

Project References

| Overseas   |
|--|
| THAI OIL CLEAN FUEL PROJECT                            |
| MIDOR REFINERY EXPANSION                               |
| FAWLEY STRATEGY (FAST) PROJECT                         |
| EPCM CAKRA DONYA PROJECT                               |
| CRUDE FLEXIBILITY PROJECT                              |
| SABIC TEESSIDE IMPROVEMENT PROJECT                     |
| SHELL FRANKLIN PROJECT                                 |
| SINGAPORE PROJECT                                      |
| BAYTOWN CHEMICAL EXPANSION PROJECT                     |
| CLEAN FUELS PROJECT                                    |
| GBARAN PHASE 3A ENWHE PROJECT                          |
| ASSIUT HYDROCRACKING COMPLEX PROJECT                   |
| REPLACEMENT OF UNIFLUX HEATERS AT MAA REFINERY PROJECT |
| ST1 GPU-PROJECT  |
| HAIFA CHEMICALS AMMONIA PLANT PROJECT                  |

| China Domestic  |
|---|
| SHENGHONG REFINING AND CHEMICAL INTEGRATION PROJECT                   |
| HENGLI 20 MILLION TONS/YEAR REFINING AND CHEMICAL INTEGRATION PROJECT |
| GUANGDONG PETROCHEMICAL AND REFINING INTEGRATION PROJECT              |

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Refining & Petrochemical System



Application Characteristics of Refining & Petrochemical Valve in System

| Valve Type      | Characteristics  | Advantage  |
|-----------------|--|--|
| Gate Valve      | <ul style="list-style-type: none"><li>It is mainly used for fluid flow or cut-off in pipeline usually not as flow regulation</li><li>Small flow resistance and reliable sealing</li></ul>  | <ul style="list-style-type: none"><li>The erosion of sealing surface is smaller than globe valve;</li><li>Bi-directional torque seal</li><li>Tight shut off</li></ul>  |
| Globe Valve     | <ul style="list-style-type: none"><li>Mainly used in isolation, drain and throttling conditions</li></ul>  | <ul style="list-style-type: none"><li>The stroke is short and the height space required is smaller the Gate valve</li><li>Efficient manufacturing process and easy maintenance</li></ul>   |
| Check Valve     | <ul style="list-style-type: none"><li>Mainly used on non-return pipeline and protect important equipment</li><li>Swing, piston, dual plate etc. diversified options</li></ul>  | <ul style="list-style-type: none"><li>Different valve types available for various chemical service conditions with good flow performance and easy operation</li></ul>  |
| Ball Valve      | <ul style="list-style-type: none"><li>Mainly used for guiding and cutting off in pipelines</li><li>Pneumatic actuated and hydraulic actuated ball valves applicable for quick open and close conditions, especially for ESDV system</li></ul>  | <ul style="list-style-type: none"><li>It is a wide and common used valve type for fine chemical industry with high flow performance, reliable Sealing and easy operation</li><li>According to the different sealing structure it can also be used for suspended solid particles, crude fluid</li></ul> |
| Butterfly Valve | <ul style="list-style-type: none"><li>It has approximate equal percentage flow characteristics and is suitable for pipelines with low flow regulation and pressure loss requirements</li><li>Suitable for frequent or emergency operation conditions</li><li>No closed cavity</li><li>Bi-directional</li></ul> | <ul style="list-style-type: none"><li>Because of its compact structure, it is suitable for the occasion of limited installation and operation space, usually it's the first choice for large size piping</li><li>No risk of cavity overpressure</li></ul>  |

Application

Typical Petroleum refining industry mainly consists of corrosion, high temperature and pressure, flammable fluids features, which ask for specific valve type and structure for better suitable application.

- Crude Oil Storage Unit Service (TOV butterfly valve)
- Oil and Gas Processing Unit Service (Axial flow check valve)
- High Temperature and Pressure Ethylene Unit (Y-type globe valve)

- High Temperature Valve for Hydrocracking Unit and SAR Unit
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Refining & Petrochemical

As a well-known international industrial valve manufacturer, Neway is dedicated to the production and R&D of industrial valves. Neway is committed to providing complete industrial valve solutions to all industries through advanced engineering and innovation.

