LIKE ME.

Precise, innovative and highly efficient

You understand the importance of energy efficiency, high performance and flexibility. So do we! Our TA-Control solutions help you design HVAC systems that deliver optimal control, maximum efficiency and an enhanced professional reputation.

Discover why our TA-Control range of solutions is just like you at www.imi-hydronic.com/control
HIGHLY PRECISE HYDRONIC CONTROL
YOU CAN MEASURE AND DIAGNOSE

The best energy efficiency can be achieved only when all processes inside the system are measurable and transparent. True system parameters and also possible system failures can be found only by precise and reliable measuring procedures. Thus, all our combined balancing and control valves are equipped with measuring points enabling you to measure flow, pressure drop, temperatures and even actual power. Patented features like fully adjustable KVs, and the ability to measure available pump head differentiates us from the competition. The new TA-Slider actuators are the most flexible actuators on the market with unique tracking of the last 10 errors to ensure faster detection of any faults.

CONTROL VALVE AND ACTUATORS

<table>
<thead>
<tr>
<th>Control valves</th>
<th>Actuators</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>Pressure independent balancing and control valves</td>
</tr>
<tr>
<td>A2</td>
<td>Combined balancing and control valves</td>
</tr>
<tr>
<td>A3</td>
<td>Standard control valves</td>
</tr>
<tr>
<td>A4</td>
<td>Actuators for balancing and control valves</td>
</tr>
<tr>
<td>A5</td>
<td>Actuators for standard control valves</td>
</tr>
</tbody>
</table>
Pressure independent balancing and control valves

5 in 1 concept

Pressure independent balancing and control valves are the ideal solution for modern heating and cooling systems requiring low operating costs, and easy and flexible installation. Valves provide stable and precise temperature control under all working conditions due to the integrated differential pressure controller that maintains a constant differential pressure over the control part. Fully open valves limit maximum flow and ensure hydronic balancing.

Our valves are unique in the market, whereby you benefit from excellent diagnostic and measuring features that help you set the working point of pumps, save maximum energy and find possible system failures.

YOUR BENEFITS

• 5 in 1: control + balancing + diagnostics + Dp control + shut-off
• The best diagnostics possibilities on the market
• Small pressure drop, energy efficient and quiet operation
• High quality and longevity

KEY TECHNICAL PARAMETERS

<table>
<thead>
<tr>
<th>Pressure independent balancing and control valves</th>
<th>PN Min. temp.</th>
<th>Max. temp.</th>
<th>Max. Dp</th>
<th>Control characteristic</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA-COMPACT-P</td>
<td>16 -10</td>
<td>90</td>
<td>4</td>
<td>LIN</td>
<td></td>
</tr>
<tr>
<td>TA-MODULATOR</td>
<td>16 -10/-20</td>
<td>90/120</td>
<td>4/6</td>
<td>EQM</td>
<td></td>
</tr>
<tr>
<td>TA-MODULATOR</td>
<td>16/25 -20</td>
<td>120</td>
<td>8</td>
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<tr>
<td>TA-FUSION-P</td>
<td>16/25 -20</td>
<td>120/150</td>
<td>8</td>
<td>EQM</td>
<td></td>
</tr>
<tr>
<td>KTM 512</td>
<td>16/25 -10</td>
<td>120/150</td>
<td>16</td>
<td>EQM</td>
<td></td>
</tr>
</tbody>
</table>

FUNCTIONS

| Pressure independent balancing and control valves | Control Max flow pre-setting Differential pressure control Shut-off Flushing Measurement |
|--------------------------------------------------|-----------------------------------------------|--------------------------------|-----------------|----------------|-----------------|
| TA-MODULATOR                                     | ✓                              ✓                ✓                      ✓               ✓                          | Flow | Pressure drop | Temperature | Available differential pressure | Power |
| TA-COMPACT-P                                     | ✓                              ✓                ✓                      ✓               ✓                          |      |              |              |                              |       |
| TA-FUSION-P                                      | ✓                              ✓                ✓                      ✓               ✓                          |      |              |              |                              |       |
| KTM 512                                           | ✓                              ✓                ✓                      ✓               ✓                          |      |              |              |                              |       |
**Pressure independent balancing and control valves**

**TA-MODULATOR**
- Flow range up to 37'300 l/h
- Perfect solution for precise temperature control using proportional actuators
- 6x better stroke control than linear valves
- Uniquely shaped EQM characteristic (patent pending)
- Compatible actuators TA-Slider 160, TA-Slider 500, TA-Slider 750
- Enables complete system diagnostics and flow measurement

**TA-COMPACT-P**
- Flow range up to 3'700 l/h
- Very compact, slim and practical valve for small terminal units
- Easy access to all its functions from one side
- Actuator connection M30x1,5
- Enables total system diagnostics
- Linear characteristic, best suited for on/off control
- Made from patented alloy Ametal®

**TA-FUSION-P**
- Flow range up to 207 m³/h, hiflow version up to 261 m³/h
- The best solution for modulating control in HVAC systems
- Extensive range of actuators
- Enables total system diagnostics
- Unique flushing function (possibility to deactivate Dp controller)

**KTM 512**
- Flow range up to 66,8 m³/h
- Ideal control valves for modulating control in district energy systems
- Wide range of actuators and adapters
- High resistance against corrosion

See applications D1 D7
# Combined balancing and control valves

## Key technical parameters

<table>
<thead>
<tr>
<th>A2 Combined balancing and control valves</th>
<th>PN</th>
<th>Min. temp.</th>
<th>Max. temp.</th>
<th>Max. Dp</th>
<th>Control characteristics</th>
<th>Dimensions</th>
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<td></td>
<td>bar</td>
<td>°C</td>
<td>°C</td>
<td>bar</td>
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<td>-20</td>
<td>120</td>
<td>4</td>
<td>EQM</td>
<td>✓ ✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
</tbody>
</table>

1 According to DN and type of actuator
2 Only for cooling systems
3 Fully adjustable Kvs, EQM control characteristic
4 Ideal for On-Off control

## Functions

<table>
<thead>
<tr>
<th>A2 Combined balancing and control valves</th>
<th>Control</th>
<th>Kv/Kvs setting</th>
<th>Shut-off</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>On-off</td>
<td>3-point</td>
<td>Modulating</td>
<td>Flow</td>
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<td>✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
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<tr>
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<td>✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
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<tr>
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<td>✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
<tr>
<td>TA-FUSION-C</td>
<td>✓ ✓</td>
<td>✓</td>
<td>✓</td>
<td>✓ ✓ ✓ ✓ ✓ ✓</td>
</tr>
</tbody>
</table>

5 Setting of requested return temperature within 8-18 °C, factory setting 12 °C
IMI TA combined balancing and control valves have all the advantages of control and balancing valves built in one body. They dramatically reduce the required number of valves by decreasing installation time and costs. All our combined balancing and control valves are equipped with measuring nipples providing extensive diagnostic functions for hydronic balancing and easy commissioning. A wide variety of control characteristics and actuators offer a unique range for different applications.

**4 in 1 concept**

- 4 in 1: control + balancing + diagnostics + shut-off
- Faster and cheaper installation
- Modulating, 3-point or On-Off control possible
- High energy efficiency and low pumping costs

**YOUR BENEFITS**

- Ideal valve for On-Off control of small terminal units
- Actuator connection M30x1,5
- Lift independent of Kv pre-setting
- Made from patented alloy Ametal®

**TBV-C**

- EQM characteristics for precise modulating control
- Lift independent of Kv pre-setting
- Actuator connection M30x1,5
- Made from patented alloy Ametal®

**TBV-CM**

- The only on/off control valve with built in return temperature control on the market
- Only for cooling systems, ideal solution for renovation
- Guarantees requested return temperature from terminal units
- Limits overflow by means of return temperature control
- On-Off control valve modulating flow saves a vast amount of pumping energy
- Improves energy efficiency of the entire cooling system

**TA-COMPACT-T**

**TA-FUSION-C**

- Patented fully adjustable Kvs, minimal risk of oversizing or undersizing
- Easy adaptation to real system conditions
- Inherent EQM control characteristic
- Valve lift independent of Kv pre-setting
- Outstanding measuring and diagnostic possibilities
Full range from one supplier

The HVAC control valve product portfolio includes electrically operated control valves made of brass, bronze and grey cast iron as well as electrically operated butterfly valves. All standard control valves are equipped with our durable and flexible MC linear actuators. The butterfly valves operate with the proven M series quarter-turn actuators.

Our standardized electrically operated industrial valves cover pressure stages up to PN 40 and class 300 as well as temperatures up to 400 °C and nominal sizes up to DN 300. Select the perfect actuator to meet your needs from our comprehensive range whatever type of control is needed: modulating, 3-point, PWM or on/off available in all voltage variants.

**CV 216/316 MZ**

- Kvs range: 0,25 - 8,0
- Compact valve for 3-point or modulating control of small terminal units
- Automatic coupling between stem and actuator for 100% push and pull thrust
- External threads for fast and easy connection
CV 216/316 RGA
- Kvs range: 0.63 - 40
- Ideal valve for 3-point or modulating control of mid sized HVAC applications
- Extensive actuator programme for different closing pressure and actuating time
- Delivered with connection fittings
- Wide range of accessories, silicon free version available

CV 206/216 GG, CV 306/316 GG
- Kvs range: 0.63 - 315
- Suitable for wide range of HVAC applications
- Extensive actuator programme for different closing pressure and actuating time
- Tight closed in both end-positions
- Wide range of accessories, silicon free version available

TA-6-WAY VALVE
- Kvs range: 1.25, 2.80 or 4.0 depending on type and size
- TA-6-Way Valve for changeover systems
- Ideal combination with TA-Modulator and TA actuators
- Full range of accessories

CV 240/340 S/E
- Kvs range: 0.16 - 1250, special Kvs values available
- Version S: made from cast steel
- Version E: made from stainless steel
- Extensive range of actuators and accessories
- Also suitable for different media on request

CV 216/316, CV 225/325
- Kvs range: 0.16 - 1250, special Kvs values available
- Suitable in building and process engineering for various mediums
- 3-way version can be used as a mixing valve or a diverting valve
- Different body materials for various temperatures and pressures

BR12WT
- Easy mounting by eyelets
- Centralised flap
- Manual operation with lever
- Rotation direction indication
- The flap and tight EPDM sealing for wide medium range
Digitally configurable actuators

TA-Slider are the most universal and flexible actuators for all modern HVAC systems from 160N to 1250N. Fully compatible with all control systems, the advanced built in technology allows full digital configuration via smart-phone.

For the first time you can digitally configure actuators also in buildings without BUS protocols. The modern way of setup is comfortable, intuitive and enables easy adjustment of all actuator parameters according to BMS requirements.

