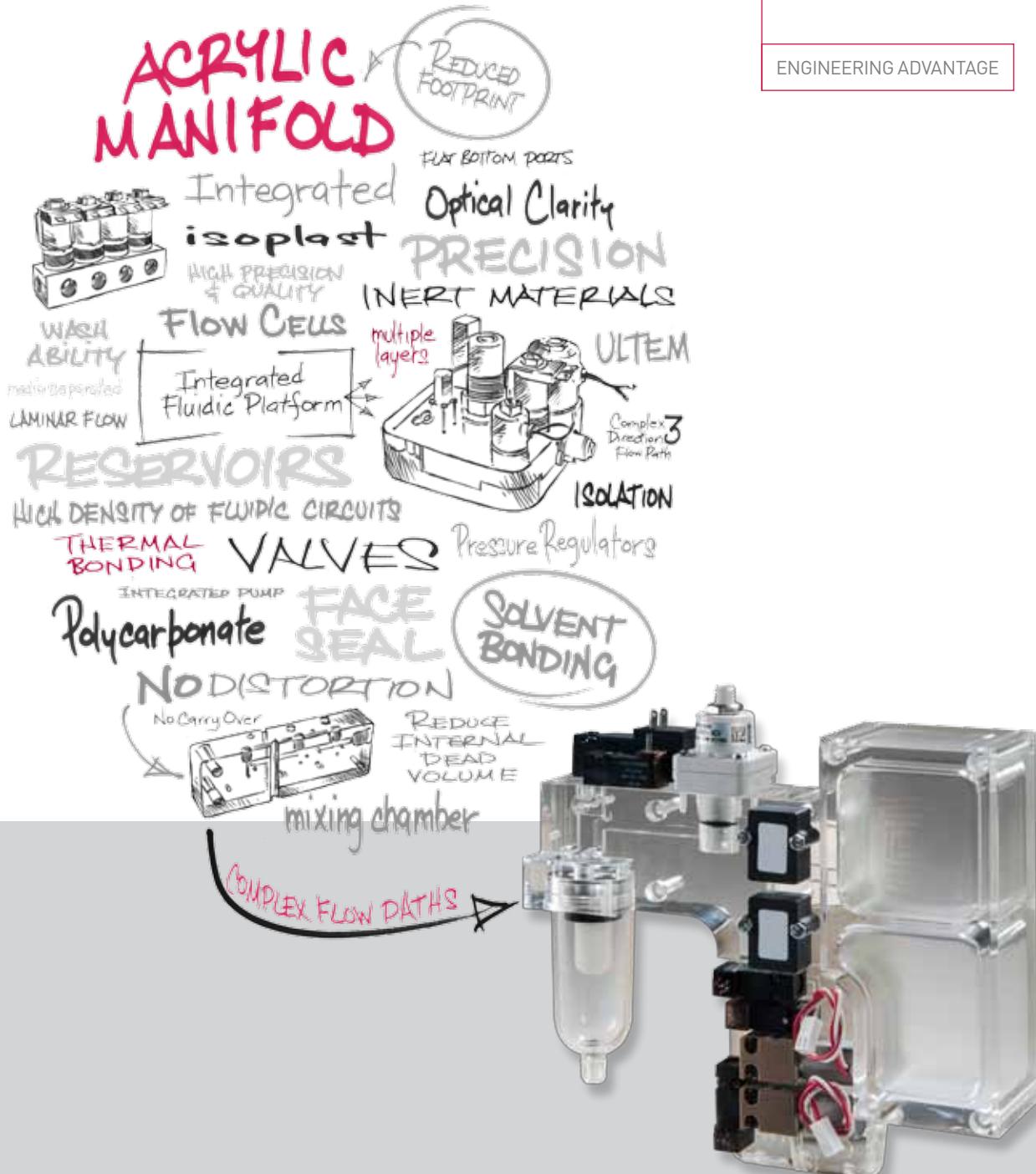


MANIFOLDS
INNOVATIVE SOLUTIONS TO
INCREASE QUALITY AND
REDUCE COST
YOU CAN SEE
OUR THINKING

ENGINEERING ADVANTAGE



CREATING ADVANTAGE WITH PEOPLE, PRODUCTS, INNOVATION AND SERVICES

A WORLD LEADER IN MOTION AND FLUID CONTROL TECHNOLOGIES, NORGREN WORKS CLOSELY WITH CUSTOMERS TO GAIN A DEEPER UNDERSTANDING OF THEIR ENGINEERING NEEDS, AND THEN CONNECTS ITS PEOPLE, PRODUCTS AND EXPERTISE TO GIVE THEIR EQUIPMENT AND THEIR BUSINESS A CLEAR ADVANTAGE.

WE CALL THIS ENGINEERING ADVANTAGE.



WITH A SALES AND SERVICE NETWORK IN 75 COUNTRIES – AS WELL AS MANUFACTURING CAPABILITY IN THE USA, GERMANY, CHINA, UK, SWITZERLAND, CZECH REPUBLIC, MEXICO AND BRAZIL – WE HAVE GENUINE GLOBAL CAPABILITY.

We also think local and niche: on focusing our resources on delivering a specific product, solution or service to meet our customers' needs.

As a responsible business, we're committed to working practices which contribute positively to the environments in which we work. Our products – including our brand new IVAC – are setting new standards for efficiency, helping customers reduce air usage and energy costs while improving overall performance. We offer:

- **INNOVATION & TECHNICAL EXCELLENCE** through four global technical centres and the experience of specialist engineering teams. We have a portfolio of patented solutions, and are always developing new and cost-effective technologies
- **HIGH PERFORMANCE PRODUCTS** covering pneumatic actuators, airline preparation, fittings and valves. We can supply these either singly to meet MRO needs, or combined in powerful customised solutions