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Product Range

| Gate Valve  |                       |                       |                   |                                    |                 |
|---|-----------------------|-----------------------|-------------------|------------------------------------|-----------------|
| Size(IN)  | Pressure Range(CLASS) | End Connection        | Temperature Range | Operation                          | Structral Style |
| 1/2" - 88"  | 150 - 4500            | RF/ RT/J/ BW/ SW/ NPT | -196°C - +650°C   | Manual/ Motor Pneumatic/ Hydraulic | OS&Y            |
| <div><div></div><div><div></div><div></div></div></div> <ul style="list-style-type: none"><li>Fugitive emission design</li><li>Fire safe design</li><li>Full port design with high CV performance</li></ul> |                       |                       |                   |                                    |                 |



| Globe Valve  |                       |                       |                   |                                    |                     |
|--|-----------------------|-----------------------|-------------------|------------------------------------|---------------------|
| Size(IN)   | Pressure Range(CLASS) | End Connection        | Temperature Range | Operation                          | Structral Style     |
| 1/2" - 30"   | 150 - 4500            | RF/ RT/J/ BW/ SW/ NPT | -196°C - +650°C   | Manual/ Motor Pneumatic/ Hydraulic | T-Pattern Y-Pattern |
| <div><div></div><div><div></div><div></div></div></div> <ul style="list-style-type: none"><li>Fugitive emission performance design</li><li>General regulating function</li><li>Y-pattern globe offering higher CV performance</li><li>Integrated seat design for cryogenic globe valve and API 602 compact designed globe</li><li>Fire safe design</li></ul> |                       |                       |                   |                                    |                     |



| Check Valve(Swing Type)  |                       |                |                   |           |                 |
|--|-----------------------|----------------|-------------------|-----------|-----------------|
| Size(IN)   | Pressure Range(CLASS) | End Connection | Temperature Range | Operation | Structral Style |
| 1/2" - 48"   | 150 - 4500            | RF/ RT/J/ BW   | -196°C - +650°C   | N/A       | Swing Type      |
| <div><div></div><div><div></div><div></div></div></div> <ul style="list-style-type: none"><li>Internally assembled hinge pin design, minimize external leakage points</li><li>Ball-like pin structure provide self-alignment, which ensure the stable sealing performance</li><li>Optimal flow design &amp; the maximum flow capacity by fluid analysis software simulation</li><li>Dedicated accurate and match grinding to guarantee the sealing performance in low temperature</li><li>Fire safe design</li></ul> |                       |                |                   |           |                 |



| Check Valve(Piston Type)   |                       |                       |                   |           |                      |
|--|-----------------------|-----------------------|-------------------|-----------|----------------------|
| Size(IN)   | Pressure Range(CLASS) | End Connection        | Temperature Range | Operation | Structral Style      |
| 1/2" - 2"  | 150 - 2500            | RF/ RT/J/ BW/ SW/ NPT | -196°C - +650°C   | N/A       | Piston/ Lifting Type |
| <div><div></div><div><div></div><div></div></div></div> <ul style="list-style-type: none"><li>Integral closed die forged for flanged body</li><li>Body guided &amp; spring return disc structure, avoid operation jamming and vibration</li><li>To prolong the service life, the seal surface is made of cobalt-based alloy by weld overlay</li><li>Fire safe design</li></ul> |                       |                       |                   |           |                      |



| Check Valve(Dual-plate Type)   |                       |                  |                   |           |                 |
|--|-----------------------|------------------|-------------------|-----------|-----------------|
| Size(IN)   | Pressure Range(CLASS) | End Connection   | Temperature Range | Operation | Structral Style |
| 2" - 76"   | 150 - 2500            | LUG/RF/Wafer RTJ | -196°C - +650°C   | N/A       | Dual-plate Type |
| <div><div></div><div><div></div><div></div></div></div> <ul style="list-style-type: none"><li>Short length, light weight and compact structure</li><li>Low flow resistance with desirable flow capacity, without water hammer</li><li>Retainerless design, no external leakage point</li><li>Superior sealing capability via specialized production process</li><li>Fire safe design</li></ul> |                       |                  |                   |           |                 |



