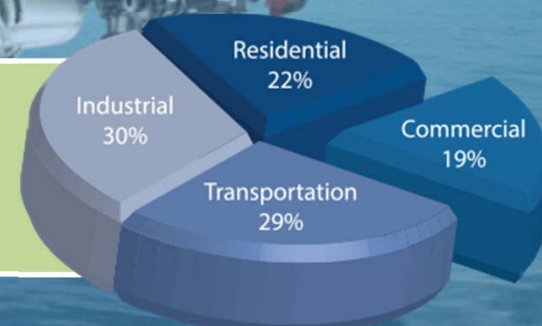


➤ Hydro-MPC  
BoosterpaQ

# Industry Usage Comparison

Commercial Energy Consumption (2012)

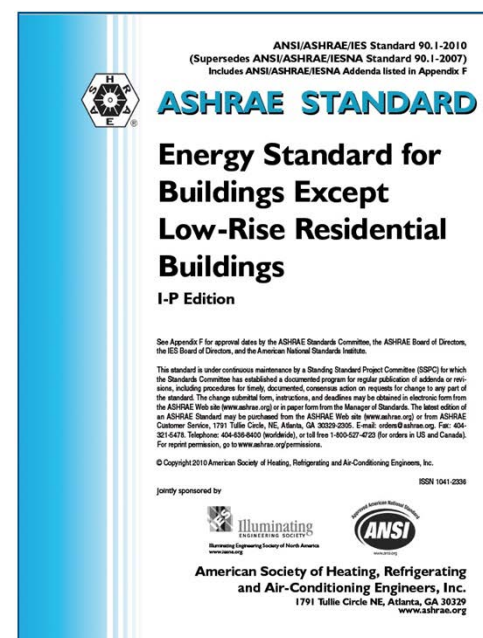
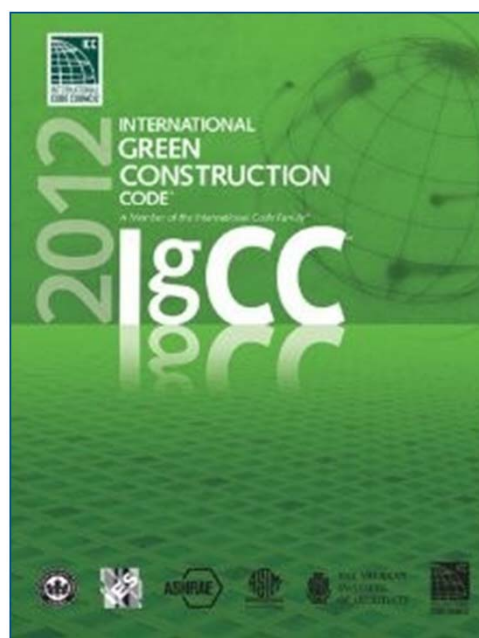
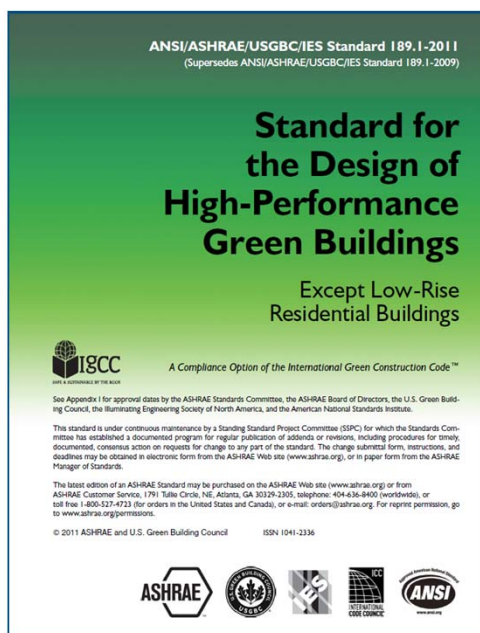
COMMERCIAL BUILDINGS CONSUME 19% OF OUR ENERGY. PUMPS CONSUME 12% OF THAT ENERGY IN TYPICAL HVAC APPLICATIONS ALONE.



End-use Total Consumption  
2012 DOE, Building Energy Data Book

# Increasing Code Demands & Challenges

Commercial energy codes expanding...





# ePumps



# Advanced Interface + Remote Control



- Control and monitor of all relevant pump data via Apple and Android devices
- Live pump data feeds such as duty point, power consumption and speed
- Detailed alarm log with time stamps and descriptive error codes
- On-site generation of PDF reports that can be signed and sent live, along with product and photo documentation

# Intelligent Interface – More Info



Home | Status | Settings | Assist

Control mode  
**AUTOADAPT**

Setpoint  
**13.1 ft**

Flow rate  
**57.2 gpm**

Head  
**13.12 ft**

Home | Ho | Status | Settings | Assist  
2.1.0.0.0

Operating status  
Pump performance  
Input power  
Warning and alarm  
Heat Energy Meter

Home | Ho | Status | Settings | Assist  
3.1.0.0.0

Setpoint  
Operating mode  
Control mode  
FLOWLIMIT  
Automatic Night Setback

Home | Ho | Status | Settings | Assist

Assisted pump setup  
Setting of date and time  
Multi-pump setup  
Setup, analog input  
Description, control mode



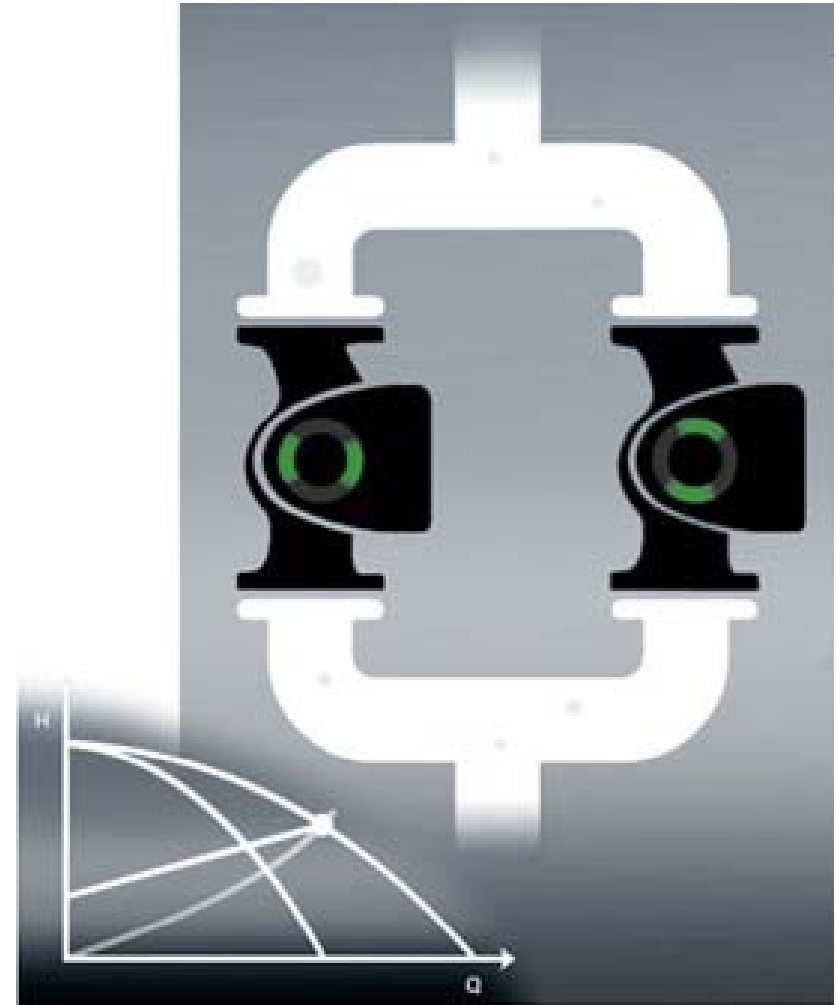
# Multiple Pump Operation

## MLE / CUE

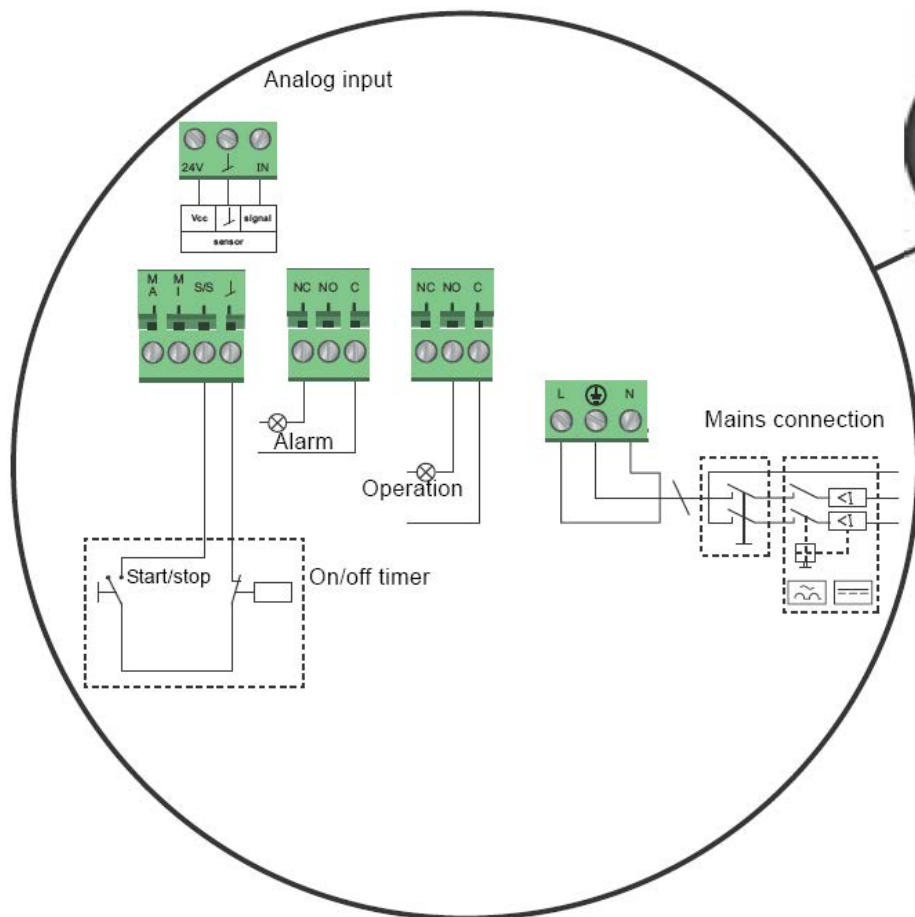
- Operate pumps in Duty / Standby Mode without external controls
- Alternate on Alarm and Time
- As simple as attaching communication wire and setting up with Grundfos Go Remote

## Magna3

- Integrated wireless technology enables interaction between pumps, simple setup via Go Remote
- Two parallel pumps can be controlled jointly in cascade mode, alternating mode or pump back-up mode



# Analog & Digital Inputs/Outputs



- Digital Inputs
  - External start/stop
  - Forced min/max curce
- Relay Outputs
  - Alarm, Ready or Operation
- Analog Input for external sensor

Fig. 37 Example of connections in the control box

# On-board Communications



## BMS Integration

The MAGNA3 can be seamlessly integrated to any BMS System in your facility today.



GENIBUS





# ePump Systems

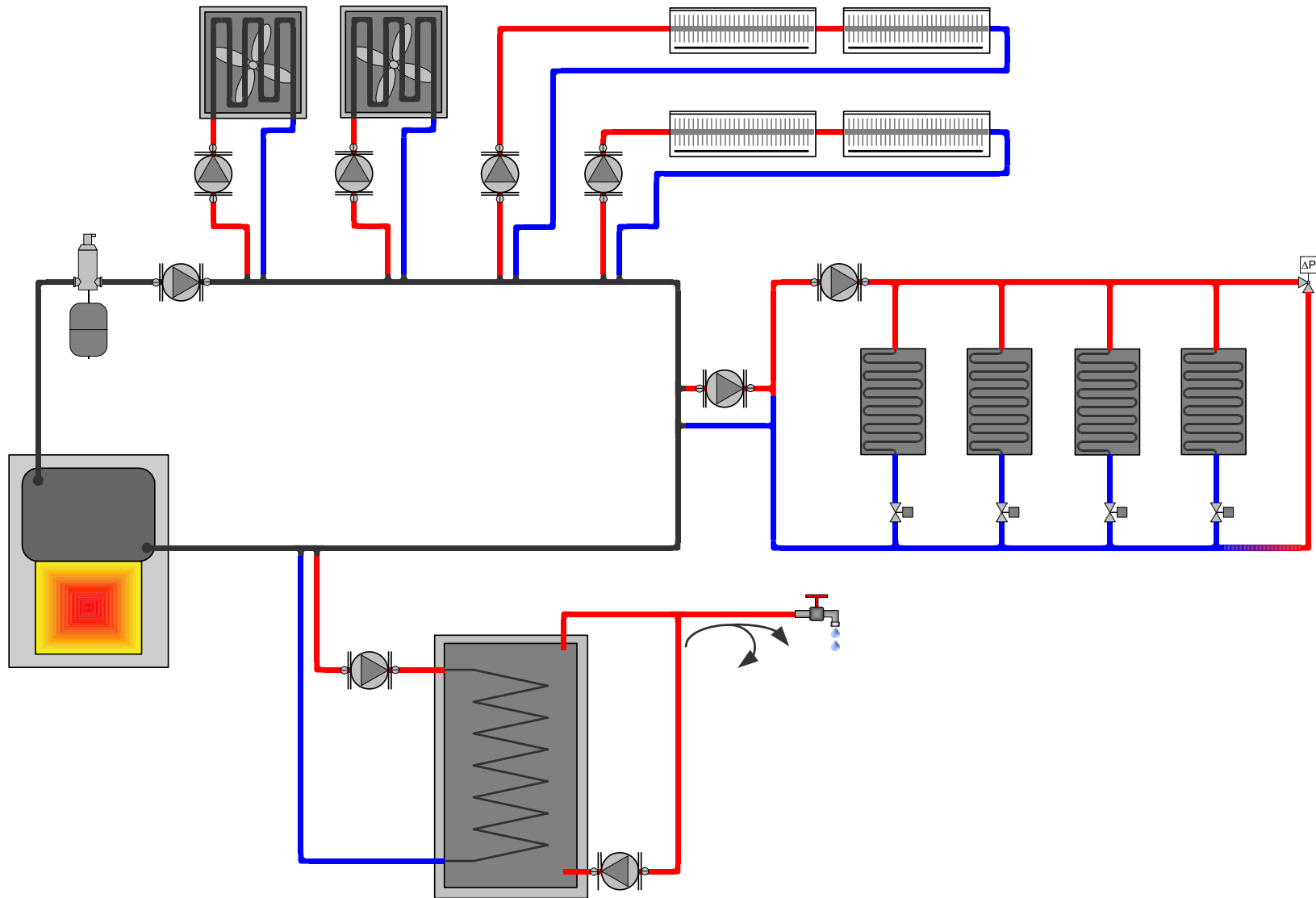
## PACKAGED PUMP SYSTEMS FOR CHILLED WATER, HOT WATER AND PRESSURE BOOSTING APPLICATIONS

- System controls adapt to variations in demand
- Designed to minimize downtime for routine maintenance
- Factory assembled and tested
- Installation wizard
- UL Listed System
- NSF 61 Annex G



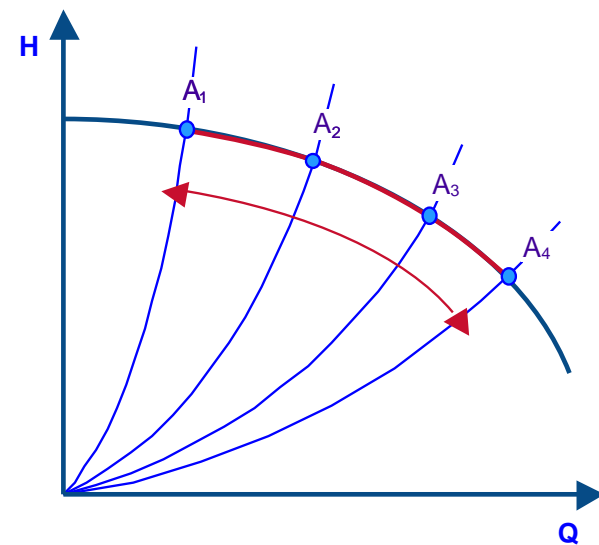
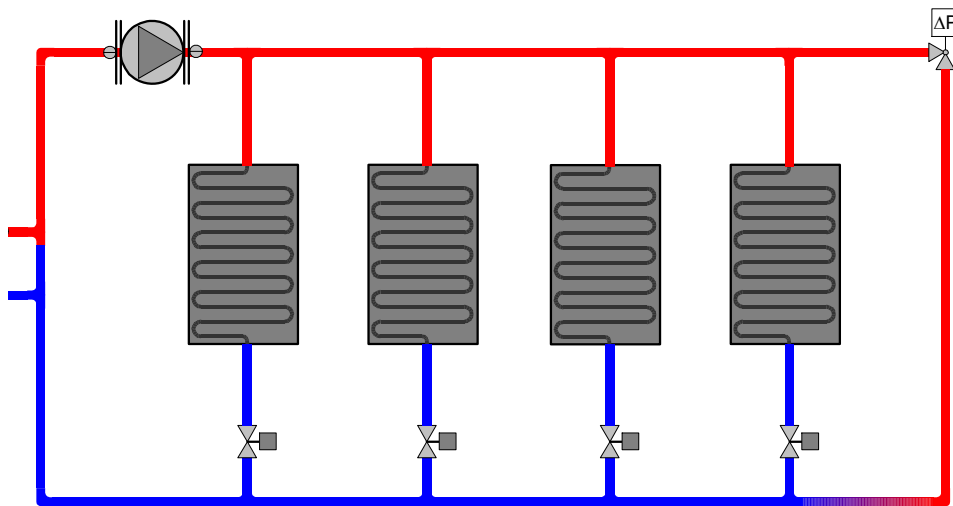
# Modern variable speed pumping

# Typical hydronic system



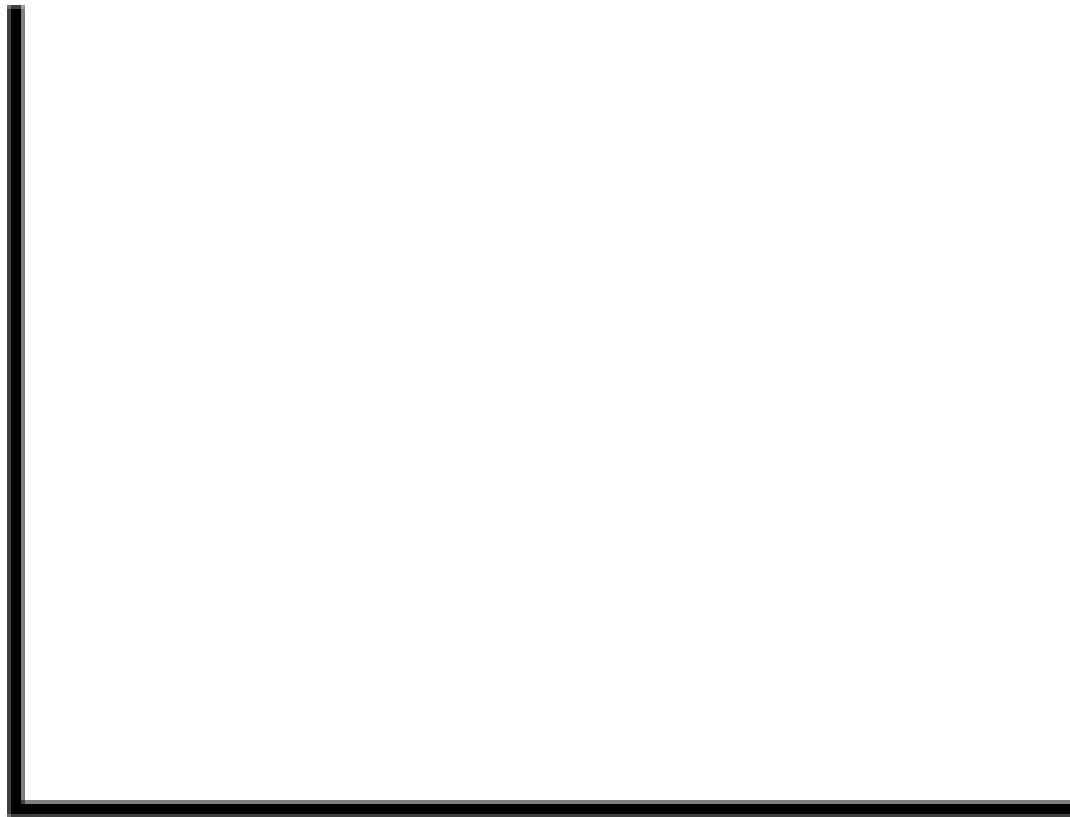
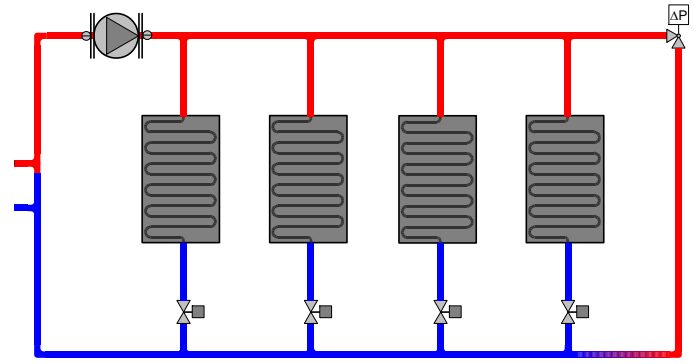


