



30 年汽车管路『智』造
30 - year automobile tubing intelligence



浙江富铭工业机械有限公司
ZHEJIANG FOMAY INDUSTRIAL MACHINERY CO.,LTD

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关于我们 About us

浙江富铭工业机械有限公司创建于 1982 年。是一家专业致力于商用车管路以及相关汽车零部件研发、制造、销售为一体的公司。公司总部位于浙江临海，下设长春、成都两个分公司，总部占地面积 150 亩，建筑面积 98000 平方米，拥有企业员工 400 多人，2016 年实现销售 3 亿元。

公司拥有国内领先的研发中心、国际先进的工艺装备、专业的团队和完善的管理体系，为国内外 20 多家整车客户提供最优的管路解决方案。经过 2013 年业务分割重组，一直是一汽解放、江铃集团、重汽集团等主机厂的核心供应商和重要合作伙伴。

公司秉承“精益、诚信、创新、卓越”的经营理念，专注于汽车轻量化和低排放的挑战，为民族绿色节能的汽车工业而努力。

Zhejiang Fomay Industrial Machinery Co.,Ltd, founded in 1982, is a professional automobile spare parts manufacturer integrated with R&D, manufacture and sales. The headquarter is located in Linhai City, Zhejiang Province, Eastern China, with two subsidiaries in Changchun City, Northern China and Chengdu City, Western China. It covers an area of 100,000m² with building area of 98,000m² in headquarter, with 400 staff members.

Fomay has senior leading R&D center, advanced equipment, professional team and perfect management system, supplying the most optimal pipeline solutions for more than 20 OEM customers at home and abroad. Since reorganization in 2013, Fomay has been a core supplier and important partner of OEM such as FAW, JMC Group, Sinotruk Group.

Adhering to the principle as “Improving, Honest, Innovative, Excellent”, Fomay is dedicated to the target of light vehicle weight and low emission, making effort to contribute to green and energy saving automobile industry.

企业荣誉 Enterprise Honor



成都分公司 Chengdu Subsidiary



长春分公司 Changchun Subsidiary

FOMAY 电加热尿素管是自主研发设计生产，根据不同的SCR系统性能特点（例如直喷泵、气辅助泵、气驱泵等），采用特殊材料和工艺开发出的可以有效降低热损耗、降低解冻功率、适合客户需求的产品。经多年的市场验证，不断进行结构优化和工艺升级，使产品优越性、一致性和可靠性更高；目前广泛适用于从国Ⅳ到国Ⅵ各阶段的道路、非道路SCR技术路线的排放系统。



FOMAY Electrically Heated SCR Tube Assembly is a self- R&D product with the application of special material and processing craft. It efficiently reduces heat loss and defrosting power, meeting different dose-driving ways (such as direct injection pump, air-assisted pump, air drive pump, and etc.) in SCR system. After years of market validation, we have constantly upgraded structure optimization and processing craft, and thus lifting products superiority, consistency and reliability. Now it is widely used in on-road and off-road China IV to IV standard automobiles with SCR technology emission system.



FOMAY 非加热尿素管

Non-heating Type SCR Tube Assembly



项目 Items	管体规格 (外径 mm × 内径 mm) Tube size (OD × ID)mm		
	5 × 3	6 × 4	8 × 6
管体材料 Material	ETFE/PA12		
连接方式 Connecting	插接 Insert	插接 Insert	插接或焊接 Insert or welding
接头型号 Connector	SAE J2044		
温度范围 Temperature range	-40℃ -125℃		
爆破压力 Burst pressure	>10 MPa	>8 MPa	>6 MPa
最小弯曲半径 Min. bend radius	$R \leq 25$	$R \leq 30$	$R \leq 40$
定型最小半径 Min. Finalizing radius	$R \leq 10$	$R \leq 15$	$R \leq 25$
相关标准 Related standard	DIN73378		

ETFE+PA12 复合尿素管的优点

ETFE+PA12 Composite SCR tube advantage



项目 Items		ETFE/PA12	普通 PA12 或者 PA11 General PA12 or PA11
尿素溶液的腐蚀性 Corrosivity of urea solution		18 g/m ² .day	>120 g/m ² .day
尿素溶液的渗透性 Permeability of urea solution	50℃ × 120h 浸泡后的重量变化率 % The weight change rate after immersion	1.10%	1.57%
	120℃ × 168h 浸泡后的重量变化率 % The weight change rate after immersion	2.84%	PA11 8.7%, PA12 7.84%
流体阻力摩擦系数 Fluids friction resistance index		0.05-0.08	0.18-0.4
接触角 (减少表面附着) Contact angle		103°	84°