| Floating Ball Valve  |                       |                |                   |                   |                                 |
|--|-----------------------|----------------|-------------------|-------------------|---------------------------------|
| Size(IN)   | Pressure Range(CLASS) | End Connection | Temperature Range | Operation         | Structral Style                 |
| 1/2" - 10"   | 150 - 1500            | RF             | -196°C - +650°C   | Manual/ Pneumatic | One piece type/ Side entry type |
| <div><div></div><div><div></div><div></div></div></div> <ul style="list-style-type: none"><li>Fire-safe &amp; anti-static design</li><li>Blow-out proof stem</li><li>ISO 5211 top flange</li><li>Optional locking device</li><li>Optional fugitive emission design</li></ul> |                       |                |                   |                   |                                 |



| Trunnion Mounted Ball Valve  |                       |                |                   |                             |                       |
|--|-----------------------|----------------|-------------------|-----------------------------|-----------------------|
| Size(IN)   | Pressure Range(CLASS) | End Connection | Temperature Range | Operation                   | Structral Style       |
| 2" - 60"   | 150 - 2500            | RF/ RT/J/ BW   | -196°C - +650°C   | Manual/Pneumatic/ Hydraulic | Top Entry/ Side Entry |
| <div><div></div><div><div></div><div></div></div></div> <div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div></div><div></div></div><div><div></div><div></div></div></div><div><div><div></div><div></div></div><div><div></div><div></div></div></div></div> <ul style="list-style-type: none"><li>Fire safe &amp; anti-static design</li><li>Blow-out proof stem</li><li>Double block and bleed</li><li>Cavity pressure self-relief</li><li>Emergency sealant injection</li><li>On-line maintenance can be achieved by top-entry series</li><li>Interchangeable between single piston effect and double piston effect seat</li><li>Optional locking device</li><li>Optional fugitive emission design</li></ul> |                       |                |                   |                             |                       |



| Concentric Butterfly Valve   |                       |                |                   |                             |                 |
|--|-----------------------|----------------|-------------------|-----------------------------|-----------------|
| Size(IN)   | Pressure Range(CLASS) | End Connection | Temperature Range | Operation                   | Structral Style |
| 2" - 72"   | 150                   | Lug/ RF        | -35°C - +204°C    | Manual/Pneumatic/ Hydraulic | Side Entry      |
| <div><div></div><div><div></div><div></div></div></div> <ul style="list-style-type: none"><li>No connect pin between disc and stem</li><li>Three-layer flange sealing design to avoid outside leakage</li><li>Anti-stem blow out</li></ul> |                       |                |                   |                             |                 |



| Double Offset Butterfly Valve   |                       |                |                   |                             |                 |
|---|-----------------------|----------------|-------------------|-----------------------------|-----------------|
| Size(IN)  | Pressure Range(CLASS) | End Connection | Temperature Range | Operation                   | Structral Style |
| 2" - 48"  | 150 - 600             | Lug/ RF        | -50°C - +200°C    | Manual/Pneumatic/ Hydraulic | Side Entry      |
| <div><div></div><div><div></div><div></div></div></div> <ul style="list-style-type: none"><li>Bi-directional zero leakage</li><li>Low torque &amp; low friction</li><li>Easy to take out and replace the seat</li><li>Fire-safe seat optional</li></ul> |                       |                |                   |                             |                 |



| Triple Offset Butterfly Valve   |                       |                |                   |                             |                       |
|---|-----------------------|----------------|-------------------|-----------------------------|-----------------------|
| Size(IN)  | Pressure Range(CLASS) | End Connection | Temperature Range | Operation                   | Structral Style       |
| 2" - 120"   | 150 - 2500            | Lug/ RF/ RTJ   | -196°C - +650°C   | Manual/Pneumatic/ Hydraulic | Top Entry/ Side Entry |
| <div><div></div><div><div></div><div></div></div></div> <ul style="list-style-type: none"><li>No rubbing, longer life</li><li>Laminated seal ring and solid metal seal ring optional and interchangeable</li><li>Fire safe design</li><li>Torque seated to achieve higher grade seal performance</li><li>Easy Maintenance at site</li></ul> |                       |                |                   |                             |                       |