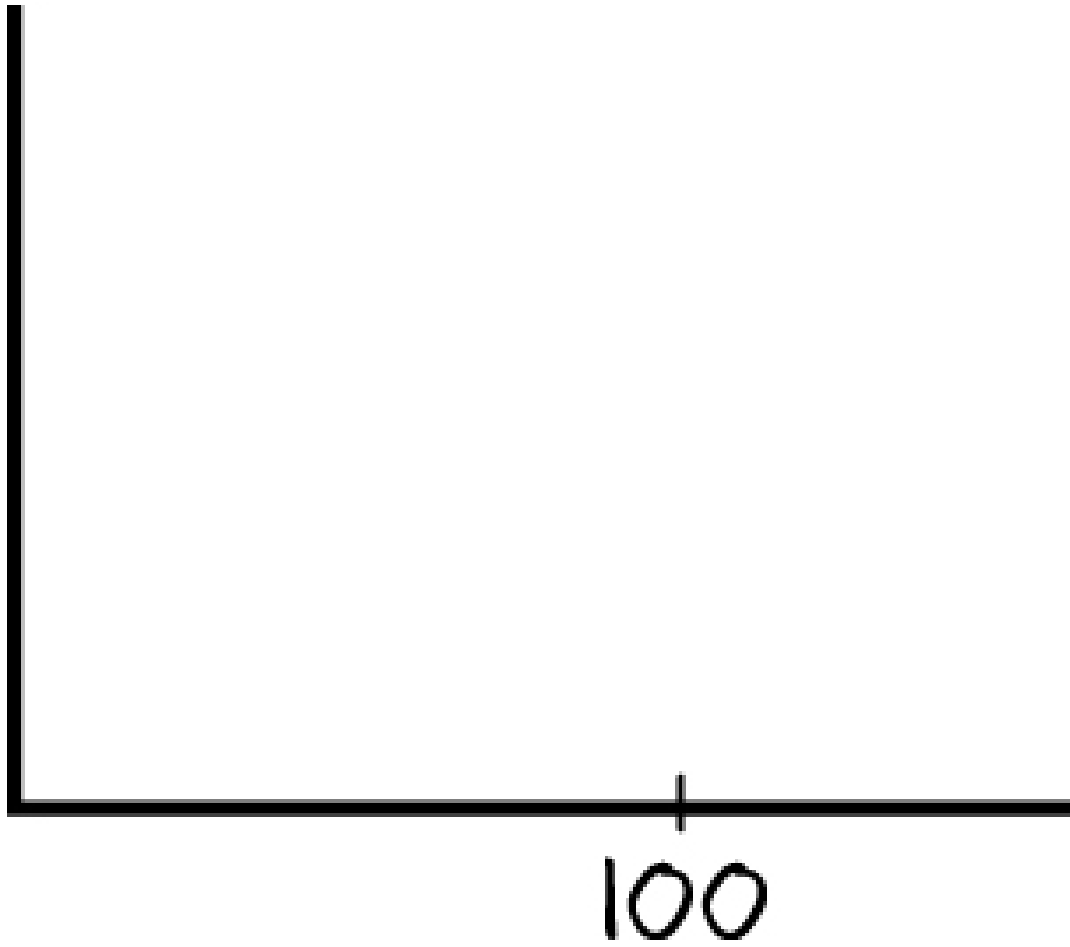
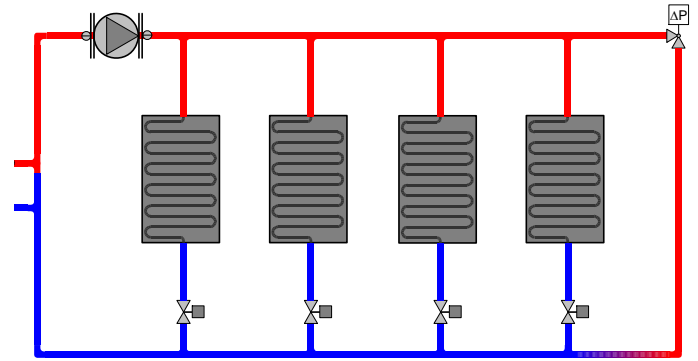
# Hydronic system

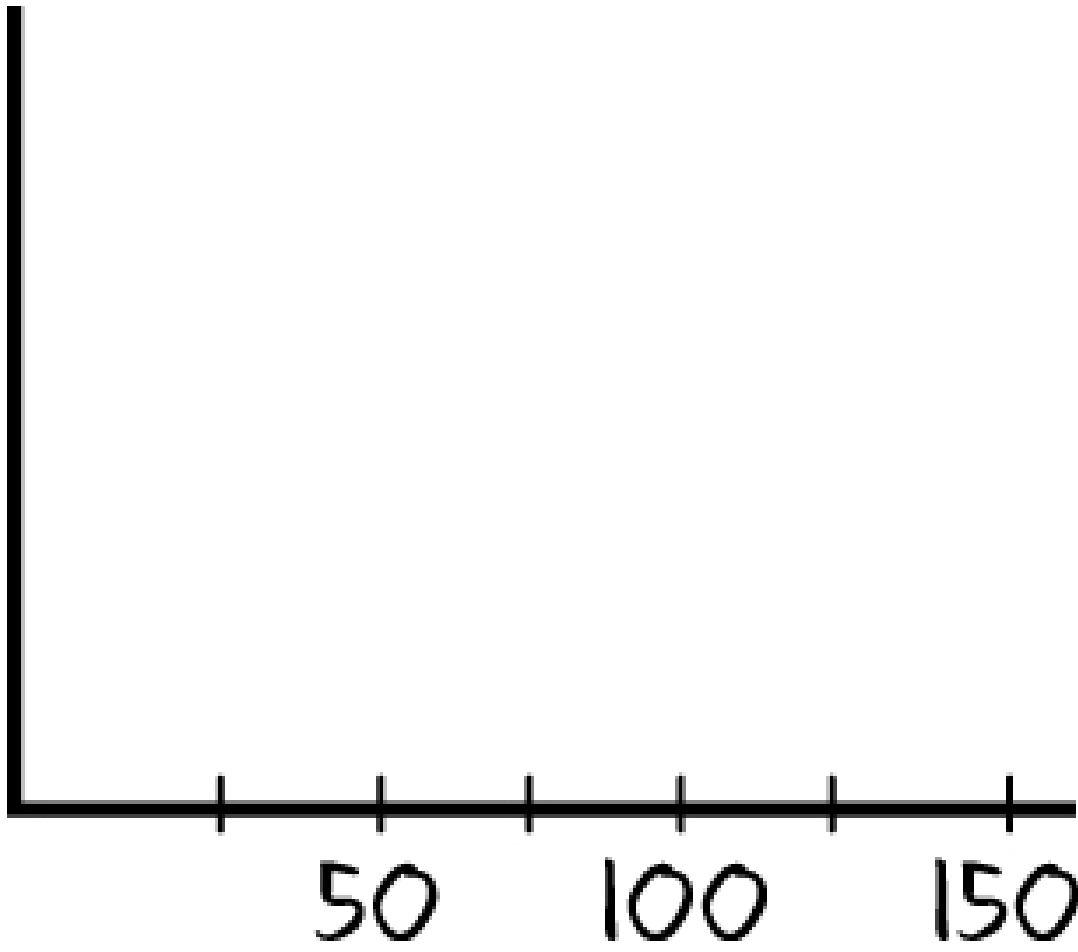
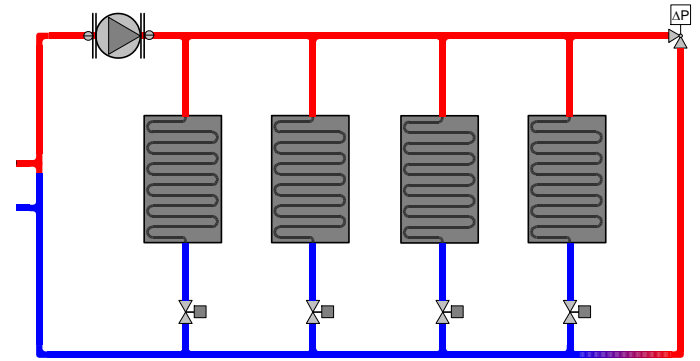


## System Control:

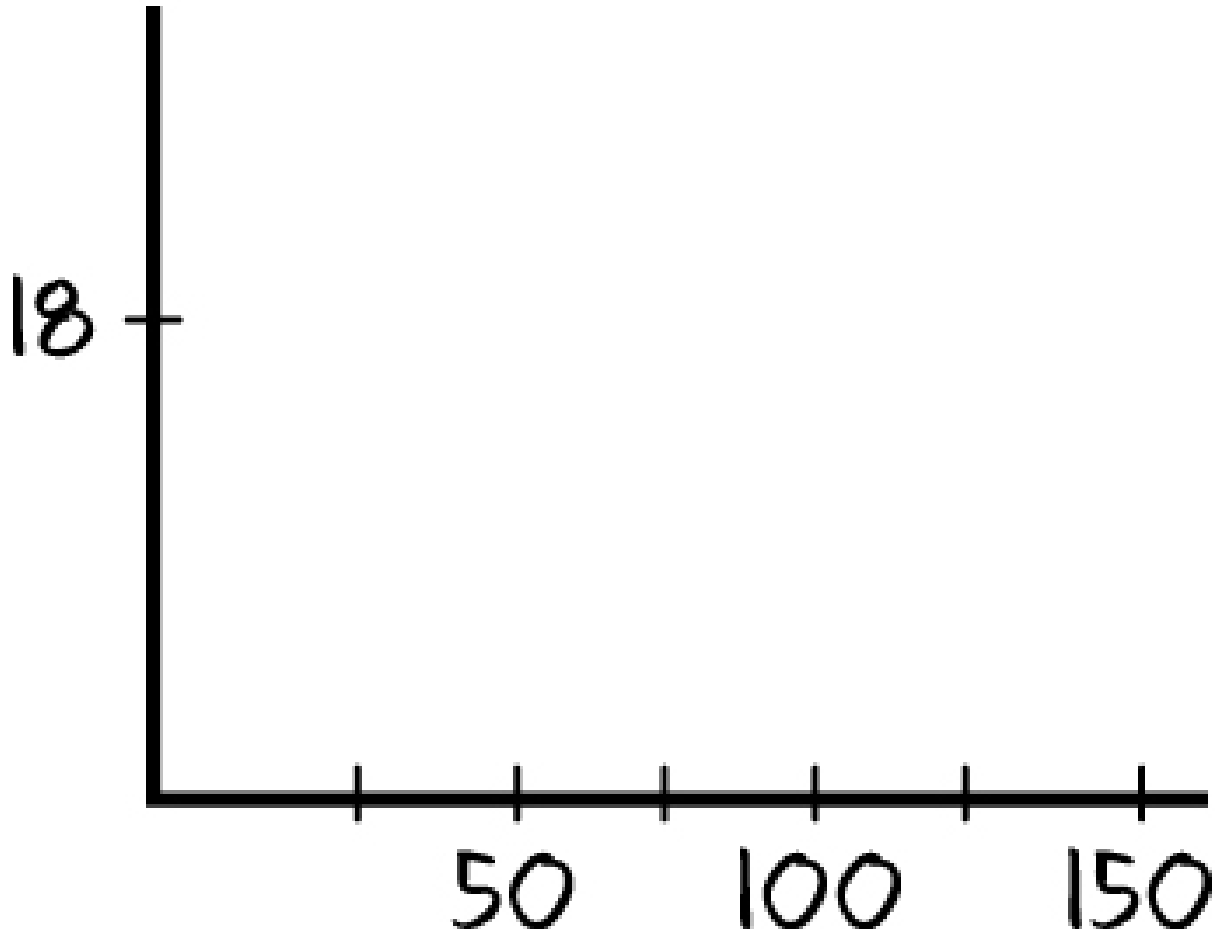
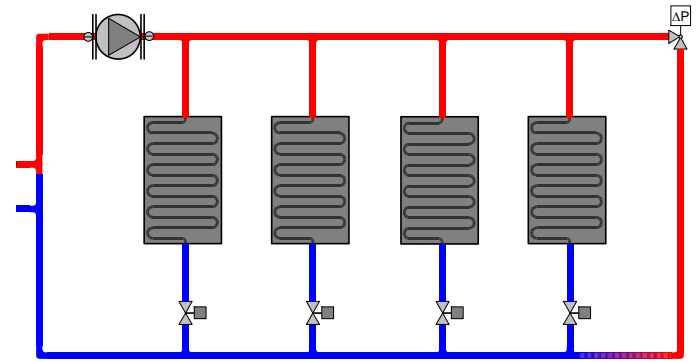
- > Mechanical Control
- > Onsite Control Programming / Decisions
- > Integrated Control

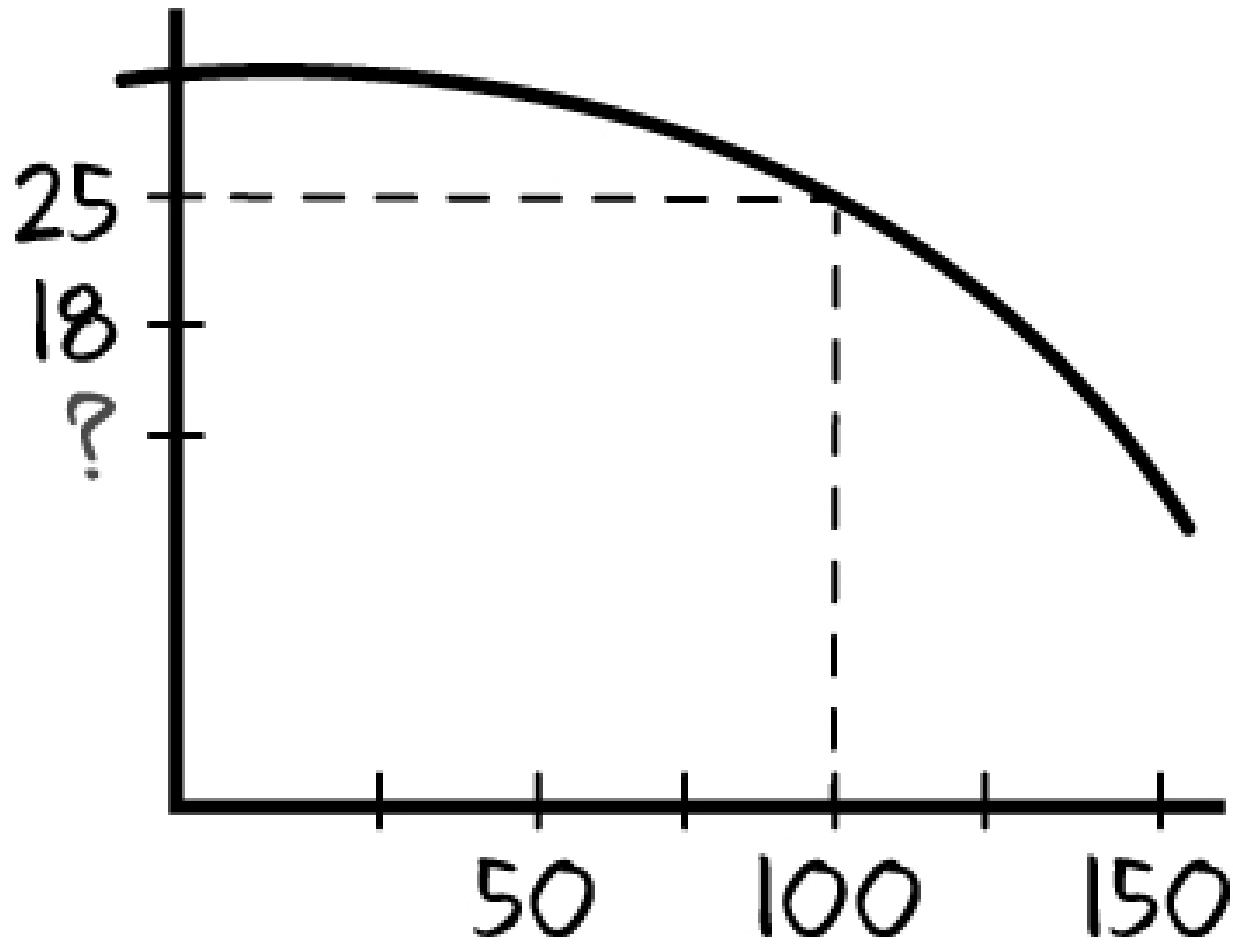
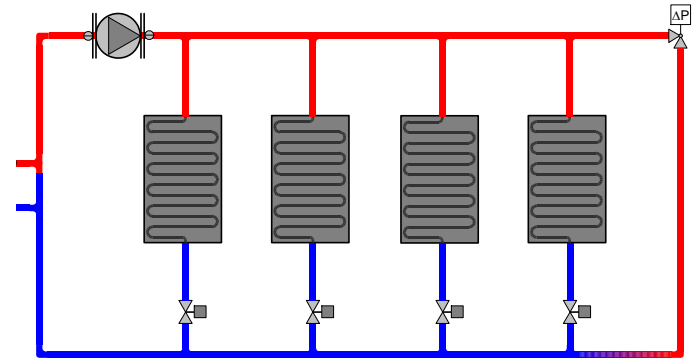


