

Ingersoll Rand

Non-Lube Module (NLM) Launch



Reliability

Efficiency

Productivity

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System Solutions

Complete Comprehensive Offering

SYSTEM CONTROLS



TANKS & PIPE



AIR TREATMENT



CONDENSATE MANAGEMENT



COMPRESSORS



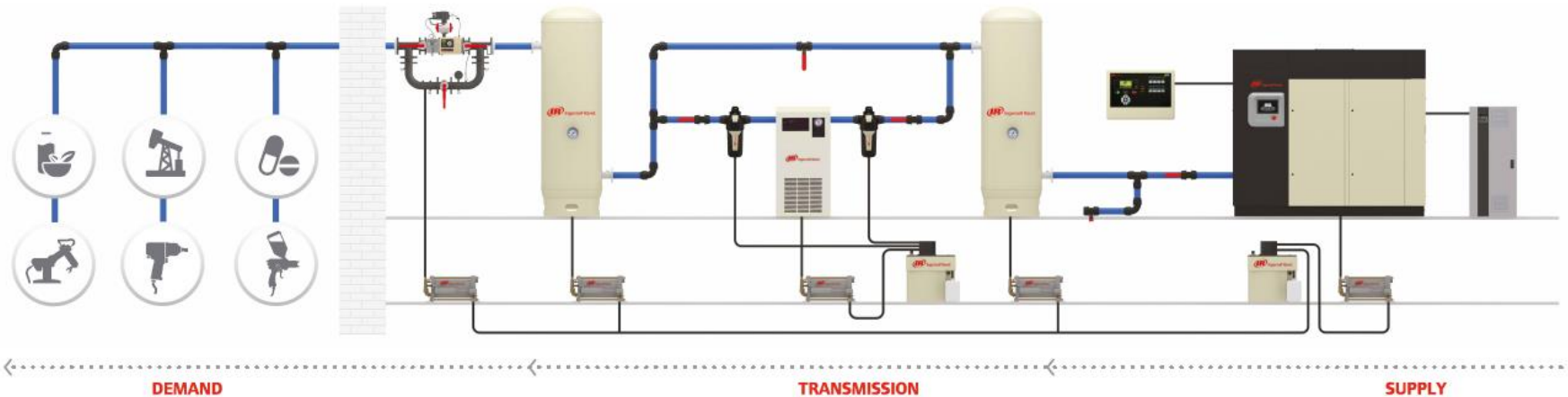
OEM PARTS



LONG LIFE LUBRICANTS



VARIABLE SPEED DRIVE



- **Air dryers** to improve productivity, system efficiency and product / process quality
- Leak-free, low pressure drop **EPL Piping**
- **Drain Valves** remove contaminants from the system without losing compressed air
- **Flow and system controllers** for compressed air system optimization
- **Filtration products** ensure clean air and improve productivity
- **Oil Water Separators** remove lubricant from compressed air condensate for an environmentally friendly disposal

Filtration that Meets Your Needs

Ingersoll Rand Filtration Variety

- Ingersoll Rand provides different filtration lines to ensure the proper solution is available to meet all customer application needs
- **FCAST**: Cast aluminium filtration for low to medium system capacity operation
- **FABRICATED FLANGED**: steel filters provide clean air for high flow or high pressure situations
- **NLM**: long lasting filtration of 10 years at a low pressure drop can be achieved



Standard Cast Aluminium
.48m³/min to 45.31 m³/min



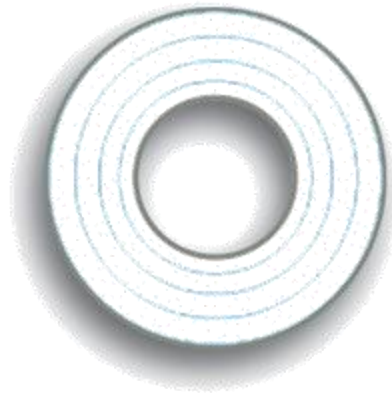
Standard Fabricated Steel
12.8 m³/min to 516 m³/min



