PITTSBURGH — With millions of dollars’ worth of discarded coins said winding up in the recycling stream via waste incineration and car shredding every year, according to an AMM report, one recycler orchestrated an experiment designed to put that theory to the test.

AMM was on the scene with American Iron & Metal Co. Inc. scrap process specialists Nicolas Fortier and Dirk Mylich at the scrap giant’s Montreal operation May 20 to test the notion that handfuls of pocket change are unsuspectingly lodged in vehicles at the time of recycling.

At half-speed it’s easy to pluck coins from the conveyor belt, which catches and carries fist-sized chunks of metal, tangled copper wires and pieces of green circuit boards from cars after they’ve been eaten and spit out of the industrial auto shredder.

On a normal day, the more than dozen men stationed along various segments of the belt—donning hard hats, masks, rubber gloves, dust suits and steel-toed boots—would let the coins pass. The pickers’ usual focus is to pull out and separate the higher-valued material from the fragments of steel and other metals as they glide by.

But on this day, the pickers standing on line at Montreal-based AIM’s scrap recycling operation have been given the directive to extract all the lost and forgotten pocket change from the conveyor as part of a test to learn whether automobiles are indeed a large source of mutilated coins.

The amount of coinage existing within the recycling industry has been called into question by the U.S. government after it seized millions of dollars in coin shipments from recyclers sourcing what it alleges were counterfeit coins from China.

Following concerns that the U.S. Mint’s program to buy back these mutilated coins could be exploited, the Treasury Department suspended and later delayed the program for what will amount to an entire year as it works to assess the security and safeguard protocols in place. [The Canadian Mint, in comparison, buys back coins through a different procedure.]

Regardless of the authenticity of the seized coins, U.S. auto shredders, waste incinerators and
COUNTING COINS: AMM GOES ON-SITE TO DETECT HOW MANY DISCARDED COINS WIND UP AT THE SHREDDER

heavy media plants argue that a significant volume of coins enter into the recycling supply chain via waste incineration and car shredding (amm.com, March 22) and that the extended delay of the program negatively affects their businesses. The search for answers to determine just how many coins are thrown away has expanded across the recycling industry and subsequently the world.

The AIM experiment paid off. After 60 cars were turned into roughly 120,000 pounds of processed material which was meticulously picked through, screened and run through a series of separating techniques. This was followed by a second and final picking through. The findings left more than a shred of evidence that a substantial amount of coins sneak their way into this segment of the recycling stream every day.

**PICK AND PULL**

Through the large window of the shredder’s operations tower, Fortier points down to a pile of 60 crushed and neatly stacked cars. Each vehicle to be shredded has already been “sourced” throughout Canada by AIM’s company owned pick-and-pull-style, self-service auto part yards, where practically any piece of a car can be bought.

Over the rumble of the machine, Fortier explains that these cars will be used as feedstock for the experiment.

A crane picks off one of the top cars in the pile and positions it on the center of the conveyor, while a controller in the tower simultaneously turns on the belt to slowly draw the car into the mouth of the shredder. For the purposes of the experiment, this process has been significantly slowed down from the normal shredding speed in order to allow the pickers more time to locate and pull coins. Mixed in with unrecognizable chunks of what were once cars, coins are among the materials spit out the other end of the shredder and are carried along on a conveyer.

“A large portion of coins are still in the car when it’s shredded,” Fortier said, noting that the cars used in this test had be pre-cleaned, or de-olluted in industry terms. Even still, Fortier hypothesized that pocket change not literally pocketed during depollution inevitably falls into and underneath the seats and other hard to reach spots.

Fortier expects to find the vast majority of coins within the separated ferrous material, as most of the coins manufactured by the Royal Canadian Mint consist of a steel base, causing them to be magnetic, unlike their U.S. counterparts that are both nonferrous and nonmagnetic. U.S. coins are generally found in the separated nonferrous materials.

Due to the magnetic quality of Canadian coins, Fortier and Mylich have implemented additional steps and scrutiny that would otherwise be unnecessary if the experiment were to be conducted using cars sourced from the United States.

“In the U.S., 100 percent of the coins would end up in the zorba,” according Mylich, referring to a shredded nonferrous scrap consisting predominately of aluminum, as defined by the Washington-based Institute of Scrap Recycling Industries. Various segregation techniques—eddy currents, air separation, flotation and screening, as well as multiple passes with magnets—help to refine the jumbled mess of mixed metal created when a car is shredded into a tradable commodity, he added.

Some domestic heavy media plants buy and process zorba, but an overwhelmingly large percentage of the metal is exported to China, where the piles are glovenlessly picked through and separated by workers who find coins from around the globe.

**LOONIES AND TOONIES**

Cascading down chutes, the mixed metal is pulled along a maze of conveyer belts through a series of rooms, yielding handfuls of coins at each stage of the process.

A large magnet at the back of the shredder begins the process, separating the jumbled material that was spit out into two distinct paths—magnetic and nonmagnetic. Loonies and toonies, Canada’s $1 and $2 coins, are the easiest to spot among

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**COINS PICKED IN 60 SHREDDED CARS**