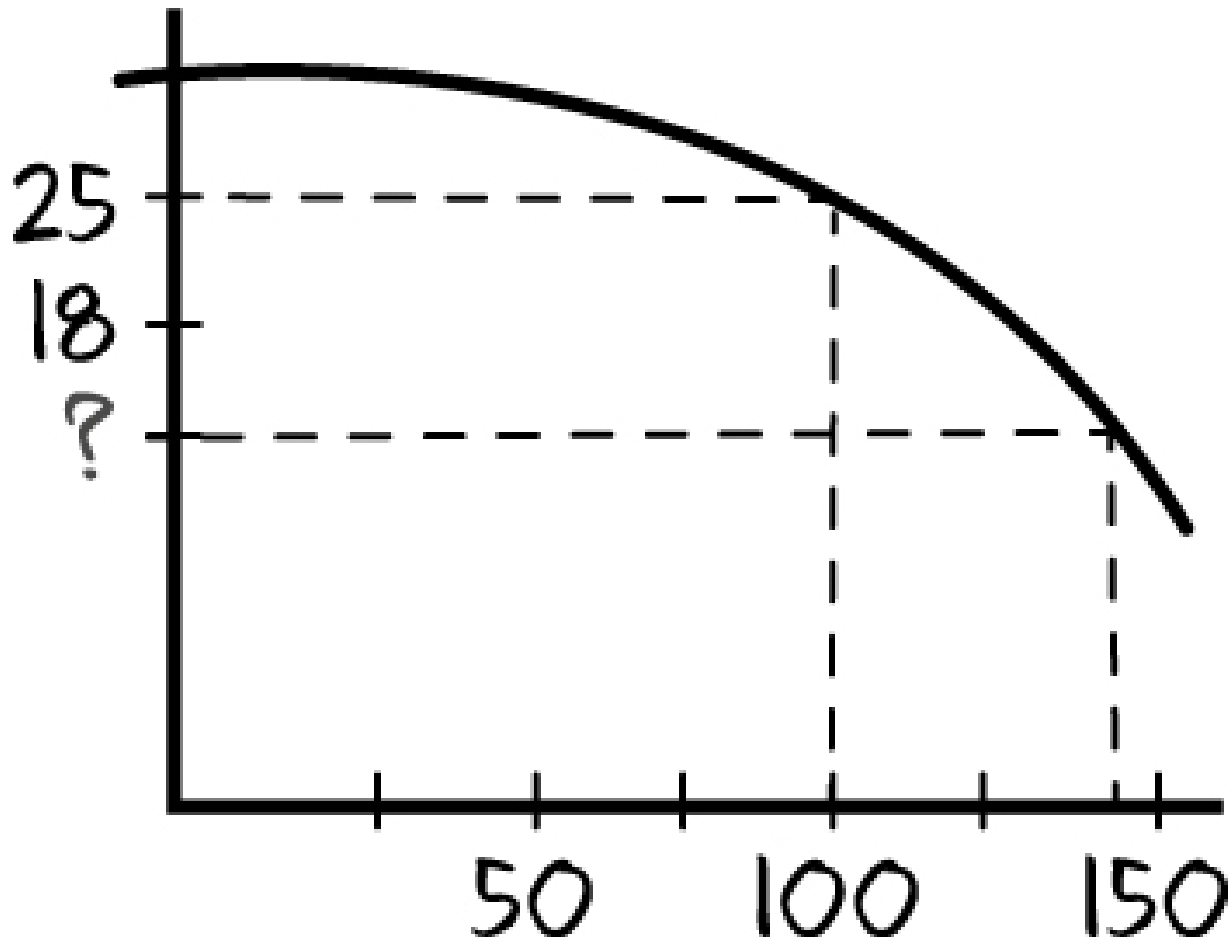
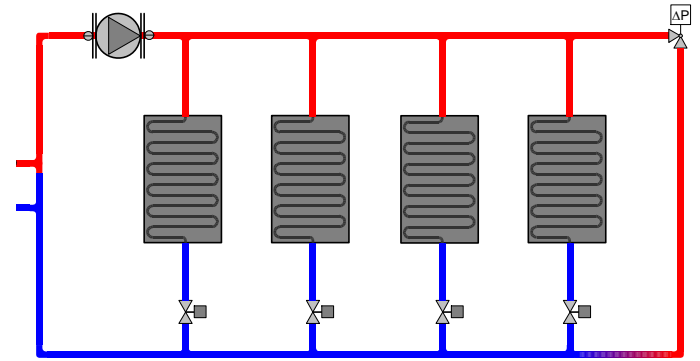


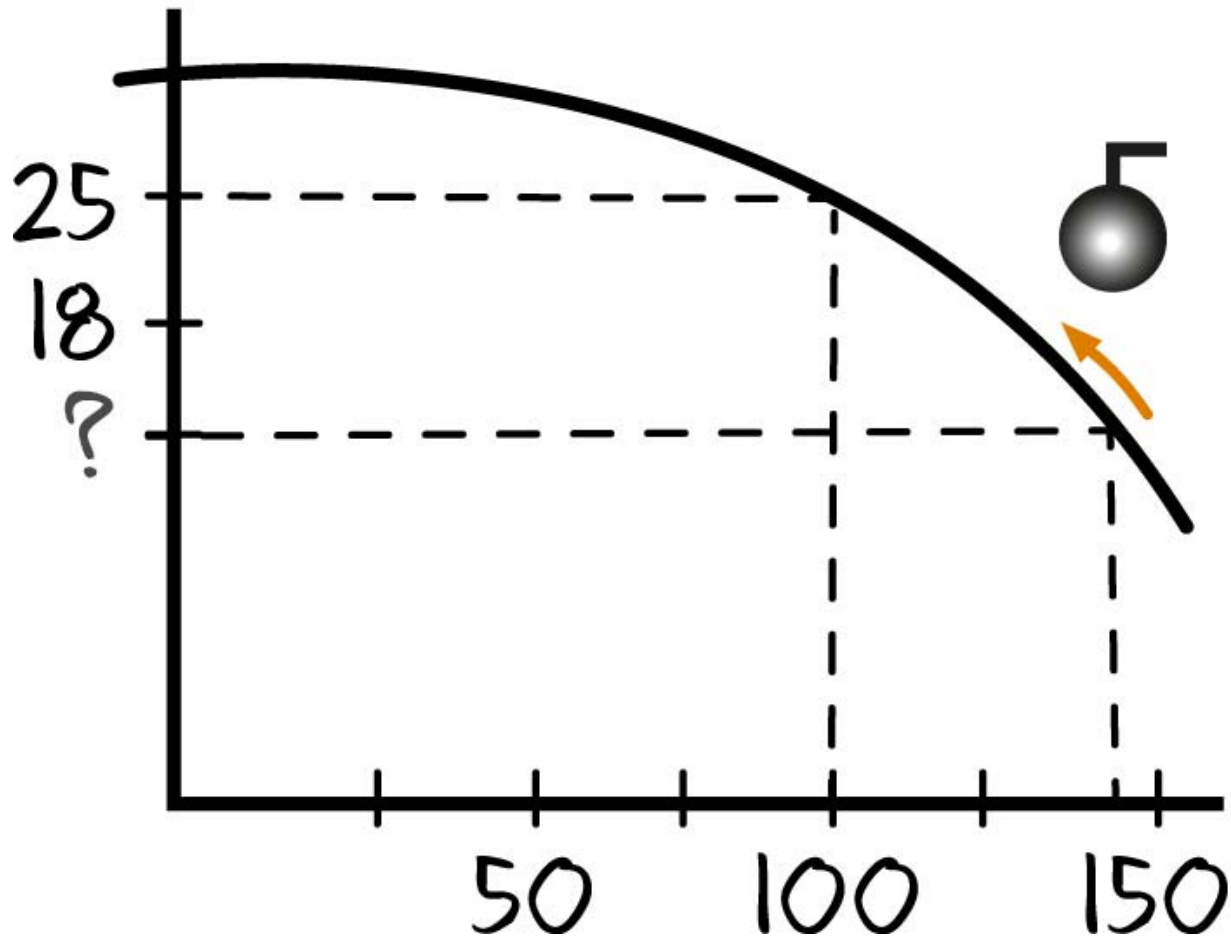
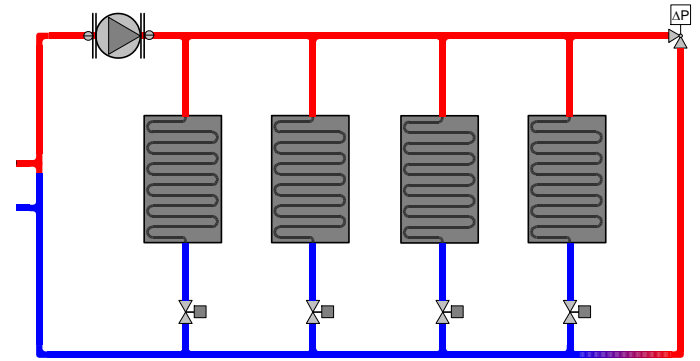




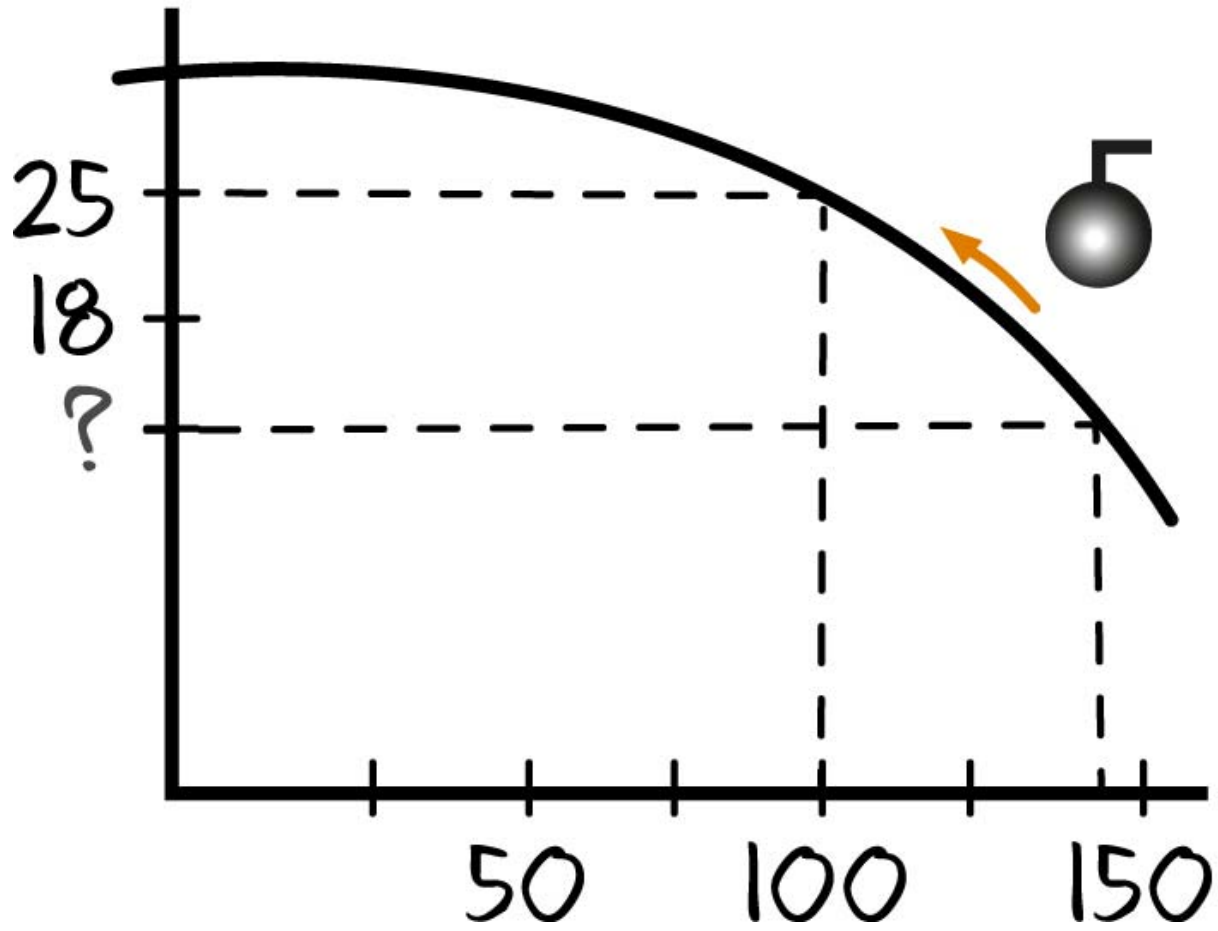
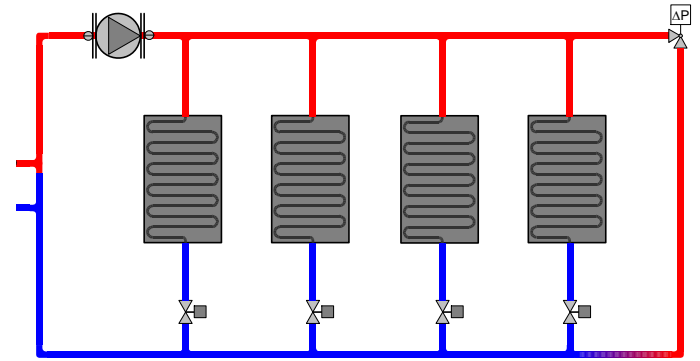


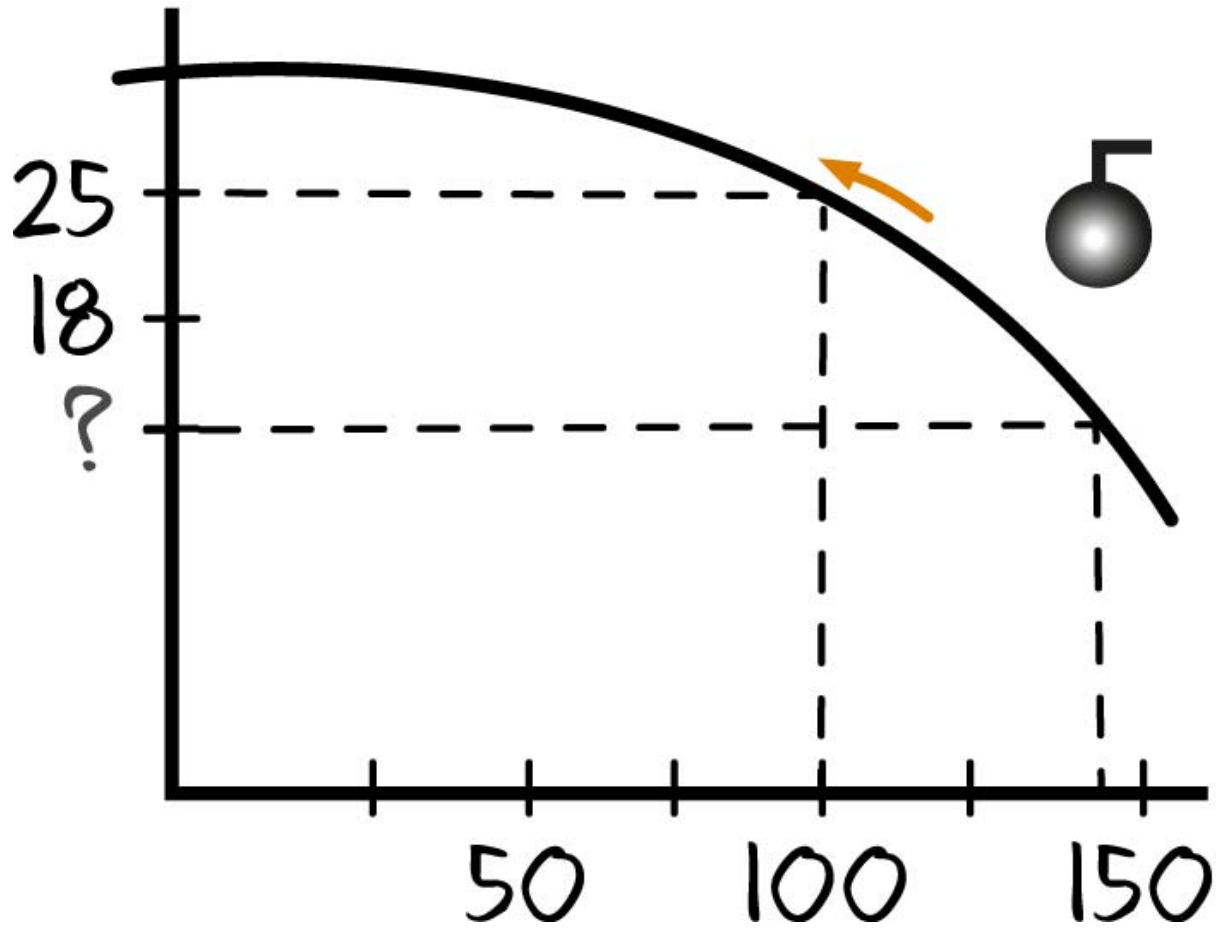
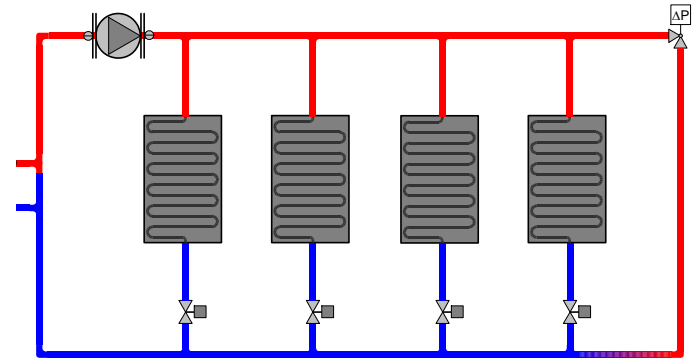


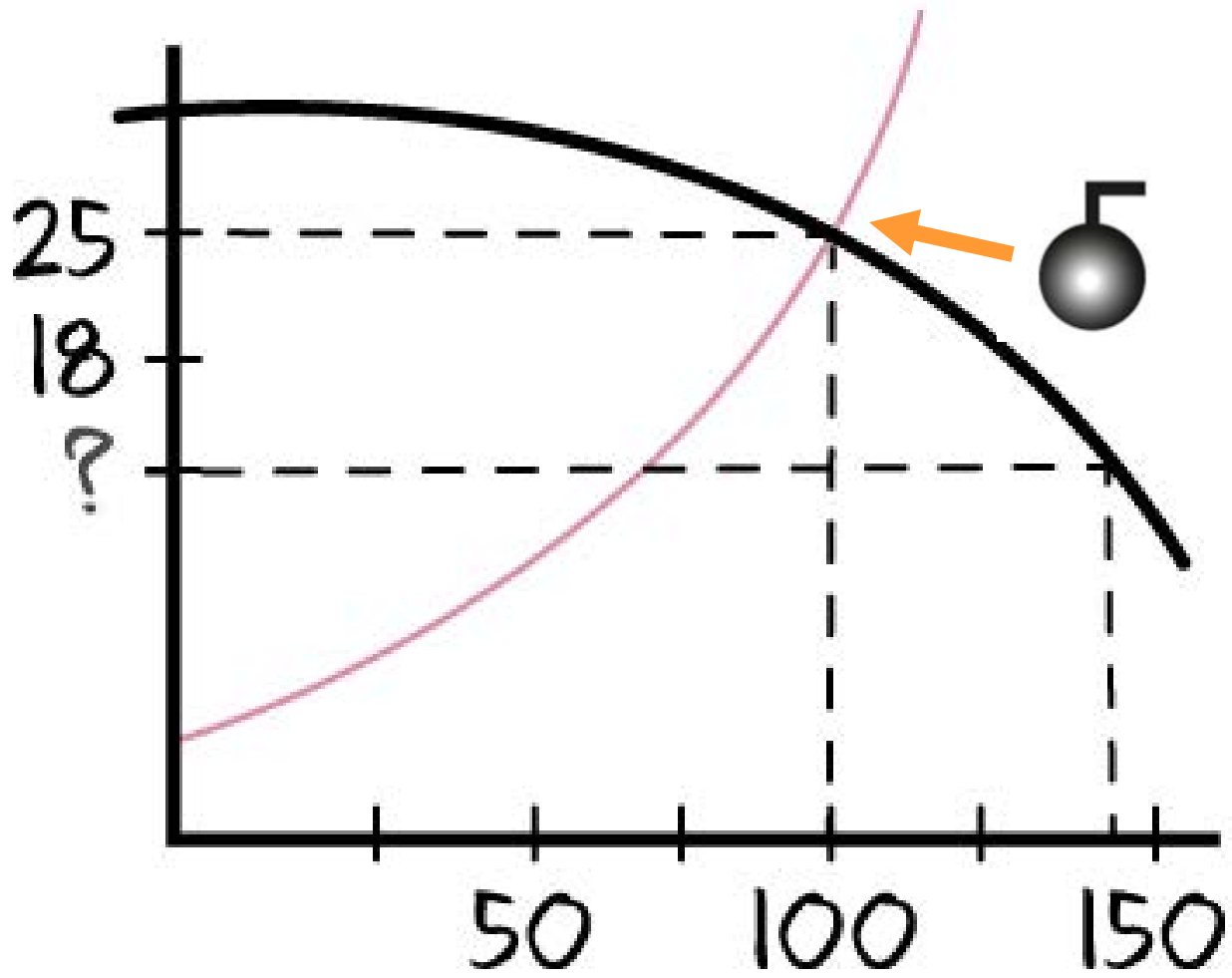
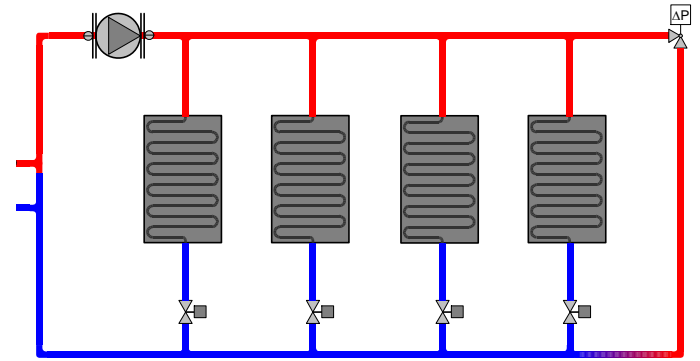