NL Module
3.5 m³/min to 283 m³/min

Filtration That Lasts and Lasts

Long Life, Deep-Bed Filtration



Typical cross-section of an NL Module



Typical cross-section of a standard filter



Deep-bed filtration provides more surface area for the highest coalescing filtration efficiency

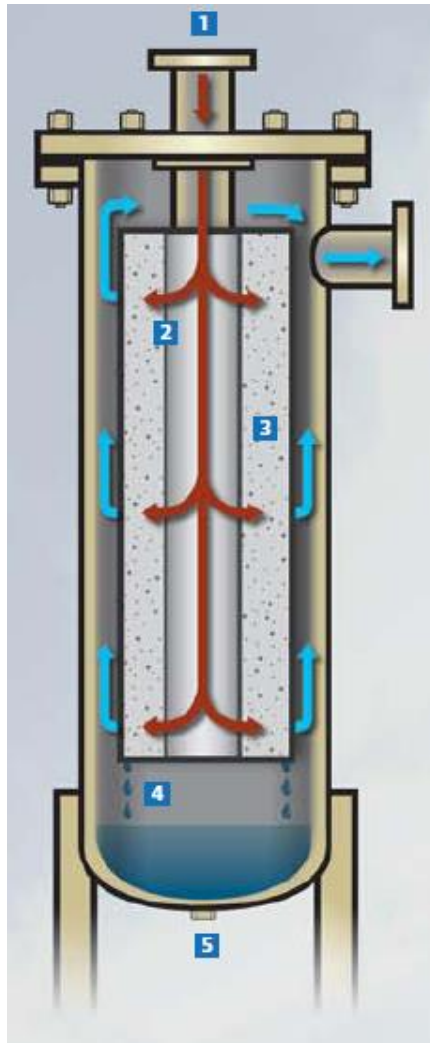
**Element life of
10 years**

**Reduces effects
of system
component
failure**

**Helps eliminate
system
downtime**

Product Technology

How It Works



Air contaminated with mineral or synthetic oil and water aerosols enters the NL Module housing and

- (1) Flows horizontally through a deep filter bed
- (2) Sub-micron particles collect on individual bed fibers and coalesce to form droplets
- (3) As the droplets move through the filter bed, they become larger and their resulting weight forces them to drop to the bottom of the housing
- (4) Low internal velocity prevents oil re-entrainment, while the large surface area keeps the pressure drop very low over the life of the element. The long residence time through the deep filter bed ensures the highest coalescing efficiency. Automatic or manual drains can be used to discharge lubricant and water that accumulate in the bottom of the housing
- (5) Compressed air and drain hookups are all that's required to integrate an NL Module into your compressed air system — no electricity is used. No loss drains included.

Product Walk-thru

Reduced Pressure Drop Equals Reduced Costs

- High-efficiency particulate filtration to 0.5 ppm (parts per million)
- Minimal pressure drop of 0.035 bar (35 mbar)
- Conventional filters operate at an average .41bar (414mbar) higher and have far shorter service life

Annual savings from .41 bar pressure drop reduction

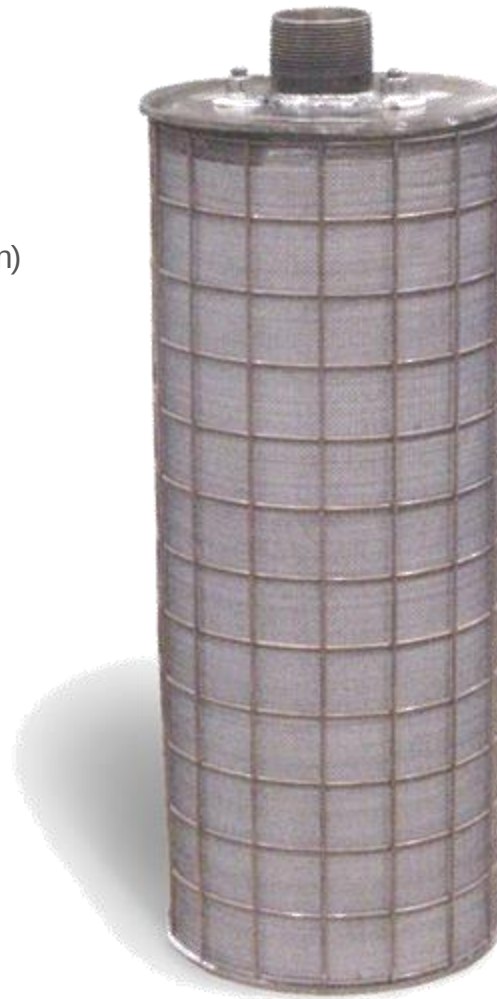
Energy cost (€ per kWh)	Air Compressor KW		
	37kW	75kW	160kW
€0.06	€274	€548	€1,096
€0.10	€457	€913	€1,826
€0.14	€640	€1,278	€2557