FOMAY 电加热尿素管

Electrically Heated SCR Tube Assembly



项目 Items		相关性能和指标 Related performance and indicators
材 料 Material	内层管（外径 * 内径）Inner Tube (OD*ID)	ETFE/PA12 复合管 Composite tube （8mm×6mm）
	加热层 Heating layer	NiCr 加热丝 + 铝箔层 heating strip+ Aluminum foil layer
	保温层 Insulating layer	PVC
	保护层 Protective layer	PA6 波纹管 Corrugated tube （OD Φ18.8mm）
快插接头型号 Connectors		SAE J2044
接头连接型式 Connecting		插接或者焊接 Insert or welding
接头防水等级 Waterproof grade of connector		IPX6K \ X7K \ X9K
快插接头拔脱力 Pull-out force of quick connector		≥ 500N
电线引线接头型号 Leading wire connector type		AMP282104-1\ DJ7021Y-2-10
使用电压范围 Voltage range		12V - 32V
温度范围 Temperature range		-40℃ - 125℃
爆破压力 Burst pressure		≥ 6 MPa
最小弯曲半径 Min. bend radius		R ≤ 60mm
定型最小半径 Min. finalizing radius		R ≤ 30mm
加热功率（每米）Heating power (per meter)		15W-40W （可调整 adjustable）
解冻时间 Defrosting time		-40℃时，完全解冻时间≤ 30min（可调整 adjustable）
相关标准 Related standard		SAE J2044、JA1160-70U JB/T11880.1、JF03-173

FOMAY EPDM 电加热尿素管

Electrically Heated SCR Tube (EPDM)



项目 Items		相关性能和指标 Related performance and indicators
材 料 Material	内层管 Inner tube	EPDM+ 芳纶 +EPDM（针织结构）Aramid fiber + Knitted structure （Φ5±0.5mm）
	加热层 Heating layer	NiCr 加热丝 + 铝箔层 Heating strip+ Aluminum foil layer
	保温层 Insulating layer	PVC
	保护层 Protective layer	PA6 波纹管 Corrugated tube （OD Φ18.8mm）
快插接头型号 Connectors		专用快插接头 Special purpose quick connector
接头连接型式 Connecting		夹箍连接 Clamp connecting
接头防水等级 Waterproof grade of connector		IPX6K \ X7K \ X9K
快插接头拔脱力 Pull-out force of quick connector		≥ 450N
电线引线接头型号 Leading wire connector type		AMP282104-1\ DJ7021Y-2-10
使用电压范围 Voltage range		12V - 32V
温度范围 Temperature range		-40℃ -125℃
爆破压力 Burst pressure		≥ 2.5MPa
最小弯曲半径 Min. bend radius		≤ 35mm
加热功率（每米）Heating power (per meter)		15W-40W （可调整 adjustable）
解冻时间 Defrosting time		-40℃时，完全解冻时间≤ 30min（可调整 adjustable）
相关标准 Related standard		SAE J2044、JA1160-70U JB/T11880.1、JF03-173

FOMAY SAE 快插接头

Quick Connector

类别 Type	图片 Picture	主要规格 Specification	适用范围 Available Range
焊接专用接头 Welding using connector		Φ7.89 or SAE 5/16" (90°)	ID 6mm
		Φ7.89 or SAE 5/16" (180°)	
		Φ9.49 or SAE 3/8" (90°)	
		Φ9.49 or SAE 3/8" (180°)	
橡胶管专用接头 Rubber Hose using connector		Φ6.35 or SAE 1/4" (90°)	ID 5mm
		Φ6.35 or SAE 1/4" (180°)	
		Φ7.89 or SAE 5/16" (90°)	
		Φ7.89 or SAE 5/16" (180°)	
		Φ9.49 or SAE 3/8" (90°)	
		Φ9.49 or SAE 3/8" (180°)	
普通绕线快插接头 General wire wrapped quick connector		Φ6.35 or SAE 1/4" (90°)	ID 6mm
		Φ6.35 or SAE 1/4" (180°)	
		Φ7.89 or SAE 5/16" (90°)	
		Φ7.89 or SAE 5/16" (180°)	
		Φ9.49 or SAE 3/8" (90°)	
		Φ9.49 or SAE 3/8" (180°)	
普通快插接头 General quick connector		Φ6.35 or SAE 1/4" (90°)	ID 3mm ID 5mm ID 6mm
		Φ6.35 or SAE 1/4" (180°)	
		Φ7.89 or SAE 5/16" (90°)	
		Φ7.89 or SAE 5/16" (180°)	
		Φ9.49 or SAE 3/8" (90°)	
		Φ9.49 or SAE 3/8" (180°)	