# Basic components of a speed controlled system



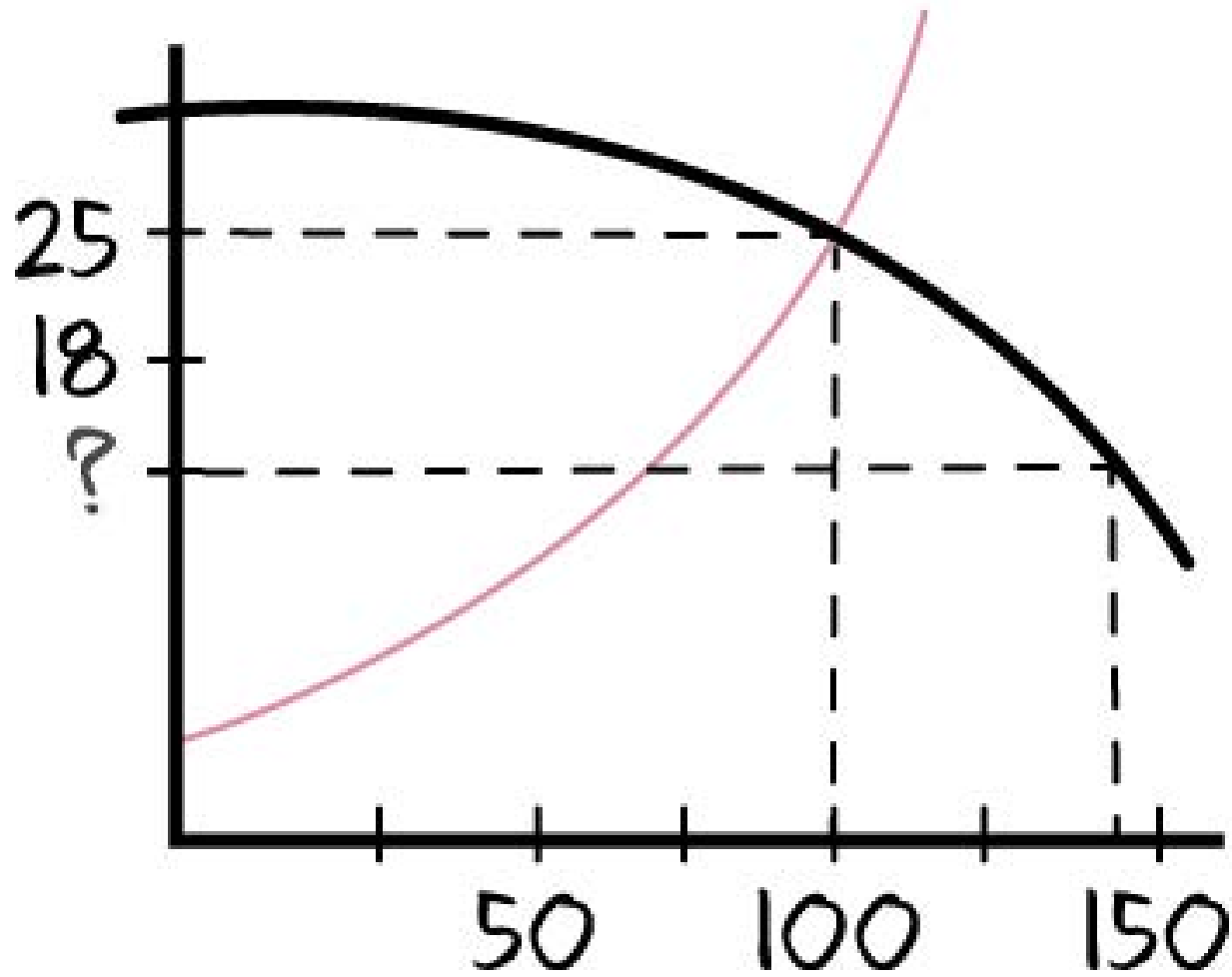
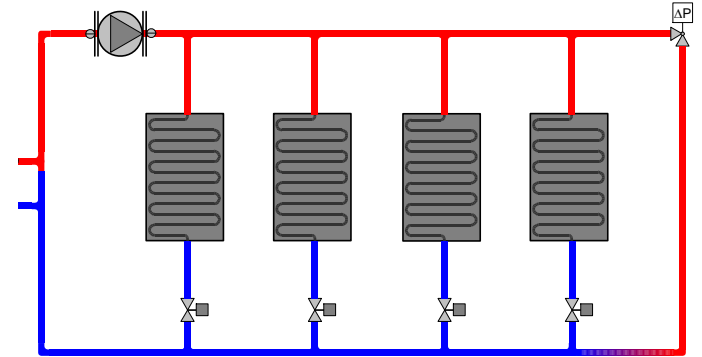
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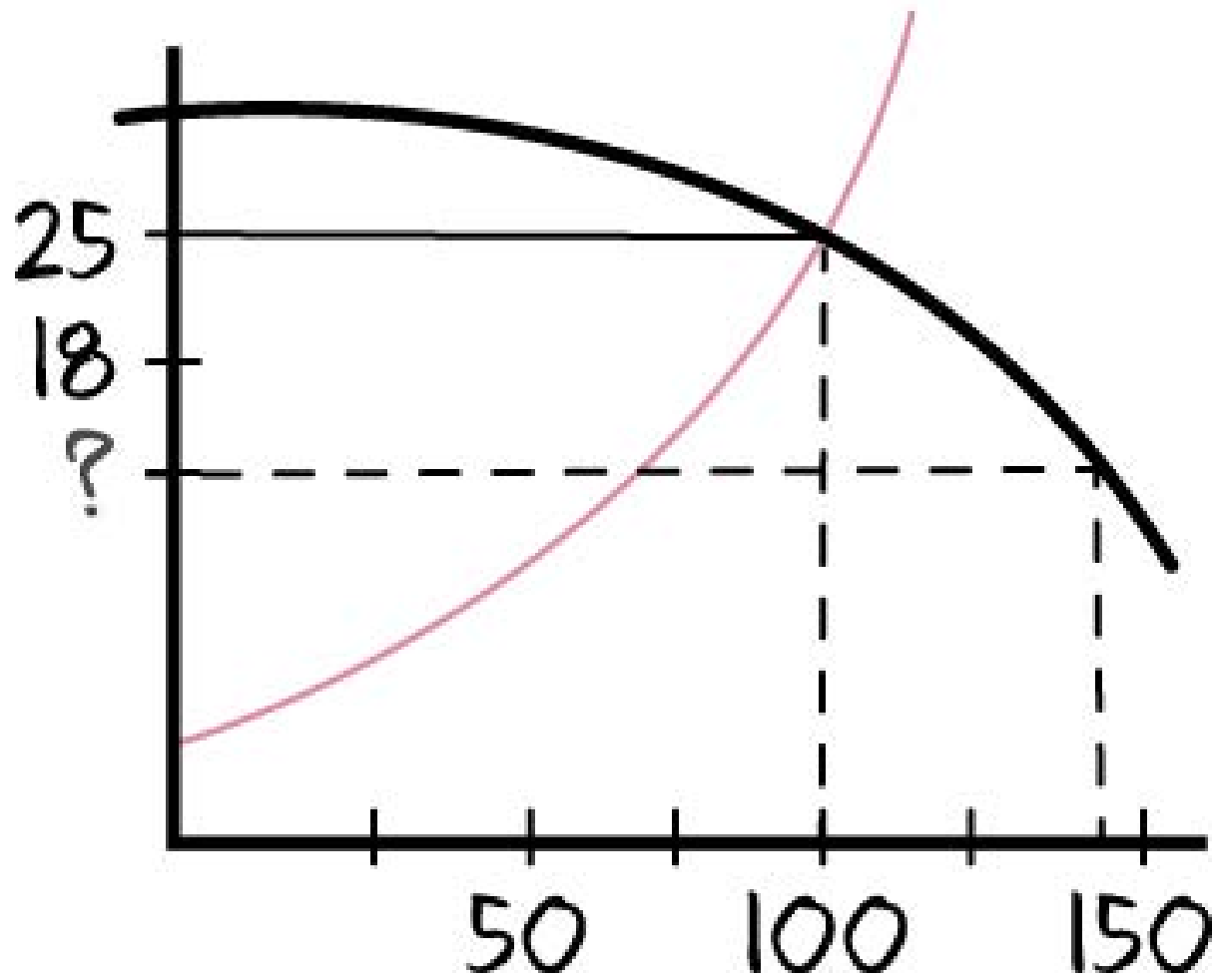
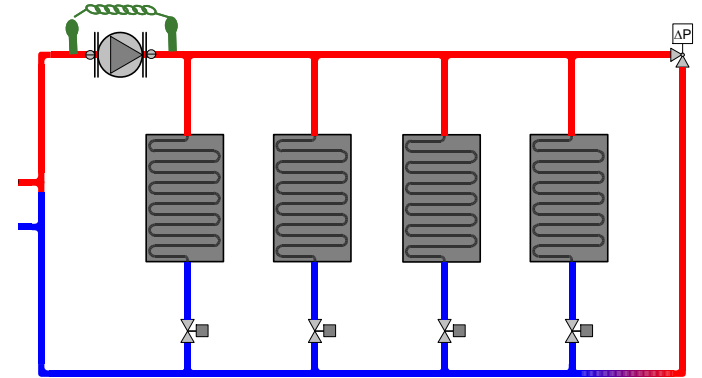


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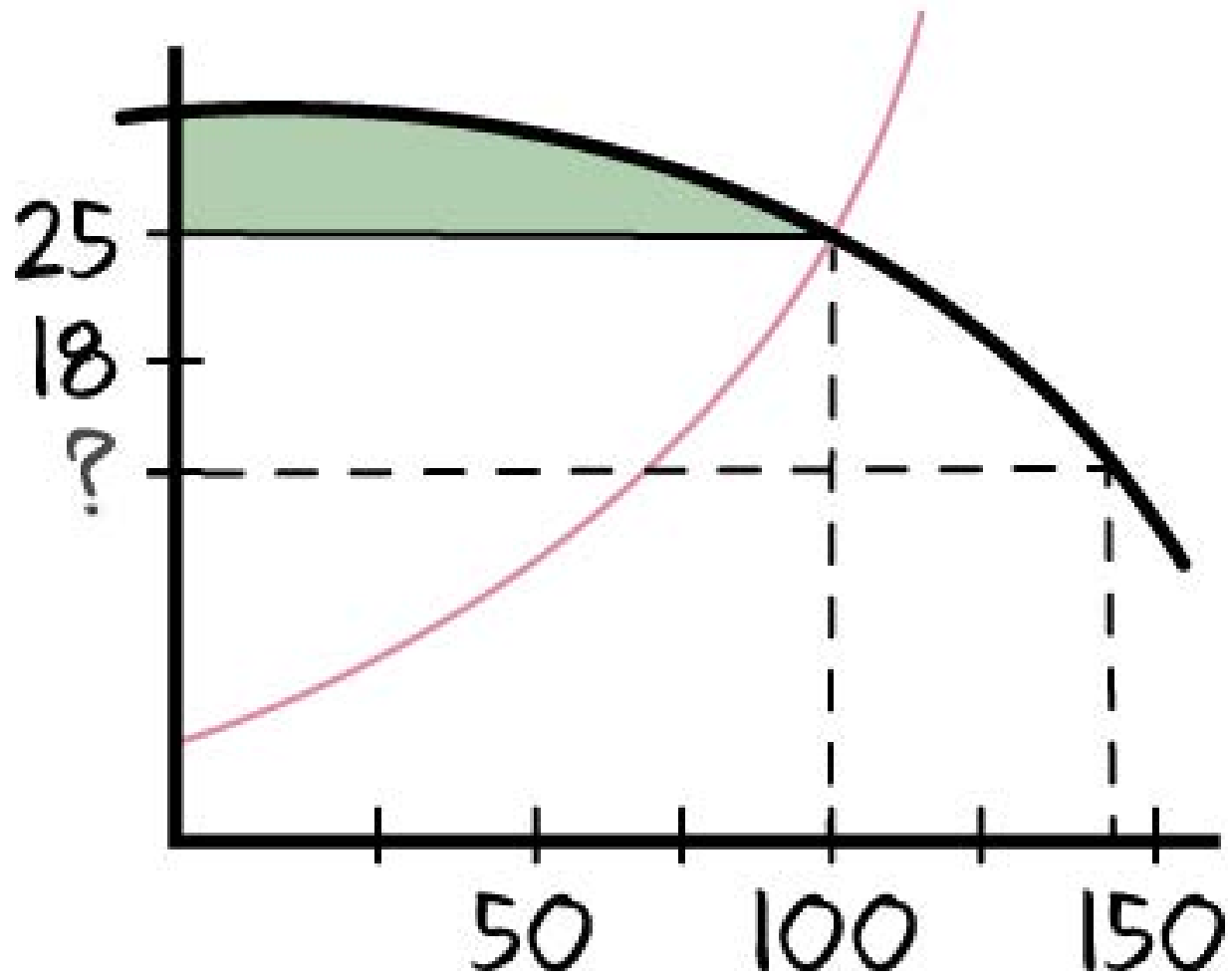
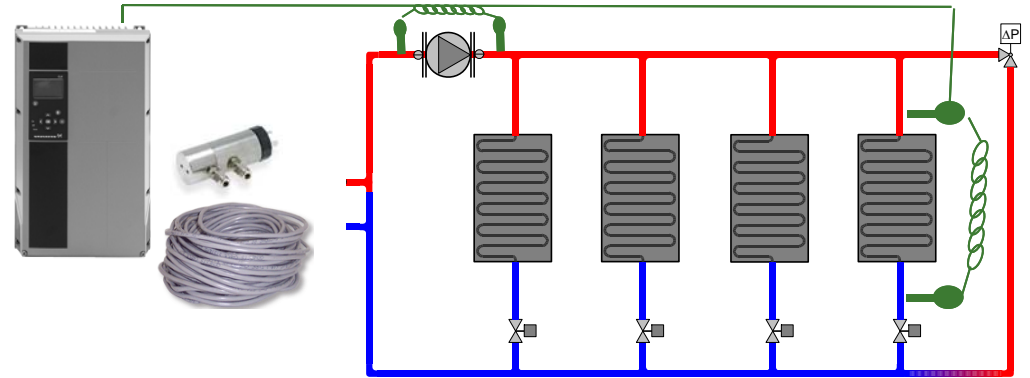


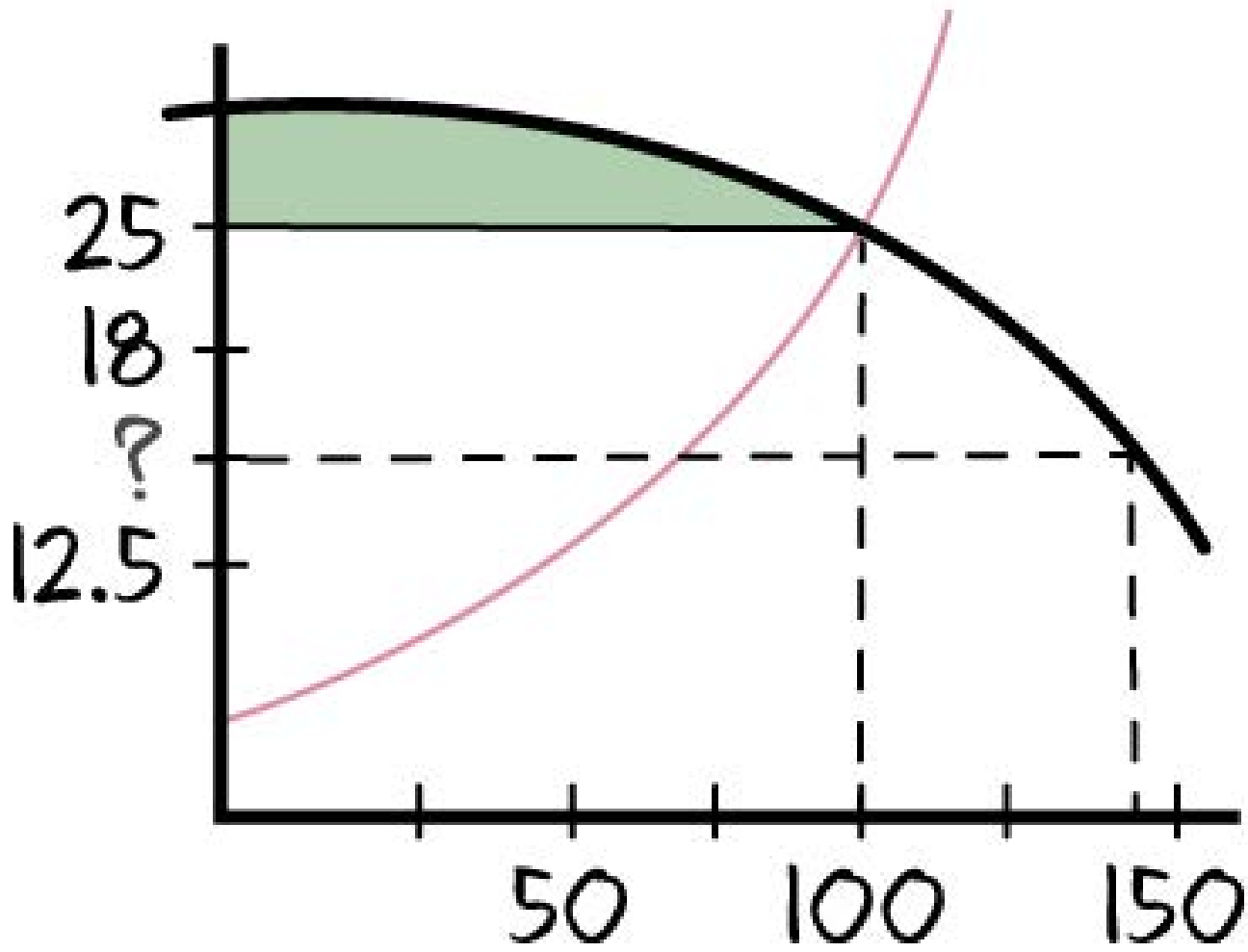
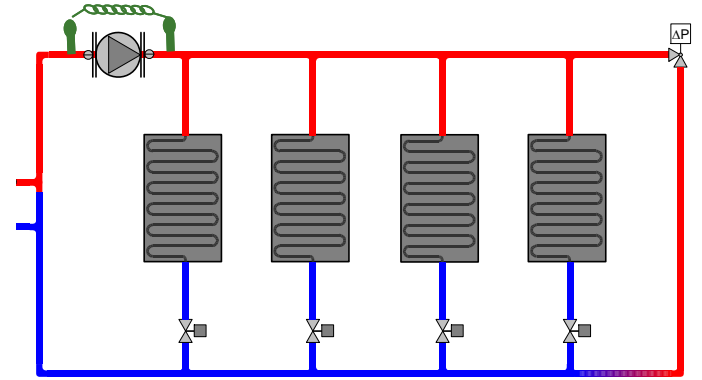
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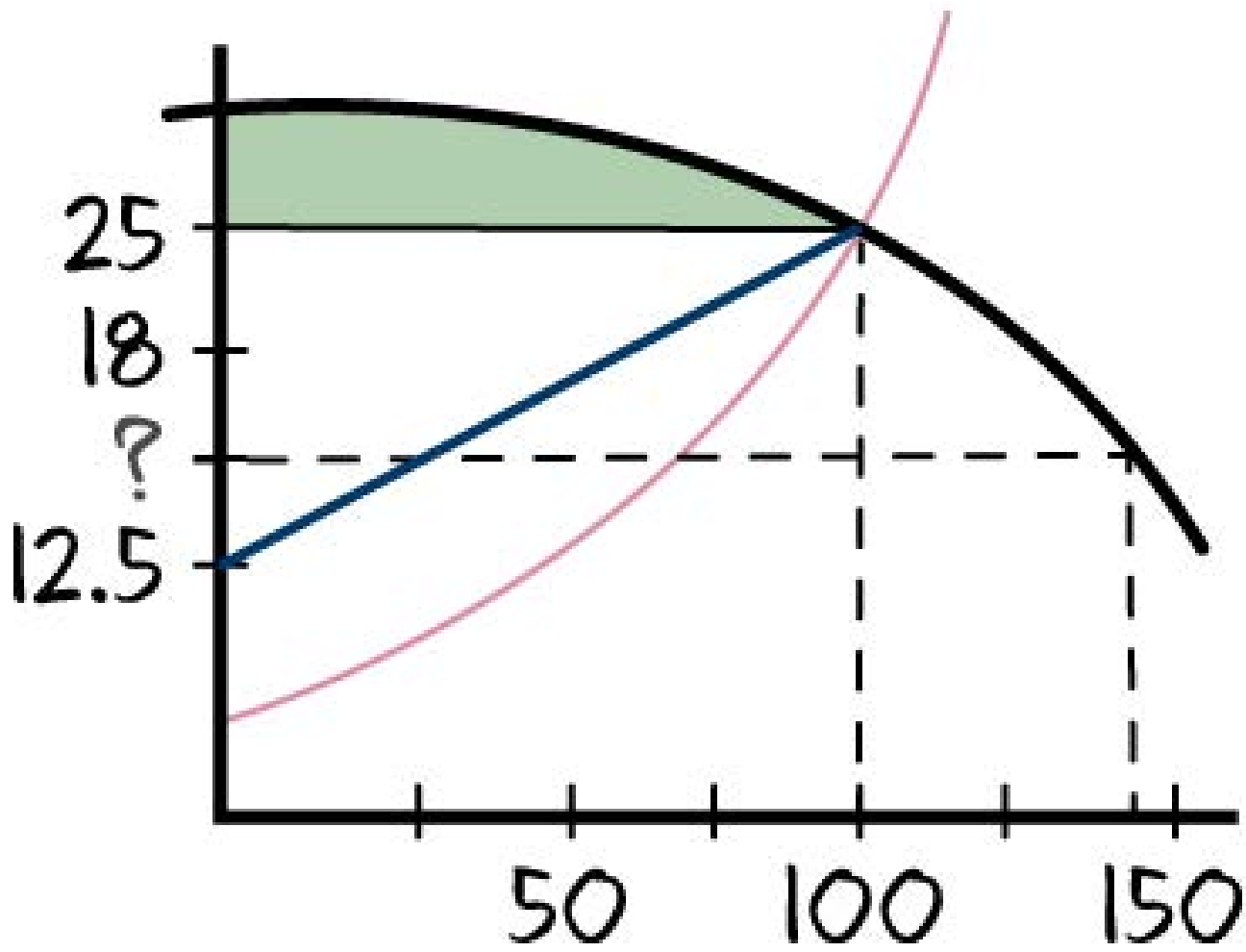
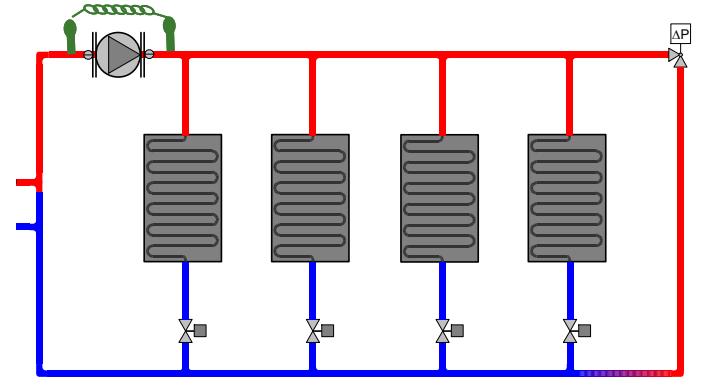


