modular-block-sampler-kit-by-infinity-turbine

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Moduar Block Sampler Kit by Infinity Turbine

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Experience the remarkable modular block gas and fluid handling industrial Legos.

PDF Version of the webpage (first pages)

Modular Block Sampler Kit $250

Experience the remarkable modular block gas and fluid handling industrial Legos.

More details coming soon regarding the contents of the Sampler Kit.

You can also buy a license for unlimited production of the blocks which includes all the plans for all versions of the blocks, including rotating elements (Tesla turbine, Tesla disc pump, cavitation, etc).

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Modular Block

The modular fluid handling device has a central bore with fluid passages that extend between block faces, both horizontally and vertically. The blocks can be stacked horizontally, vertically, or both. Rotating elements can be configured in any of the passages for the purpose of pumping, extraction, or power production.

Purpose: The functionality of the blocks is to perform rapid prototyping by deploying modular construction of systems using bolts.

Standard Blocks: 3 inch size with 10/32 inch fasteners. 1 inch center bore and 1/4 and 1/2 inch horizontal bores.

Larger Blocks: 6 inch size with 3/8 inch fasteners. 3 inch center bore and 1/4, 3/8, and 1/2 inch horizontal bores.

Patents (I and II) cover all sizes and most applications.

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Experimenters Kit (Large)

Includes metal bearing blocks, center blocks, blank center block for modification, HDPE magnetic coupling blocks, blank HDPE blocks for modification, stainless steel shafts (short and long lengths), rotating assembly discs of various shapes which can be used for experimenting with pumping and cavitation, all fasteners, shaft clips, bearings, o-rings.

This is a standard atmospheric unit (non-pressurized) and not designed for pressure applications. 110V variable speed drive electric motor, magnetic couplings.

All attach points are 3/8 inch. This is a DIY kit. Support is additional. Kit is for experimenting with cavitation, pumping, or other experiments with water or air. It is not a extraction system for botanicals, but a water or air based experimentation system.

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Applications of Turbine Modular Blocks:

Thermodynamic Cycles:
Vapor compression, Einstein cycle, Otto cycle, Diesel cycle, Brayton cycle, Rankine cycle, Organic Rankine cycle.

Fluid Handling: Fementation, distillation, filtration, evaporator, condenser.

This invention relates generally to devices for processing and sampling of gases and liquids, and more specifically to devices allowing rapid construction of fluid reactors, distillers, extractors, homogenizers, filtration/separation devices, process models (e.g., devices for modeling engine cycles, refrigeration cycles, etc.), and other devices for handling fluids.

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BACKGROUND OF THE INVENTION:

Fluid handling devices including fermenters, distillers, filtration tanks, evaporators, etc. (or combinations of these components) are exceedingly common in industry and in research labs.

Researchers and engineers also often need to experiment with models for common thermodynamic cycles, e.g., refrigeration cycles (vapor compression cycle, Einstein cycle, etc.) and power cycles (Otto cycle, Diesel cycle, Brayton cycle, Rankine cycle, etc.).

While it is often desirable to generate prototypes or small-scale versions of such devices, they are usually time-consuming, difficult, and expensive to construct. One approach commonly used in laboratories is to connect glassware vessels (e.g., flasks, towers, heat exchangers, etc.) with rubber tubing so that the vessels form some desired fluid process model.

Even apart from the significant time and expense required for their construction, these are quite fragile, are unsuitable for pressurized processes, and are also usually unsuitable for processes involving extreme temperatures or corrosive materials owing to the weakness of the tubing. In some cases, more durable fluid handling devices can be formed from metal vessels connected with (for example) brazed copper tubing, but these involve even greater time, cost, and fabrication burdens.

Tesla Disc in the Modular Block

Infinity has long been promoting building small prototypes and then numbering up to scale up, thereby eliminating most larger to-scale issues. The modular block experimenters kit allows entrepeneurs a gateway to verify development and then provide a methodology to evolve concepts to commercialized products.

The experimenters kit provides multiple Tesla pump and turbine discs (stamped out of steel) which can be stacked on a common shaft for experiments.

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Modular Block Format

The modular block format allows quick connect using 10/32 fasteners.

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Examples of Tesla Rotors and Turbine Discs

Laser cut steel rotors for many appications for air and fluid hydrodynamic cavitation (water, CO2, and more).