FOMAY SCR 尿素箱

SCR Urea Tank

随着我国汽车尾气排放法规的进一步实施，FOMAY SCR尿素箱以其强度高、耐腐蚀性强、易安装、个性化设计需求等优点，广泛应用于中重卡、轻卡以及工程机械等 SCR系统上。

As the further implementation of the automobile exhaust emission regulations, Fomay Urea Tank, with its excellent performance in strength, corrosive resistance, easy installation and personalized design, are widely used in SCR system of light trucks, media & heavy trucks and engineering machinery.



产品材料：中密度聚乙烯

产品结构：储存箱和监测（传感器）两部份组成

温度范围：-45℃~85℃

产品工艺：滚塑、吹塑

执行标准：ISO22241、JA 1160-70U-2、JBT 11880

主要规格：16升，25升，38升，60升

Material: MDPE

Components: Tank Body+Level Sensor

Working Temperature: -45℃~85℃

Production Process: Rotational Molding or Blow Molding

Standard: ISO22241、JA 1160-70U-2、JBT 11880

Capacity: 16L, 25L, 38L, 60L

主要性能指标 Main performance Index

内部清洁度 Internal Cleanliness	≤ 0.2mg/L
密封性 Leak tightness	30KPa, 无泄漏 No-leakage
振动耐久 Vibrating Durability	模拟整车振动无损伤 Simulating the vehicle vibration, without damage
耐压性能 Pressure resistance performance	50Kpa, 无泄漏无开裂（允许变形） No leaking, no cracking (deformation is allowed)
低温冲击 Low-Temp impact Performance	介质温度 -40℃, 30J 能量冲击无泄露 At -40℃, no leaking after impaction of 30J
坠落性能 Drop performance	6m 高空坠落无泄露 No leaking, dropped from 6m height



FOMAY 动力转向低压油管

Low Pressure Automotive Power Steering Hose

材料: NBR / 聚酯线 / CPE 或 CSM

Material: NBR / polyester / CPE or CSM

结构: 编织 (或缠绕)

Construction: braided (or spiraled)

形状: 直管或定型管

Shape: straight tube or formed tube

外观: 黑色、表面包布纹

Apperance: black, surface with the fabric pattern

执行标准: SAE J189, GB/T20461, JF01

Executive Standard: SAE J189, GB/T20461,J F01



规格 Specification

公称尺寸 Nominal size(mm)	内径 I.D Tolerance(mm)	外径 O.D Tolerance(mm)	最小爆破压力 Min.Burst Pressure(MPa)
10×17	10±0.5	17±0.5	7.0
13×21	13±0.5	21±0.5	7.0
16×24	16±0.5	24±0.5	5.0
18×26	18±0.5	26±0.5	5.0
23×32	23±0.5	32±0.5	5.0

主要性能指标 Main performance Index

序号 No.	试验性能及试验条件 Test performance and test condition	性能要求 Performance requirments
1	耐脉冲疲劳性 (脉冲压力) Pulse pressure: 0~1.0MPa	100000 次无变形、破裂等 No deformation or breaking after 100,000 times
	脉冲频率 Pulse frequency: 30~40 times / min	
	介质温度 Medium temperature: 135℃ ±2℃	
	环境温度 Environment temperature: 100℃ ±5℃	
2	抗拉试验 Tensile test	接头最小拉脱力 min.pull-out force 1500N
3	耐低温性 (-40℃ ×24h) low temperature resistance	无龟裂、破裂、分层等 No craking, No breaking, No delamination
4	层间粘合力 Adhesive strength between layers	min. 1.8N/mm
5	爆破强度 Burst strength	min. 7.0MPa
6	耐臭氧性 Ozone resistance (50pphm,40℃ ×72h)	无龟裂 No craking
7	长度变化率 length change rate (1.72MPa)	-10%~+0%