Based on 4040 hours/year operation and .10 Euros/kw-Hour

Product Walk-thru

NL Module Element

- High-efficiency particulate filtration to 0.5 ppm (parts per million)
 - > 3 microns at 100%
 - 0.1 to 3 microns at 99.98%
- Effective oil removal
 - 2 ppm in = 0.01 ppm out
 - 10 ppm in = 0.05 ppm out



**More
filtration
surface
area**

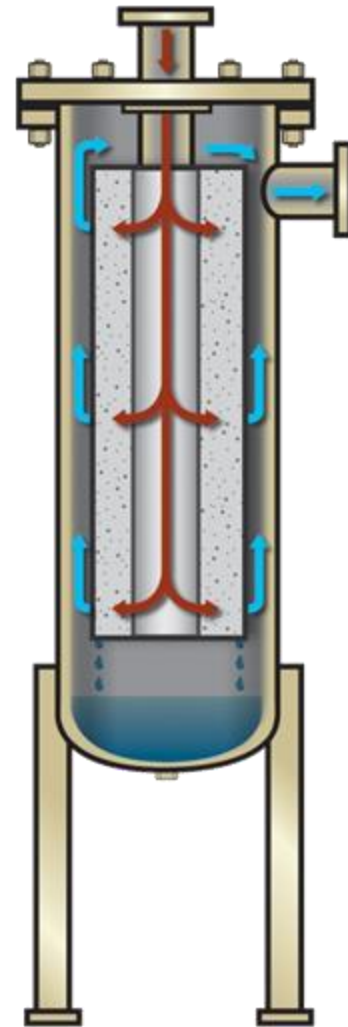
**Longer,
more
narrow
profile**

**Lower
Passing
Velocity**

Product Walk-thru

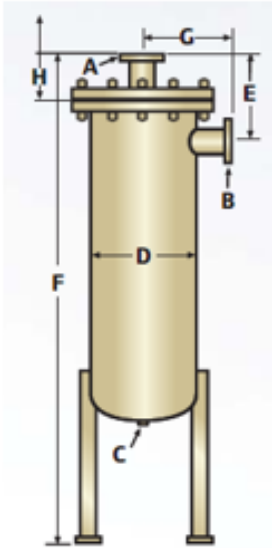
Maintenance Free Filtration

- Element life of 10 years
- Effective in removing all common mineral and synthetic lubricants
- Broad flow range: 3.5 to 283 m³/min
- Virtually maintenance-free filtration
- Standard differential pressure gauge indicates element condition throughout years of usage for easy monitoring



