

Light It or Fight It

SEI Industries Ltd.

Firefighting Division

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Fighting Fire with Fire

Not all fire is bad. Fire can rejuvenate eco-systems, provide access, reduce dangerous fuel loading and create diversity.

Today, land managers often use fire as a “prescription” for forest health. Prescribed burns, controlled burns and back burns, during actual firefighting, all require the best tools possible to ensure crew safety and a successful burn.

Typically, these fires are ignited from the air using a helicopter mounted plastic sphere dispenser that drops aerial ignition devices (delayed chemical ignition spheres) or by using a ‘heli-torch’ – a drip torch hanging from a helicopter that drops globules of ignited fuel gel to the ground.

Recognizing that the market needed a modernized solution for the industry’s 30-year-old aerial ignition tools, SEI developed the Dragon product line to increase safety,

improve reliability and deliver sustained performance. Offering a new alternative for aerial ignition, the Red Dragon is able to dispense fire ignition spheres – known as Dragon Eggs – over vast areas of land.

Its cousin, the Green Dragon, is also revolutionary in that it is the first terrestrial-mounted, automated, gas-propelled sphere launcher of its kind allowing the industry to conduct ground burning operations using a variety of vehicle platforms such as pick-up trucks, ATVs, UTVs and boats. This option also reduces the need for expensive helicopter resources.

In addition to these patented technologies, SEI is collaborating with Field Support Services, in the USA, to develop hand-held, single-shot spring guns and high-speed gas propelled launchers that are compatible with the Dragon Eggs.

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The Red Dragon is a helicopter-mounted dispensing machine, used to disburse Dragon Eggs (delayed chemical ignition spheres) for controlled burns.



Meet the Red Dragon

Using a hand-held controller, the Red Dragon's main advantage over older dispensing machines is its ability to quickly adjust its dispensing speed, rather than forcing the helicopter to adjust to the machine's drop rate.

This advantage also enables the dispersal of SEI's Dragon Eggs (delayed chemical ignition spheres) in perfect concentration levels according to the terrain below.

The teaming of the Red Dragon® dispenser with Dragon Eggs has resulted in a next generation aerial ignition system that offers increased safety, features and more operability than any other dispenser available today.

Manufactured by SEI Industries, the same company that invented the world-renowned Bambi Bucket, the Red Dragon dispenser provides a number of distinct advantages including:

- Seven different drop rates (producing a range of 25 – 175 spheres per minute) that can be easily selected by the click of a dial. Existing models only offered four speeds and were

prone to jamming when changing speeds.

- Micro-processor controlled motor and feed gates virtually eliminate sphere jamming and provide automatic jam detection and clearing. For anyone who has used an older dispenser, this feature couldn't have come soon enough.
- Fixed-displacement pumps that deliver the same amount of glycol, no matter what speed is selected, compared to the old method of some spheres getting too much or too little glycol depending on the motor speed.
- Safety systems that utilize back-up battery to ensure on-board fire suppression response capability in the event of main power failure.

Additional features include a resettable sphere counter, tank drain valves, a larger capacity hopper, a user-friendly tethered remote control and a removable base for easy installation in light, intermediate and medium helicopters while allowing for better ergonomics for the PSD operator.



Dragon Eggs burn during a demonstration.

The Fire Behind Dragon Eggs

The entire Dragon product line uses the same advanced-engineered one-inch plastic spheres known as Dragon Eggs.

Dragon Eggs contain high-grade potassium permanganate and, when injected with glycol, cause a chemical reaction and a 20-40 second delayed ignition. This ignition consists of a sustained flame



that burns for approximately two minutes. Dragon Eggs offer superior ignition reliability, a multi-colored casing to increase visibility and they're smaller in size. This smaller size still delivers the same amount of active ingredient as in previous spheres but allows twice as many spheres in the hopper which doubles flight time before having to land for refilling.

Introducing the Green Dragon

Co-developed by SEI Industries and Field Support Services, the Green Dragon (patent pending) is an automated ground-launcher designed and engineered for use in forestry and wildfire management applications such as back burning or prescribed burning.

As a CO₂-propelled, fully-automatic fire ignition tool, the Green Dragon offers a variable firing rate that can be adjusted for shooting more than 30 spheres per minute up to 70m (225 ft.) away. The Green Dragon can be mounted on several ground-based platforms including trucks, boats, ATVs and UTVs. Some of the benefits of the Green Dragon include:

- Reduces exposure to fire entrapment during burning operations
- Supports hand-held drip torch and hand launcher ignition activities
- Provides deeper penetration and more efficient fire ignition lines
- Promotes quicker ignition and delivers more effective burning



Successful field trials have taken place with the Florida State Division of Forestry and the US Fish and Wildlife Service. The Green Dragon has also been successfully demonstrated during burn-off operations with the British Columbia Forest Service in Canada, in land adjacent to the Cape Canaveral shuttle launching area and with a number of land and wildfire management agencies across the USA.

International beta testing areas consist of Australia, Chile, Argentina and Mexico. Industry demand has also seen requests for this new innovation in Zambia, Mozambique, South Africa and China.



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About SEI Industries

Since 1982, SEI Industries Ltd. has manufactured the Bambi Bucket® — a helicopter-slung bucket designed to fight urban and wild-land fires. It was the Bambi Bucket that first established SEI into the design, manufacturing, marketing and commissioning of engineered fabric products.

Today, the Bambi Bucket is used in more than 110 countries worldwide and by more than 1,000 operators. Since the invention of the Bambi, SEI has expanded into a wide range of products that serve the aviation, remote site, environmental and firefighting industries.

SEI operates from a 48,000 sq. ft. manufacturing facility in Delta, B.C. and, as an ISO 9001:2008 certified company, it engineers its products to ensure the highest levels of quality based on its 25-year record of successful product innovations.



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The Pyroshot and Pyroshot HS are the newest tools to support ground fire ignition during burn operations.

The single-shot Pyroshot is a spring-powered incendiary plastic sphere dispenser that can best be described as a hand-held, spring gun. The Pyroshot can launch spheres upwards of 25m (80 ft.) and is a lightweight tool that uses Dragon Eggs and costs 1/45 of traditional flare guns.

The primary function of the Pyroshot is to supplement the use of drip torches for ground ignition operations. With its ease of transport and operation, an operator can place a fire in any part of a 150 foot swath in a single pass through the woods.

The Pyroshot HS is a gas propelled, trigger activated plastic sphere hand-launcher. The Pyroshot HS is also compatible with the Dragon Eggs and uses a 20 lb. CO2 bottle to fire upwards of 100m (320 ft.) @ 135 psi. The Pyroshot HS is also easy to transport, safe and very easy to use.

The capability of the combined Pyroshot product line can significantly reduce the time required to burn small to medium-sized plots. As a result, wildfire burnout and backfire operations can be conducted with greater speed and less effort.

More than two years of field testing on the Pyroshot was conducted in the US on prescribed burning and wildlife habitat restoration activities with very good results.

The Green Dragon and Pyroshot product line are the result of years of collaboration in product design, development and field testing between SEI Industries and Field Support Services of Atlanta, Georgia, USA.

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