- **EXCEPTIONAL LOCAL SERVICE** delivered through Key Account Management teams and sector specialists committed to understanding and meeting our customers' engineering challenges, wherever they are

CREATING ADVANTAGE WITH MANIFOLDS

INNOVATION & TECHNICAL EXCELLENCE

Our highly experienced engineering and production teams design and manufacture custom manifolds from Aluminum, Brass, Stainless Steel and a wide range of plastics, from Teflon to Acrylics. Our engineers incorporate the latest techniques and technologies to ensure the best design for your application - whether your unique application requires a simple machined manifold or full integration of a complex fluidic circuit in a multi-layered, multi-channel manifold.

HIGH PERFORMANCE PRODUCTS

With our extensive selection of products, we will be able to design a manifold solution that will deliver some or all of the following advantages.

- Reduce overall solution footprint and weight
- Eliminate potential leak paths
- Integrate multiple discrete components such as fittings, valves, pressure regulators, check valves, restrictors, filters, pressure and flow sensors
- Incorporate complex pneumatic and/or fluidic circuits directly into the manifold
- Allow for the maximum number of components on a given manifold face (high density of fluid circuits)
- Consistently maintain the exact fluidic volume between discrete components
- Eliminates potential dead spaces within the manifold (elimination of dead (static) volumes)
- Improved reliability
- Complex multi-directional flow paths