Performance/Specifications Data

No.	Model	Filter Model number (EMEIA)	Flow capacity	Connection Size (A), (B)	Drain Port (C)	Weight	Dimension					
		(CCN)	(Nm ³ /h)	(in)	(in)	(kg)	D (mm)	E (mm)	F (mm)	G (mm)	H (mm)	Volume (l)
1	F210INLM	17933082	210	2" BSPP	1" BSPP	205	353	370	1075	330	180	57
2	F430INLM	17933083	430	2" BSPP	1" BSPP	205	353	370	1075	330	180	57
3	F850INLM	17933084	850	DN 80 PN16	1" BSPP	234	353	367	1736	330	180	114
4	F1380INLM	17933085	1380	DN 80 PN16	1" BSPP	239	353	367	1736	330	180	114
5	F1870INLM	17933087	1870	DN 80 PN16	1" BSPP	297	397	394	1837	355	185	160
6	F2550INLM	17933088	2550	DN 100 PN16	1" BSPP	349	448	394	1840	381	190	205
7	F3220INLM	17933089	3220	DN 100 PN16	1" BSPP	551	601	434	1924	457	210	380
8	F4070INLM	17933090	4070	DN 100 PN16	1" BSPP	560	601	434	1924	457	210	380
9	F5100INLM	17933091	5100	DN 100 PN16	2" BSPP	623	601	434	2256	457	210	470
10	F7600INLM	17933092	7600	DN 150 PN16	2" BSPP	797	601	459	3886	457	214	830
11	F10200INLM	17933093	10200	DN 200 PN16	2" BSPP	1107	750	537	3937	532	220	1400
12	F13600INLM	17933095	13600	DN 200 PN16	2" BSPP	1283	750	537	4597	532	220	1700
13	F17000INLM	17933096	17000	DN 250 PN16	2" BSPP	2025	750	615	5389	532	250	2085



NL Module

The Top-Performing Filter NL Module

Engineered for the highest performance, the NL Module is a 100% stainless steel unit designed for the most demanding applications. It features a 100% stainless steel frame and a 100% stainless steel filter element. The NL Module is available in 100, 200, and 300 gallon capacities. It is designed for use in a variety of applications, including water filtration, chemical processing, and food processing. The NL Module is a top-performing filter module that is designed for the most demanding applications.