FOMAY 动力转向高压油管

High Pressure Automotive Power Steering Hose

材料: NBR / CPE 或 CSM

Material: NBR / CPE or CSM

结构: 钢丝编织

Construction: steel wire braided

外观: 黑色、表面光面

Apperance: black, smooth surface

执行标准: SAE J190, GB/T20461, JF01

Executive Standard: SAE J190, GB/T20461, JF01



规格 Specification

公称尺寸 Nominal size (mm)	内径 I.D Tolerance (mm)	外径 O.D Tolerance (mm)	最大工作压力 Max.Working Pressure (MPa)	最小爆破压力 Min.Burst Pressure (MPa)	最小弯曲半径 Min.Bend Radius (mm)
10×1	10±0.5	18±0.7	18	70	130
12×1	13±0.5	22.1±0.9	16	64	180
16×2	16±0.5	34±0.5	25	100	200

主要性能指标 Main performance Index

序号 No.	试验性能及试验条件 Test performance and test condition	性能要求 Performance requirments
1	耐脉冲疲劳性 (脉冲压力) Pulse pressure: 0~10.3MPa	225000 次无变形、破裂等 No deformation or breaking after 225,000 times
	脉冲频率 Pulse frequency: 30~40 times / min	
	介质温度 Medium temperature: 135℃ ±2℃	
	环境温度 Environment temperature: 100℃ ±5℃	
2	抗拉试验 Tensile test	接头最小拉脱力 min.pull-out force 5338N
3	耐低温性 (-40℃ ×24h) low temperature resistance	无龟裂、破裂、分层等 No craking, No breaking, no delamination
4	层间粘合力 Adhesive strength between layers	min. 1.8N/mm
5	耐臭氧性 Ozone resistance (50pphm,40℃ ×72h)	无龟裂 No craking
6	容积膨胀 Volumetric expansion (8.97MPa ×2min)	19~21cm³/m
7	长度变化率 length change rate (10.3MPa)	-5%~+2%

FOMAY 高温氟橡胶制动软管

High Temperature Fluororubber Brake Hose

FOMAY高温氟橡胶制动软管为国内首创，达到国际先进水平，具有耐高温、耐腐蚀、耐老化、阻燃、抗震、弯曲半径小、使用寿命长、易于安装等特点。可广泛应用于航空、化工、机械、汽车等领域。

FOMAY high temperature FKM brake hose is the initial domestic product, which achieved the international level, this product has characteristics such as high temperature resistant, corrosion resistant, aging resistant, inflaming retarding, anti-vibration, small bend radius, long service life, easy to install. It is widely used in the field of aerospace, chemical, machine and automobiles.



工作温度：-45℃ ~ +260℃，短期可达300℃

爆破压力：高温200℃爆破 > 3MPa，常温爆破压力 > 10MPa

热老化性能：经200℃，168小时高温空气老化后仍能保持3MPa不泄露

使用寿命：脉冲寿命在20万次以上

执行标准：JF01 - 69（联合制订）

The working temperature range from -45℃ ~ +260℃ (in short time, it can get +300℃). at 200℃, the burst pressure is more than 3MPa, at room temperature, the burst pressure is higher than 10MPa, after 200℃ 168 Hrs heat air aging test, the hose still can maintain 3MPa without leaking. The impulse test can exceed 200,000 cycles. We have established the industry standard with China FAW Group Corportation R&D Center.

FOMAY 不锈钢丝编织聚四氟乙烯管

PTFE Tube With Stainless Steel Wire Braiding

FOMAY聚四氟乙烯具有耐热性、化学惰性、低磨损性等特性。广泛适用于商用车制动高温前空气管、发动机的冷却器机油管、以及化学药品和气体导管、工程机械、汽车等其领域。

FOMAY PTFE TUBE and PFA TUBE is provided with performance of high temperature resistant, chemical resistant, low abrasion and none-adherence. With stainless wire performance of braid and textile braid two ways, It is widely be applied in chemical, engineering machine, automotive and other industry.

工作温度：-40℃ ~ +180℃（短时可到200℃）

材料结构：PTFE软管+不锈钢编织

工艺特点：直管式、螺旋式、平波纹

Working Temperature: -45℃ to +180℃ (can endure 200℃ in a short time.)

Construction: PTFE tube + Stainless steel wire braiding

Characteristics: Straight tube, Screw type, flat corrugated stype.