**YOUR BENEFITS**

- Up to 50% faster commissioning
- Installation flexibility in non-standard positions
- Reduced design complexity
- Easy diagnostics
- Unique error memory

### FOR CONTROL VALVES FROM DN10 UP TO DN50

<table>
<thead>
<tr>
<th>TA-Slider versions for Non-BUS Systems</th>
<th>TA-Slider versions for BUS Communication Systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA-Slider 160</td>
<td></td>
</tr>
<tr>
<td>Std</td>
<td>KNX</td>
</tr>
<tr>
<td>I/O</td>
<td>KNX R24</td>
</tr>
<tr>
<td>C0</td>
<td>ModBus</td>
</tr>
<tr>
<td>Plus</td>
<td>ModBus CO</td>
</tr>
<tr>
<td></td>
<td>BACnet</td>
</tr>
<tr>
<td></td>
<td>BACnet CO</td>
</tr>
<tr>
<td>TA-Slider 500</td>
<td></td>
</tr>
<tr>
<td>Std</td>
<td>ModBus</td>
</tr>
<tr>
<td>I/O</td>
<td>ModBus R24</td>
</tr>
<tr>
<td>Plus</td>
<td>BACnet</td>
</tr>
<tr>
<td></td>
<td>BACnet R24</td>
</tr>
</tbody>
</table>

### KEY FEATURES

**User friendly:**
Red-Blue-Violet LED for heating/cooling mode in charge-over system and easy indication of errors

**Fully digitally configurable:**
- input signal, also split range of input signal
- output signal
- control characteristic
- calibration regimes
- stroke limitation to set Kvmax or max. flow
- protection against valve blockage
- error safe position
- broken line detection

**Additional features of I/O and Plus versions**
- adjustable output VDC signal
- programmable binary input
- programmable relay (Plus version only)
A4 

Actuators for balancing and control valves

FOR CONTROL VALVES FROM DN32 UP TO DN200

Digitally fully configurable:
- input signal, also split range of input signal
- output signal
- control characteristic
- calibration regimes
- stroke limitation to set Kvmax or max. flow
- time for full stroke cycle to avoid blockage
- error safe position
- broken line detection

Manual override

Green-red LED indication of operating statuses

Tracking of last 10 errors

Additional features of "Plus" version:
- output mA signal (VDC as standard)
- programmable binary input
- programmable 2 relays
- optional BUS communication boards

750

750 Plus

1250

1250 Plus

BACnet

Modbus
TA-DONGLE
Remote configuration and control of TA-Sliders with or without BUS communication

KEY FEATURES

Comfortable USB interface between actuator and smartphone with Bluetooth communication. Ability to clone settings can allow up to 50% faster configuration times.

- Internal battery allows setup of actuator with or without power supply
- Micro USB
- Manual override of actuator (160 and 500 also without power supply)
- Quick copy of configuration to identical actuators
- Cable with microUSB connector
- On/Off button
- Internal battery for energy supply during configuration
- Green-red smart LEDs show actuator activities
- Config button: Upload of last set up configuration to several identical actuators
- Micro USB connector for charging
- Battery life indicator
- Bluetooth signal

Moves actuator UP
Moves actuator DOWN
AUTO/MANUAL regime

AUTO/MANUAL regime
Moves actuator UP
Moves actuator DOWN
Internal battery allows setup of actuator with or without power supply
Manual override of actuator (160 and 500 also without power supply)
Quick copy of configuration to identical actuators
Cable with microUSB connector
On/Off button
Internal battery for energy supply during configuration
Green-red smart LEDs show actuator activities
Config button: Upload of last set up configuration to several identical actuators
Micro USB connector for charging
Battery life indicator
Bluetooth signal
HYTUNE
Mobile application for configuration and control of TA-Sliders via TA-Dongle

**BENEFITS**

- Easy to use
- Comfortable set up of TA-Sliders even in poorly lit environments
- Added protection against human error
- Access list of last 10 errors and operating statistics

For smartphones using IOS version 5 or later and Android version 4.3 or later.
Actuators for balancing and control valves

<table>
<thead>
<tr>
<th>Actuators for balancing and control valves</th>
<th>OPERATION PRINCIPLE</th>
<th>CONTROL</th>
<th>SUPPLY VOLTAGE [V]</th>
<th>INPUT SIGNAL</th>
<th>OUTPUT SIGNAL</th>
<th>STROKE [mm]</th>
<th>CONTROL VALVE COMPATIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA-SLIDER 160 (optional I/O, CO, Plus)</td>
<td>NEW</td>
<td>MOTORIZED</td>
<td>MODULATING</td>
<td>24 AC/DC</td>
<td>0(2)-10VDC fully configurable</td>
<td>0(2)-10 VDC</td>
<td>6.9</td>
</tr>
<tr>
<td>TA-Slider 160 KNX (optional KNX R24, Modbus, Modbus CO, BACnet, BACnet CO)</td>
<td>NEW</td>
<td>MOTORIZED</td>
<td>MODULATING</td>
<td>by BUS</td>
<td>by BUS</td>
<td>by BUS</td>
<td>6.9</td>
</tr>
<tr>
<td>TA-SLIDER 500 (optional I/O, Plus)</td>
<td>NEW</td>
<td>MOTORIZED</td>
<td>MODULATING</td>
<td>24 AC/DC</td>
<td>0(2)-10VDC fully configurable</td>
<td>0(2)-10 VDC</td>
<td>16.2</td>
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<tr>
<td>TA-SLIDER 500 Modbus (optional Modbus R24, BACnet, BACnet R24)</td>
<td>NEW</td>
<td>MOTORIZED</td>
<td>MODULATING</td>
<td>by BUS</td>
<td>by BUS</td>
<td>by BUS</td>
<td>16.2</td>
</tr>
<tr>
<td>TA-SLIDER 750 (optional KNX, BACnet, MODBUS)</td>
<td>NEW</td>
<td>MOTORIZED</td>
<td>MODULATING</td>
<td>24 AC/DC, 230 AC</td>
<td>0(2)-16 VDC, 0(4)-20 mA, 3-point, on-off</td>
<td>0(2)-10 VDC, 0(4)-20 mA</td>
<td>20</td>
</tr>
<tr>
<td>TA-SLIDER 1250 (optional KNX, BACnet, MODBUS)</td>
<td>MOTORIZED</td>
<td>MODULATING</td>
<td>24 AC/DC, 230 AC</td>
<td>0(2)-16 VDC, 0(4)-20 mA, 3-point, on-off</td>
<td>0(2)-10 VDC, 0(4)-20 mA</td>
<td>20</td>
<td>TA-FUSION-C DN100-150, TA-FUSION-P DN100-150, KTM 512 DN65-125</td>
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<tr>
<td>EMO-TM</td>
<td>THERMOELECTRIC</td>
<td>MODULATING</td>
<td>24 AC</td>
<td>0-10 / 10-0 / 2-10 / 10-2 VDC</td>
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<td>4.7</td>
<td>TBV-CM, TA-MODULATOR DN15-20</td>
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<tr>
<td>EMO 3/24</td>
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<td>3-POINT</td>
<td>24 AC</td>
<td>3-POINT</td>
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<td>4.5</td>
<td>TBV-CM, TA-MODULATOR DN15-20, TA-COMPACT-P</td>
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<tr>
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<td>MODULATING/3-POINT</td>
<td>24 AC/DC</td>
<td>0(2)-10 VDC, 3-POINT</td>
<td>-</td>
<td>4.8</td>
<td>TBV-C, TBV-CM, TA-MODULATOR DN15-20, TA-COMPACT-P</td>
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<td>230 AC</td>
<td>3-POINT</td>
<td>-</td>
<td>4.8</td>
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<td>TA-MC50/24-C</td>
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<td>330V</td>
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<td>10</td>
<td>KTM 512 DN 15-50</td>
</tr>
</tbody>
</table>

1 For KTM 512 DN65-125 other actuators may be required depending upon the maximum static inlet pressure in the system. Please see full KTM 512 datasheet selection table for further details.
2 Also 2-10 or 10-2, proportional split range: 0-5, 5-10, 5-10 or 10-5 / 0-4.5, 4.5-0, 5.5-10 or 10-5.5 / 2-6, 6-2, 6-10 or 10-6 VDC.
3 Also inverted 2-10 or 10-2 VDC / 4-20 or 20-4 mA and split range: 0-5, 5-10 or 10-5 / 0-4.5, 4.5-0, 5.5-10 or 10-5.5 / 2-6, 6-2, 6-10 or 10-6 VDC, 0-10, 10-0, 10-20, 20-10 / 4-12, 12-4, 12-20, 20-12 mA.
### RECOMMENDED CONTROL VALVES

<table>
<thead>
<tr>
<th>Actuators for balancing and control valves</th>
<th>TBV-C</th>
<th>TBV-CM</th>
<th>TA-MODULATOR</th>
<th>TA-COMPACT-T</th>
<th>TA-COMPACT-P</th>
<th>KTM 512</th>
<th>TA-FUSION-C/P</th>
<th>TA-FUSION-C/P</th>
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<tbody>
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<td>DN15-25</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>TA-MC50-C</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4  Possible but linear control characteristic of the valve must be compensated by actuator EQM control mode (TBV-CM recommended).
5  Both, actuator and valve have linear characteristics. TBV-CM is recommended for modulating control.
6  Possible but special connection required.
A4 Actuators for balancing and control valves

**TA-SLIDER 160, 500**
- Fully configurable by smartphone
- Manual override by TA-Dongle
- Memory for last 10 errors
- High IP54 protection class in all positions
- Configurable relay and binary input
- Compatible with Bacnet, Modbus and KNX bus protocol
- Adjusting force: TA-Slider 160 (160/200N), TA-Slider 500 (500N)
- Change-over version available

**TA-SLIDER 750, 1250**
- Fully configurable by smartphone
- Manual override by hexagonal key or TA-Dongle
- Memory for last 10 errors
- High IP54 protection class
- Configurable 2 relays and binary input
- BUS compatibility with BACnet, MODBUS protocols
- Adjusting force: TA-Slider 750 (750N), TA-Slider 1250 (1250N)

**EMO-T**
- Visible position indicator
- High IP54 protection in all positions
- Connection M30x1,5
- Adjusting force 125N

**EMO-TM**
- Visible position indicator
- Auto-adaptation to input signal
- Automatic stroke adjustment
- High IP54 protection class in all positions
- Connection M30x1,5
- Adjusting force 125N
EMO 3

- Automatic stroke adjustment
- Low-noise operation
- Low energy consumption
- Connection M30x1,5
- Adjusting force 160N

TA-MC15-C

- For IMI TA balancing and control valves
- Connection M30x1,5
- Position indicator
- Low power consumption
- Adjusting force 200N

TA-MC50-C

- For IMI TA pressure independent control valves KTM 512 DN 15-50
- Automatic stroke adaptation
- Position indicator
- Low power consumption
- Adjusting force 500N
# Actuators for standard control valves

## Compatibility with standard control valves

<table>
<thead>
<tr>
<th>Actuators for standard control valves</th>
<th>CV 216/316 RGA</th>
<th>CV 206/306 GG</th>
<th>CV 216/316 GG</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DN 15-50</td>
<td>DN 65</td>
<td>DN 80-100</td>
</tr>
<tr>
<td>TA-MC55</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>TA-MC65</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>TA-MC100</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>TA-MC100 FSE/FSR</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>TA-MC160</td>
<td>✓</td>
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<tr>
<td>TA-MC161</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>TA-MC250</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>TA-MC400</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>TA-MC500</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>TA-MC1000</td>
<td></td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>