Financial Performance Report and Key Metrics									
		Quarterly Performance (Q1-Q4)				Annual Performance (YTD)		Overall Summary	
Item	Unit	Q1 Sales	Q2 Sales	Q3 Sales	Q4 Sales	Annual Total	Target	Variance	Notes
Category A	Product A	120,000	130,000	110,000	140,000	500,000	520,000	-20,000	Below target
	Product B	80,000	90,000	70,000	100,000	340,000	350,000	-10,000	Below target
	Product C	150,000	160,000	140,000	170,000	620,000	630,000	-10,000	Below target
	Product D	90,000	100,000	80,000	110,000	380,000	390,000	-10,000	Below target
	Product E	110,000	120,000	100,000	130,000	460,000	470,000	-10,000	Below target
Category B	Product F	130,000	140,000	120,000	150,000	540,000	550,000	-10,000	Below target
	Product G	100,000	110,000	90,000	120,000	420,000	430,000	-10,000	Below target
	Product H	140,000	150,000	130,000	160,000	580,000	590,000	-10,000	Below target
	Product I	160,000	170,000	150,000	180,000	660,000	670,000	-10,000	Below target
	Product J	180,000	190,000	170,000	200,000	740,000	750,000	-10,000	Below target
Category C	Product K	200,000	210,000	190,000	220,000	820,000	830,000	-10,000	Below target
	Product L	220,000	230,000	210,000	240,000	900,000	910,000	-10,000	Below target
	Product M	240,000	250,000	230,000	260,000	980,000	990,000	-10,000	Below target
	Product N	260,000	270,000	250,000	280,000	1,060,000	1,070,000	-10,000	Below target
	Product O	280,000	290,000	270,000	300,000	1,140,000	1,150,000	-10,000	Below target
Category D	Product P	300,000	310,000	290,000	320,000	1,220,000	1,230,000	-10,000	Below target
	Product Q	320,000	330,000	310,000	340,000	1,300,000	1,310,000	-10,000	Below target
	Product R	340,000	350,000	330,000	360,000	1,380,000	1,390,000	-10,000	Below target
	Product S	360,000	370,000	350,000	380,000	1,460,000	1,470,000	-10,000	Below target
	Product T	380,000	390,000	370,000	400,000	1,540,000	1,550,000	-10,000	Below target
Category E	Product U	400,000	410,000	390,000	420,000	1,620,000	1,630,000	-10,000	Below target
	Product V	420,000	430,000	410,000	440,000	1,700,000	1,710,000	-10,000	Below target
	Product W	440,000	450,000	430,000	460,000	1,780,000	1,790,000	-10,000	Below target
	Product X	460,000	470,000	450,000	480,000	1,860,000	1,870,000	-10,000	Below target
	Product Y	480,000	490,000	470,000	500,000	1,940,000	1,950,000	-10,000	Below target
Category F	Product Z	500,000	510,000	490,000	520,000	2,020,000	2,030,000	-10,000	Below target
	Product AA	520,000	530,000	510,000	540,000	2,100,000	2,110,000	-10,000	Below target
	Product AB	540,000	550,000	530,000	560,000	2,180,000	2,190,000	-10,000	Below target
	Product AC	560,000	570,000	550,000	580,000	2,260,000	2,270,000	-10,000	Below target
	Product AD	580,000	590,000	570,000	600,000	2,340,000	2,350,000	-10,000	Below target
Category G	Product AE	600,000	610,000	590,000	620,000	2,420,000	2,430,000	-10,000	Below target
	Product AF	620,000	630,000	610,000	640,000	2,500,000	2,510,000	-10,000	Below target
	Product AG	640,000	650,000	630,000	660,000	2,580,000	2,590,000	-10,000	Below target
	Product AH	660,000	670,000	650,000	680,000	2,660,000	2,670,000	-10,000	Below target
	Product AI	680,000	690,000	670,000	700,000	2,740,000	2,750,000	-10,000	Below target
Category H	Product AJ	700,000	710,000	690,000	720,000	2,820,000	2,830,000	-10,000	Below target
	Product AK	720,000	730,000	710,000	740,000	2,900,000	2,910,000	-10,000	Below target
	Product AL	740,000	750,000	730,000	760,000	2,980,000	2,990,000	-10,000	Below target
	Product AM	760,000	770,000	750,000	780,000	3,060,000	3,070,000	-10,000	Below target
	Product AN	780,000	790,000	770,000	800,000	3,140,000	3,150,000	-10,000	Below target
Category I	Product AO	800,000	810,000	790,000	820,000	3,220,000	3,230,000	-10,000	Below target
	Product AP	820,000	830,000	810,000	840,000	3,300,000	3,310,000	-10,000	Below target