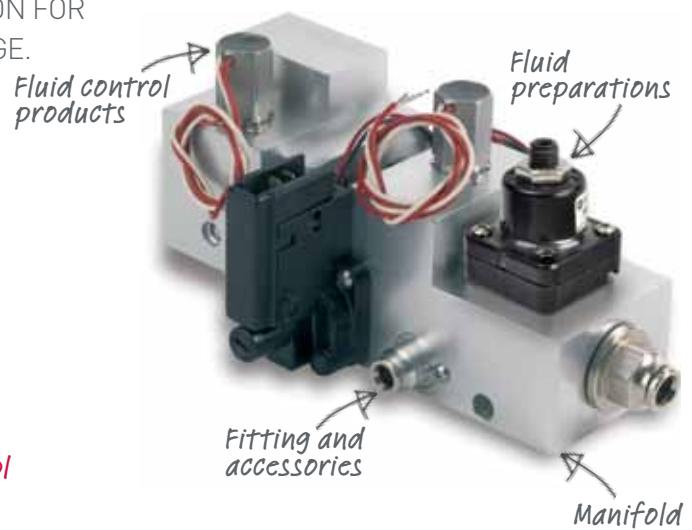
EXCEPTIONAL LOCAL SERVICE

We're a global business with extensive resources, but our focus is always local. Whether you're being helped by a Key Account manager or working directly with one of our design engineers, we will work with you and your team to determine the best solution for your challenge.



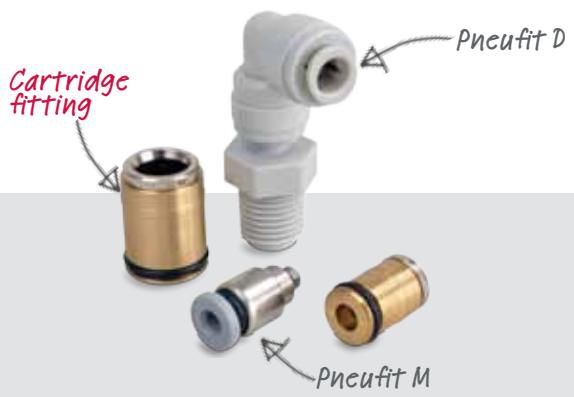
CREATING YOUR CUSTOM MANIFOLD

MANIFOLDS ENABLE COMPONENT INTEGRATION FOR A COMPACT, CLEAN, AND MANAGEABLE PACKAGE. THESE PRODUCTS REPRESENT SOME OF THE UNLIMITED COMPONENT POSSIBILITIES.



Fluid Control Products

- High flow proportional controls
- Low watt digital solenoids
- 2/2 and 3/2 Media Separated Valves



Fitting and Accessories

- Cartridge, threaded or coupling designs
- Easily connected
- Check and relief valves



Fluid Preparations

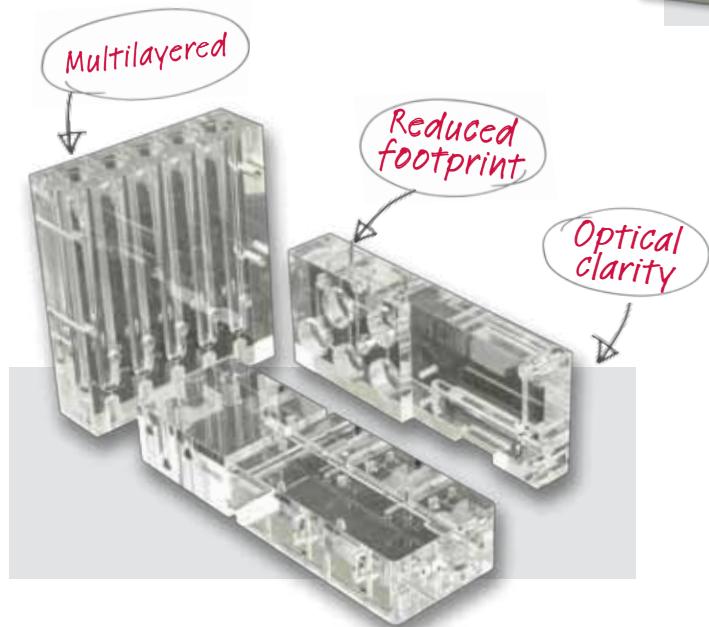
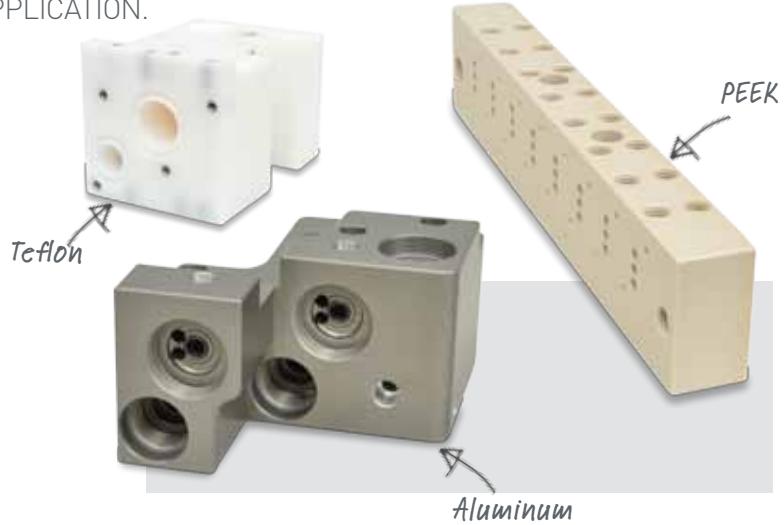
- Precision and manifold mount pressure regulation
- Oxygen compatible
- Filtration down to 0.01 micron

