FLUIDFORMING AMERICAS
HYDROFORMING REINVENTED

FLUIDFORMING: BETTER, FASTER, SMARTER

PRECISION METAL FORMING

How is the FluidForming Process Different from Hydroforming?

FluidForming is ***better.*** It's the first major advancement in metal forming since the 1930s and it differs from traditional hydroforming in several significant ways.

- High forming pressures of up 4,000 bar/60,000 psi yield Six Sigma accuracy.
- Bladder-free technology reduces maintenance costs and improves precision and finish quality.
- 99.996% first-pass-yield rate.
- Environmentally friendly.
- Low overall total cost of ownership.

> We handmade these parts for years and now we have them manufactured by FFA with Six Sigma quality. Thanks to the flexibility of the FFA process, we were able to increase the tank content volume by 34.5% giving our customers a much-improved life cycle between refills — which is a huge competitive advantage for us.

TITLE: *Project Manager*
INDUSTRY: *Instrumentation*
PRODUCT: *Liquid Nitrogen Tank*

> The collaboration in part development with FluidForming Americas has enabled us to optimize our product with no additional cost and no time lost to the project. We avoided significant manufacturing pitfalls thanks to FluidForming.

TITLE: *Engineering Manager*
INDUSTRY: *Automotive*
PRODUCT: *Heat Exchanger*

Can FluidForming Streamline Manufacturing and Accommodate Rapid Prototyping?

FluidForming is ***faster.*** FluidForming is compatible with 3D printing and is the ideal solution for rapid prototyping.

- 3D printed tooling slashes tooling costs and dramatically improves time-to-market.
- Prototyping tools are the same as production tools.
- Finite Element Analysis (FEA) minimizes trial and error and maximizes efficiency.
- Ideation to production can happen in days, rather than weeks or even months.
- Nested tooling capabilities facilitate undercuts, logos, and sharp angles while reducing production time and further minimizing tooling costs.

What can FluidForming Achieve that Traditional Hydroforming or Die Stamping Cannot?

FluidForming is ***smarter.*** With an emphasis on perfection, quality, and innovation, we always ask our clients if they've been settling for less.

- Perfection: FluidForming is the only metal forming technology that can form highly complex valves, precision microchannel heat exchangers, and flawless defense-grade satellite dishes perfectly every time.
- Quality: FluidForming enables companies to manufacture parts that were previously impossible to form from metal. FluidForming's bladder-free and water-based technology encourages the use of painted, patterned, and prefinished metals with minimal post-fixturing costs.
- Innovation: FluidForming enables new parts and products to be brought to the market more quickly and more affordably.

> Part accuracy has gone from no-two-parts-are-alike to Six Sigma conformance and repeatability with 0% non-conforming product.

TITLE: *Vice President*
INDUSTRY: *Communications*
PRODUCT: *Precision Satellite Dish*

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FLUIDFORMING TECHNOLOGY:

FORMBALANCER SPECIFICATIONS

MEET THE FORMBALANCER

FluidForming Americas is the first to offer an unprecedented combination of technologies incorporated into a single machine. 4-in-1 hydroforming machines, known as FormBalancers, have the following metal forming capabilities:

- Bladderless sheet metal forming
- Tube forming
- Bladder-based hydroforming
- Hydraulic hydroforming

The patented, force-contained structure permits extremely high forming pressures of up to 4,000 bar/60,000 psi. The modular design and multiple machine sizes allow for flexible floor placement. The machine's compact design requires a minimal factory footprint and does not necessitate any special structural reinforcements. Operators can transition between metal forming functions within minutes.

> "The consistent quality and repeatability of FluidFormed parts have reduced our secondary labor costs in fit-up and reduced workers' compensation claims by substantially reducing on-the-job injuries."
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> **TITLE:** *Engineering Manager*
> **INDUSTRY:** *Agriculture*
> **PRODUCT:** *Exhaust Fitting*

FluidForming FormBalancer ***Specifications***

FormBalancer		FB 25	FB 35	FB 42	FB 50	FB 60	FB 80	FB 80L	FB 100
Tool Clamping Force	kN	25,000	35,000	42,000	50,000	60,000	80,000	80,000	100,000
	ton	2,500	3,500	4,200	5,000	6,000	8,000	8,000	10,000
Table Size	mm	800x800	1,000x1,200	1,200x1,200	1,200x1,500	1,300x1,600	1,500x1,800	1,300x2,000	1,500x2,000
	inch	31.5x31.5	39.4x47.2	47.2x47.2	47.2x59.1	51.2x63	59.1x70.9	51.2x78.7	59.1x78.7
Max Forming Depth	mm	300	450	500	500	550	600	600	600
	inch	~11.8	~17.7	~19.7	~19.7	~21.7	~23.6	~23.6	~23.6
Max Forming Pressure	psi	~60,000	~60,000	~60,000	~60,000	~60,000	~43,511	~43,511	~43,511
	bar	~4,000	~4,000	~4,000	~4,000	~4,000	~3,000	~3,000	~3,000

FluidForming FormBalancer ***Installation Requirements***

FormBalancer		FB 25	FB 35	FB 42	FB 50	FB 60	FB 80	FB 80L	FB 100
Width	meters	2.7	3.4	3.7	4.5	4.5	5	4.5	5
	feet	8.9	11.2	12.1	14.8	14.8	16.4	14.8	16.4
Height	meters	4	4.2	4.5	4	4.5	6	5	5.5
	feet	13.1	13.8	14.8	13.1	14.8	20	16.4	18
Depth	meters	4	6.1	6.1	5.5	6	8.5	7	7
	feet	13.1	20	20	18	19.7	28	23	23
Electrical Power (Installed)	V/Hz	480/60	480/60	480/60	400/50	400/50	480/60	400/50	400/50
	kW	90	130	130	200	200	200	250	300