<table>
<thead>
<tr>
<th>Coin type</th>
<th>Magnetic coins</th>
<th>Nonferrous coins</th>
<th>All coins</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2</td>
<td>7</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>$1</td>
<td>14</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>25¢</td>
<td>64</td>
<td>0</td>
<td>64</td>
</tr>
<tr>
<td>10¢</td>
<td>38</td>
<td>1</td>
<td>39</td>
</tr>
<tr>
<td>5¢</td>
<td>40</td>
<td>12</td>
<td>52</td>
</tr>
<tr>
<td>1¢</td>
<td>10</td>
<td>97</td>
<td>107</td>
</tr>
<tr>
<td><strong>Total coins</strong></td>
<td><strong>173</strong></td>
<td><strong>110</strong></td>
<td><strong>283</strong></td>
</tr>
<tr>
<td><strong>Coins per car</strong></td>
<td><strong>2.88</strong></td>
<td><strong>1.83</strong></td>
<td><strong>4.72</strong></td>
</tr>
<tr>
<td><strong>Total value</strong></td>
<td><strong>$49.90</strong></td>
<td><strong>$167</strong></td>
<td><strong>$651.67</strong></td>
</tr>
<tr>
<td><strong>Value per car</strong></td>
<td><strong>83¢</strong></td>
<td><strong>3¢</strong></td>
<td><strong>86¢</strong></td>
</tr>
</tbody>
</table>

Source: AMM
the pieces of steel scattered in the material that drifts by. In the background, the flood of metal onto the first conveyer is punctuated with a pop and grinding noise as each car is crushed and torn apart by the shredding machine.

All the remaining nonmagnetic material was diverted onto a second path via another series of belts and chutes into a new room rightfully dubbed the downstream operation. Here, the metal from the automotive shredder, mixed with residue—glass, plastics, foam and rubber, literally is flung out with residue—glass, plastics, foam and rubber, literally is flung out of the stream and off the conveyer by an eddy current separation system. The metal collected at this stage is zorba—aluminum, copper, lead, magnesium, stainless steel, nickel, tin and zinc.

These chunks of zorba are carried down another line and scavenged over by second group of pickers, who removed the majority of nonferrous coins, like pennies, during the experiment. In order to ensure that no coins were missed through the processes, Fortier and Mylich organized a third crew to sort through the fines—pieces smaller than the size of a pen cap—which get screened out after the eddy current process.

In a final attempt to locate any possible leftover coinage, the pair searched through the pieces of material that were kicked off into a separate bin by the magnets in the shredder. Just a few kicks through this scattered pile revealed coins, so Fortier and a few volunteers raked through the pile, successfully recouping the castaways.

**JACKPOT**

After the dust settled and all the pocket change was collected, the count began. Although Fortier and Mylich didn’t become instant millionaires, the results amazed the pair. Out of the 60 cars shredded, the team extracted Canadian $31.57 ($39.57), or nearly C$86 cents (66 cents) per car at an average of five coins in each vehicle. While this amount might seem trivial to some, the figure grows rapidly when looking at the number of cars shredded every year. In the United States alone, if an average of 86 cents were contained in each car at the time of shredding, the total amount climbs to well over $150 million in recycled coinage since the start of the millennium.

“I thought we’d only find a few coins per car, but to find almost (Canadian) $1 per car of value is quite amazing,” Fortier said, noting that the challenges posed by the coins being magnetic could have resulted in some coins being missed through the process, suggesting the average amount per car could be even higher.

The findings surprised the pair, along with AIM president and chief executive officer Herbert Black—enough so that the team is rethinking how it handles cars and might potentially capture the unseen lucrative revenue hidden in each vehicle in the future.

“This will change the way we treat the cars we buy for our pick-and-pull yards. While depolluting the cars, we will keep an eye on loose coins; It’s easy money,” Fortier said.

“If we were located in the U.S., we definitely would put a picker on the zorba line,” Mylich added.

Out of curiosity, Fortier and Mylich went to the pick-and-pull yard armed with razor blades to conduct a followup experiment. The pair scoured seven freshly delivered cars to the yard, ripping out the seats, peeling back the carpet and scavenging the dashboard, cup holders and floor. The findings from this small sample more than mirrored the earlier results, with an average of more than 10 coins in each car representing an average of about C$1.12 (nearly 86 cents) in each vehicle. Interestingly, Fortier and Mylich concluded that the junkier the car, the more coins it was likely to contain.

**FULL FAITH AND CREDIT**

Whether hidden inside the nooks and crannies of cars, as proven by AIM, or among the ash of incinerated waste, coins enter the recycling stream at a staggering rate when taking into account the number of vehicles shredded and the volume of trash generated on a national level in any given year.

As a result, U.S. waste incinerators, auto shredders and heavy media plants have had trouble digesting the U.S. Mint’s decision to prolong the suspension to the buyback program. Numerous industry participants have told AMM that the extended suspension has and will continue to have a negative impact on their businesses, with the hiatus amounting to an abrupt freeze of a revenue stream during the worst market cycle since the 2008 crash.

After surveying domestic and foreign recyclers to gauge the repercussions that the suspension has had on business throughout

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Pickers. More than 120,000 pounds of material processed from shredded cars was passed through a series of separating techniques, screened and meticulously picked by the Montreal scrap giant. The results revealed that each car contained an average of C$86 cents (66 cents). If this rate is applied to the U.S. industry since the start of the millennium, it suggests that well over $150 million in coins could have been recycled.

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Continued
the recycling supply chain, the Washington-based Institute of Scrap Recycling Industries (ISRI) has begun talks with government officials in an attempt to resolve the issue.

“Based on these findings, it certainly shows there are indeed a significant number of coins in each car when it gets recycled, which total up to significant sums,” ISRI legal counsel Scott Horne said.

“We are speaking with legislative and executive branch officials to see if this issue can be resolved promptly.”

Despite uncertainty regarding the resumption of the program, which in May was delayed an additional six months by the U.S. Treasury Department (amm.com, April 29), companies have told AMM that they continue to sort and collect coins, banking on the program’s restart.

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Reconsidered: Herb Black (above center), AIM’s president and chief executive officer, discusses the results from the coin experiment with his scrap process specialists. The findings surprised them, enough so that the team is rethinking how it handles cars and might potentially capture the unseen lucrative revenue hidden in each vehicle in the future.