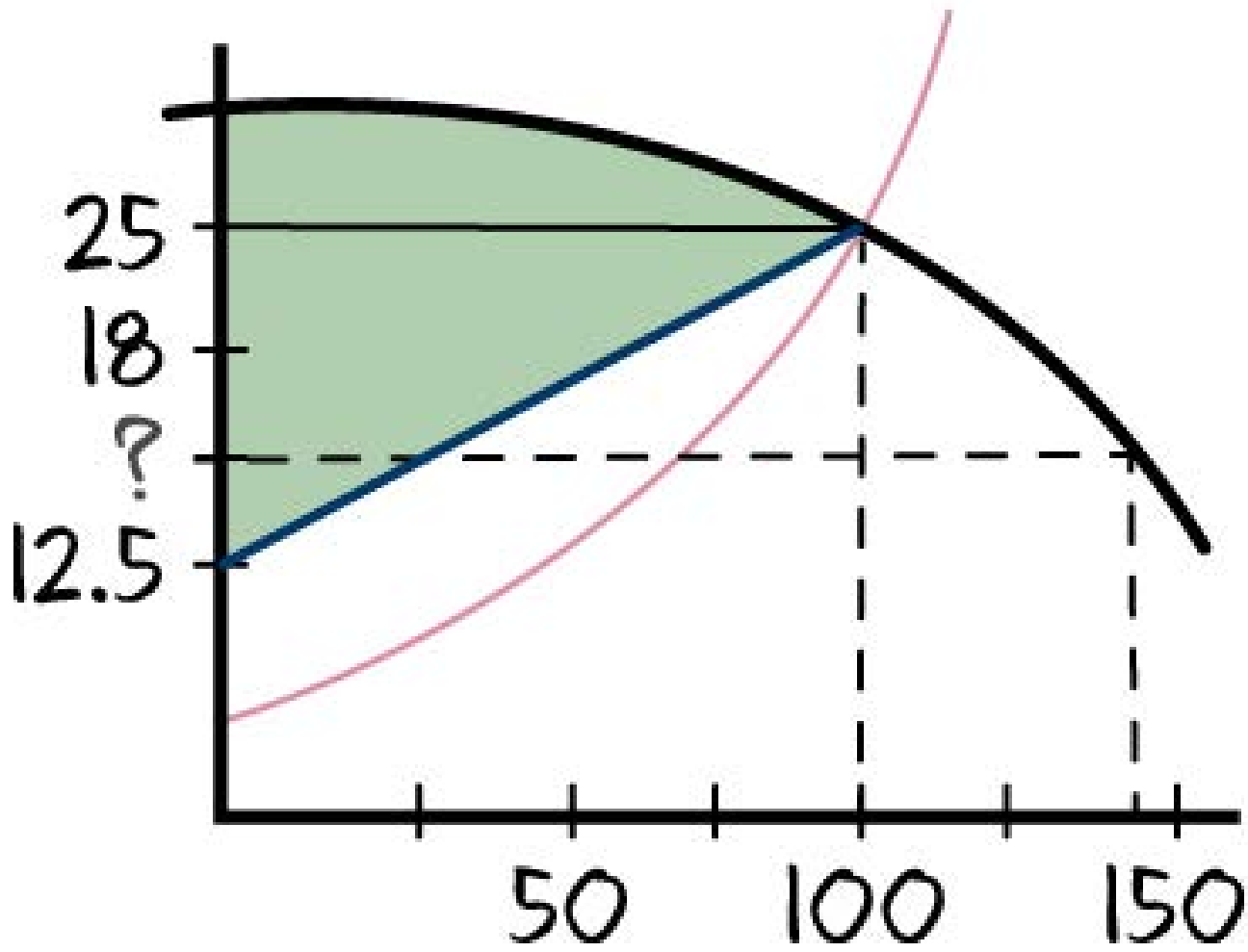
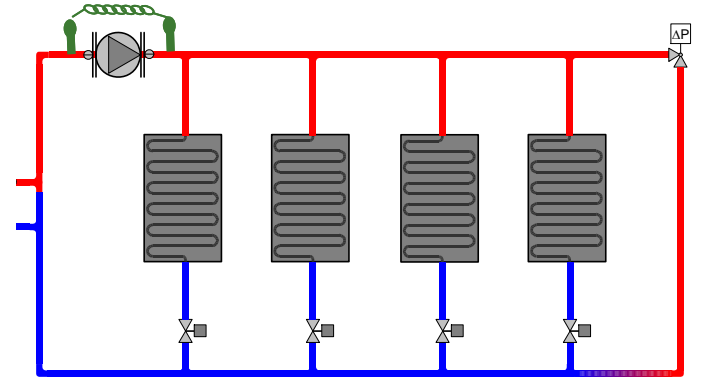
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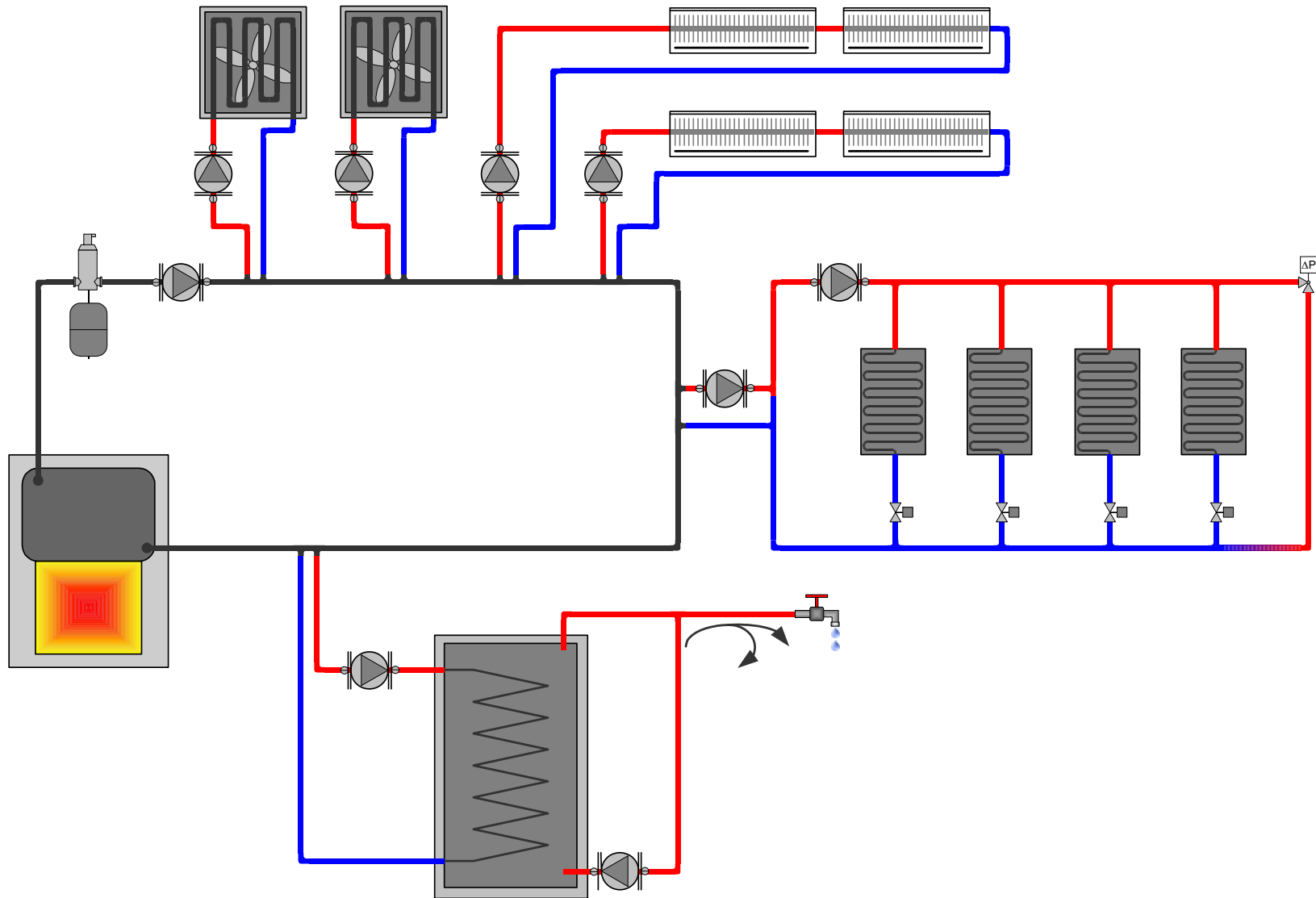


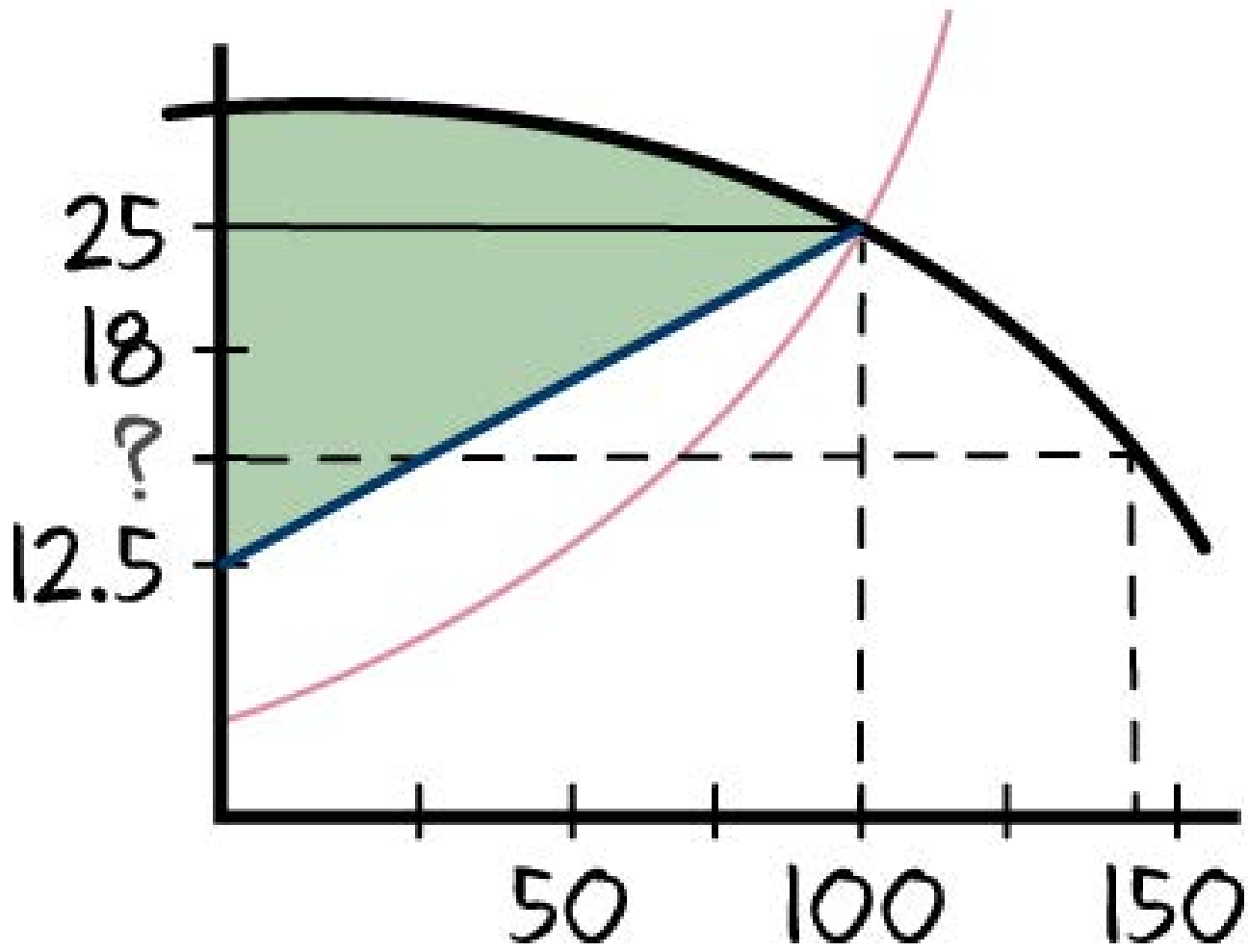
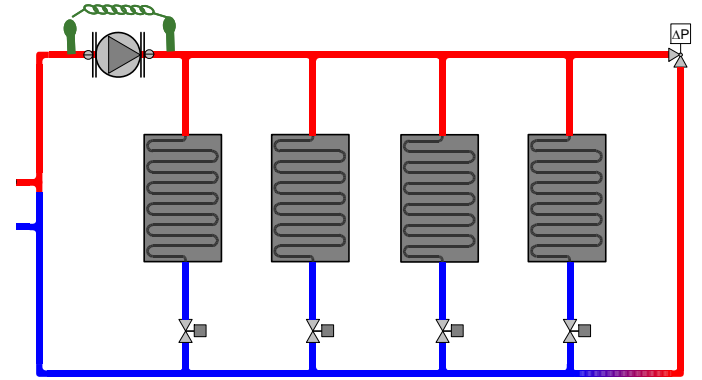
# Grundfos ePumps – Sm/Mid range

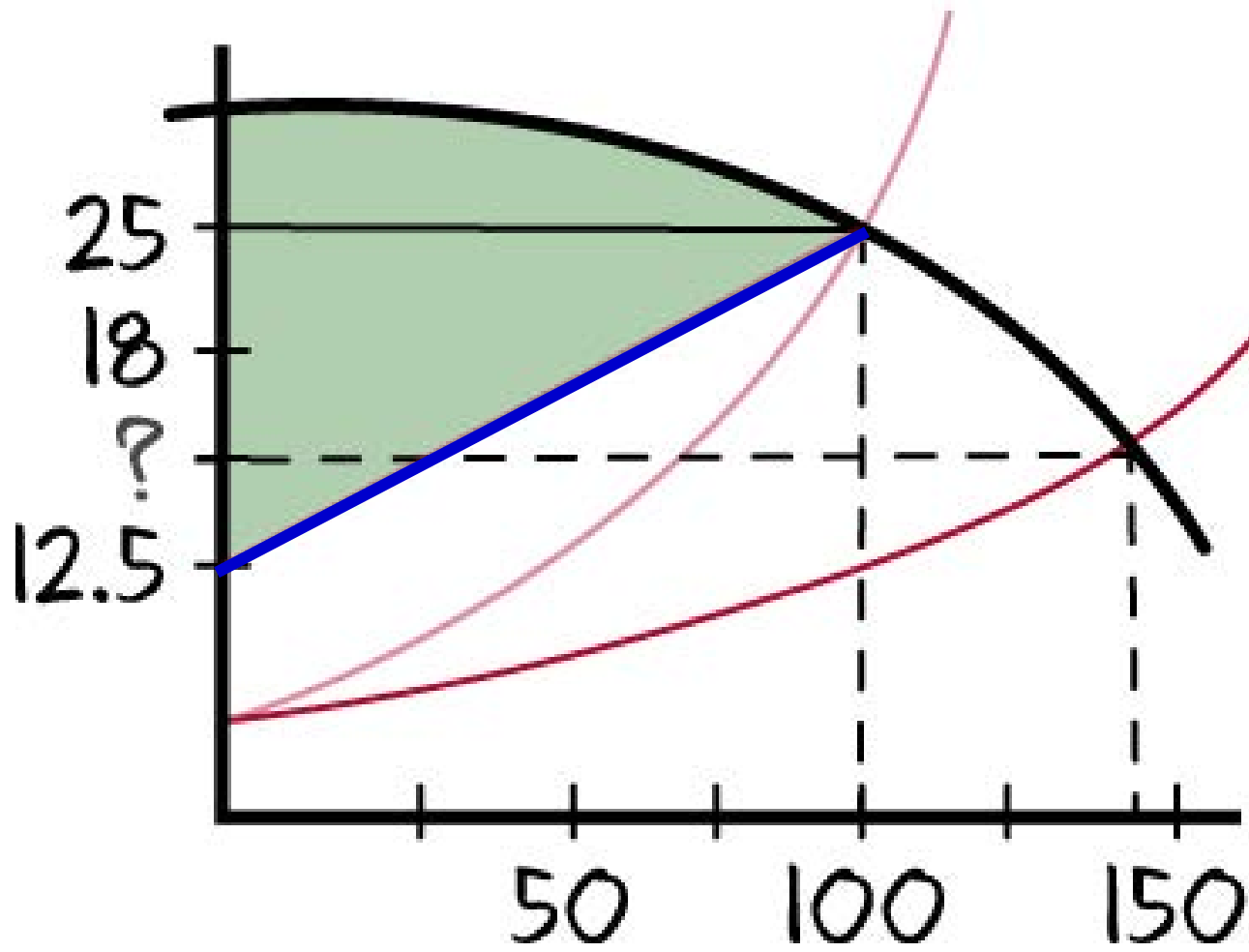
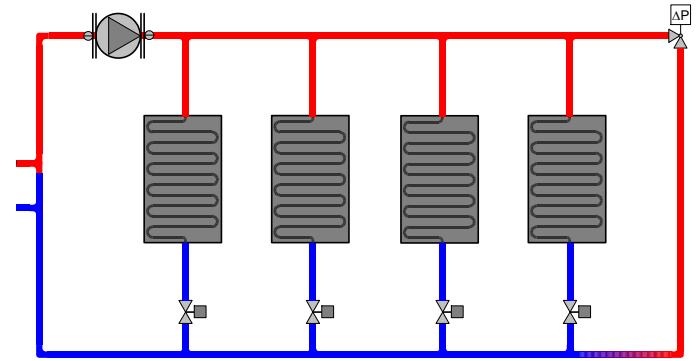
## Magna3 - BUILT ON A PROVEN FOUNDATION