1. For DN 32-50
2. For valves with 20 mm stroke
3. For valves with 30 mm stroke
### KEY TECHNICAL PARAMETERS

<table>
<thead>
<tr>
<th>Actuators for standard control valves</th>
<th>OPERATION PRINCIPLE</th>
<th>FAIL SAFE</th>
<th>SUPPLY VOLTAGE [V]</th>
<th>INPUT SIGNAL</th>
<th>OUTPUT SIGNAL</th>
<th>STROKE [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>TA-MC55/24</td>
<td>3-POINT</td>
<td>-</td>
<td>24 V AC/DC</td>
<td>3-POINT</td>
<td>0-10 VDC</td>
<td>20</td>
</tr>
<tr>
<td>TA-MC55/230</td>
<td>3-POINT</td>
<td>-</td>
<td>230 AC</td>
<td>3-POINT</td>
<td>0-10 VDC</td>
<td>20</td>
</tr>
<tr>
<td>TA-MC55Y</td>
<td>MODULATING</td>
<td>-</td>
<td>24 V AC/DC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>20</td>
</tr>
<tr>
<td>TA-MC65/24</td>
<td>3-POINT</td>
<td>-</td>
<td>24 V AC/DC</td>
<td>3-POINT</td>
<td>0-10 VDC</td>
<td>20</td>
</tr>
<tr>
<td>TA-MC65/230</td>
<td>3-POINT</td>
<td>-</td>
<td>230 AC</td>
<td>3-POINT</td>
<td>0-10 VDC</td>
<td>20</td>
</tr>
<tr>
<td>TA-MC65Y</td>
<td>MODULATING</td>
<td>-</td>
<td>24 V AC/DC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>20</td>
</tr>
<tr>
<td>TA-MC100/24</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>24 V AC/DC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>20</td>
</tr>
<tr>
<td>TA-MC100/230</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>230 AC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>20</td>
</tr>
<tr>
<td>TA-MC100 FSE/FSR</td>
<td>MODULATING</td>
<td>YES</td>
<td>24 V AC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>20</td>
</tr>
<tr>
<td>TA-MC100 FSE/FSR</td>
<td>3-POINT</td>
<td>YES</td>
<td>230 AC</td>
<td>3-POINT</td>
<td>0-10 VDC</td>
<td>20</td>
</tr>
<tr>
<td>TA-MC160/24</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>24 V AC/DC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>30</td>
</tr>
<tr>
<td>TA-MC160/230</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>230 AC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>30</td>
</tr>
<tr>
<td>TA-MC161/24</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>24 V AC/DC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>20</td>
</tr>
<tr>
<td>TA-MC161/230</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>230 AC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>20</td>
</tr>
<tr>
<td>MC250/24</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>24 V AC/DC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>50</td>
</tr>
<tr>
<td>MC250/230</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>230 AC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>50</td>
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<tr>
<td>MC400/24</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>24 AC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
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<tr>
<td>MC400/230</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>230 AC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>60</td>
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<tr>
<td>MC500/24</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>24 V AC/DC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>50</td>
</tr>
<tr>
<td>MC500/230</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>230 AC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>50</td>
</tr>
<tr>
<td>MC1000/24</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>24 AC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>50</td>
</tr>
<tr>
<td>MC1000/230</td>
<td>MODULATING/3-POINT</td>
<td>-</td>
<td>230 AC</td>
<td>0(2)-10 VDC/0(4)-20 mA</td>
<td>0-10 VDC</td>
<td>50</td>
</tr>
</tbody>
</table>

- Voltage 115 VAC available
- Output signal 0(4)-20mA available as accessories
- Max. differential pressure 3.5 bar
Actuators for standard control valves

**TA-MC55, TA-MC65**
- Automatic stroke adaptation
- Min-Max position indicators
- Binary input for frost protection function
- Blockage detection
- Different actuating times
- Manual mode
- Low power consumption
- Adjusting force 600N

**TA-MC 100**
- 24V version enables modulating or 3-point control (switch)
- Automatic stroke adaptation
- Min-Max position indicators
- Binary input for frost protection function
- Blockage detection
- Wire breakage detection
- Adjustable hysteresis for input signal
- Different actuating times
- Manual mode
- Low power consumption
- Adjusting force 1000N

**TA-MC 100 FSE/FSR**
- Visible switch to test fail-safe function
- TA-MC100FSE: Stem extended on power failure
- TA-MC100FSR: Stem retracted on power failure
- Automatic stroke adaptation
- Min-Max position indicators
- Binary input for frost protection function
- Blockage detection
- Wire breakage detection
- Protection against input signal oscillations
- Manual mode
- Low power consumption
- Adjusting force 1000N
Actuators for standard control valves

**TA-MC160, TA-MC161**
- 24V version enables modulating or 3-point control (switch)
- Automatic stroke adaptation
- Min-Max position indicators
- Binary input for frost protection function
- Blockage detection
- Wire breakage detection
- Adjustable hysteresis for input signal
- Different actuating times
- Manual mode
- Low power consumption
- Adjusting force 1600N

**MC 250, 400, 500, 1000**
- Automatic stroke adaptation
- Min-Max position indicators
- Binary input for frost protection function
- Blockage, wire breakage and lock detection
- Overheating protection
- Internal temperature monitoring
- Automatic actuator heating
- Open circuit detection
- Adjustable hysteresis for input signal
- Different actuating times
- Autopause to avoid control hunting
- Manual mode
- Low power consumption
- Adjusting force:
  - MC 250  2.5 kN
  - MC 400  4 kN
  - MC 500  5 kN
  - MC 1000 10 kN
Over 4 million reasons every year to measure
Rapid growth in energy prices and increasing comfort levels require a perfectly functioning system creating optimal conditions for the proper function of your building management system.

**Perfect Hydronic balancing is a basic requirement to obtain genuine comfort at minimum energy cost.**

Our “Total hydronic balancing” concept has been used for more than 50 years all over the world in millions of applications and it is constantly being improved by new experience from real installations.

It’s a collection of unique balancing valves, pressure controllers, balancing instruments, patented balancing methods, smart balancing procedures and excellent training programs sharing our mutual experience.

---

**TOTAL HYDRONIC BALANCING**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B1</strong></td>
<td>Balancing valves</td>
</tr>
<tr>
<td><strong>B2</strong></td>
<td>Fixed orifices</td>
</tr>
<tr>
<td><strong>B3</strong></td>
<td>Double regulating fittings</td>
</tr>
<tr>
<td><strong>B4</strong></td>
<td>Differential pressure controllers</td>
</tr>
<tr>
<td><strong>B5</strong></td>
<td>Differential pressure relief valves</td>
</tr>
</tbody>
</table>
Balancing valves

Full range
Available in sizes DN 10-400, IMI TA balancing valves are used in an impressive range of applications. Ideally suited for use in heating and cooling systems, tap water systems and industry. The STAD and STAF are the most well known balancing valves worldwide.

Absolute certainty
Balancing technology used by our customers has been developed thanks to 50 years of experience from more than 100 000 projects worldwide. Patented balancing methods like TA-Diagnostics and TA-Wireless give you the power and absolute confidence to successfully complete a project of any size. Our patented materials and technology features never disappoint.

<table>
<thead>
<tr>
<th>B1 Balancing valves</th>
<th>PN</th>
<th>Min. temp.</th>
<th>Max. temp.</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>bar</td>
<td>°C</td>
<td>°C</td>
<td>10</td>
</tr>
<tr>
<td>TBV</td>
<td>16</td>
<td>-20</td>
<td>120</td>
<td>✓</td>
</tr>
<tr>
<td>STAD-R</td>
<td>25</td>
<td>-20</td>
<td>120</td>
<td>✓</td>
</tr>
<tr>
<td>STAD</td>
<td>25</td>
<td>-20</td>
<td>120</td>
<td>✓</td>
</tr>
<tr>
<td>STAD-C</td>
<td>20</td>
<td>-20</td>
<td>120</td>
<td>✓</td>
</tr>
<tr>
<td>STAD-B</td>
<td>25</td>
<td>-20</td>
<td>120</td>
<td>✓</td>
</tr>
<tr>
<td>STAD-D</td>
<td>25</td>
<td>-20</td>
<td>120</td>
<td>✓</td>
</tr>
<tr>
<td>STAF</td>
<td>16</td>
<td>-10</td>
<td>120</td>
<td>✓</td>
</tr>
<tr>
<td>STAF-R</td>
<td>16</td>
<td>-20</td>
<td>120</td>
<td>✓</td>
</tr>
<tr>
<td>STAG</td>
<td>25</td>
<td>-20</td>
<td>120</td>
<td>✓</td>
</tr>
<tr>
<td>STAF-SG</td>
<td>16/25</td>
<td>-20</td>
<td>120</td>
<td>✓</td>
</tr>
<tr>
<td>TA-BVS</td>
<td>16/25/40</td>
<td>-30</td>
<td>200</td>
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</tbody>
</table>
### FUNCTIONS

<table>
<thead>
<tr>
<th>B1 Balancing valves</th>
<th>Valve Body Material</th>
<th>End Connection Type</th>
<th>Double Sealed Measuring Points</th>
<th>Drain Function</th>
<th>Pressure balanced plug</th>
<th>Drinking water certified</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBV</td>
<td>A-metal®</td>
<td>Threaded</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAD-R</td>
<td>A-metal®</td>
<td>Threaded</td>
<td></td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>STAD</td>
<td>A-metal®</td>
<td>Threaded</td>
<td></td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>STAD-C</td>
<td>A-metal®</td>
<td>Threaded</td>
<td></td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>STAD-B</td>
<td>A-metal® with electrophoretic layer</td>
<td>Threaded</td>
<td></td>
<td></td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>STAD-D</td>
<td>A-metal® with T.E.A., PLUS® surface treatment</td>
<td>Threaded</td>
<td></td>
<td></td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>STAF</td>
<td>Cast iron</td>
<td>Flanged</td>
<td></td>
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</tr>
<tr>
<td>STAF-R</td>
<td>Gunmetal</td>
<td>Flanged</td>
<td></td>
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<td></td>
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<tr>
<td>STAG</td>
<td>Ductile iron</td>
<td>Grooved</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STAF-SG</td>
<td>Ductile iron</td>
<td>Flanged</td>
<td></td>
<td></td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>TA-BVS</td>
<td>Stainless steel</td>
<td>Flanged / Welding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Special version available  
2 from DN 65

---

**TBV**

- Ideal valve for balancing small terminal units
- Compact size
- Full measuring capabilities
- Made from patented alloy A-metal®

**STAD**

- The most popular balancing valve worldwide
- Excellent measuring accuracy
- Ergonomic handwheel with accurate digital read-out
- Available with / without 1/2" or 3/4" draining
- Made from patented alloy A-metal®

**STAD-C**

- Special version for high temperature systems up to 150°C
- Double sealed measuring points with high protection against leakages
- Ergonomic handwheel with accurate digital read-out
- External threads or smooth ends for tight and reliable connection
- Made from patented alloy A-metal®

See applications D3 D4 D5 D6 D9 D10 D11 D12
Balancing valves

**STAD-R**
- Unique balancing valve for renovations with reduced Kvs values
- No need to reduce pipe dimensions; decreases installation costs
- Ergonomic handwheel with accurate digital read-out
- Full measuring possibilities with high accuracy
- Made from patented alloy Ametal®

**STAD-D**
- Balancing valve for hot tap water systems with special protection against oxygen corrosion
- Certified to be used in systems with drinking water
- Ergonomic handwheel with accurate digital read-out
- Excellent measuring accuracy
- Made from patented alloy Ametal®

**STAF, STAF-SG**
- Equipped with a digital read-out, the handwheel ensures accurate and straightforward balancing
- Self-sealing measuring points for simple, accurate balancing
- Positive shut-off function for easy maintenance

**STAG**
- Equipped with a digital read-out, the handwheel ensures accurate and straightforward balancing
- Self-sealing measuring points for simple, accurate balancing
- Positive shut-off function for easy maintenance

**STAF-R**
- Made from bronze with high resistance to corrosion for tap/industrial water systems
- Pressure balanced plug for easy closing and opening under high differential pressure
- Excellent measuring accuracy
- Bonnet, cone and stem made from patented alloy Ametal®

**TA-BVS**
- Stainless steel balancing valve with flanges or welding ends
- Ideal for use mainly in industrial and high temperature applications
- Long life and maintenance free operation
- DN 200 and 250 with manual gear for easy shut-off

See applications D3 D4 D5 D6 D9 D10 D11 D12
Fixed orifices

Flow measuring orifices with self-sealed measuring points are used for simple flow measuring in heating and cooling systems or systems in industries with constant flow.