	Product AQ	840,000	850,000	830,000	860,000	3,380,000	3,390,000	-10,000	Below target
	Product AR	860,000	870,000	850,000	880,000	3,460,000	3,470,000	-10,000	Below target
	Product AS	880,000	890,000	870,000	900,000	3,540,000	3,550,000	-10,000	Below target
Category J	Product AT	900,000	910,000	890,000	920,000	3,620,000	3,630,000	-10,000	Below target
	Product AU	920,000	930,000	910,000	940,000	3,700,000	3,710,000	-10,000	Below target
	Product AV	940,000	950,000	930,000	960,000	3,780,000	3,790,000	-10,000	Below target
	Product AW	960,000	970,000	950,000	980,000	3,860,000	3,870,000	-10,000	Below target
	Product AX	980,000	990,000	970,000	1,000,000	3,940,000	3,950,000	-10,000	Below target
Category K	Product AY	1,000,000	1,010,000	990,000	1,020,000	4,020,000	4,030,000	-10,000	Below target
	Product AZ	1,020,000	1,030,000	1,010,000	1,040,000	4,100,000	4,110,000	-10,000	Below target
	Product BA	1,040,000	1,050,000	1,030,000	1,060,000	4,180,000	4,190,000	-10,000	Below target
	Product BB	1,060,000	1,070,000	1,050,000	1,080,000	4,260,000	4,270,000	-10,000	Below target
	Product BC	1,080,000	1,090,000	1,070,000	1,100,000	4,340,000	4,350,000	-10,000	Below target
Category L	Product BD	1,100,000	1,110,000	1,090,000	1,120,000	4,420,000	4,430,000	-10,000	Below target
	Product BE	1,120,000	1,130,000	1,110,000	1,140,000	4,500,000	4,510,000	-10,000	Below target
	Product BF	1,140,000	1,150,000	1,130,000	1,160,000	4,580,000	4,590,000	-10,000	Below target
	Product BG	1,160,000	1,170,000	1,150,000	1,180,000	4,660,000	4,670,000	-10,000	Below target
	Product BH	1,180,000	1,190,000	1,170,000	1,200,000	4,740,000	4,750,000	-10,000	Below target
Category M	Product BI	1,200,000	1,210,000	1,190,000	1,220,000	4,820,000	4,830,000	-10,000	Below target
	Product BJ	1,220,000	1,230,000	1,210,000	1,240,000	4,900,000	4,910,000	-10,000	Below target
	Product BK	1,240,000	1,250,000	1,230,000	1,260,000	4,980,000	4,990,000	-10,000	Below target
	Product BL	1,260,000	1,270,000	1,250,000	1,280,000	5,060,000	5,070,000	-10,000	Below target
	Product BM	1,280,000	1,290,000	1,270,000	1,300,000	5,140,000	5,150,000	-10,000	Below target
Category N	Product BN	1,300,000	1,310,000	1,290,000	1,320,000	5,220,000	5,230,000	-10,000	Below target
	Product BO	1,320,000	1,330,000	1,310,000	1,340,000	5,300,000	5,310,000	-10,000	Below target
	Product BP	1,340,000	1,350,000	1,330,000	1,360,000	5,380,000	5,390,000	-10,000	Below target
	Product BQ	1,360,000	1,370,000	1,350,000	1,380,000	5,460,000	5,470,000	-10,000	Below target
	Product BR	1,380,000	1,390,000	1,370,000	1,400,000	5,540,000	5,550,000	-10,000	Below target
Category O	Product BS	1,400,000	1,410,000	1,390,000	1,420,000	5,620,000	5,630,000	-10,000	Below target
	Product BT	1,420,000	1,430,000	1,410,000	1,440,000	5,700,000	5,710,000	-10,000	Below target
	Product BU	1,440,000	1,450,000	1,430,000	1,460,000	5,780,000	5,790,000	-10,000	Below target
	Product BV	1,460,000	1,470,000	1,450,000	1,480,000	5,860,000	5,870,000	-10,000	Below target
	Product BW	1,480,000	1,490,000	1,470,000	1,500,000	5,940,000	5,950,000	-10,000	Below target
Category P	Product BX	1,500,000	1,510,000	1,490,000	1,520,000	6,020,000	6,030,000	-10,000	Below target
	Product BY	1,520,000	1,530,000	1,510,000	1,540,000	6,100,000	6,110,000	-10,000	Below target
	Product BZ	1,540,000	1,550,000	1,530,000	1,560,000	6,180,000	6,190,000	-10,000	Below target
	Product CA	1,560,000	1,570,000	1,550,000	1,580,000	6,260,000	6,270,000	-10,000	Below target
	Product CB	1,580,000	1,590,000	1,570,000	1,600,000	6,340,000	6,350,000	-10,000	Below target
Category Q	Product CC	1,600,000	1,610,000	1,590,000	1,620,000	6,420,000	6,430,000	-10,000	Below target
	Product CD	1,620,000	1,630,000	1,610,000	1,640,000	6,500,000	6,510,000	-10,000	Below target