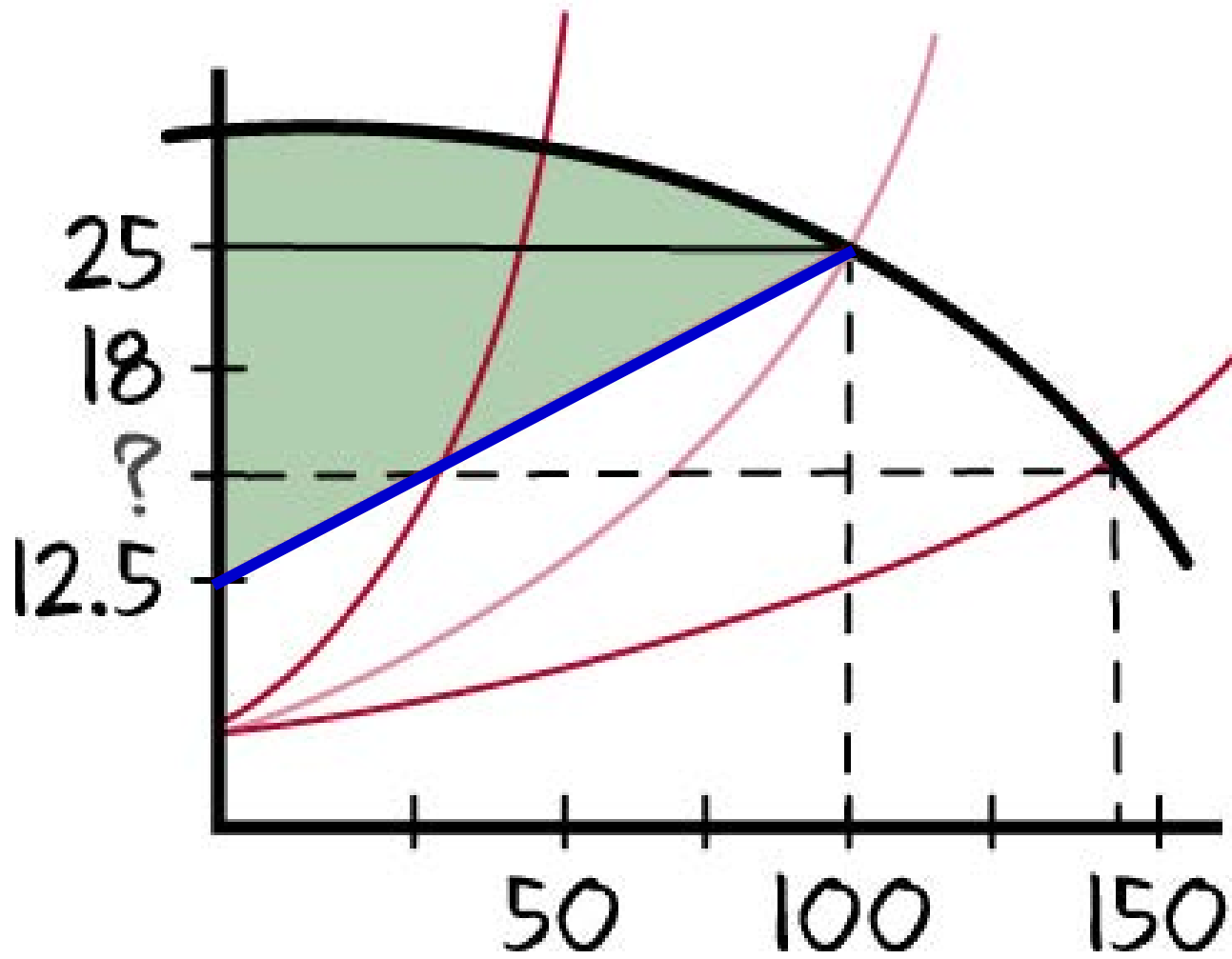
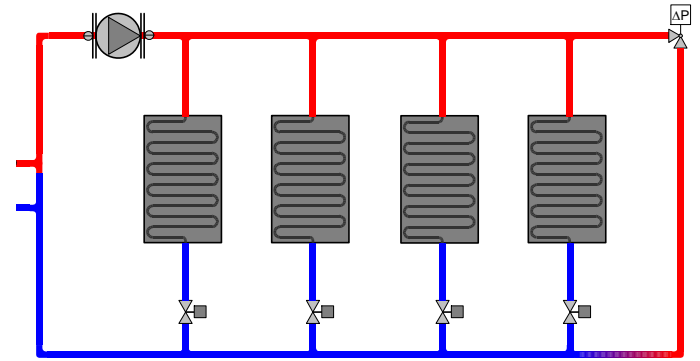
# Typical hydronic system

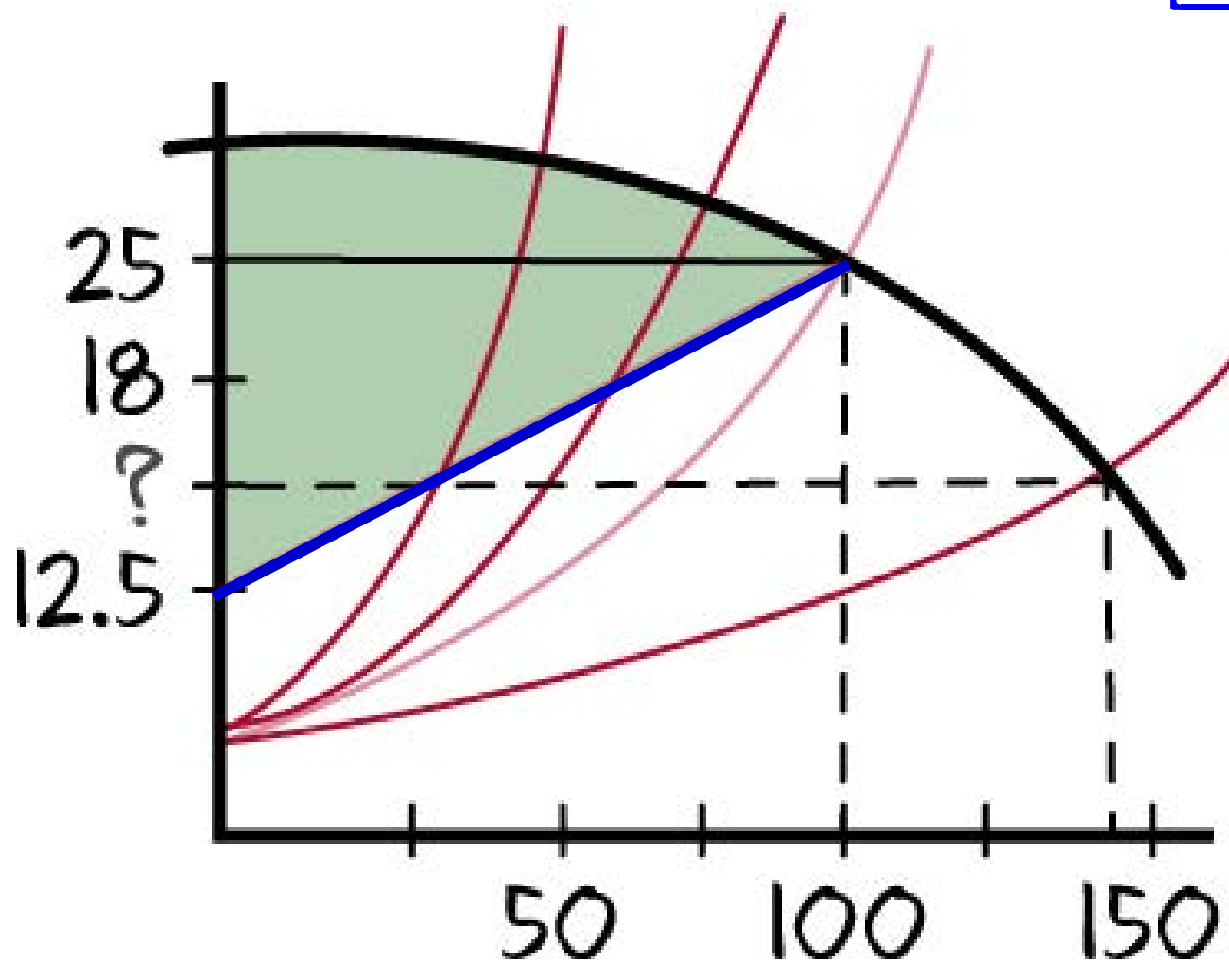
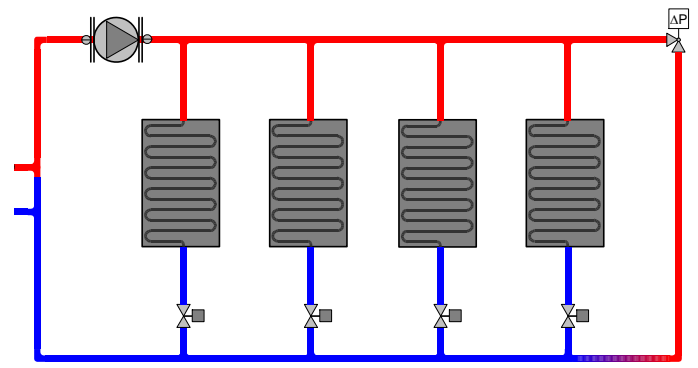


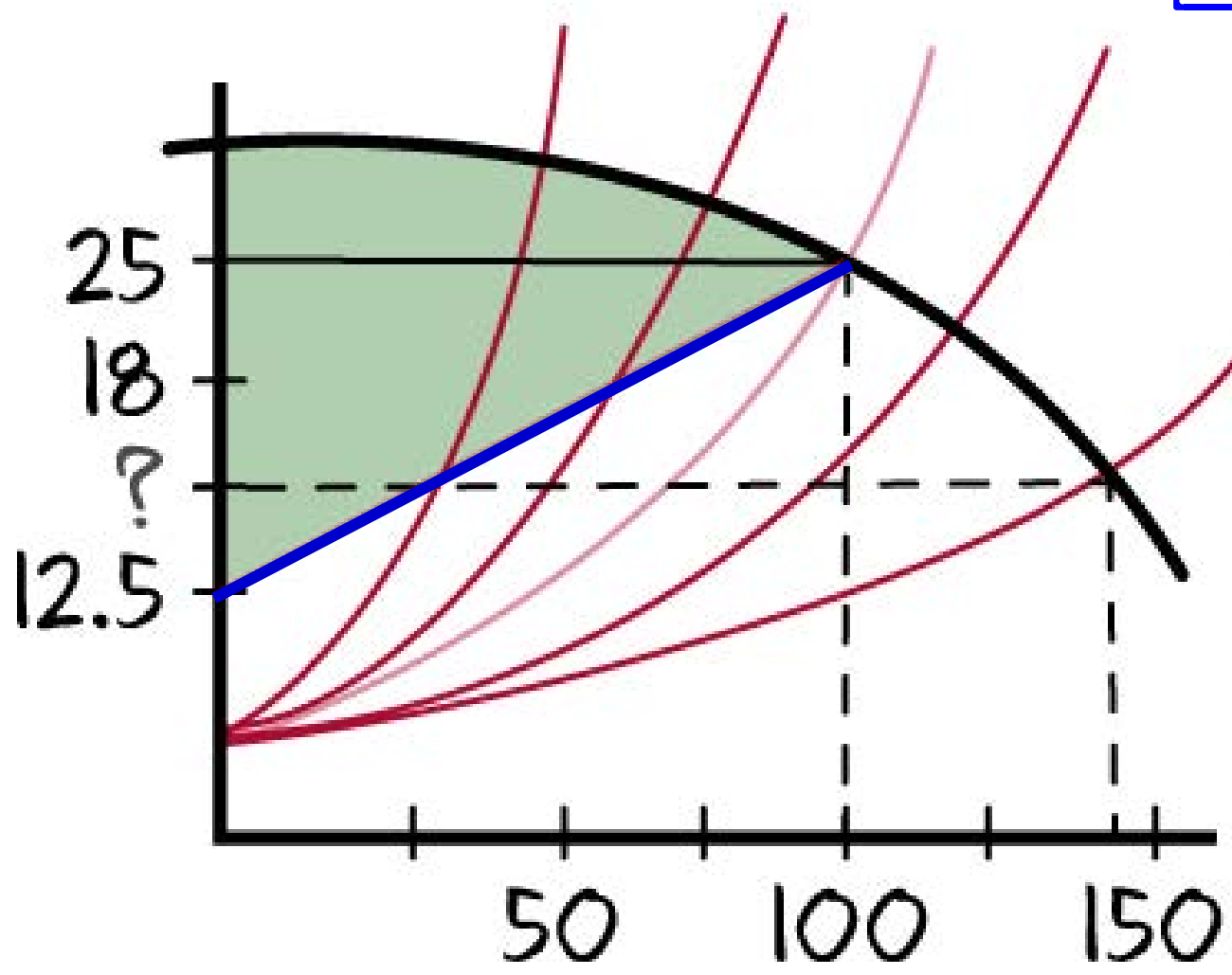
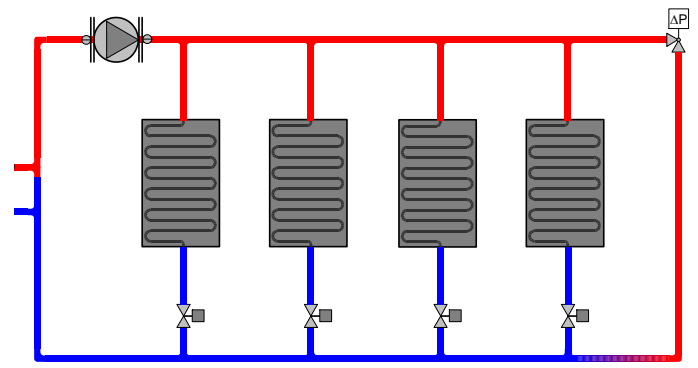


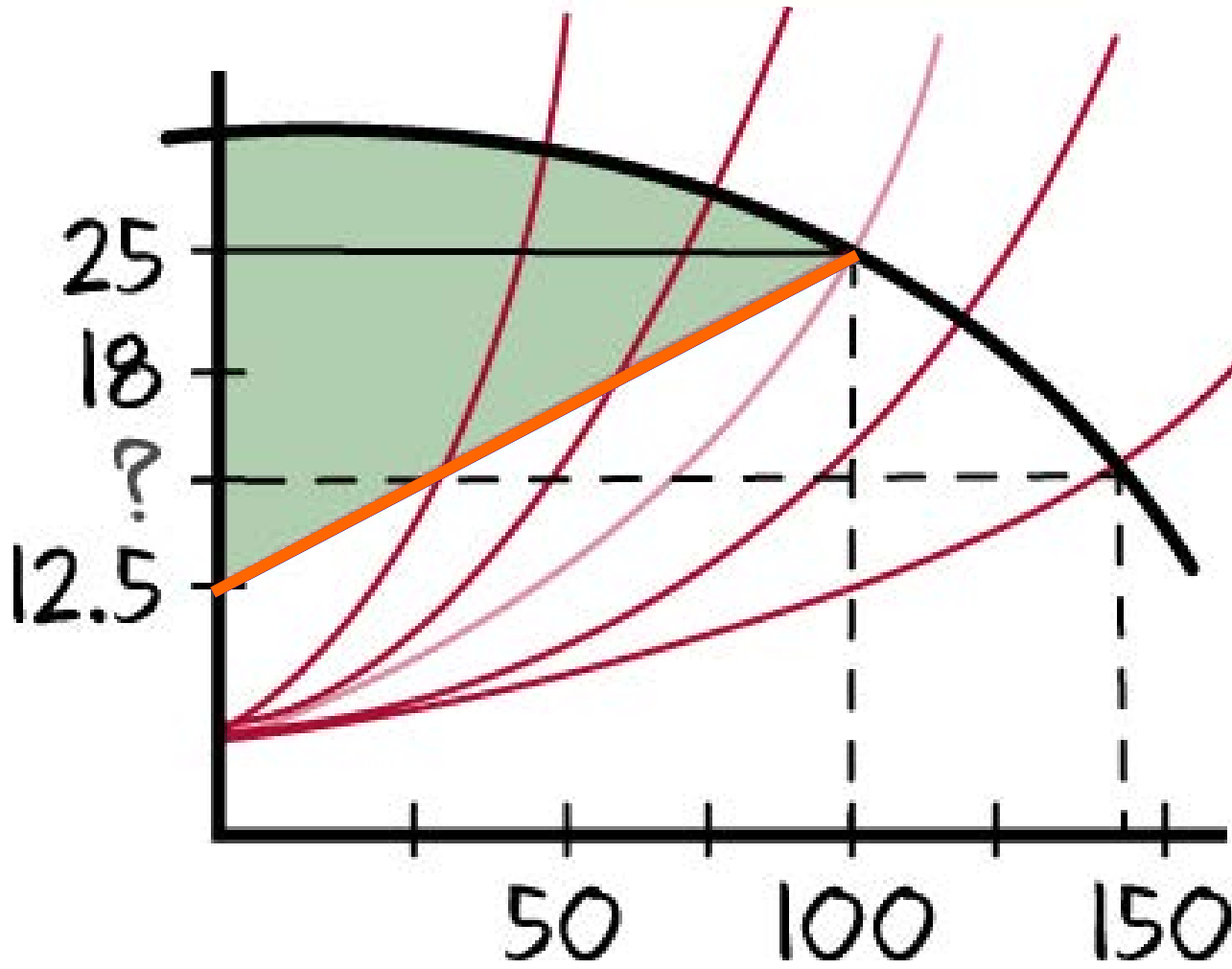
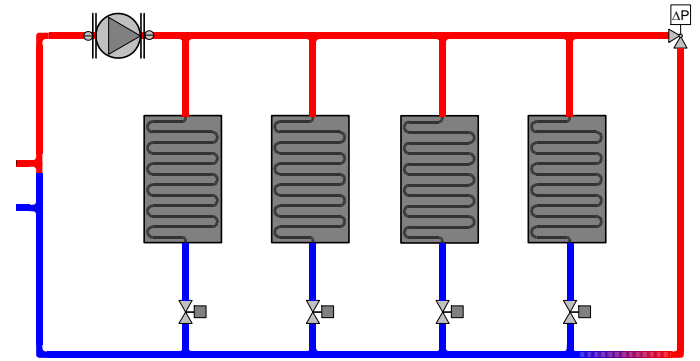