Our fixed orifices are made precisely from stainless steel and guarantee longevity and very accurate measuring.

The orifice should be installed between two counter flanges. It is recommended to install 10D straight lengths before and 5D straight lengths after the orifice for exact measuring.

KEY TECHNICAL PARAMETERS

<table>
<thead>
<tr>
<th>Fixed orifices</th>
<th>PN</th>
<th>Min. temp.</th>
<th>Max. temp.</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>bar</td>
<td>°C</td>
<td>°C</td>
<td>20</td>
</tr>
<tr>
<td>MDF0</td>
<td>16</td>
<td>-20</td>
<td>120</td>
<td>✓</td>
</tr>
<tr>
<td>MDF0</td>
<td>25</td>
<td>-20</td>
<td>120</td>
<td>✓</td>
</tr>
<tr>
<td>MDF0</td>
<td>40</td>
<td>-20</td>
<td>120</td>
<td>✓</td>
</tr>
</tbody>
</table>

MDF0

- Made from stainless steel
- Suitable for heating/cooling and technology circuits
- Measuring points made from dezincification resistant alloy Ametal®
- Excellent measuring accuracy
Double regulating fittings

KEY TECHNICAL PARAMETERS

<table>
<thead>
<tr>
<th>Double regulating fittings</th>
<th>PN</th>
<th>Min. temp.</th>
<th>Max. temp.</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>bar</td>
<td>°C</td>
<td>°C</td>
<td>15 20 25 32 40 50</td>
</tr>
<tr>
<td>STK</td>
<td>16</td>
<td>-20</td>
<td>120</td>
<td>✓ ✓</td>
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</tbody>
</table>

FUNCTIONS

<table>
<thead>
<tr>
<th>Double regulating fittings</th>
<th>Pre-setting</th>
<th>Shut-off</th>
<th>Measuring</th>
<th>Draining</th>
</tr>
</thead>
<tbody>
<tr>
<td>STK</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

STK

- Return lockshield with direct Kv indicator
- Setting with lock ring
- Shut-off function
- Made from nickel-plated patented alloy Ametal®
## Differential pressure controllers

### KEY TECHNICAL PARAMETERS

<table>
<thead>
<tr>
<th>B4 Differential pressure controllers</th>
<th>PN</th>
<th>Min. temp.</th>
<th>Max. temp.</th>
<th>Max. Dp</th>
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### FUNCTIONS

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<th>Measuring</th>
<th>Shut-off</th>
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### DIFFERENTIAL PRESSURE RANGE (kPa)

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Differential pressure controllers

**STAP DN 15-50**

- Ideal DP controller with shut-off function for radiators/air conditioning circuits
- Measuring point for return temperature/pressure measurements
- Draining optional as an accessory, mounting without system draining
- Made from patented alloy Ametal®

**STAP DN 65-100**

- Ideal Dp controller for secondary circuits in HVAC systems
- Two measuring points for system diagnostics enabling the measurement of temperature and differential pressure
- Special measuring point for capillary connection on STAF is a part of delivery
- Works in all positions

**DA 516 / DAF 516**

- Patented In-line body for quiet operation under high differential pressures
- Particularly effective in systems with high temperatures and differential pressures
- Highly accurate differential pressure control with very low hysteresis
- Rust protection thanks to the electrophoretically painted ductile iron body
- Small and compact body for easy installation in small spaces
- Easy to insulate
- DAF for use in supply pipe, 2 capillaries

**TA-PILOT-R**

- First In-line Dp controller operated by Pilot technology
- The smallest, the lightest and the most accurate Dp control on the market
- Clearly visible setting lockable against tampering
- Measuring points for system diagnostics and exact setting according to system true parameters

**TA-COMPACT-DP**

- All in one zone control valve, balancing valve and differential pressure controller
- Ideal solution for zone control in apartment buildings
- Compact valve fits in areas where space is limited
- Enables flow measurement and system diagnostics
- Recommended actuator: EMO-T

See applications D2 D3 D4 D5 D6 D8 D9 D10 D12 D13
Differential pressure relief valves

Differential pressure relief valves are used in heating and cooling systems to ensure a minimum flow level through the pump, maintaining the desired supply temperature when the system operates at low loads or keeps constant differential pressure for specific circuits with terminal units.

**KEY TECHNICAL PARAMETERS**

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**BPV**

- Setting scale with protective cap against dirt and tampering
- Shut-off function
- Easy setting with 3mm hexagonal key
- Made from patented alloy Ametal®

**HYDROLUX**

- Direct setting by handwheel with setting scale
- Low proportional hysteresis
- Very quiet in operation
- Made from corrosion resistant gunmetal

**DAB 50**

- Special internal geometry
- Quiet operation under high differential pressures
- Protected against corrosion
- Robust valve for demanding applications

**PM512**

- Pneumatic principle allows adjustable set-point from 0 to 16 bar
- In-line design for quiet operation
- Opens at increasing inlet pressure
- Setting dependent on static pressure in the system
TAKE CONTROL OF YOUR SUCCESS
Until you can measure something and express it in numbers, you are only beginning to understand.

- Lord Kelvin

Describing the real behavior of a system or turning unexpected operating problems into figures is not a simple task. It requires the right smart tools.

Working together with you on many projects during the year is the best way to fully understand your needs.

Hydronic tools were specially tailored for you to simplify your job and above all to save your time and money.

If you run into trouble, you don’t have to deal with it alone. You can always rely on our technical support, no matter where you are or how large your project is.

**YOUR PROFESIONAL INSURANCE**

**HYDRONIC TOOLS**

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<td>Measuring tools</td>
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<td>C3</td>
<td>Software</td>
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You are smart, accurate and insightful – our measuring instruments are too!

TA-Scope is now updated with new fine-tuned functionalities and smart technology to make hydronic balancing easier, faster and more accurate.

Automatic electronic flushing and calibration

Direct reading of data through an OLED display

One-person balancing cuts time, effort and cost

The NEW DpS-VISIO:
15% smaller and lighter

www.imi-hydronic.com/ta-scope
Balancing instruments

**TA-SCOPE**
- TA-Scope and new DpS-Visio: Advanced measuring instruments for optimal hydronic balancing
- DpS-Visio: 15% lighter and 15% more compact
- Safer, easier and more accurate commissioning due to automatic electronic flushing and calibration
- Direct reading of measurement data thanks to OLED display on DpS Visio
- Covers larger size installations up to 500kPa. The high pressure (HP) version allows going up to 1000kPa
- TA-Wireless – one person with one instrument can accurately balance complex systems with only one valve adjustment per valve necessary
- TA-Diagnostic – detects system errors, allowing for easy maintenance, troubleshooting and balancing calculations in existing buildings
- Self-sealing needles with integrated temperature sensor – designed to make measurement safer and more accurate
- System performance is improved, with more precise measurement and easier heating/cooling power logging
- Precise diagnostics with the help of stand-alone data-logging for up to 100 days on battery power

Measuring tools

**TA-LINK**
- Provides an accurate measurement of the differential pressure
- The crucial connection between the hydronic system and the building management system (BMS)
- Max. differential pressure 2 or 5 bar, measuring range 0-40 kPa or 0-100kPa
- Output signal 0-10V or 4-20mA
HySelect

HySelect is computer software that:
- selects valves and determines the right valve size and setting
- helps to choose the correct type of actuator and available accessories
- calculates heating and cooling systems, also with diversity factors
- converts different units
- communicates with balancing instrument TA-Scope

HyTools

HyTools is an app packed with hydronic calculation tools. You can have all our products, hydronic calculators and unit conversion tools on your iPhone, iPad, iPod Touch* or Android smartphone.
The HyTools functions include:
- Hydronic calculator: q-Kv-Dp; P-q-DT; q-Valve-Dp
- Zeparo Dp calculation
- Valve sizing and presetting
- Radiator power estimation (steel and cast iron)
- Sizing and presetting of thermostatic valves, balancing valves, Dp controllers and more
- Pipe sizing
- Unit conversion
- Run-time localisation selection (24 regions)
- Run-time language selection of 16 languages

Download HyTools now from the Apple* App Store or Google Play. With HyTools, everything you need for complex hydronic calculation is just one touch away.
IMI Hecos

IMI Hecos is a fully graphical computer program that helps you design waterborne heating and cooling systems in the technically correct, most economical and efficient way. It makes it easy to calculate all the parts of hydronic loops including terminal units, valves, pumps and pipes. You just need to describe the building, rooms and temperatures and define what the system should look like. In return you can get the required pump head, detailed lists of optimally sized components, water volume of the system for further pressurisation unit calculation, full system specification and most importantly, your full plant’s scheme to print out or export into CAD program.

- Easy to modify the calculation parameters and retrieve new results.
- Interactive communication between the drawing and result sheets.
- Availability of software application for one pipe radiator systems as well as a reverse return system.
- Joint drawing for the software showing the heating and the cooling network (e.g. 4-pipe fan coil system).
- Glycol correction.

HyTune

Application for smartphones for digital configuration of TA-Slider actuators.

- Easy to use
- Comfortable set up of TA-Sliders even in poorly lit environments
- Added protection against human error
- Access list of last 10 errors and operating statistics
Applications

TAKE CONTROL OF WHERE YOUR ENERGY FLOWS
Solution examples show the most used applications in heating and cooling systems. There are a large number of variants, combinations and unique solutions that are beyond the scope of the contents of this brochure. Every system has its own specifics with regard to the source of heat or cold, type of control, investment limits etc. Please do not hesitate to ask our hydronic specialists for help to choose the best solution for your project. Your success is the greatest reward of the work we do every day.
Heating system – variable flow
Pressure independent balancing and control valves

ENERGY EFFICIENCY

• Provides stable and precise temperature control under all operating conditions.
• Pressure independent control with high control authority for modulating/3-point control.
• Low pumping energy consumption (no overflows).
• Very small pressure drop of IMI TA valves minimises the demands on the pump head.
• Pump head optimisation possible thanks to unique valve diagnostic functions.
• Minimal heat loss on return pipes.

