

Waterglass

**A solar art glass installation
by Sarah Hall, RCA**

Waterglass uses glass art and renewable energy to tell a story about creativity and the natural environment. This work combines photovoltaic cells with architectural glass art in a design that both delights and informs the viewer, from the exterior and interior of the building. The three faces of the building, east, north and west, speak of the past, present, and future of human exploration and our relationship to nature.

On the eastern side, above the main entrance, the central image is a lake freighter bow, composed of spray and mist. This section evokes the traditional uses of the lake and the surrounding natural environment (for transportation, drinking water, and industry), and recognizes the pioneers who took on and overcame challenges throughout our history to the current day. Behind this imposing form, on the interior, is an image gallery that encompasses the visual history of the lake.

The gallery provides fine detail and a new layer of discovery for the viewer inside the building. The images are arranged into a transparent grid that relates to and plays on the pattern of the photovoltaic cells on the western side. From sunlight our human life and on and about the lake is illuminated: Marilyn Bell's dramatic swim across the lake, Ned Hanlan's rowing skills, tall ships, the shoreline and horizon. The visual effect is enhanced by the use of dichroic glass, which offers an ever-changing palette of colour.

Across the north face, a 30-meter-long glass mural expresses the moods of the Lake: the movement of waves, spray and mist, followed by a peaceful waters flowing into a calm, deep pool, then gathering into another wave that flows over the canopy into the western façade. The water forms contain a variety of patterns and textures – the sparkle and ripple of light being refracted through a denser form. Energetic and enigmatic – stormy and quiet - the Lake in all of its seasons and mystery is shown.

The lake is seen as unbound, defying gravity and rising from its bed to gather and play across the Harbourfront Centre façade. This northern face - the longest side and the one most visible to the city - is a reminder of the eternal beauty and unceasing energy of water and light, the essential elements of life. As the most

visible face of a building devoted to arts and culture, the title also refers to the creativity that underlies these and all other human activities which examine the intersections between science, nature and art. Change comes about not only through science, but through an evolution in perception. The image gallery on the inside of this section expands on this idea, showing new ideas across all disciplines that are leading to a more sustainable future.

On the western face, the energy of the waves encounters - and flows into a vision of the future – the photovoltaic cells that gather energy from the sun and take us to a new relationship with nature. Out of the natural world and our traditional ways of using it, there comes a new vision: the replacement of coal plants with photovoltaics, wind energy, and heating and cooling through deep water and geothermal technologies. In this way *Waterglass* becomes a public showcase of fresh new ideas for energy and our relationship with beautiful Lake Ontario.

The message is clear – to make intelligent use of what we already have in abundance: sun, water, wind, and the tides, to carry us towards a healthy and prosperous future. The piece can also be read from west to east: as the energy springing out of the solar cells and flowing into the north and east façades.

Techniques & Materials

The artistic elements are created with airbrushed, fired enamels with sandblasting on architectural glass. The image gallery uses screen-printed photographs and dichroic glass. The result is a sharp, clean image on a background that changes colour depending on the angle of the sunlight. The image galleries will be assembled using the great resources available to us: provincial and city archives, newspaper libraries, public and private collections, along with my own photos.

The 10 photovoltaic panels (solar collectors) are created as triple glazed safety glass units with embedded solar cells. There are 54 standard blue cells per panel, 5” x 5” each. These glazed units will be mounted into the existing frames with conduit wiring. This installation will be a wonderful and highly visible demonstration of building-integrated photovoltaics as an alternative to the more common approach that places solar panels without regard to the architecture. It is also essential and deeply integrated aspect of the art installation.

The art glass, which Sarah Hall fabricates at her studio in Paderborn, Germany, will match the surface of the new curtain wall glazing in the other panels. Because the work is being done in Germany, where 70% of the electricity comes from renewable sources, the glazing and firing processes are environmentally responsible in their use of energy.