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Modular Blocks in HDPE and Aluminum

We have in stock various modular blocks in hexagonal and square shapes.

Square: HDPE 5 inch blocks.
Square: Aluminum 5 inch blocks.

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Modular fluid handling device II (Components of the Gas Leverage Turbine)

A modular fluid handling device includes at least one block having opposing block faces shaped as tessellating regular polygons, and a series of block sides therebetween. Each block includes a central bore and fluid passages extending between the block faces, and possibly ducts extending between the bore and the fluid passages. The blocks may be rapidly horizontally and/or vertically affixed with their bores and/or fluid passages in communication to form a fluid handling device having the desired configuration (e.g., with the bores and fluid passages forming a desired process flow path, fluid circuit, or the like). Star wheels and/or rotor discs can be provided within the block bores for purposes of pumping fluids flowing within the bores, and/or for purposes of deriving power from fluid flow within the bores.

FIELD OF THE INVENTION

This document concerns an invention relating generally to devices for processing and sampling of gases and liquids, and more specifically to devices allowing rapid construction of fluid reactors, distillers, extractors, homogenizers, filtration/separation devices, process models (e.g., devices for modeling engine cycles, refrigeration cycles, etc.), and other devices for handling fluids.

BACKGROUND OF THE INVENTION

Fluid handling devices including fermenters, distillers, filtration tanks, evaporators, etc. (or combinations of these components) are exceedingly common in industry and in research labs. Researchers and engineers also often need to experiment with models for common thermodynamic cycles, e.g., refrigeration cycles (vapor compression cycle, Einstein cycle, etc.) and power cycles (Otto cycle, Diesel cycle, Brayton cycle, Rankine cycle, etc.). While it is often desirable to generate prototypes or small-scale versions of such devices, they are usually time-consuming, difficult, and expensive to construct. One approach commonly used in laboratories is to connect glassware vessels (e.g., flasks, towers, heat exchangers, etc.) with rubber tubing so that the vessels form some desired fluid process model. Even apart from the significant time and expense required for their construction, these are quite fragile, are unsuitable for pressurized processes, and are also usually unsuitable for processes involving extreme temperatures or corrosive materials owing to the weakness of the tubing. In some cases, more durable fluid handling devices can be formed from metal vessels connected with (for example) brazed copper tubing, but these involve even greater time, cost, and fabrication burdens.

A prior patent (U.S. Pat. No. 7,146,999 to Giese et al., which is incorporated by reference herein) describes a modular fluid handling system wherein modular blocks bear passageways for carrying fluids, and wherein inserts having different functionality—e.g., valve inserts, filter inserts, turbine inserts, pump inserts, heating/cooling inserts, sensor inserts, flow routing/diverting inserts, etc.—can be inserted into selected blocks. The blocks, with or without inserts, can be affixed together to construct a durable fluid handling device. This document relates to improvements and additions to the modular fluid handling system described in U.S. Pat. No. 7,146,999 to Giese et al.

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Steel Version Experimental Modular Blocks for Gas and Fluid Channel Projects

Experimental Modular Blocks for bolt-together gas and fluid handling structures. 10-32 pass through bores and threaded connections. Steel version (not anodized aluminum).

Multiple available. Two versions shown, bearing blocks and rotor housing. All in hexagonal modular block format.

We use these for SDR experimentation, water extraction, and other projects which need a quick configuration format using a simple bolt-together methodology. This is the future of all gas and fluid processing.

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Experimental Modular Blocks for Housing Gas and Fluid Channel Projects

Experimental Modular Blocks are bolt-together components for gas and fluid handling structures. 10-32 inch fasteners have pass-through bores and threaded connections.

Multiple available. Two versions shown, bearing blocks and rotor housing. All in hexagonal modular block format.

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Small SDR Experimental Disc Assembly in Modular Block Housing

This is an example of a spinning disc reactor, or SDR. It was built using spinning discs for the application of providing cavitation to blast apart plant cells to release oil.

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Example of Large Format Modular Blocks

For experimentation of cavitation and pumping designs, we have several versions of the modular block which can be used for prototype-to-commercial version ready assemblies. Can be used with many fluids, including water and compressed air. Rotating elements can easily be 3-D printed, or laser cut from a variety of materials. The o-rings are not designed for pressure applications. You may spec out specific fastener, o-ring, and other engineering values for pressure rated projects.

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