INVESTMENT

• Solution with minimal number of installed valves.
• Cheaper actuators can be used (low closing pressure required).
• Excellent measuring and diagnostic capabilities of IMI TA valves enable full system diagnostics without additional investment in other devices.
• Fast return on investment (premium quality, high longevity, high energy savings).
• High flexibility. Heating system can be constructed gradually without the need to perform hydronic balancing, the pump head should be set to the demands of the new system.

SIZING

• Simple valve sizing according to nominal flow.
• Hydronic calculation based on minimal required differential pressure on the reference valve and pressure drop of the system during nominal conditions.
• No need to check control valve authority.
• Easy selection of suitable actuator.
• HySelect and IMI Hecos software will help you with hydronic calculations.

COMMISSIONING

• Easy pre-setting of maximum flow on each valve.
• Direct measuring of actual flow and available differential pressure helps you accurately set the minimal required pump head to achieve the highest energy efficiency.
• With the excellent diagnostic capabilities of IMI TA valves, TA-Scope makes it easy to find and resolve any possible system failures.

QUICK LINKS

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<th>PIBCV</th>
<th>Pressure independent balancing and control valves</th>
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<td>Balancing valves</td>
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Pressure independent balancing and control valves

Recommended

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<td>Investment</td>
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1) Optional/recommended for flow measuring and system diagnostics
5) Check valve is recommended to protect AHU against freezing up if secondary pump fails
6) Optional/recommended for maintaining hot water in the supply pipe (without or with actuator, opens when AHU control valve is fully closed)

Legend:
- PIBCV: Pressure independent balancing and control valve
- BV: Balancing valve
- VSP: Variable speed pump control
- FCU: Fan-coil
- AHU: Airhandling unit
- AHB: Active heating beam
- AC: Air curtain
- EXCH: Heat exchanger

MODULATING

MODULATING/ON–OFF

VSP

DISTRICT ENERGY

OPTIONALLY IN RETURN

MODULATING

PIBCV

AHD

AHD

AHD

PIBCV

PIBCV

PIBCV

FCU

FCU

FCU

AHU

AHU

AHU

AC

VSP

EXCH

VSP

Legend:
Heating system – variable flow
Combined balancing and control valves

ENERGY EFFICIENCY

- Provides stable and precise temperature control under all operating conditions.
- Differential pressure controllers on branches help stabilize pressure conditions for modulating valves and maintain good control authority.
- TA-FUSION-C valves with a fully adjustable Kvs value always works with high control authority and Dp controllers are not usually needed.
- Low pumping energy consumption.
- Pump head optimisation possible thanks to unique valve diagnostic functions.
- Minimal heat loss on return pipes.
- Under certain conditions, On-Off control can create some overflows during partial load. This phenomenon can be limited during project design.

INVESTMENT

- Recommended solution with good balance between energy efficiency and investment.
- Depending on system structure, this solution is typically cheaper in comparison to D1 although some balancing valves and differential pressures on branches are needed.
- Dp controllers are not needed (lower investment) if TA-FUSION-C with adjustable Kvs are used.
- Excellent measuring and diagnostic capabilities of IMI TA valves enable full system diagnostics without additional investment in other devices.
- Fast return on investment (usually cost effective solution, premium quality products, high longevity).
- High flexibility. Heating system can be constructed gradually without the need to perform hydronic balancing, the pump head should be set to the demands of the new system.

SIZING

- Sizing of the valve according to nominal flow and minimal pressure drop (1/3 of total pressure drop of branch without control valves which is controlled by Dp controller) for good control authority.
- High control authority of TA-FUSION-C thanks to adjustable Kvs, minimal risk of undersizing.
- Actuator closing pressure must be checked.
- We do recommend using pressure independent balancing and control valves for separate small terminal units connected directly to the main pipe to ensure high control authority and limit overflows.
- HySelect and IMI Hecos software will help you with hydronic calculations.

COMMISSIONING

- Easy pre-setting of valves according to hydronic calculation.
- Direct measuring of actual flow and available differential pressure enables the minimal pump head required to be set properly.
- Flow measuring of individual small control valves in branch possible but not obligatory.
- Freely adjustable Kvs of TA-FUSION-C enables increased control authority when control hunting occurs.
- With the excellent diagnostic capabilities of IMI TA valves, it is easy to find and solve any possible system failures using TA-Scope.

QUICK LINKS

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<td>Balancing valves</td>
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<tr>
<td>B4</td>
<td>DPC</td>
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Combined balancing and control valves

<table>
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1) Optional/recommended for flow measuring and system diagnostics
5) Check valve is recommended to protect AHU against freezing up if secondary pump fails
6) Optional/recommended for maintaining hot water in the supply pipe (without or with actuator, opens when AHU control valve is fully closed)
7) Dp control recommended if control valve authority can drop below 0.25 during system operation due to big changes of differential pressure
   Usually not needed for TA-FUSION-C with high control authority thanks to adjustable kvs

**Legend:**
- BCV: Combined balancing and control valve
- BV: Balancing valve
- DPC: Differential pressure controller
- VSP: Variable speed pump
- FCU: Fan-coil
- AHU: Air handling unit
- AHB: Active heating beam
- AC: Air curtain
Heating system – variable flow
Balancing and standard control valve

ENERGY EFFICIENCY

- Provides stable and precise temperature control under all operating conditions if control valves are properly sized and pressure conditions are under control.
- Differential pressure controllers on branches help stabilize pressure conditions for modulating valves and maintain good control authority.
- Low pumping energy consumption.
- Pump head optimisation possible.
- Minimal heat loss on return pipes.

INVESTMENT

- Higher investment in comparison to solution D2, installation of stand-alone balancing valves.
- Bigger flows require bigger balancing valves and Dp controllers on branches (TA-PILOT-R helps to decrease investment).
- Unique measuring and diagnostic functions on IMI TA valves guarantee minimum energy usage and proper setting of all system components.
- High flexibility. Heating system can be constructed gradually. It is recommended that you finish branches and commission the balancing valve and Dp controller to avoid hydronic interactivity.

SIZING

- Control valve sizing according to nominal flow and minimal pressure drop (1/3 of total pressure drop of branch without control valves controlled by Dp controller) to ensure good control authority.
- Closing pressure of actuator must be checked.
- HySelect and IMI Hecos software will help you with hydronic calculations.

COMMISSIONING

- Easy pre-setting of all balancing valves and Dp controllers according to hydronic calculation.
- Dp controllers should be set according to the real pressure drop of the branch.
- Use IMI TA balancing methods to find optimal set point of pump.
- With the excellent diagnostic capabilities of IMI TA valves, it is easy to find and solve any possible system failures using TA-Scope.

QUICK LINKS

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<td>BCV Combined balancing and control valves</td>
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<tr>
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<td>CV 2-way control valves</td>
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<td>B1</td>
<td>BV Balancing valves</td>
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<td>B4</td>
<td>DPC Differential pressure controllers</td>
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Balancing and standard control valve

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Acceptable

MODULATING

1) Optional/recommended for flow measuring and system diagnostics
5) Check valve is recommended to protect AHU against freezing up if secondary pump fails
6) Optional/recommended for maintaining hot water in the supply pipe (without or with actuator, opens when AHU control valve is fully closed)
7) Dp control recommended if control valve authority can drop below 0.25 during system operation due to big changes of differential pressure
Usually not needed for TA-FUSION-C with high control authority thanks to adjustable kvs

Legend:
- CV: 2-way control valve
- BCV: Combined balancing and control valve
- BV: Balancing valve
- DPC: Differential pressure controller
- VSP: Variable speed pump
- FCU: Fan-coil
- AHU: Air handling unit
- AHB: Active heating beam
- AC: Air curtain
- EXCH: Heat exchanger
Heating system – variable flow

Thermostatic radiator valves with pre-setting

**ENERGY EFFICIENCY**

- Provides high temperature comfort and energy savings.
- Variable speed pump and Dp controllers help stabilize pressure conditions and keep proportional band within the recommended range to ensure small temperature hysteresis and quiet operation.
- Low pumping energy consumption (proportional control recommended).
- Minimal heat loss on return pipes.
- Low return temperature improves energy efficiency of heat pumps and condensing boilers.

**INVESTMENT**

- Low investment with fast return on investment.
- Premium quality with longevity.
- Lockshields save money by closing the radiator during renovation without the need to drain the whole heating system and stop heating (less system corrosion, higher comfort).
- Balancing valves and Dp controllers with great measuring and diagnostic capabilities help set pump head and find possible system failures.
- High flexibility. Heating system can be constructed gradually. It is recommended to finish branches and commission balancing valve and Dp controller to avoid hydronic interactivity.

**SIZING**

- Sizing of thermostatic valves according to P-band within 1-2K with respect to maximum recommended pressure drop.
- Balancing valves and Dp controllers in large systems are recommended for quiet operation and highly efficient operation.
- Extensive portfolio of IMI Heimeier products offer an optimal solution for each type of radiator or floor heating.
- NOTE: Usage of pressure independent balancing and control valves is forbidden in systems with thermostatic valves. They only limit maximum flow, increase pump head and remain fully open for the majority of the heating season due to their diversity factor.
- HySelect and IMI Hecos software will help you with hydronic calculations.

**COMMISSIONING**

- Easy pre-setting of thermostatic valves, balancing valves and Dp controllers according to the hydronic calculation.
- Direct measuring of actual flow and available differential pressure to accurately set the minimal required pump head and ensure quiet and energy efficient operation.
- It is recommended to limit the maximum temperature for each room directly on the thermostatic head to avoid overheating. A fully open thermostatic head wastes energy!

**QUICK LINKS**

<p>| A1 | PIBCV | Pressure independent balancing and control valves | page 4 |
| B1 | BV    | Balancing valves                                 | page 24 |
| B4 | DPC   | Differential pressure controllers                | page 29 |</p>
<table>
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**Recommended**

- **E-Z VALVE**
- **MULTILUX**
- **V-EXACT II**
- **REGULUX**
- **BCV**
- **BV**
- **DPC**
- **VEKOLUX**
- **VSP**

**Legend:**

<table>
<thead>
<tr>
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<th>Combined balancing and control valve</th>
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<tr>
<td>BV</td>
<td>Balancing valve</td>
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<tr>
<td>DPC</td>
<td>Differential pressure controller</td>
</tr>
<tr>
<td>V-EXACT II</td>
<td>Thermostatic radiator valve with presetting</td>
</tr>
<tr>
<td>MULTILUX</td>
<td>Thermostatic radiator valve with presetting for two-point connection</td>
</tr>
<tr>
<td>E-Z VALVE</td>
<td>Thermostatic radiator valve with presetting for one-point connection</td>
</tr>
<tr>
<td>REGULUX</td>
<td>Radiator lockshield</td>
</tr>
<tr>
<td>VEKOLUX</td>
<td>Radiator lockshield for two-point connection</td>
</tr>
<tr>
<td>VSP</td>
<td>Variable speed pump control</td>
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</tbody>
</table>

1) Optional/recommended for flow measuring and system diagnostics
14) PIBCV (without actuator) only limits maximum flow when all TRV’s are open.
   During partial load PIBCV remains fully open. Its pressure drop increases the demand on the total pump head which creates noise during partial load.
Heating system – variable flow

AFC technology (Automatic Flow Control)

ENERGY EFFICIENCY

• High temperature comfort under all operating conditions.
• Automatic flow control limits overflows and helps avoid underflows.
• Low pumping energy consumption.
• Differential pressure control is required when maximum available differential pressure for AFC technology can be exceeded.
• Minimal heat loss on return pipes.
• Low return temperature improves energy efficiency of heat pumps and condensing boilers.