CHOOSE YOUR MANIFOLD

NORGREN OFFERS A VARIETY OF MANIFOLD MATERIALS COMPATIBLE WITH YOUR APPLICATION.

Precision Machined Manifolds

- Robust, compact designs
- Aluminum, SS, Brass, Delrin and Kynar
- Burr free intersections
- NPT straight thread and flat bottom ports



Precision Acrylic Manifolds

- Multi-layered designs
- Custom geometries and volumes
- Complex three dimensional flow paths
- Thermal or Solvent bonded
- Flame and vapor polishing



COMPLETE MANIFOLD SOLUTIONS

NORGREN CAN CONFIGURE MANIFOLDS FOR YOUR CUSTOM SOLUTION



Custom Complete Acrylic Solutions

- Simplified Designs
- Reduced overall foot print
- High density fluid circuitry
- Integrated control components



Custom Complete Machined Solutions

- Improved reliability
- Simplified designs
- Reduced complexity
- Out of the box ready



ENGINEERING
ADVANTAGE



CUSTOMER CHALLENGE

RAIL



ENERGY



FOOD & BEVERAGE



CUSTOMER CHALLENGE

- Low profile air horn control
- In-field modification

NORGREN SOLUTION

- Low profile for ceiling mounting
- Low pressure drop



CUSTOMER CHALLENGE

- Simple to use system
- Meet certifications levels

NORGREN SOLUTION

- Increased Safety
- Easy serviceability



CUSTOMER CHALLENGE

- Expandable solutions
- Reduced maintenance

NORGREN SOLUTION

- Easy expandability
- Minimal lime scale for



INDUSTRIAL AUTOMATION



LIFE SCIENCE



COMMERCIAL VEHICLE



CUSTOMER CHALLENGE

- Reduce leaks
- Centralized controls

NORGREN SOLUTION

- Reduced connections
- Reduced footprint



CUSTOMER CHALLENGE

- Small envelope
- Ensure precise fluid dispense

NORGREN SOLUTION

- 2-channel syringe pump
- Simplified fluidic circuit



CUSTOMER CHALLENGE

- Consolidate air accessories
- Handling discrete input/output

NORGREN SOLUTION

- Reduction of potential leaks
- Faster installations



**AUSTRALIA**

Tel: +61 3 9213 0800
Fax: +61 3 9213 0890
enquiry@norgren.com.au

AUSTRIA

Tel: +43 22 36 63 520
Fax: +43 22 36 63 520 20
enquiry@at.norgren.com

BELGIUM & LUXEMBURG

Tel: +32 2 333 44 11
Fax: +32 2 333 44 88
enquiry@be.norgren.com

BRAZIL

Tel: +55 11 5698 4000
Fax: +55 11 5698 4001
vendas@norgren.com

CANADA

Tel: +1 303 794 2611
Fax: +1 303 795 9487
enquiry@usa.norgren.com

CHINA