Technical Features

- #### High Temperature and Pressure Valves

  - Pressure seal bonnet recommended for Gate & Globe
  - Casting and die-forging valve body optional
  - Graphite sealing ring design for pressure seal bonnet
  - By pass structure optional
  - Flexible wedge, split wedge, parallel slide gate optional
- #### Ultra-high Temperature Valves

  - Welding bonnet recommended for Gate & Globe & Butterfly
  - Casting and die-forging valve body optional
  - Extension bonnet & Heat dissipation plate
  - Live load packing
- #### Hydrogenation Valves

  - Material composition and Grain size control
  - HIC& SSC testing
  - Nondestructive testing
  - Forged body design optional
- #### Fugitive Emission Valves

  - Different constructions of dynamic seal
  - Multi layers of bellow, high service life
  - Certified graphite packing (API, ISO, TA-LUFT, SHELL SPEC)
- #### Cryogenic Service Valves

  - Bonnet extension
  - Pressure relief
    - Relief hole for gate & floating ball valve
    - DIB-2 seats system for TM ball valve
  - Cryogenic treatment
  - Lip seal structure for Ball Valve

Certificates of Neway Refining & Petrochemical Industry Valve

(including but not limited to the following certificates)

- CE, ATEX Certification for the European Union
- Special Equipment Manufacturing License in China
- Fugitive Emission certificate
- Fire-Safe Certificate

Complete Solutions for Industrial Valves

#### About Neway

Neway is a global valve manufacturer committed to the research/development, production, and sale of high-quality industrial valves. Our product scope includes Gate, Globe, Check, Ball, Butterfly, Nuclear, Control, Subsea, Safety valves and Well-Head equipment. Our valves are widely supplied to industries including Oil & Gas, Refining, Chemical/Petrochemical, Pipeline, LNG, On/Offshore Exploration & Production, Power, and Renewable/Green Energy applications. Neway's owned and vertically integrated R & D center, forging/casting plants, and production/assembly bases allow us to control all business processes to ensure a stable supply chain, rigorous quality control standards, and competitive pricing/delivery options. Approximately 3,500 employees all over the world strive to provide Neway's superior products and excellent service to our customers.

#### Neway Factory

Neway adopts the group multi-factory management model and has one major valve assembly plant in China with 230,000m<sup>2</sup> coverage , one API 6A valve plant, three casting foundries, one forging factory and new plant for Butterfly valve. Neway also has a joint venture factory in Saudi Arabia.

#### R&D

In order to meet the application requirements of valves in different fields, Neway applies advanced software (ANSYS, FE-SAFE, MathCAD, Autodesk Simulation CFD, Foxpro, NX, etc.) for product research and development, and has established professional material laboratory and special engineering test, which can simulate various extreme conditions and lay a solid foundation for the research and development of high-end valves.

#### Sales Network

Neway implements global marketing and sales strategy, has established sales companies and offices subordinate to China HQ in China and overseas, such as America, Netherlands, Italy, Singapore, UAE and Nigeria, and established strategic partnership with more than 80 overseas agents and distributors around the world.

#### Quality Guarantee

Neway is committed to providing zero defects valves to our customers and controls quality from order input, production process, final test to on-site service. Neway products obtained all major industrial qualifications including ISO9001, API 6A, API 6D, CE/PED, CU-TR, ASME N & NPT, TA-Luft, ABS, Norsok and fire safe, FE certificate, etc by our continuous efforts. Moreover, Neway has been approved as a qualified supplier by many world famous energy users. With its high-quality products and services, Neway has also been awarded the title of strategic supplier or "Best partner" by many customers.