INVESTMENT

• Slightly higher investment is compensated for by very high energy efficiency, system reliability, fast return on investment and simplicity of installation and commissioning.
• Proper function of all radiators and floor heating circuits without complaints and additional service costs.
• Quiet operation.
• Ideal solution for renovation - immediate improvement of system performance.
• High flexibility. Size of installation can be extended or reduced without impact on control quality.

SIZING

• Easy adjustment of AFC components according to maximum flow.
• Maximum differential pressure must be respected.
• Ideal solution for renovation in buildings with hidden pipes in walls/floors etc. Simplified hydronic calculation can be applied.
• HySelect and IMI Hecos software will help you with hydronic calculations.

COMMISSIONING

• Easy pre-setting of maximum flow.
• Automatic hydronic balancing.
• Pump head can be pre-set according to max. flow, proportional control is recommended.
• AFC insert can be removed with a special tool if needed in A-exact valves under system pressure.

QUICK LINKS

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<tr>
<td>A1</td>
<td>PIBCV</td>
<td>Pressure independent balancing and control valves</td>
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</tr>
<tr>
<td>B1</td>
<td>BV</td>
<td>Balancing valves</td>
<td>page 24</td>
</tr>
</tbody>
</table>

Technology on the website [www.imi-hydronic.com](http://www.imi-hydronic.com).
### Recommended

#### Energy efficiency
- Low
- High

#### Investment
- Low
- High

1) Optional/recommended for flow measuring and system diagnostics

12) Dp controller is only required if available differential pressure is higher than max. diff. pressure for AFC technology.

---

**Legend:**
- PIBCV: Pressure independent balancing and control valve
- BV: Balancing valve
- ECLIPSE: Thermostatic radiator valve with AFC technology
- MULTILUX ECLIPSE: Thermostatic radiator valve with presetting for two-point connection with AFC technology
- DYNACON ECLIPSE: Floor heating manifold with AFC technology
- MULTIBOX ECLIPSE: Floor heating control with AFC technology
- REGULUX: Radiator lockshield
- VSP: Variable speed pump control

---

**Diagram:**
- Flowchart detailing the connections and components of the heating system, including the mentioned valves and controllers.

---

### Applications

D5
Heating system – constant flow

Balancing and standard control valves

ENERGY EFFICIENCY

• Control stability is high thanks to constant differential pressure in the entire system.
• High temperature comfort under all operating conditions. Easy design - easy commissioning - easy operation.
• Old fashioned solution, the main benefit is its simplicity and constantly high control valve authority.
  Pump can run on highest efficiency.
• Low pumping energy consumption.
• No pumping energy saving. High pumping energy consumption, constant flow and pressure drop of the system.
• High heat loss on return pipes (needs thicker heat insulation) during partial load.
• High return temp. reduces energy efficiency of heat pumps and condensing boilers.
• Dirty filters and overflows significantly increase the annual operating costs.

INVESTMENT

• In addition to a cheaper investment it provides constantly high control valve authority, high system reliability, a fast return on investment and simplicity of installation and commissioning.
• Due to manual balancing valves there are no complaints of operation and additional service costs.
• Quiet operation.
• Ideal for small systems where energy saving is not a real goal.
• Small system flexibility. System probably needs to be re-balanced after installation extension or reduction unless PIBCV valves are used without actuator.
• Control valve might be delivered as an optional accessory by producer of terminal unit.
• High number of installed valves, typically bigger sizes.
• No possibility to apply diversity factor and decrease pipe dimensions.

SIZING

• Easy sizing, easy balancing and control valve selection.
• Constant speed pump can be used at maximum and constant efficiency.
• Simplified hydronic calculation can be applied.
• HySelect and IMI Hecos software will help you with hydronic calculations.
• It is not an ideal technical solution for renovation and unknown systems.
• Hydronic calculation is needed for 3-way valves and balancing valves.
• Right Kvs value is essential for good control authority of 3-way valve.
• 3-way valves controlling small terminal units need a reduced Kvs value in direction AB-B or an additional balancing valve in the bypass to limit overflows during partial load or when valve is fully shut. A PIBCV valve used without an actuator as a flow limiter is the optional solution.
• HySelect and IMI Hecos software will help you with hydronic calculations.

COMMISSIONING

• Easy pre-setting of design flow.
• TA developed balancing methods are applicable.
• Pump head can be pre-set according to max. flow, proportional control is recommended.
• Constant speed pump can be used at maximum and constant efficiency.
• Pre-setting of balancing valves according to hydronic calculation.
• Setting of pump head to achieve nominal constant flow, constant speed is obligatory.
• Hydronic balancing or just flow measuring to check real flows is recommended. Balancing valves in AHU bypasses must be set according to pressure drop of AHU unit. Fully open balancing valves creates overflows when 3-way control valves are shut.

QUICK LINKS

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<th>Quick Link</th>
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<td>A1</td>
<td>PIBCV                              Pressure independent balancing and control valves</td>
<td>4</td>
</tr>
<tr>
<td>B1</td>
<td>BV                                  Balancing valves</td>
<td>24</td>
</tr>
</tbody>
</table>
1) Optional/recommended for flow measuring and system diagnostics
7) Dp control recommended if control valve authority can drop below 0.25 during system operation due to big changes in differential pressure
Usually not needed for TA-FUSION-C with high control authority thanks to adjustable kvs
8) When temperature difference in primary circuit is higher, size of 3-way valve in that place can be smaller.
9) 3-way without reduced Kvs in direction B-AB without the possibility to balance bypass, PIBCV without an actuator is recommended for maximum flow limitation.
10) 3-way valve with reduced Kvs in direction B-AB.
11) To balance bypass, in order to achieve the same pressure drop as with the fancoil.
13) Recommended differential pressure control, in order to provide the correct differential pressure for the outlet.

Legend:

- PIBCV: Pressure independent balancing and control valve
- CV: 2-way control valve
- BV: Balancing valve
- VSP: Variable speed pump control
- FCU: Fan-coil
- AHU: Airhandling unit
- EXCH: Heat exchanger
Cooling system – variable flow
Pressure independent balancing and control valves

ENERGY EFFICIENCY

- Provides stable and precise temperature control under all operating conditions.
- Pressure independent control with high control authority for modulating/3-point control.
- Low pumping energy consumption (no overflows).
- Very small pressure drop of IMI TA valves minimise demands on the pump head.
- Pump head optimisation thanks to unique diagnostic functions of IMI TA valves.
- Minimal heat gains on return pipes.
- Minimal risk of low return temperature and reduction of chiller energy efficiency.

INVESTMENT

- Recommended solution with minimal number of valves in installation.
- Excellent measuring and diagnostic capabilities of IMI TA valves enable full system diagnostics without additional investment in other devices.
- Fast return on investment, typically less than 3 years.
- High flexibility enables the system to build up gradually or add new terminal units in future without hydronic balancing, pump head should be optimized.

SIZING

- Simple valve selection by required maximum flow.
- Hydronic calculation based on minimal required differential pressure on reference valve and pressure drop in system during nominal conditions.
- No need to check control valve authority.
- Easy selection of suitable actuator.
- Complete range of valves for wide range of flows.
- HySelect and IMI Hecos software will help you with hydronic calculations.

COMMISSIONING

- Easy pre-setting of maximum flow on every valve.
- Direct measuring of actual flow and available differential pressure to correctly set the minimum required pump head and ensure quiet and energy efficient operation.
- With the excellent diagnostic capabilities of IMI TA valves, it is easy to find and solve any possible system failures using TA-Scope.

QUICK LINKS

| A1 | PIBCV | Pressure independent balancing and control valves | page 4 |
| B1 | BV | Balancing valves | page 24 |
| A2 | CVT | Control valve with return temperature controller TA-COMPACT-T | page 7 |
Applications

PIBCV
Pressure independent balancing and control valve

BV
Balancing valve

CVT
Control valve with return temperature controller TA-COMPACT-T

Legend:

VSP
Variable speed pump

FCU
Fan-coil

AHU
Air handling unit

CHB
Chilled beam

BT
Buffer tank

1) Optional/recommended for flow measuring and system diagnostics.
2) Optional for maintaining constant cold water in supply pipe if needed.
   TA-COMPACT-T, setting 2K above supply temperature.
   NOTE: max. differential pressure 2 bar.
Cooling system – variable flow

Combined balancing and control valves

**ENERGY EFFICIENCY**

- Provides stable and precise temperature control under all operating conditions.
- Differential pressure controllers on branches stabilize pressure conditions for modulating valves and keep good control authority. TA-FUSION-C valves with fully adjustable Kvs value always work with high control authority and Dp controllers are not usually needed.
- Low pumping energy consumption.
- Pump head optimisation possible thanks to valve’s unique diagnostic functions.
- Minimal heat gains on return pipes.
- Minimal risk of low return temperature and reduction of chiller energy efficiency.

**INVESTMENT**

- Recommended solution with good balance between energy efficiency and investment.
- Depending on system structure, this solution is typically cheaper in comparison to D1 although some balancing valves and differential pressures on branches are needed.
- Dp controllers are not needed (lower investment) when TA-FUSION-C is used with adjustable Kvs.
- Excellent measuring and diagnostic capabilities of IMI TA valves enable full system diagnostics without additional investment in other devices.
- Fast return on investment, typically less than 3 years.
- High flexibility. Cooling system can be constructed gradually without the need to perform hydronic balancing, pump head should be set to the new system demands.

**SIZING**

- Sizing of the valve according to nominal flow and minimal pressure drop (1/3 of total pressure drop of branch, without control valves, controled by Dp controller) to ensure good control authority.
- High control authority of TA-FUSION-C thanks to adjustable Kvs, minimal risk of undersizing.
- Under certain conditions, On-Off control can create some overflows during partial load. This phenomenon can be limited during project design.
- Actuator closing pressure must be checked.
- We do recommend using pressure independent balancing and control valves for separate small terminal units connected directly to the main pipe to ensure high control authority and limit overflows.
- HySelect and IMI Hecos software will help you with hydronic calculations.

**COMMISSIONING**

- Easy pre-setting of valves according to hydronic calculation.
- Direct measuring of actual flow and available differential pressure enables you to properly set the minimum required pump head.
- Flow measuring of individual small control valves in branch possible but not obligatory.
- Freely adjustable Kvs of TA-FUSION-C enable increasing control authority when control hunting occurs.
- With the excellent diagnostic capabilities of IMI TA valves, it is easy to find and solve any possible system failures using TA-Scope.