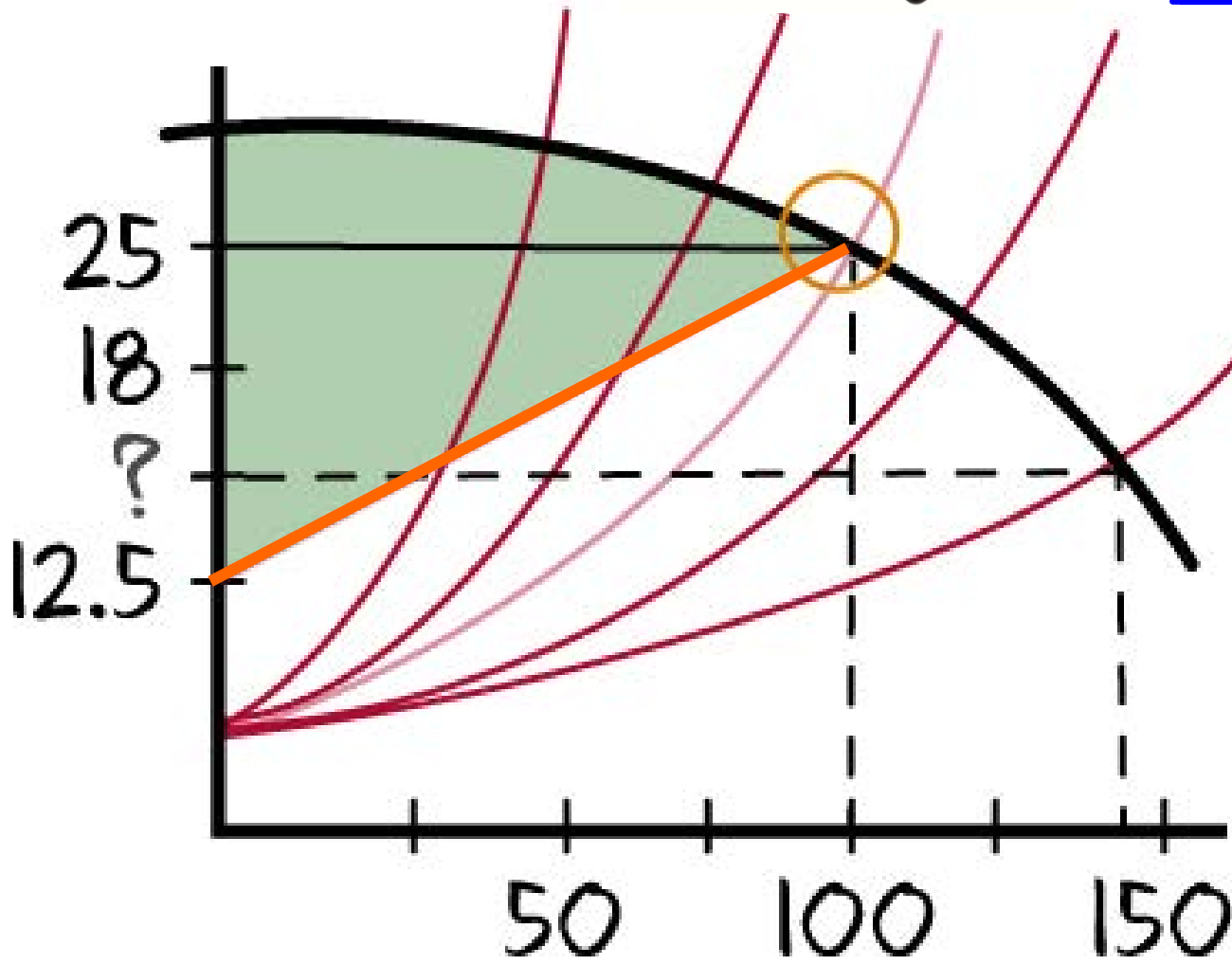
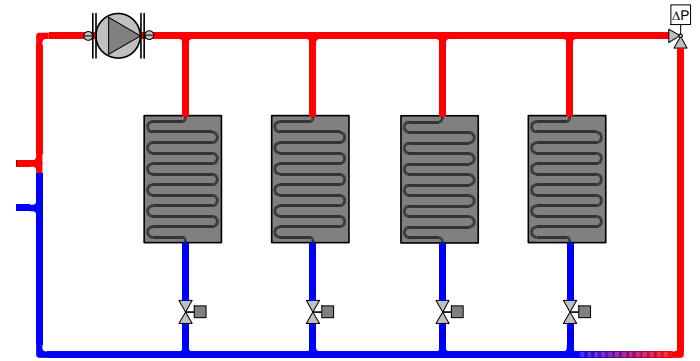


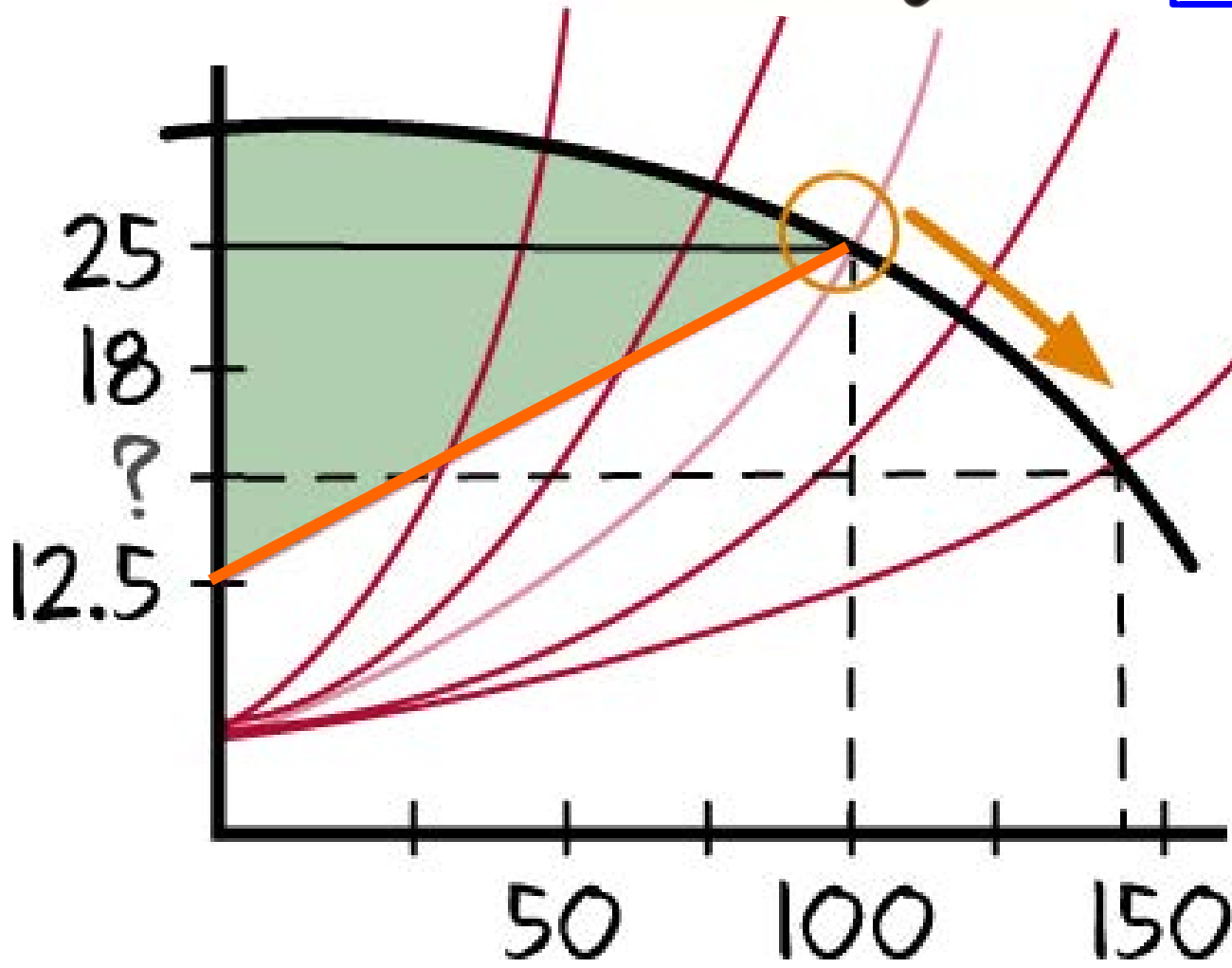
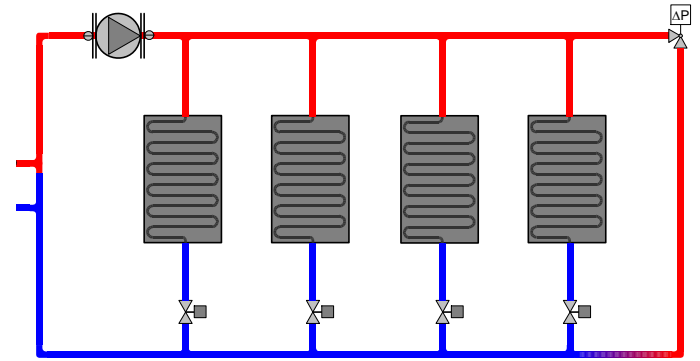




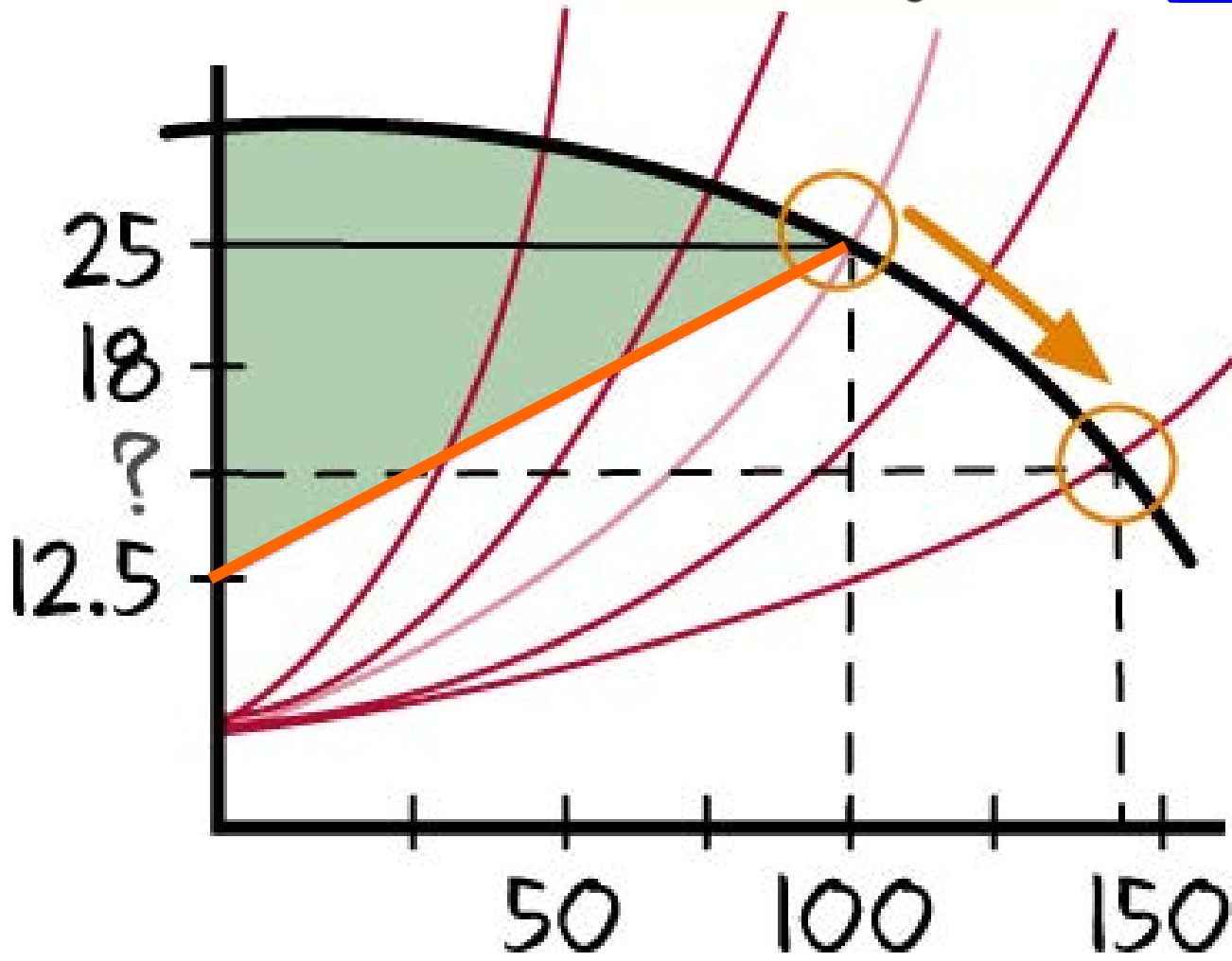
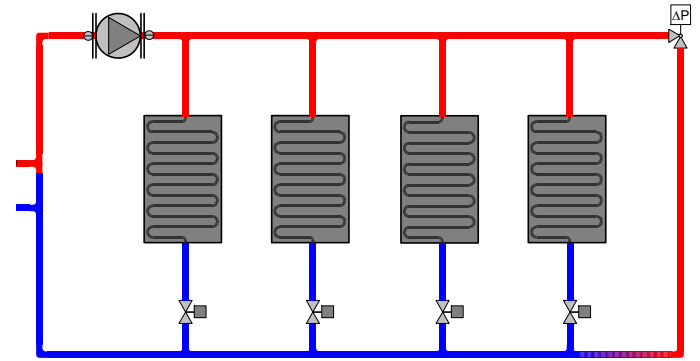


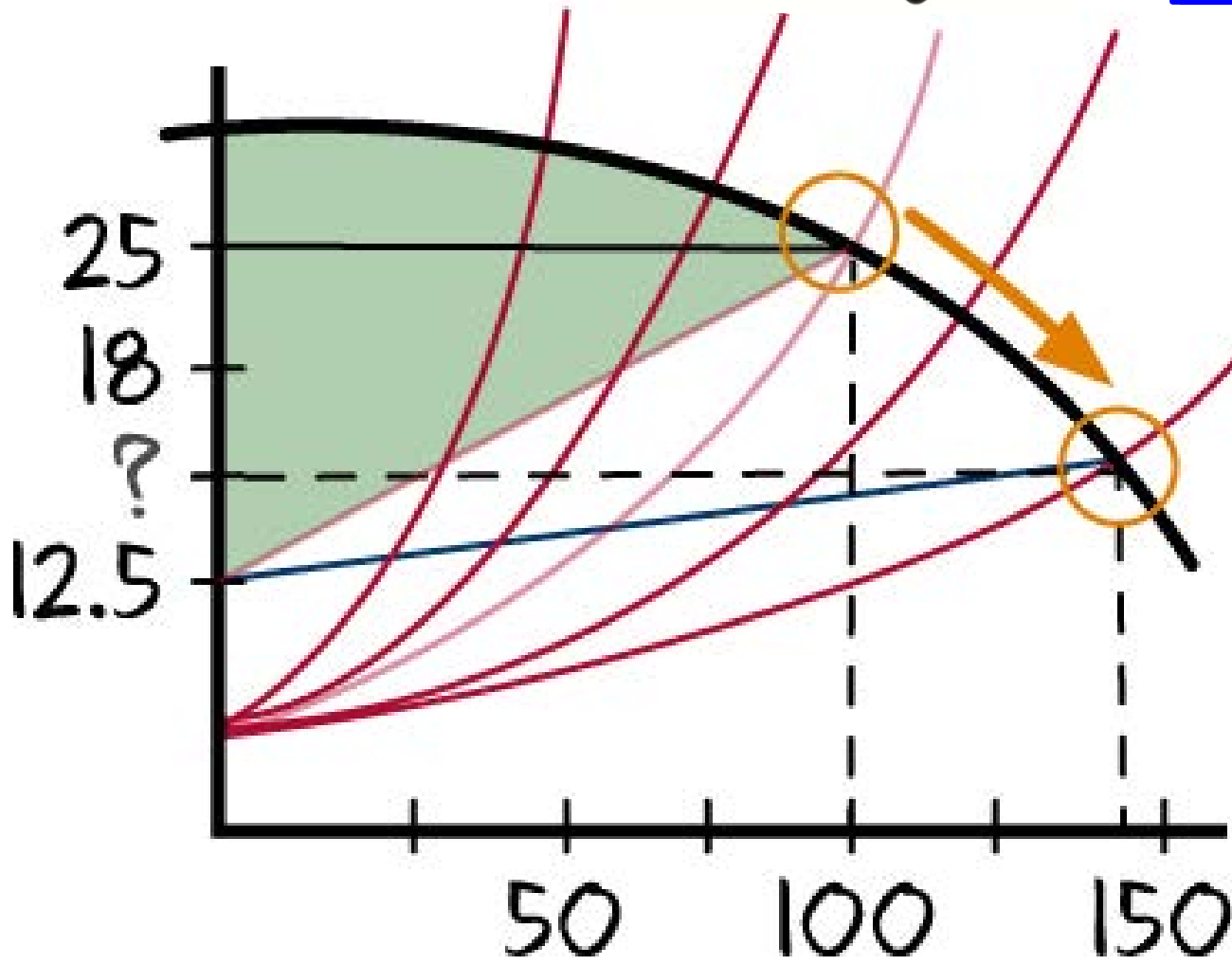
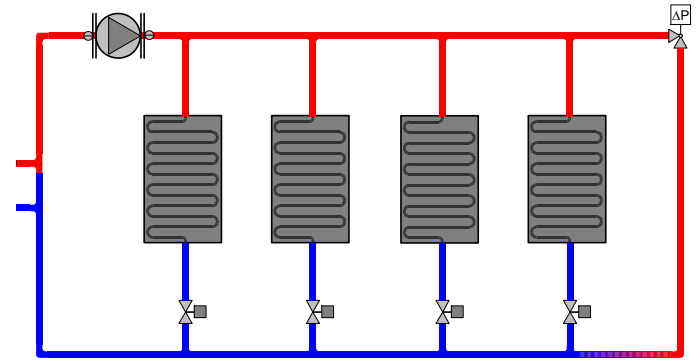


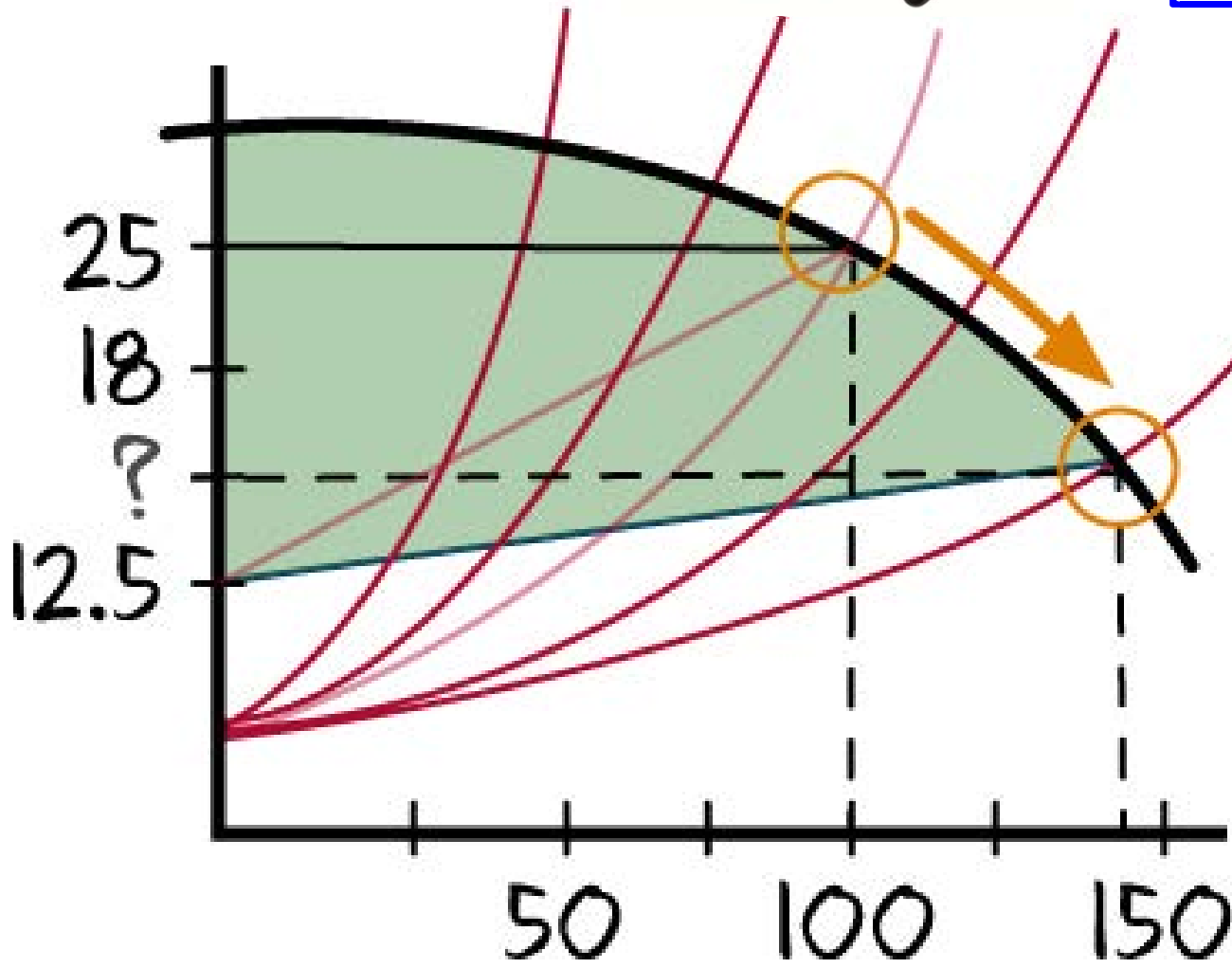
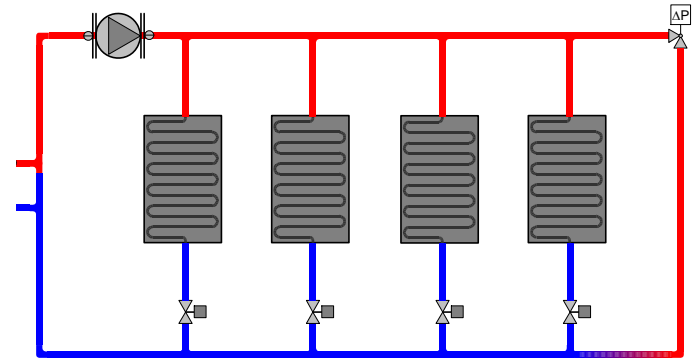