Tel: +86 21 2416 1800
Fax: +86 21 2416 1900
info@norgren.com.cn

CROATIA

Tel: +386 4 5317550
Fax: +386 (64) 7000949
info@si.norgren.com

CZECH REPUBLIC & SLOVAKIA

Tel: +420 465 612 879
Fax: +420 465 612 908
info@cz.norgren.com

DENMARK

Tel: +45 44 91 41 66
Fax: +45 44 91 15 60
norgren@norgren.dk

FINLAND

Tel: +358 95 712 140
Fax: +358 95 712 1440
arki@norgren.fi

FRANCE

Tel: +33 1 60 04 95 95
Fax: +33 1 60 43 18 86
norgren@norgren.fr

GERMANY

Tel: +49 2802 49-0
Fax: +49 2802 49356
info@norgren.de

HONG KONG

Tel: +852 2492 7608
Fax: +852 2498 5878
enquiry@norgren.com.hk

HUNGARY

Tel: +36 1 284 9000
Fax: +36 1 284 8980
info@norgren.hu

INDIA

Tel: +91-120-4089500
Fax: +91-120-4089599
enquiry@norgren.co.in

IRELAND

Tel: +353 1 8300 288
Fax: +353 1 8300 082
dublin@norgren.com

ITALY

Tel: +39 039 60 631
Fax: +39 039 60 63 301
info@norgrenitalia.it

JAPAN

Tel: +81 6 6876 8913
Fax: +81 6 6876 8929
toiawase@norgren.com

MALAYSIA

Tel: +60 3 5121 9255
Fax: +60 3 5121 2889
sales@norgren.com.my

MEXICO

Tel: +52 55 1500 64 00
Fax: +52 55 1500 64 30
neumatica@norgren.com.mx

NETHERLANDS

Tel: +31 (0)36 548 6828
Fax: +31 (0)36 548 6838
enquiry@nl.norgren.com

NEW ZEALAND

Tel: +64 9 579 0189
Fax: +64 9 526 3398
enquiry@norgren.co.nz

NORWAY

Tel: +47 22 90 80 80
Fax: +47 22 90 80 81
norgren@norgren.no

POLAND

Tel: +48 22 518 9530
Fax: +48 22 518 9531
biuro@norgren.pl

ROMANIA

Tel: +40 31 425 17 06
Fax: +40 31 425 17 08
office@norgren.ro

RUSSIA

Tel: +7 499 729 56 09
Fax: +7 499 729 57 49
sales@norgren-imu.ru

SINGAPORE

Tel: +65 6862 1811
Fax: +65 6862 1886
sales@norgren.com.sg

SLOVENIA

Tel: +386 4 531 7550
Fax: +386 4 531 7555
info@si.norgren.com

SPAIN

Tel: +34 93 748 9800
Fax: +34 93 783 0838
norgren@norgren.es

SWEDEN

Tel: +46 40 59 51 00
Fax: +46 40 49 50 90
info@norgren.se

SWITZERLAND

Tel: +41 71 973 82 00
Fax: +41 71 973 82 01
norgren@norgren.ch

TAIWAN

Tel: +886 33162673
Fax: +886 33162910
enquiry@norgren.com.tw

THAILAND

Tel: +66 2750 3598/99
Fax: +66 2750 3855
sales@norgren.co.th

UK

Tel: +44 1543 265 000
Fax: +44 1543 265 827
advantage@norgren.com

USA

Tel: +1 303 794 2611
Fax: +1 303 798 4856
enquiry@usa.norgren.com

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