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<td>A2</td>
<td>BCV Combined balancing and control valves</td>
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<td>A2</td>
<td>CVT Control valve with return temperature controller TA-COMPACT-T</td>
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<tr>
<td>B4</td>
<td>DPC Differential pressure controllers</td>
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</table>

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Recommended

1) Optional/recommended for flow measuring and system diagnostics.
2) Optional for maintaining constant cold water in supply pipe if needed.
TA-COMPACT-T, setting 2K above supply temperature.
NOTE: max. differential pressure 2 bar.
3) Example when requested supply temperature for AHU is higher than global supply temperature.
7) Dp control recommended if control valve authority can drop below 0.25 during system operation due to big changes in differential pressure.
Usually not needed for TA-FUSION-C with high control authority thanks to adjustable kvs.

Legend:
- PIBCV: Pressure independent balancing and control valve
- BCV: Combined balancing and control valve
- BV: Balancing valve
- DPC: Differential pressure controller
- CVT: Control valve with return temperature controller TA-COMPACT-T
- VSP: Variable speed pump
- FCU: Fan-coil
- AHU: Air handling unit
- CHB: Chilled beam
- BT: Buffer tank (low loss header function)
Cooling system – variable flow
Balancing and standard control valves

**ENERGY EFFICIENCY**

- Provides stable and precise temperature control under all operating conditions if control valves are properly sized and good control authority can be achieved.
- Stability of differential pressure for modulating or 3-point control is ensured by differential pressure controllers on branches.
- Low pumping energy consumption.
- Pump head optimisation possible.
- Minimal heat gains on return pipes.

**INVESTMENT**

- Higher investment in comparison to solution D2, control valves require balancing valves.
- Bigger flows require bigger sizes of balancing valves and Dp controllers on branches (TA-PILOT-R decreases investment thanks to high Kvs values).
- Great measuring and diagnostic capabilities enable full system diagnostics without additional investment in other devices.
- High flexibility. Cooling system can be constructed gradually. It is recommended to finish branches and commission balancing valve and Dp controller to avoid hydronic interactivity.

**SIZING**

- Control valve sizing according to nominal flow and minimal pressure drop (1/3 of total pressure drop of branch without control valves controlled by Dp controller) to ensure good control authority.
- Closing pressure of actuator must be checked.
- Balancing valves and Dp are simple to select using HySelect or IMI Hecos software.

**COMMISSIONING**

- Easy pre-setting of all balancing valves and Dp controllers according to hydraulic calculation.
- Dp controllers should be set according to real measured pressure drop of specific branch.
- Minimize pump head using TA Balancing methods.
- With the excellent diagnostic capabilities of IMI TA valves, it is easy to find and solve any possible system failures by using TA-Scope.

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<td>A2</td>
<td>CVT    Control valve with return temperature controller TA-COMPACT-T</td>
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<td>A3</td>
<td>CV     3-way / 2-way control valves</td>
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Balancing and standard control valves

Acceptable

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**Legend:**
- **PIBCV**: Pressure independent balancing and control valve
- **BV**: Balancing valve
- **BCV**: Combined balancing and control valve
- **CV**: 3-way / 2-way control valve
- **CVT**: Control valve with return temperature controller TA-COMPACT-T
- **VSP**: Variable speed pump
- **FCU**: Fan-coil
- **AHU**: Air handling unit
- **CHB**: Chilled beam
- **BT**: Buffer tank

1) Optional/recommended for flow measuring and system diagnostics
2) Recommended for maintaining cold water in supply pipe (TA-COMPACT-T)
4) Example when minimal flow in the cooling system is required.
Cooling system – variable flow
Control valves with return temperature controller

**ENERGY EFFICIENCY**

- Unique On-Off control modulates flow according to return temperature.
- Always correct return temperature in entire system.
- No risk of low return temperature and reduction of chiller energy efficiency.
- Minimal heat gains on return pipes.
- Low pumping energy consumption.
- Increases room temperature comfort when fan operates on minimal speed (the feeling of cold is limited).

**INVESTMENT**

- Low investment in On-Off control with benefits of modulating control.
- Easy installation, a small number of valves.
- High flexibility enables you to construct the system gradually or disconnect terminal units.

**SIZING**

- Ideal solution for renovation with a lack of information about existing pipeline network.
- Sizing of the valve according to nominal flow and requested P-band of return temperature controller.
- Dp controllers on branches are recommended
  - if maximum differential pressure can be exceeded
  - in large systems with setback night mode to accelerate morning start-ups
- Easy selection of suitable On-Off actuators.
- Not recommended for systems where supply temperature is not constant.

**COMMISSIONING**

- Easy direct pre-setting of requested return temperature.
- Pump head setting according to hydronic calculation, proportional control recommended.
- TA-COMPACT-T enables you to measure and monitor return temperature using TA-Scope.

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Control valves with return temperature controller

**Recommended**

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</table>

1) Optional/recommended for flow measuring and system diagnostics
2) Differential pressure controllers are recommended if maximum differential pressure for CVT valves can be exceeded.

---

**Legend:**

- PIBCV: Pressure independent balancing and control valve
- BV: Balancing valve
- DPC: Differential pressure controller
- CVT: Control valve with return temperature controller TA-COMPACT-T
- FCU: Fan-coil
- CHB: Chilled beam
- VSP: Variable speed pump
- BT: Buffer tank

---

**ON–OFF (MODULATES FLOW)**

---

**Legend:**

- PIBCV: Pressure independent balancing and control valve
- BV: Balancing valve
- DPC: Differential pressure controller
- CVT: Control valve with return temperature controller TA-COMPACT-T
- FCU: Fan-coil
- CHB: Chilled beam
- VSP: Variable speed pump
- BT: Buffer tank
Cooling system – constant flow

Balancing and standard control valves

ENERGY EFFICIENCY

- Old fashioned solution, the main benefit is its simplicity and constantly high control valve authority. Pump can run on highest efficiency. Only a manual balancing valve is required, i.e. a cheaper and more reliable solution (No moving parts in valve).
- Control stability is high thanks to constant differential pressure in the entire system.
- High pumping energy consumption, constant flow and pressure drop of the system. No pumping energy saving.
- High heat gains on return pipes during partial load (needs thicker heat insulation).
- Low return temperature has negative impact on energy efficiency of chillers.
- Dirty filters and overflows significantly increase the annual operating costs.
- Easy design – easy commissioning – easy operation.

INVESTMENT

- High number of installed valves, typically bigger sizes.
- No possibility to apply diversity factor and decrease pipe dimensions.
- Longer payback time for highly efficient variable speed pumps.
- Constant working regime decreases longevity of pumps.
- In addition to a cheaper investment it provides constantly high control valve authority, high system reliability, fast return on investment and simplicity of installation and commissioning.
- Quiet operation.
- Ideal for small systems where energy saving is not a real goal.
- Small system flexibility. System probably needs to be re-balanced after installation extension or reduction unless PIBCV valves are used without an actuator.
- Control valve might be delivered as an optional accessory by producer of terminal unit.

SIZING

- Hydronic calculation is needed for 3-way valves and balancing valves.
- Right Kvs value is essential for good control authority of 3-way valve.
- 3-way valves controlling small terminal units need reduced Kvs value in direction AB-B or an additional balancing valve in the bypass to limit overflows during partial load or when valve is fully shut. PIBCV valve used without an actuator as flow limiter is the optimal solution.
- HySelect and IMI Hecos software will help you with hydronic calculations.
- Easy sizing, easy balancing and control valve selection.
- Control valve might be delivered as an optional accessory by producer of terminal unit.
- Constant speed pump can be used at maximum and constant efficiency.

COMMISSIONING

- Pre-setting of balancing valves according to hydronic calculation.
- Setting of pump head to achieve nominal constant flow, constant speed is obligatory.
- Hydronic balancing or just flow measuring to check real flows is recommended. Balancing valves in AHU bypasses must be set according to pressure drop of AHU unit. Fully open balancing valves creates overflows when 3-way control valves are shut.
- Constant speed pump can be used at maximum and constant efficiency.
- TA developed balancing methods are applicable.

QUICK LINKS

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<td>Balancing valves</td>
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</tbody>
</table>
9) 3-way valve without reduced Kvs in direction B-AB without possibility to balance bypass, PIBCV without actuator is recommended for maximum flow limitation.
10) 3-way valve with reduced Kvs in direction B-AB.
11) To balance bypass, in order to achieve the same pressure drop as with the fan-coil.

Legend:
- **PIBCV**: Pressure independent balancing and control valve
- **CV**: 3-way / 2-way control valve
- **BV**: Balancing valve
- **FCU**: Fan-coil
- **AHU**: Airhandling unit
- **BT**: Buffer tank
**Extra – variable flow**

Auto-adapting variable flow decoupling circuit

### ENERGY EFFICIENCY

- Enables variable speed controllers to work and save energy.
- Very high energy efficiency guaranteeing perfect and quiet system operation without negative hydronic interactivity.
- Pump head of secondary pump can be decreased by differential pressure kept on differential pressure controller (primary pump helps the secondary one). Primary pump can supply secondary circuit in case of secondary pump failure.
- No risk of low (cooling) or high (heating) return temperature with impact on energy efficiency in the production.
- Low pumping energy consumption (variable flow).
- Minimal heat gains/losses in return pipes.
- The supply water temperature is kept as supplied from the production (primary).
- Higher energy efficiency can be achieved by remote VSP controller (please contact your Hydronic College specialist, he will help you to find the right place and setting).
- Effective control circuit without actuator and conventional control valve (DPC do not require electric power to operate).

### INVESTMENT

- Very low investment in comparison to alternative solutions which decrease energy efficiency and increase the complexity of the system.
- Easy installation, minimal space required.
- Ideal solution for circuits with higher pressure drop but connected to network with less differential pressure available, investment to the new primary pump not needed.
- Fast return on investment.
- Quiet operation, no complaints.

### SIZING

- Tertial flow through the bypass is typically 1% of total secondary flow thus the balancing valve in the bypass has small dimensions.
- No need for additional solutions to maintain min. flow of primary pump if tertial by-pass flow is sized accordingly.
- Dp controller is designed for nominal secondary flow, pressure drop is managed by primary pump.
- Setting range of DP controller according to pressure drop of balancing valve in bypass (taken into account when sizing secondary pump).
- Please contact your Hydronic College specialist if technical support is needed.

### COMMISSIONING

- Easy pre-setting of balancing valve in bypass.
- Setting of differential pressure on Dp controller by measuring tertial flow using TA-Scope.

### QUICK LINKS

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<th>Code</th>
<th>Description</th>
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<tbody>
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<td>B1</td>
<td>BV</td>
<td>Balancing valves</td>
</tr>
<tr>
<td>B4</td>
<td>DPC</td>
<td>Differential pressure controllers</td>
</tr>
</tbody>
</table>
An auto-adapting variable flow decoupling circuit is an ideal solution for variable primary and secondary circuits when a secondary pump must be used to hydronically decouple differential pressure from the primary pump. The supply water temperature is kept as supplied from production (primary). Nominal flow through the bypass is typically 1% of total secondary flow thus the balancing valve in the bypass is small. Minimum flow rate through bypasses can also be determined by the minimum flow of the primary pump.