不锈钢丝编织软管规格参数 Stainless Steel Wire Braid Tube Specification & Performance

规格 Specification	最小内径 (mm) Min. ID	最大外径 (mm) Max. OD	工作压力 (MPa) Working pressure	爆破压力 (MPa) Min. Bursting pressure	弯曲半径 (mm) Min. bend radius
4	4.4	6.9	10.5	42	51
6	6.6	10.5	10.5	42	51
8	8.2	12.5	10.5	42	102
10	11.3	15.4	10.5	42	118
16	16	21.1	6.9	24	165

注：最大工作压力（WMP）在 130℃以上，温度每增加 1℃，WMP 减少 0.5%

Note: Above 130 ℃，MWP reduced by 0.5% under per degree temperature increase.

FOMAY 尼龙压力管及总成

Mono Layer & Multi-layer PA Tube

尼龙压力管是具有良好的化学和物理性能稳定性的PA11或PA12材料制成，易弯曲易成型，符合DIN、SAE等标准要求。可广泛适用于汽车、工程机械、生产组装线、纺织机械等用作油、汽、气、水等传输管路。

Nylon tube,made of PA11 or PA12, has good chemical stability and physical property.It is flexible and can be easily formed.PA tube is widely used in automotive industry,engineering machinery,product assembling line,textile machinery etc,for delivery of oil,steam,air,water and so on.It meets DIN73378,DIN74324 and SAE J844 standards.



性能 Performance

- ◎ 体积稳定、外形美观、内外壁光滑
- ◎ 耐腐蚀、无不良化学反应
- ◎ 寿命长、不易老化
- ◎ 曲挠性能好
- ◎ 耐磨性能好
- ◎ 抗震、抗冲击性优异
- ◎ 颜色多种多样
- ◎ 适用于各种不同接头
- ◎ 高防水性
- ◎ 耐高低温（-40℃ ~ +100℃）
- ◎ Stable dimension, beautiful apperance, smooth inner & outer surface
- ◎ Corrosion resistance and no abnormal chemical reaction
- ◎ Long useful life, aging resistance
- ◎ Good bending performance
- ◎ Good abrasion resistance
- ◎ Good anti-vibration and anti-shock performance
- ◎ Various in color
- ◎ Suitable to various connectors
- ◎ Good waterproof performance
- ◎ High and low temperature resistance（-40℃ ~ +100℃）

规格 Specification

外径 O.D(mm)	壁厚 (mm)Thickness	允许工作压力 (bar) Allowable Working Pressure	最小弯曲半径 (mm) Min.Bend Radius	管标记 Marking
5	1	34	25	5×1
6	1	27	30	6×1
8	1	19	40	6×1
10	1	15	60	10×1
10	1.25	19	60	10×1.25
12	1.5	19	60	12×1.5
12.5	1.25	15	70	12.5×1.25
14	1.5	20	75	14×1.5
14	2	21	75	14×2
16	2	19	95	16×2
18	1.5	12	100	18×1.5

FOMAY SCR 电加热冷却水管

SCR Electrically Heated Coolant Hose

材料：改性 EPDM/ 聚酯线

Material: Modified EPDM + Polyester cord

结构：针织

Construction: Knitting

形状：直管或定型管

Shape: straight tube or formed tube

外观：黑色、光面

Appearance: black, smooth

执行标准：SAE J20R4 GB/T18948-2003

Executive standard: SAE J20R4 GB/T18948-2003



技术参数 Technical data

试验项目 Test items	标准 Standard
冷弯性试验 Bending performance at (-40℃ ×5h)	无龟裂 No cracking
制冷机循环性试验 Refrigerator cycle test (130℃ ×0.2MPa)	
外径变化 O.D changes	0 ~ +12%
内外胶变化 Inner and out rubber change	无龟裂及解体现象 No cracking and disintegration
爆破强度 Burst strength	1.2MPa (ID<20mm)
冷热交变试验 Alternating hot and cold test 100pphm×40℃ ×336h 臭氧老化后 After ozone aging -30℃ ×72h; 100℃ ×168h	无明显喷霜现象 No clear blooming phenomenon
弹性体非接触渗色测量 (120℃ ×24h) Non-contacting elastomer color penetration test	Δb: ≤ 4.0
抗电性试验 Electrical resistance test	无条纹化 No striping
压力脉冲试验 (132℃) Pressure pulse test	无破裂现象等 No breaking phenomenon and so on
附着力试验 Adhesin test	1.5KN/m
臭氧试验 Ozone test100pphm×40℃ ×72h	无龟裂 No cracking
真空塌瘪试验 Vacuum collapse flat test	外径塌瘪 O.D falls flat: ≤ 20%