	Product CE	1,640,000	1,650,000	1,630,000	1,660,000	6,580,000	6,590,000	-10,000	Below target
	Product CF	1,660,000	1,670,000	1,650,000	1,680,000	6,660,000	6,670,000	-10,000	Below target
	Product CG	1,680,000	1,690,000	1,670,000	1,700,000	6,740,000	6,750,000	-10,000	Below target
Category R	Product CH	1,700,000	1,710,000	1,690,000	1,720,000	6,820,000	6,830,000	-10,000	Below target
	Product CI	1,720,000	1,730,000	1,710,000	1,740,000	6,900,000	6,910,000	-10,000	Below target
	Product CJ	1,740,000	1,750,000	1,730,000	1,760,000	6,980,000	6,990,000	-10,000	Below target
	Product CK	1,760,000	1,770,000	1,750,000	1,780,000	7,060,000	7,070,000	-10,000	Below target
	Product CL	1,780,000	1,790,000	1,770,000	1,800,000	7,140,000	7,150,000	-10,000	Below target
Category S	Product CM	1,800,000	1,810,000	1,790,000	1,820,000	7,220,000	7,230,000	-10,000	Below target
	Product CN	1,820,000	1,830,000	1,810,000	1,840,000	7,300,000	7,310,000	-10,000	Below target
	Product CO	1,840,000	1,850,000	1,830,000	1,860,000	7,380,000	7,390,000	-10,000	Below target
	Product CP	1,860,000	1,870,000	1,850,000	1,880,000	7,460,000	7,470,000	-10,000	Below target
	Product CQ	1,880,000	1,890,000	1,870,000	1,900,000	7,540,000	7,550,000	-10,000	Below target
Category T	Product CR	1,900,000	1,910,000	1,890,000	1,920,000	7,620,000	7,630,000	-10,000	Below target
	Product CS	1,920,000	1,930,000	1,910,000	1,940,000	7,700,000	7,710,000	-10,000	Below target
	Product CT	1,940,000	1,950,000	1,930,000	1,960,000	7,780,000	7,790,000	-10,000	Below target
	Product CU	1,960,000	1,970,000	1,950,000	1,980,000	7,860,000	7,870,000	-10,000	Below target
	Product CV	1,980,000	1,990,000	1,970,000	2,000,000	7,940,000	7,950,000	-10,000	Below target
Category U	Product CW	2,000,000	2,010,000	1,990,000	2,020,000	8,020,000	8,030,000	-10,000	Below target
	Product CX	2,020,000	2,030,000	2,010,000	2,040,000	8,100,000	8,110,000	-10,000	Below target
	Product CY	2,040,000	2,050,000	2,030,000	2,060,000	8,180,000	8,190,000	-10,000	Below target
	Product CZ	2,060,000	2,070,000	2,050,000	2,080,000	8,260,000	8,270,000	-10,000	Below target
	Product DA	2,080,000	2,090,000	2,070,000	2,100,000	8,340,000	8,350,000	-10,000	Below target
Category V	Product DB	2,100,000	2,110,000	2,090,000	2,120,000	8,420,000	8,430,000	-10,000	Below target
	Product DC	2,120,000	2,130,000	2,110,000	2,140,000	8,500,000	8,510,000	-10,000	Below target
	Product DD	2,140,000	2,150,000	2,130,000	2,160,000	8,580,000	8,590,000	-10,000	Below target
	Product DE	2,160,000	2,170,000	2,150,000	2,180,000	8,660,000	8,670,000	-10,000	Below target
	Product DF	2,180,000	2,190,000	2,170,000	2,200,000	8,740,000	8,750,000	-10,000	Below target
Category W	Product DG	2,200,000	2,210,000</						

AIR COMPRESSOR PARTS & ACCESSORIES

The product information and **air compressor parts and accessories** are available online at www.3m.com/usa/na/naa. To learn more about our products and our comprehensive parts, product literature, 3M.com, our 24-hour website, is full of air compressor resources.



1. COMPRESSOR

3M offers a wide range of air compressors for your compressed air needs.



2. AIR HOSE REELS

3M offers a wide range of air hose reels for your compressed air needs.



3. AIR LINE FILTERS

3M offers a wide range of air line filters for your compressed air needs.

Air Compressor Services



1. INSTALLATION

3M offers a wide range of air compressor services for your compressed air needs.



2. AIR COMPRESSOR PARTS

3M offers a wide range of air compressor parts for your compressed air needs.



3. INSTALLATION

3M offers a wide range of air compressor services for your compressed air needs.

Ingersoll Rand

Non-Lube Module (NLM) Launch

Reliability

Efficiency

Productivity

David Gonzalez
Channel Programs Manager