Please ask your Hydronic College partner for more information about sizing and hydronic balancing.

Legend:
- **BV**: Balancing valve
- **DPC**: Differential pressure controller
- **VSP**: Variable speed pump

**Recommended**

<table>
<thead>
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<th>Energy efficiency</th>
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<tbody>
<tr>
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</table>
Extra – variable flow

Zone temperature control (e.g. heating in apartments)

ENERGY EFFICIENCY

• Zone temperature control can decrease energy bills by up to 20%.
• Keeps lower temperature in apartment when nobody is present during the day.
• Enables central night setback.
• Limits maximum flow to apartment and saves pumping energy.
• Helps to protect installation against noise.

INVESTMENT

• TA-COMPACT-DP replaces 3 individual valves: zone control valve, balancing valve and differential pressure controller – this brings 60% cost savings.
• Installation is 3 times faster.
• Ideal solution for apartments with central heat source (heat pump, boiler, central heating).
• Quiet operation without overflows, no complaints.

SIZING

• Simplified sizing according to the required design flow and requested differential pressure for the heating circuit.
• No need to use additional Dp controllers and balancing valves on branches.
• Please contact your Hydronic College specialist if technical support is needed.

COMMISSIONING

• Easy setting of requested design flow.
• Flow measuring with TA-Scope.
• Very compact design also fits in areas in which space is limited.
• EMO-T actuators with IP54 protection class provide freedom in installation positions.

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<th>Balancing valves</th>
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<td>DPC</td>
<td>Differential pressure controllers</td>
<td>page 29</td>
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<tr>
<td>B4</td>
<td>DPC-ZV</td>
<td>Differential pressure controller with zone control valve (TA-COMPACT-DP)</td>
<td>page 30</td>
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</table>

For more information about IMI Heimeier products please visit www.imi-hydronic.com.
Applications

1) Optional/recommended for flow measuring and system diagnostics

Legend:

- **DPC-ZV**: Differential pressure controller with zone control valve (TA-COMPACT-DP)
- **STS**: Shut-off valve with measuring point and capillary connection
- **BV**: Balancing valve
- **V-Exact II**: Thermostatic radiator valve with stepless setting
- **Regulux**: Radiator lockshield with shut-off, setting and draining
- **Multibox**: Floor heating control in the wall
- **K-Head**: Thermostatic head
- **Thermostat-P**: Digital room temperature controller
- **VSP**: Variable speed pump
Four-pipe heating and cooling system – Variable flow

ENERGY EFFICIENCY

• Stable and precise temperature control in all operating conditions.
• Precise volume flow specifically for heating and cooling modes.
• Motorized drive with very low stand-by power consumption.
• Pressure-independent control with high control authority for continuous/three-point control.
• Low energy consumption by pump (no excessive flow).
• The very low pressure drop of the IMI TA valves reduces the pump head requirement.
• Pump head optimisation possible with unique diagnostic functions.
• Lowest possible return temperatures for minimal heat loss in return pipes.

INVESTMENT

• Solution with the smallest possible number of installed valves.
• Only a small number of data points necessary, just one or two depending on the system.
• Less expensive actuators can be used (lower closing pressure required).
• IMI TA valves have outstanding measurement and diagnostic features for full system diagnostics without the additional expense of extra components.
• Rapid return on investment (top quality, extreme durability, big energy savings).
• Expensive balancing not necessary.
• Additional pressure stabilising fixtures not necessary.
• Cost-effective 6-way valve without special Kvs value inserts in the outlets.
• High flexibility. The heating system can be constructed or extended in stages without the need to repeat the hydronic balancing process. Simply adjust the circulating pump setting to the new system requirements, and you’re done!

DIMENSIONING

• Simple valve dimensioning thanks to the larger nominal flow.
• Simple selection of 6-way valve without the need to calculate the Kvs value, because it is only used as a switchover valve.
• Hydronic calculation based on the minimum differential pressure required at the reference valve and on the pressure drop of the system under nominal conditions.
• Verification of control valve authority not necessary.
• Simple selection of suitable actuator.
• HySelect helps with hydronic calculations.

COMMISSIONING

• Simple presetting of maximum flow at each valve.
• Flows and all parameters set directly using the HyTune app.
• Menu-driven settings, displayed in graphical form in the HyTune app.
• Parameter settings in other identical drives can simply be duplicated.
• The flow and the current differential pressure can be directly measured, helping you to optimise the pump head for maximum energy efficiency.
• TA-Scope uses the outstanding diagnostic features of the IMI TA valves to detect and correct all potential.

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<td>A3</td>
<td>TA-6-way valve</td>
<td>Control Valves</td>
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Four-pipe heating and cooling system

Recommended

Anwendungen

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<tr>
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</table>

**Legend:**

- **TA-6-way valve:** Special valve to switch between heating and cooling
- **PIBCV:** Pressure-independent balancing and control valve (TA-Modulator) with TA-Slider 160 CO actuator (automatic adjustment of planned flow for heating and cooling)
- **BV:** Balancing valve
- **VSP:** Variable speed pump
- **FCU:** Fan coil unit
- **AHB:** Radiant ceiling panels
- **EXCH:** Heat exchanger

---

1) Optional/recommended for flow measurement and system diagnostics
Case study

Discover how tailor-made products, value-enhancing services and commissioning efficiency were crucial for the success of this project.

Kalvebod Brygge
OPP Kalvebod Brygge is a completely new office building in the centre of Copenhagen, which covers an area of 40,000 m². It hosts important players of the region such as the Danish Railroads, Danish Energy Agency, Danish Transport, Construction and Housing Authority and The Danish Road Directorate.

The challenge
The project is a partnership between the public and private sector where project handling, commissioning, daily operation, maintenance and financing were all covered by a single contract between the government and the private sector.

This demanded highly reliable solutions and timely delivery of products. In addition, the BMS (Building Management System) supplier had specific requirements since they had a strong preference for KNX solutions on field level and actuators with low light or noise emission to not disturb the environment.

The solution
Our TA-Slider 160 KNX solution was the perfect match to our customer’s needs; it met the requirements of the BMS supplier and thanks to a tailor-made solution by IMI Hydronic Engineering the KNX protocol was adjusted to include an option to shut off the actuator’s lights.

In addition, this digitally configurable actuator, gave the installation company a competitive advantage thanks to fast and reliable product commissioning.

Furthermore, the BMS management system will benefit the future of the operation by ensuring it is effectively working at all times.

The Outcome
IMI Hydronic Engineering delivered 1550 TA-Slider 160 KNX actuators and was also able to also cross sell 1550 TRV-3 Calypso radiator valves.

Reliable products, value-enhancing services and commissioning efficiency were definitely crucial aspects for the success of this collaboration.

FACTS
Project Type: Office Building
Location: Copenhagen, Denmark
Owner: Bygningsstyrelsen
Consultant: MOE A/S
Architect: Arkitema Architects
System integrator: Grue & Hornstrup
Gross area: 40,000 m²

PRODUCTS INSTALLED:
- TA-Slider 160 KNX
- TRV-3 Calypso
Discover how digitally configurable actuators could deliver high-performing climate control technologies to 18,000 apartments.

NSHAMA Town Square
From concept to completion, planning and installing an ideal indoor climate for NSHAMA Town Square  
A major new development offering the very latest in contemporary living, NSHAMA Town Square in Dubai comprises 3,000 townhouses, 18,000 apartments and a range of hospitality facilities spread across 750 acres of land.

The solution  
The bespoke solution demanded an innovative combination of a range of leading-edge TA solutions to meet the customer's demanding requirements. Both standard and our ground-breaking digitally configurable actuators were installed, alongside combined balancing and control valves, balancing valves and a combination of other components.

The involvement of IMI Hydronic Engineering’s experts from the planning stage onwards, has helped ensure significant value add throughout the project lifecycle. The solution will deliver an ideal indoor climate, minimise wear and tear on critical system components and deliver optimal energy efficiency for years to come.

FACTS

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<tr>
<td>Location:</td>
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<td>Consultant:</td>
<td>Arif &amp; Bintoak</td>
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<td>Gross Area:</td>
<td>750 acres</td>
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HySelect enabled our engineers to verify the optimal system pump head, determine the index circuit and identify the ideal location and setting of the pump sensor to deliver the most energy-efficient chilled water network prior to installation.

PRODUCTS INSTALLED:

- TA-Fusion
- TA-Slider 160 standard version
- TA-Slider 750 standard version
- EMO TM
- STAF
- TA-BAV
- TA 60
- TA-BTV
- TA-STR
- TA-NRV
Discover how the TA-6-way valve was able to deliver efficiency and control to a combined chilled and hot water climate control system.
A world’s first for community hubs, Harbord Diggers Memorial Club is creating an ideal indoor climate for entertainment, leisure and wellbeing.

Improving the lives of the local community, both young and old, is the main focus of the redevelopment of the Harbord Diggers Memorial Club. It will provide a safe and secure living accommodation for older residents, while simultaneously delivering superb leisure facilities for the community as a whole.

The challenge
The mixed-use nature of the project demanded a hydronic system capable of handling both chilled and hot water climate control. The solution would also have to employ innovative sequencing technologies to minimise piping and controls components and make the best use of limited space.

The solution
A modulating system capable of providing accurate flow control to terminal units was seen as the ideal solution. IMI Hydronic Engineering specified a bespoke solution using a combination of our ground-breaking digitally configurable actuators TA-Slider 160 with bus communication, pressure independent balancing and control valves, TA-Modulator and the recently launched TA-6-Way-Valve.

It’s a revolutionary solution that enables heating and cooling modes to be precisely controlled via single pipe system. Aside from delivering unparalleled flow control accuracy, it eliminates the need for multiple valves and actuators and reduces both overall cost and the space taken up by the installation. And with the flexibility and ease-of-use provided by our leading-edge programmable digital actuators, ensuring maximum and minimum flow rates and a comfortable indoor climate at the touch of a button has never been easier.

FACTS

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<td>Mounties Group</td>
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<td>Gross area:</td>
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</table>

PRODUCTS INSTALLED:
- TA-6-way valve
- TA-Slider 160 plus
- TA-Modulator
Your strong partner with global experience

Maracanã Stadium, Rio de Janeiro

Our control and balancing valves delivered an energy efficient indoor climate in Brazil’s largest stadium with cooling capacity of 10.6 MW.

Gardens by the Bay, Singapore

IMI TA valves ensure accurate temperature control without compromising on energy efficiency for over 93,000 plants of more than 1,160 species.

Burj Khalifa Tower, Dubai

The world’s tallest building, 828 meters, 160 storeys, 8,000 IMI TA valves, commissioned by IMI Hydronic Engineering.

Orhideea Towers, Bucharest

A complete IMI TA controls solution was installed to deliver accurate temperature control in the 37,000m² commercial property.

Le Trèfle Building, Geneva

Changeover system commissioned with 1,000 TA-Slider 160 plus actuators. Digital configuration with TA-Dongle allowed to reduce by 50% the commissioning time versus the initial solution.

www.imi-hydronic.com