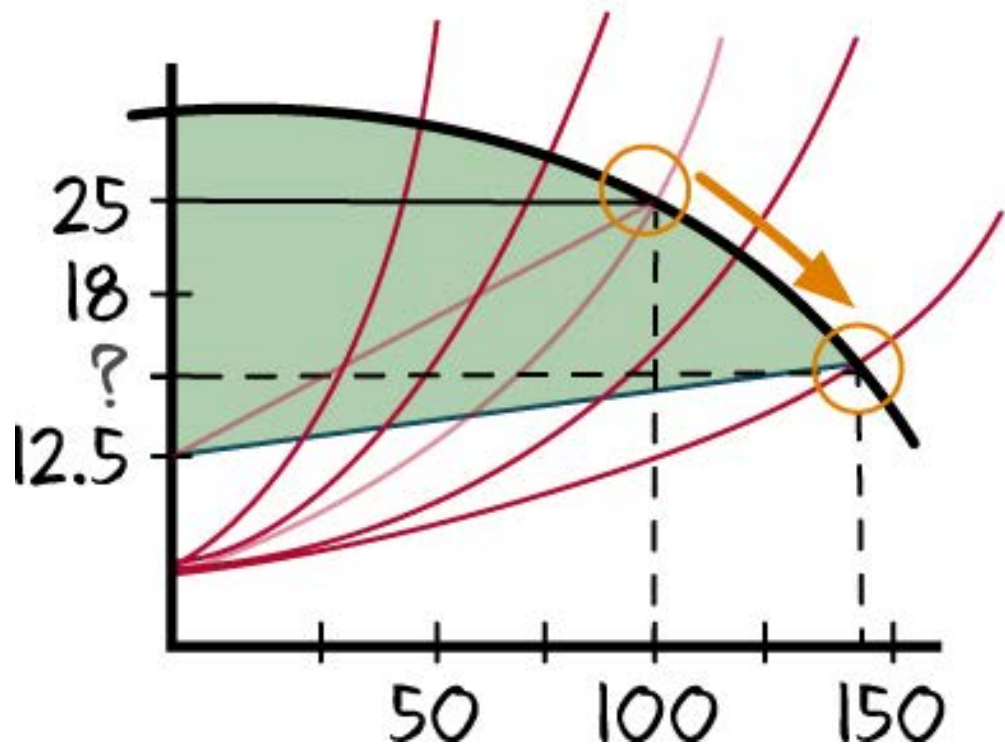
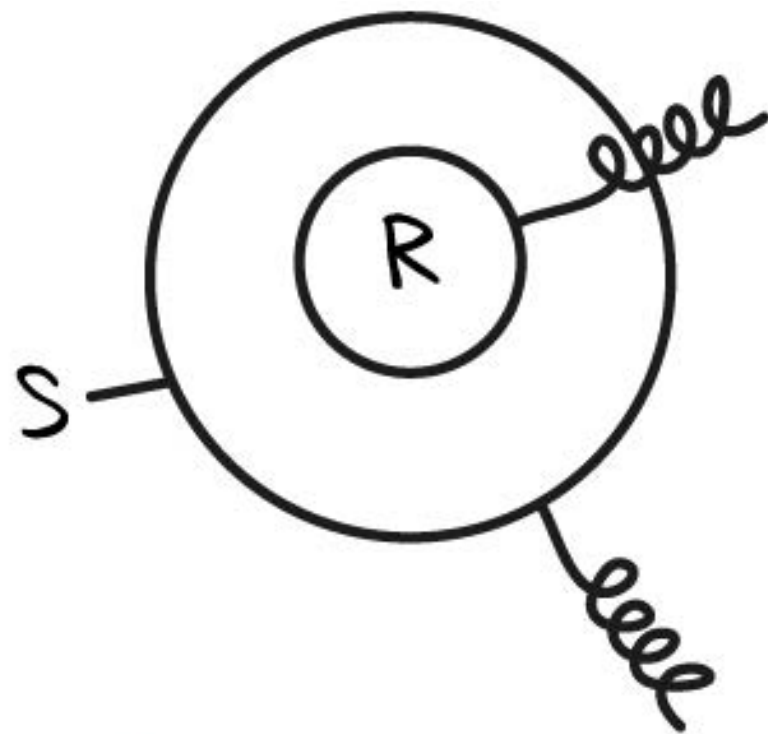


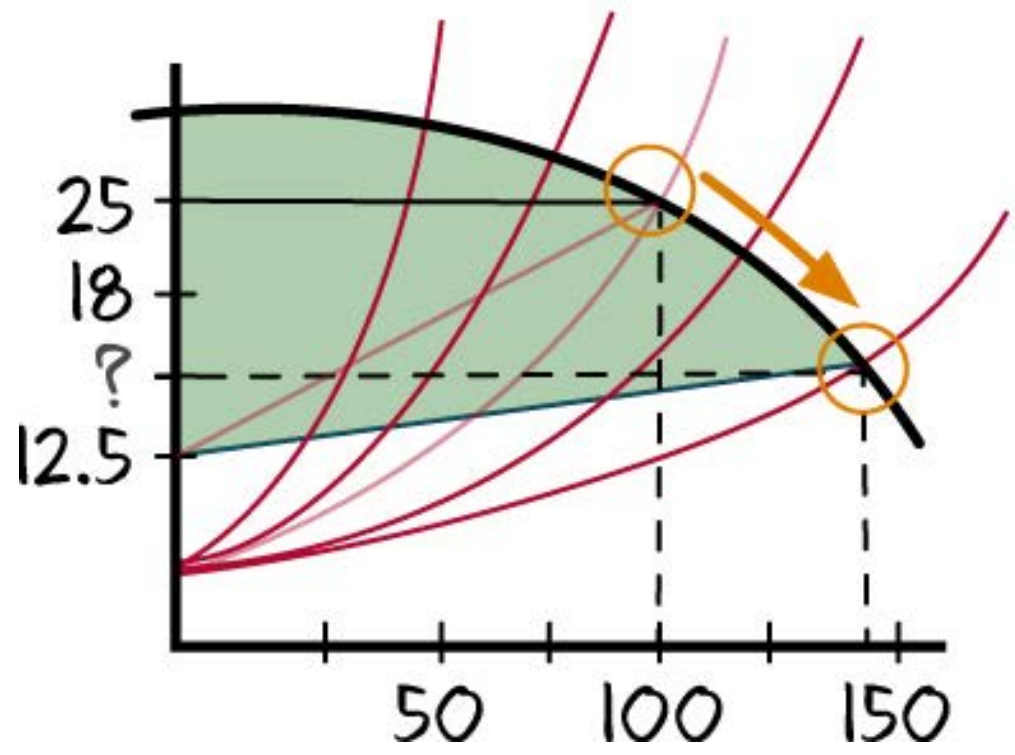
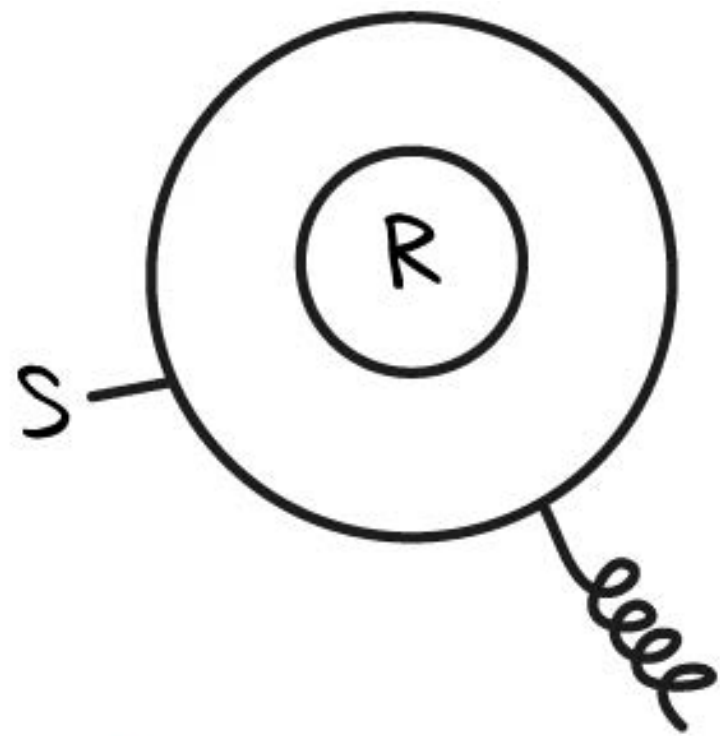


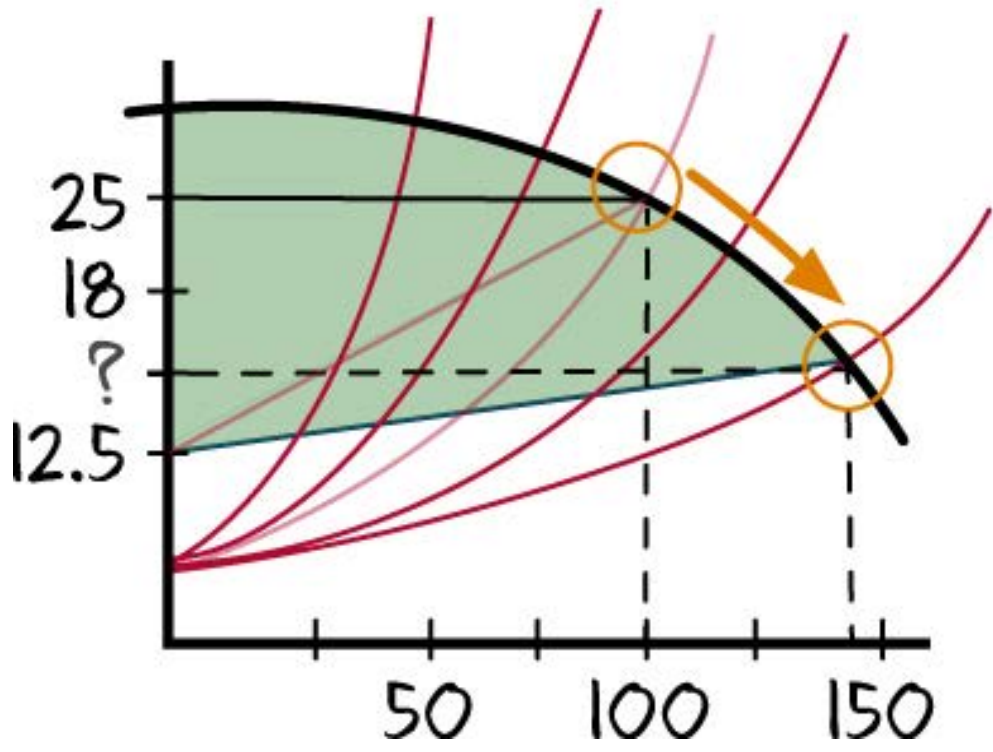
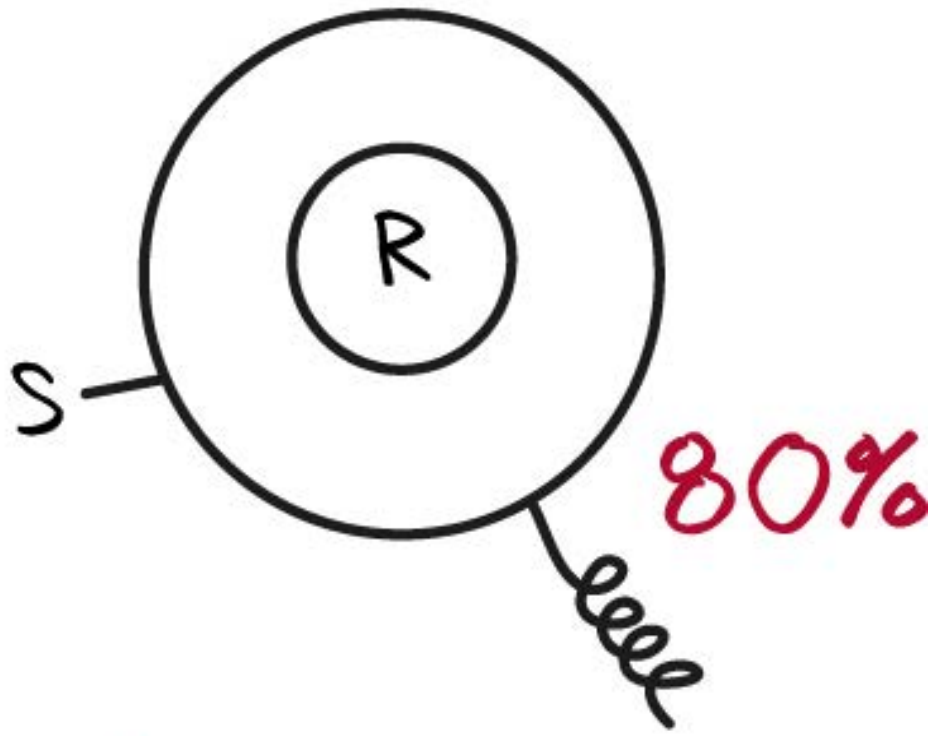








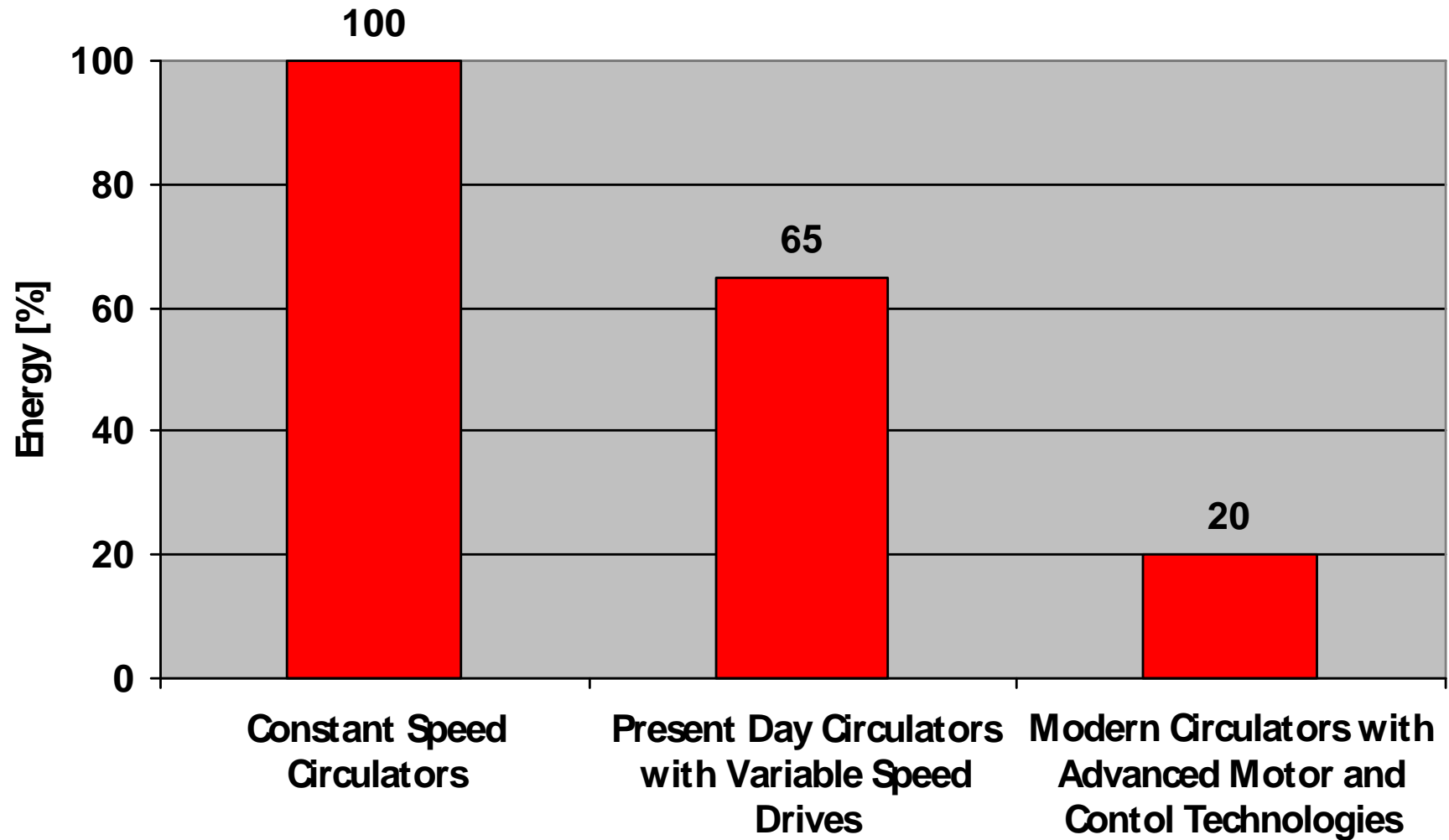






# Adding it all up...

## Yearly energy consumption



# Doing Our Part

Now and in the Future...

> What can you do NOW to reduce energy consumption while improving indoor comfort for your customers?

## Energy savings

> An innovative, ground breaking variable speed pump that monitors system needs and “learns” the building energy usage to optimize performance is here now.

## Tougher standards are coming

> **Future building designs** will require a 50% increase in building energy performance. What can you do differently to meet that requirement?

GRUNDFOS THINKING ABOUT TOMORROW

**CONCERN** Put sustainability first  
**CARE** Be there for a growing world  
**CREATE** Pioneer new technologies

# DEMAND MORE

FROM YOUR BUILDING

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be think innovate

GRUNDFOS 

# Campbell Equipment Company

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

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tomc@campbellequipment.com

# Campbell Equipment Company

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

- **LOCHINVAR** High Efficiency Boilers, Indirect Tanks, HW Generators, and HVAC Buffer Tanks
  - **GRUNDFOS** High Efficiency HVAC, Booster, & Domestic Pump Solutions
  - **CALEFFI** Hydronic & Hydraulic Separators and Balancing Accessories
  - **NEUTRA-SAFE** Condensate Neutralizers
  - **THS** Heat Exchangers, Descalers and Specialty Products
  - **WESSELS** Expansion Tanks, Separators, Storage Tanks, and Filtration Equipment
- 
- **LOCHINVAR** High Efficiency Hot Water Heaters and Storage Tanks
  - **LAWLER** Thermostatic Mixing, Emergency, Photographic, and Specialty Valves
  - **ZURN HYDROMECHANICS** Floor & Roof Drains, Carriers, Cleanouts, Interceptors, Hydrants
  - **ZURN AQUASPEC** Commercial Brass Lav, Sink, Lab, Service Sink, and Food Service Faucets
  - **ZURN ECOVANTAGE** Ultra High Efficiency Urinals, Closets, and Sensor Equipment
  - **ZURN FLUSH VALVES** Manual and Sensor Flush Valves, Sensor Faucets
  - **ZURN FLO-THRU** Pre-sloped Trench Drain Systems, Catch Basins
  - **WILKINS** Backflow Preventers, Water Control Products
  - **ZURN CHEMICAL DRAINAGE** Fusion / Mechanical Corrosive Pipe Systems & Neutro Tanks
  - **AMTEKCO** Stainless Steel Scullery, Process, Photo, Mop Sinks & Tables