FOMAY 针织胶管

Knitted Rubber Hose

FOMAY针织胶管采用清华大学设计的整套全自动化生产线生产（主机采用进口）。产品规格为内径 ϕ 8mm- ϕ 60mm，具有耐老化、耐高温、柔软性好、表面光亮美观等优点。

广泛应用于机械、汽车等领域的输水管路。该生产线功能齐全，利用不同的材料和工艺，还可以制成应用于机械工业，汽车工业及其他领域的输油、输气、输水管路。



FOMAY Knitted Rubber Hose is manufactured on an automatic production line (with an imported engine) designed by Tsinghua University. Specification ranges from 8mm to 60mm(Inner Diameter). The hose possesses many good performances, such as aging-resistance, heat-resistance, flexibility, smooth in surface and etc.

It is widely used in hydraulic pipelines in mechanical and automobtive industry. The production line has a complete function. By adopting different materials and techniques, it can manufacture hoses applied in oil, air, water delivery pipelines in mechanical, automobile and other industries.



FOMAY 其他管路

Other Tubes



软管总成
Tube Assembly



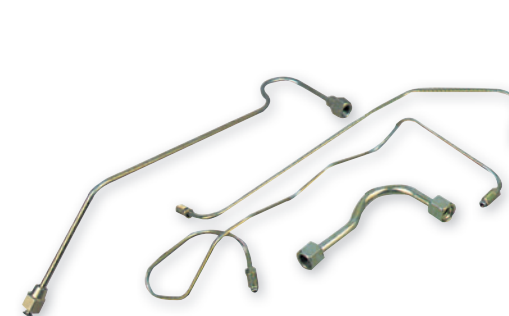
PA波纹管
PA Corrugated Tube



硅胶管
Silicon Hose



空气管
Air Intake Hose

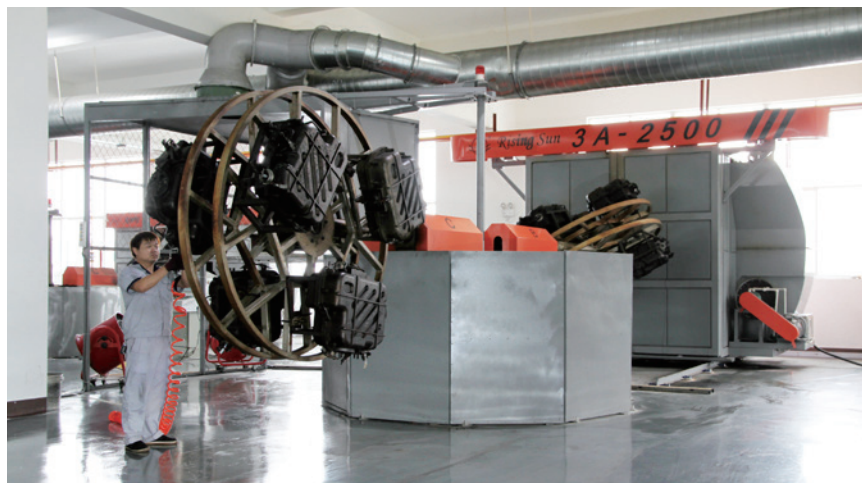
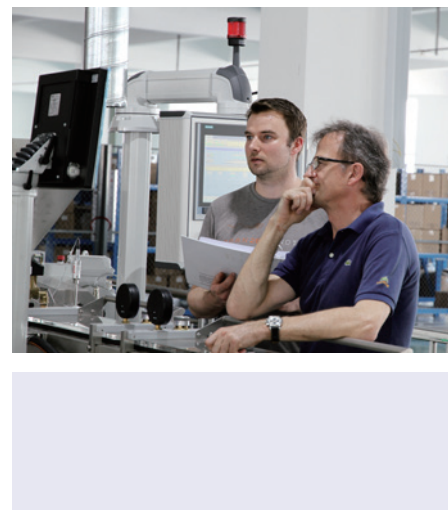


钢管总成
Steel Pipe Assembly



部份生产设备

Production Machine



部份测试设备

Testing Machine

